Legal Comments of the Cities of

Augusta, Georgia and North Augusta, South Carolina

on

U.S. Army Corps of Engineers Report:
"Savannah Harbor Expansion Project,
Georgia and South Carolina: Fish Passage at New Savannah Bluff Lock and Dam
Integrated Post Authorization Analysis Report and
Supplemental Environmental Assessment"
and Related Documents

Submitted by

Augusta, Georgia

and

North Augusta, South Carolina

April 15, 2019

Contents

These comments address legal issues regarding the February 14, 2019 Draft Integrated Post Authorization Analysis Report (PAAR) and Supplemental Environmental Assessment (SEA), Fish Passage at New Savannah Bluff Lock and Dam (NSBLD) and Draft Finding of no Significant Impact (FONSI) to evaluate proposes changes to the Fish Passage feature of the Savannah Harbor Expansion Project (SHEP)(hereinafter "SHEP PAAR/SEA/FONSI" or "Draft Report"). These comments are submitted in accordance with the National Environmental Policy Act, 42 U.S.C. § 4321 et seq. ("NEPA") and applicable Federal laws, regulations and policy including United States Army Corps of Engineers - Procedures for Implementing the National Environmental Policy Act (ER 200-2-2), US Army Corps of Engineers. Engineer Regulation 200-2-2, 33 C.F.R. Part 230. Please accept these comments include these comments in the administrative record for the proceeding and processing in accordance with applicable requirements.

Summary

The SHEP PAAR/SEA/FONSI constitutes a new, separate action significantly affecting the environment. Accordingly, the Corps is required to follow NEPA procedures including developing a reasonable range of alternatives with public input regarding issues and effects. Here, the Corps has impermissibly combined two federal actions: the Savannah Harbor Expansion Project ("SHEP") which is underway, commencing in 2012 and located 180 miles away, and the deauthorization of the New Savannah Bluff Lock and Dam ("NSBLD") as authorized by the Water Infrastructure Improvements for the Nation Act, 114 P.L. , 130 Stat. 1703 (Dec. 16, 2016), § 1319 ("WIIN 2016").

The two projects have completely separate NEPA purpose and need. By combining the two separate federal actions, the Corps has failed to follow NEPA procedures, deprived the public of due process and processes afforded by the National Environmental Policy Act, 42 U.S.C §§ 4321 *et seq.*, and Corps regulations and policies. Where the SHEP purpose was to address inefficiencies in the marine transportation of goods through Savannah Harbor by deepening the Savannah Harbor for international commerce and economics, WIIN 2016 is explicitly for the purpose of deauthorization of the NSBLD specifically and explicitly maintaining existing pool surface water elevations. As none of the Corps' alternatives maintains existing surface water pool elevations – dropping the pool by as much as 6 feet depending upon the alternative and location – no alternative proposed by the Corps satisfies the requirements of WIIN 2016.

The Corps' proposal will result in severe damage to the Augusta Region's economic future, impacts to millions in government investment, its water supply, its water-dependent quality of life, lifestyle and character, to mitigate for a single effect – fishery impact – from a $ 706 million Corps deepening project is unconscionable. The impacts are along seventeen miles of the Savannah River, and will range in reduction from economic damage to serious quality of life damage to a water dependent City and Region which has been built around the current pool in place for nearly a century, since 1937.

The entire basis for fish passage at the NSBLD is for mitigation for impacts from the Savannah Harbor Expansion. Passage of sturgeon is experimental, at best, with very, very few instances of measurable success making the Corps proposal certain to harm Augusta but uncertain in terms of providing any meaningful environmental benefit. When it was determined in 2012 that passage **around** the

NSBLD for sturgeon[1] would mitigate for environmental adverse impacts from Savannah Harbor deepening, the Corps and its sister Federal Agency the National Marine Fisheries Service ("NOAA-NMFS" or "NOAA-Fisheries") concluded that **only four** sturgeon would be potentially taken (killed) by the SHEP work, and twenty 'takes' due to trawling and relocation (which releases the individuals alive). NOAA-NMFS, Biological Opinion, Deepening of the Savannah Harbor Federal Navigational Channel in association with the Savannah Harbor Expansion Project (NMFS Consultation No. F/SERJ2010105579) (Nov. 4, 2011). Nationally, fish passage for sturgeon has been ineffective. The NSBLD passage is being designed after the Cape Fear fish passage and is being studied by NOAA-NMFS "to apply these lessons learned to the Savannah River where a rock-arch ramp fishway will be constructed at New Savannah Bluff Lock and Dam. That project is being constructed to mitigate impacts to shortnose sturgeon from the Savannah Harbor Expansion Project." Notably, we are unable to find any record of a single sturgeon passing the Cape Fear fish passage project which was also designed to pass Atlantic sturgeon and shortnose sturgeon. https://sero.nmfs.noaa.gov/habitat_conservation/hcd_headlines/cape_fear_ld1_fishway.html. The Cape Fear lock and dam was removed and replaced with a rock ramp fishway designed consistent with Corps Alternatives 2-1 through 2-9. Thus, the benefits of NSBLD removal and modification are overstated and not justified scientifically. Further, the Cape Fear passage is also reportedly less successful than the lock and dam for striped bass migration and potadromy.[2] The Corps has done no assessment of this data and information.

Therefore, the drastic impacts to the environment and economic vitality of the Augusta Region is sacrificed for an uncertain benefit to mitigation for impacts 180 miles away on very few sturgeon. Augusta supports ecosystem and species protection. It is unlawful, as set forth below, to place disproportionate impact to the Augusta area to achieve scientifically questionable and arguably experimental ecosystem and species benefits as mitigation for impacts from a separate harbor deepening project 180 miles away, and improper to do so prior to assessing alternatives more beneficial to the sturgeon and less impactful to the region and the ecosystem and resources in the Augusta and North Augusta region.

Given that the purpose of the Corps proposal is mitigation for four sturgeon would be potentially taken (killed) by the SHEP work, and twenty 'takes' due to trawling and relocation,[3] the Corps has violated NEPA by failing to consider a reasonable range of alternatives which would satisfy mitigation for the anticipated level of take by the Savannah Harbor deepening. If the Corps has determined that it is unable to satisfy the original mitigation it identified, issued for public notice, and selected in a Record of Decision ("ROD"), it is required under NEPA and federal statutes including the Endangered Species Act, 16 U.S.C. §§ 1531 et seq. to develop and assess a reasonable range of alternatives to

[1] Although other species are expected to use passage, and would also use functional locks at the NSBLD, the Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) and Shortnose Sturgeon (*Acipenser brevirostrum*) drive the fish passage design and mitigation purpose.

[2] Raabe, J., "Evaluation of Fish Passage Following Installation of a Rock Arch Rapids at Lock and Dam #1, Cape Fear River, North Carolina" (2014). International Conference on Engineering and Ecohydrology for Fish Passage. 69. https://scholarworks.umass.edu/fishpassage_conference/2014/June9/69

[3] We recognize that in subsequent consultations the Corps has increased its incidental take request to 10 sturgeon. NOAA-NMFS. NOAA-NMFS, 2017 Biological Opinion Supplement Biological Opinion, Deepening of the Savannah Harbor Federal Navigational Channel in association with the Savannah Harbor Expansion Project (NMFS Consultation No. F/SERJ2010105579)(Oct. 13, 2017)("2017 BiOp Supplement")

effectuate the mitigation. Here, the Corps has only assessed fish passage at the NSBLD as its only alternative to the impacts to very few sturgeon 180 miles away. NEPA requires a reasonable range of alternatives, which here would include any number of habitat enhancements, conservation measures, alternative passage methods which would not drastically affect the Augusta Region, and may not affect it at all, but satisfy ESA Section 7 consultation requirements and provide for protection of a species impact by harbor deepening. By failing to consider a reasonable range of alternatives, the Corps has failed to comply with NEPA to assess a reasonable range of alternatives to achieve the sturgeon mitigation required under the 2012 SHEP EIS and ROD.

It is inappropriate, illegal and patently unfair to place such a significant impact on the Augusta region simply to permit benefits to another region. At the time the SHEP was approved, the position of the Corps and all parties was clear: removal of the New Savannah Bluff Lock and Dam was infeasible. 2012 SHEP EIS, App. C Mitigation, at 65. Nothing has changed since that 2012 Corps pronouncement respecting feasibility. When the Corps suggested fish passage at the NSBLD as a mitigation feature for SHEP impacts to sturgeon, here was no discussion of removing the NSBLD; there was no consideration of reduction of water levels along a seventeen mile segment. 2012 SHEP EIS generally; 2012 SHEP EIS, App. C Mitigation. Based upon the assertions that removal of the NSBLD is infeasible, and would not occur, governments and the public did not comment adversely or otherwise exercise rights of appeal, challenge or review of the 2012 SHEP EIS and related determinations. The 2019 PAAR by proposing drastic changes from the 2012 SHEP EIS forever altering the Augusta Region impermissibly changes the purpose, need, and scope of the 2012 SHEP EIS, lacking logical outgrowth from the original action and arbitrarily reversing numerous key scientific, technical, and other determinations.

The only change since the 2012 SHEP EIS identified by the Corps is WIIN 2016. As explained below and made clear in Corps guidance and memoranda, WIIN 2016 requires that the NSBLD be kept in place with the lock repaired and other necessary modifications including capability of passing fish over the structure, or alternatively removal of the NSBLD without a requirement to pass fish. Under any and all options, the pool surface water level is required to be maintained under WIIN 2016 specifically such that the Augusta Region would not be affected. As discussed below, if the Corps decides to remove the NSBLD, WIIN 2016 is clear that Congress did not intend that fish be passed. Accordingly, if the Corps still wishes to implement fish passage as mitigation for its other project, the Savannah Harbor Expansion, then it must keep the NSBLD in place, repair it, and construct a fish passage over it.

The Corps has proceeded with the NSBLD deauthorization to remove the NSBLD without following complete NEPA procedures discussed in detail below. Among the issues with the NEPA process are the Corps utilized an improper baseline for analysis by using a 2012 SHEP EIS mitigation plan for passage around the NSBLD, a project it now says it will never complete. Baseline is existing conditions under NEPA. The Corps also impermissibly predisposed its decision – over a year ago on January 14, 2017 it announced its decision to cast aside the 2012 SHEP EIS through consultation with NOAA-NMFS and instead removal the NSBLD. The Corps also recently 'eliminated' Alternative 1-1 through a blog post, impermissibly, before close of the comment period. The Corps issued the PAAR/SEA/FONSI before data from its February 8 through 15 drawdown could be used to calibrate modeling and consider true effects of its proposal and alternatives. The modeling is shown in our Technical Comments to be in error and understate water elevation drops. See Section V.A.

The Corps has illegally proposed and issued a draft Finding of No Significant Impact ("FONSI") at the same time as its public notice of the proposal and before completion of the comment period. In essence the Corps is saying there is no significant impact from the action proposed in the 2019 PAAR/SEA/FONSI before even asking for public comment on impacts. The alternatives considered also fail to comply with federal law, specifically the WIIN 2016 Act, which requires that the pool surface water elevation upstream of the NSBLD be maintained. No alternatives assessed by the Corps maintains the pool which has been in existence since 1937, significantly affecting hundreds of thousands in the Augusta Region, millions in local and state investment, parks, recreation, municipal water supply, property values and environmental and aquatic resources.

As set forth below and in Technical Comments, the Corps erred in its NEPA analysis failing to take a hard look at direct, indirect and cumulative effects; applied an incorrect NEPA baseline for alternative analysis; narrowed the range of alternatives and omitted consideration of reasonable and feasible alternatives; failed to comply with the National Historic Protection Act, 54 U.S.C. §§ 300101 et seq. and other Historic Resource Laws by failing to conduct historic and cultural resource surveys in an appropriate area of direct effect. The Technical Comments identify significant underestimate of effects including pool surface water elevations and scope of effects rending the NEPA analysis insufficient as a matter of law. Due to significant impacts of the proposal, and consistent with other dam removal and construction and modification projects of this magnitude, the Corps is required to complete an Environmental Impact Statement with full public participation; full public notice in the Federal Register following an adequate draft environmental document; incorporation of all data and completion of NEPA studies. The Corps has impermissibly cut short the NEPA and Corps processes, for example issuing the Draft Reports before information from the February 8 to February 15 drawdown field verification information could be processed and effects determined. For these reasons and issues detailed below, the Corps must revise its analysis, assess alternatives as discussed below, conduct necessary consultation and studies and reissue a draft document in Environmental Impact Statement form prior to taking federal action. NOAA-NMFS has stated in consultation documents that for bids for any work relating to the Corps proposal would not be awarded until January 2021 and that fish passage would be completed in October 2022, eight months after completion of the inner harbor dredging. NOAA-NMFS, 2017 Biological Opinion Supplement Biological Opinion, Deepening of the Savannah Harbor Federal Navigational Channel in association with the Savannah Harbor Expansion Project (NMFS Consultation No. F/SERJ2010105579)(Oct. 13, 2017)("2017 BiOp Supplement"), at 9. NEPA and Due Process may not be evaded by deadlines, but here the artificially short public participation is avoidable and inappropriate in light of the significant nature of the impacts.

I. The Proposed Action Violates Congress' Explicit Mandate in the WIIN2016 Act

Under WIIN 2016, the Secretary is authorized to take one of two Options respecting the NSBLD as necessary: repair and modify the NSBLD and allow fish passage, or remove the NSBLD and construct a new structure.

(c) PROJECT MODIFICATIONS.—
(1) IN GENERAL.—Notwithstanding any other provision of law, the Project is modified to include, as the Secretary determines to be necessary—
(A)(i) repair of the lock wall of the New Savannah Bluff Lock and Dam and modification of the structure such that the structure is able—
(I) to maintain the pool for navigation, water supply, and recreational activities, as in existence on the date of enactment of this Act; and
(II) to allow safe passage over the structure to historic spawning grounds of shortnose sturgeon, Atlantic sturgeon, and other migratory fish; or
(ii)(I) construction at an appropriate location across the Savannah River of a structure that is able to maintain the pool for water supply and recreational activities, as in existence on the date of enactment of this Act; and
(II) removal of the New Savannah Bluff Lock and Dam on completion of construction of the structure; and
(B) conveyance by the Secretary to Augusta-Richmond County, Georgia, of the park and recreation area adjacent to the New Savannah Bluff Lock and Dam, without consideration.

WIIN2016 Act, 14 P.L. 322, 130 Stat. 1703 (Dec. 16, 2016), § 1319(C). WIIN 2016 was enacted December 16, 2016.

WIIN 2016 deauthorizes the NSBLD. WIIN 2016 does not require the Secretary to take any action, but if the Secretary determines action is necessary Congress has specifically prescribed the Secretary's actions as one of two options:

OPTION 1 Section 1319 (c)(1)(A)(i): repair of the lock wall of the NSBLD such that it would 'maintain the pool for navigation, water supply, and recreational activities, as in existence on the date of enactment of this Act,' and 'allow safe passage over the [NSBLD]' or shortnose sturgeon, Atlantic sturgeon and other migratory fish, OR

OPTION 2 Section 1319 (c)(1)(A)(ii): construction of a structure 'able to maintain the pool for water supply and recreational activities,' and removal of the NSBLD on completion of this construction.
As a third alternative, the Secretary may take 'no action' and decide neither option is necessary.

Because Congress did not mandate the Secretary implement either OPTION 1 Section 1319 (c)(1)(A)(i) or OPTION 2 Section 1319 (c)(1)(A)(ii), the Secretary has a third option: take no action. The NSBLD would remain in place, unchanged. 1319 (c)(1)(A)(i) will be referred to as Option 1: NSBLD Lock Repair and Modification with Fish Passage and 1319 (c)(1)(A)(ii) will be referred to as Option 2: NSBLD Removal without Fish Passage. The No Action alternative will be referred to as Option 3: No Action.

Regardless of option selected, the Secretary is required to maintain the NSBLD pool surface water elevation albeit for slightly different purposes. Navigational purposes are included in Option 1, but not Option 2. Notably, Option 3: No Action would also maintain pool surface water elevation.

There is no legal disagreement between the Corps and Augusta regarding the Secretary's options under WIIN 2016 and limitation to the two Options under WIIN 2016. The Corps has, however, failed

to apply the clear language requiring pool surface water elevations be maintained, and the Corps has proposed alternatives not authorized by WIIN 2016 and exceeding its scope. The Department of Army, U.S. Army Corps of Engineers ("Corps") issued a legal interpretation on May 25, 2017 stating that the Corps could implement "either of the following alternatives" reciting Option 1: NSBLD Lock Repair and Modification Option 1 and Option 2: NSBLD Removal without Fish Passage. U.S. Army Corps of Engineers, Memorandum for Commander South Atlantic Division, "Implementation Guidance for Section 1319 of the Water Resources Development Act of 2016 (WRDA 2016), New Savannah Bluff Lock and Dam, Georgia." The Corps' PAAR/SEA/FONSI public notice and PAAR/SEA/FONSI documents concur and recite these two options and so there is no legal disagreement as to applicability of the language. See PAAR/SEA/FONSI, Executive Summary, at i.

Augusta Utilities and North Augusta comment that despite the clear language of WIIN 2016, the Corps PAAR/SEA/FONSI proposed action, and alternatives violate the language of WIIN2016 in two major ways:

WIIN 2016 requires the Corps to repair the Lock Wall and Modify the NSBLD, not remove it, if the Secretary determines that Fish Passage is Necessary.

If the Secretary determines fish passage is necessary, WIIN 2016 requires the Corps to leave the NSBLD in place, repair the lock wall, and modify the NSBLD. OPTION 1 Section 1319 (c)(1)(A)(i). Congress explicitly **omitted fish** passage from Option 2 Section 1319 (c)(1)(A)(ii). Congress made clear that it intended that the NSBLD remain in place with repair and modification if fish passage was necessary. Thus, Alternatives 2-3 and 2-6 (including sub-alternatives) are not authorized under WIIN 2016 and are in fact contrary to WIIN 2016. The Secretary is not authorized to remove the NSBLD such that it would 'maintain the pool for navigation, water supply, and recreational activities, as in existence on the date of enactment of this Act,' and 'allow safe passage over the [NSBLD]' does not authorize the Corps to both remove the NSBLD and p

The Proposal and Alternatives Fail to Meet the Requirement of both OPTION 1 and OPTION 2 in Section 1319 (c)(1)(A) to Maintain the Pool. The Corps' proposed alternative 2-6D lowers pool elevation by xx (modeled) and yy (actual observed) failing to meet the requirements of WIIN 2016. Corps HECRAS modeling shows each alternative lowers pools surface elevation and therefore no proposed alternative meets the requirements of WIIN 2016 to maintain pool surface elevations as in existence on the date of enactment. Augusta Utilities experts have shown that the Corps analysis actually understates the level of lowering of the pool surface water elevation, and is confirmed by field data from the February 8 through February 15 Corps drawdown of the pool behind the NSBLD done to demonstrate post-project conditions. Thus, no alternative proposed by the Corps meets the Congressional mandate that the Corps maintain the pool that existed on the date of enactment.

Congressmen Joe Wilson and Rick Allen testified at a March 31, 2019 Hearing regarding the Corps proposal and the WIIN 2016 Act, explaining the congressional intent was to maintain the pool upstream of the NSBLD and expressing concern that the Corps had misinterpreted the statute. Technical Comments, Appendix I. Congressman Wilson stated he was disappointed that the misinterpreted the intent of the WIIN Act and confirmed that the physical level of the pool at the time of WIIN 2016 enactment was clearly the required surface elevation criteria. Congressman Allen agreed and stated he was assured by the Corps that the pool level would be maintained. Congressman Allen and Wilson were joined in April 9, 2019 Letter by Senators Lindsey Graham, Johnny Isakson, Tim Scott, and David Perdue expressing concern at the Corps' interpretation of the WIIN 2016 Act and reiterating the intent to maintain pool surface water elevation. Technical Comments, Appendix B. That letter also expresses concern that the February 8 through 15 drawdown proved that the Corps' proposal 'does not appear to meet the requirements of the plain text of the legislation or the intent of Congress when it passed the WIIN Act."

A. WIIN 2016 requires the Corps to repair the Lock Wall and Modify the NSBLD, Not Remove it, if the Secretary determines that Fish Passage is Necessary.

Where Congress includes particular language in one section of a statute but omits it in another section of the same Act, the Supreme Court has repeatedly interpreted the omission as clear Congressional intent that Congress intentionally and purposely omitted the provision or requirement. Nat'l Ass;s of Mfrs v. Department of Defense, 138 S. Ct. 617, 625 (2018); INS v. Cardoza-Fonseca, 480 U.S. 421, 432 (1987); Russello v. United States, 464 U.S. 16 (1983).

i. The Corps Preferred Alternative, Proposal 2-6D to Remove the NSBLD Falls Under Option 2 Section 1319 (c)(1)(A)(ii) which Explicitly Omits Fish Passage

Congress was clear: if the Secretary determined Option 2 Section 1319 (c)(1)(A)(ii) was necessary, Congress did not authorize fish passage be implemented at NSBLD. By omitting fish passage, Congress clearly intended that fish passage not be included.

According, if fish passage is 'necessary' as per the Secretary's determination, the only option available to the Secretary is Option 1 Section 1319 (c)(1)(A)(i): repair of the lock wall of the NSBLD such that it would 'maintain the pool for navigation, water supply, and recreational activities, as in existence on the date of enactment of this Act.'

Congressional intent could not be more clear. By selecting Alternative 2-6D *and* including fish passage, the Corps has contravened Congress clear intent.

ii. If the Secretary determines Fish Passage is Necessary, then it is Required to Repair the Lock and Modify the NSBLD, not Remove the NSBLD

The language of the WIIN 2016 Act is clear. If the Corps wishes to address fish passage, it must repair the lock wall such that it maintains the pool for navigation, water supply, and recreational activities under Section 1319 (c)(1)(A)(i) of WIIN 2016. As discussed below, the Corps did not assess potential use of adjustable gates on the existing structure which will maintain the pool surface water elevation and allow for adaptive management, and include fish passage. See Figure 1, below:

Table 19: List of Intermediate Alternatives with Refinements	
Alternative Number	Alternative Description
2012 SHEP GRR (NAA)	Construct a 285' wide fixed crest weir at elevation 110 around SC side of NSBLD
1-1	Repair lock wall, retain dam, 200' wide fish passage ramp on GA side
1-2	Repair lock wall, remove dam, 380' wide fish passage ramp in place of dam
2-1	Remove lock and dam, 500' wide fixed crest weir @ elevation 105
2-2	Remove lock and dam, 500' wide fixed crest weir @ elevation 106
2-3	Remove lock and dam, 500' wide fixed crest weir @ elevation 107
2-4	Remove lock and dam, 500' wide fixed crest weir @ elevation 107.6
2-5	Remove lock and dam, 500' wide fixed crest weir @ elevation 110
2-6a	Remove lock and dam, 500' wide fixed crest weir @ elevation 110 with floodplain bench
2-6b	Remove lock and dam, 500' wide fixed crest weir @ elevation 107 with floodplain bench
2-6c	Remove lock and dam, 500' wide fixed crest weir @ elevation 108 with floodplain bench
2-6d	Remove lock and dam, 500' wide fixed crest weir @ elevation 109 with floodplain bench
2-7	Remove lock and dam, 500' wide fixed crest weir @ elevation 110 with bypass channel and one 50' wide gate
2-8	Remove lock and dam, 500' wide fixed crest weir @ elevation 110 with bypass channel and two 50' wide gates
2-9	Remove lock and dam, excavate park, 920' wide fixed crest weir @ elevation 110

Figure 1: List of Intermediate Alternatives from Corps PAAR/SEA/FONSI (Table 19 of PAAR)

The no action alternative under WIIN 2016, as well as NEPA, is retention of the current NSBLD in place with no change, as discussed below.[4]

B. **The Proposal and Alternatives Fail to Meet the Requirement of both OPTION 1 and OPTION 2 in Section 1319 (c)(1)(A) to Maintain the Pool.**

i. The Proposal and Alternatives Fail to Maintain the Pool and Reduce Surface Elevation from Existing Conditions.

None of the Corps' alternatives maintain the pool as it existed on the date of enactment. The pool has a water surface elevation of 115, as agreed by the Corps and confirmed below. See Technical Comments, Section V.A.; Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019); Sections III, IV and V below. Each of the Corps alternatives fail to maintain pool surface water

[4] As discussed below, the no action alternative identified by the Corps in the PAAR/SEA/FONSI is legally incorrect in that no action is considered to be a plan altering the NSBLD respecting the separate Federal action involved in the SHEP.

elevation. For example, regarding water intakes, the Corps models predicts pool surface water elevations at 111.9 at Augusta's Hicks Raw Water intake station for alternative 2-6D:

Table 27: NSBLD Pool Elevations for Fish Passage Alternatives At Intakes

Location	Pool Elevation (ft NGVD29) @3600 cfs							
	NAA	Alt 1-1	Alt 2-3	Alt 2-6a	Alt 2-6b	Alt 2-6c	Alt 2-6d	Alt 2-8
NSBLD	113.5	112.4	108.7	111.8	108.7	109.6	110.5	111.9
Potash/Fibrant/ et al.	113.9	112.8	109.9	112.3	109.9	110.6	111.3	112.4
SCE&G	114.0	112.9	110.2	112.5	110.1	110.7	111.4	112.5
Kimberly Clark	114.0	112.9	110.2	112.5	110.1	110.7	111.4	112.5
Hicks Raw Water	114.1	113.1	110.9	112.7	110.9	111.3	111.9	112.8
City of North Augusta	114.5	113.7	111.9	113.3	111.9	112.2	112.6	113.3

2019 PAAR, at 3.6.13, P. 93 (Table 27).

Indeed, under the Corps own analysis, each alternative would place surface water levels below the Corps' calculated surface elevation of 114.1 feet mean sea level. No proposed alternative or assessed alternative complies with Congress' mandate in WIIN 2016 that pool surface water elevations be maintained. The proposed alterative 2-6D violates WIIN 2016, as do all alternatives analyzed by the Corps. Additional detail is provided in the Technical Comments.

Augusta points out below that the No Action Alternative under NEPA consists of current, existing baseline conditions.

In the 2012 SHEP EA, the Corps states,

> "The District maintains stable pool elevations **(near EL 115 feet) during most river flows** and raises the gates at the dam during high flows to reduce the backwater effects of the dam on the upstream pool and its adjacent development."
>
> 2012 SHEP EA, App. C Mitigation Plan, at 71.

The baseline pool elevation is therefore, by the Corps' own analysis and published studies, 115 feet. Similarly, USGS water stage records show that the Corps has actually operated the dam at an average normal level of 115.0. Augusta has retained engineering experts from Cranston Engineering and Merrick Engineering/McLaughlin Whitewater. Both firms have vast experience with hydraulic and hydrologic analysis, with Merrick/McLaughlin having designed the Corps Columbus Georgia dam removal and environmental enhancement for shoal bass and recreation. Cranston and Merrick concur that, based upon USGS datum, NSBLD design documents, and field measurements, water surface level elevations at NSBLD are consistent with the 2012 Corps baseline, and not the 2019 PAAR document:

Description	**Water Elevations**				**Notes**
Location	**Lock & Dam[a]**		**Fifth Street Bridge[b]**		
Datum	**NGVD 1929**	**NAVD 1988**	**NGVD 1929**	**NAVD 1988**	Assumed difference = 0.8'
Normal pool per original design[c]	115.0 - 114.5	114.2 - 113.7	115 N/A	114.2 N/A	
Corps' current operations					
"Normal"[d]	114.0 -114.5	113.2 - 113.7	115.1	114.3	
Range[e]	112.0 - 115.3	111.2 - 114.2	N/A	N/A	
Usual Levels (non-flood) per USGS gauges[f]	115.0[g]	114.3	115.0	114.3[h]	Approximate Water Year 2018 year-long medians, by inspection
Alternative Simulations **Q= 8000 cfs** **from HEC-RAS Summary[i]**					Elevations Produced from Questioned Model
Existing	114.0	113.2	116.1	115.3	Probably wrong
No Action Alt	114.0	113.2	116.1	115.3	Probably wrong
Alt 1-1	113.9	113.1	116.0	115.2	Probably wrong
Alt 2-6a	112.6	111.8	115.4	114.6	Probably wrong
Alt 2-6d	111.7	110.9	115.0	114.2	Inconsistent with observations 2/15/2019
Actual Elevations February 15, 2019	111.08	110.28[j]	112.03	111.23[k]	Flow rate at NSBLD was 7,270 cfs, near 8,000 cfs.
Desired by Cities and Counties[l]	N/A	N/A	115.2	114.5	

Note: The actual instantaneous flow rates in the Savannah River on the morning of February 15, 2019, were 7,270 cfs at NSBLD and 5,422 cfs at Augusta Canal Diversion Dam

References:

Description	**Water Elevations**				**Notes**
Location	**Lock & Dam[a]**		**Fifth Street Bridge[b]**		
Datum	**NGVD 1929**	**NAVD 1988**	**NGVD 1929**	**NAVD 1988**	Assumed difference = 0.8'

1. Lock and Dam United States Geological Survey (USGS) gauge is located just upstream. Datum is NGVD 1929.
2. Fifth Street USGS gauge is located on first pier from Georgia side. Datum for the recording gauge is NAVD 1988. Zero of the recording gauge is 100.00. Note that the datum for staff gauge is NGVD 1929. Zero of the staff gauge (and previous recording records) is Elevation 102.06. Verified by field surveys by Cranston Engineering Group, P.C.
3. Construction plans: *Rehabilitation of Gates and Piers, New Savannah Bluff Lock and Dam*, Plate S-500, 12 March 1995; and Corps of Engineers, U. S. Army, Savannah, Georgia, District, *Special Flood Hazard Information Report, Savannah River, Augusta, Georgia*, August 1971, p. 7.
4. Draft Report, Appendix A, p. A-19. USGS records for Water Year 2018 contradict the Corps' assertion of operating range.
5. Draft Report, 2.2.2. Hydrology and Floodplains, p. 18.
6. Inspection of records of USGS gauge records for Water Year 2018 (October 1, 2017—September 30, 2018).
7. Gauge 02196999 at New Savannah Bluff Lock and Dam.
8. Recording Gauge 02126670 at Jefferson Davis (Fifth Street) Bridge.
9. Draft Report, Appendix A, Table 8. Summary of HEC-RAS Results, p. A-41.
10. Gauge 02196999 at New Savannah Bluff Lock and Dam.
11. Recording Gauge 02126670 at Jefferson Davis (Fifth Street) Bridge. Verified by actual field survey by Cranston Engineering Group, P.C.at Elev. 111.20 (NVGD 1988) on February 15, 2019 at 11:13 am EDT.
12. Resolutions by Augusta, North Augusta, Aiken County, and Columbia County.

Additional detail is provided in Technical Comments at Section V.A. A supporting engineering analysis has been provided as an Appendix to Augusta's comments with elevation and model assessment data, as well as field measurement data. Technical Comments, Appendix F, River Vision Plan, McLaughlin Whitewater (April 2019). Additionally, engineers performing analysis have identified several issues with modeling input and analysis, identified in "Summary of Discrepancies and Questions from Hec-Ras Model" attached to and referenced in the Technical Comments. See Appendices D, E. See also Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019).

The Technical Comments and supporting memoranda show that the Corps used a lower elevation than the pool level specified by the WIIN 2016 Act. Specifically, the Corps used an elevation of 113.2 where the Corps' own documents and operational records identify a. See Draft Report, Table 8, Page A-41. The Technical Comments identify field data taken during the Corps February 8 through 15 drawdown showing significantly lower pool elevations than predicted by the Corps in the Draft Report. Technical Comments Section V.A, and generally; Technical Comments, Appendix J North

Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019).

The Corps has identified alternative 2-6D as the Proposed Alternative. February 16, 2019 Public Notice. That alternative results in reduction in pool of 3.1 feet as compared to the 115 feet elevation the Corps identified in the 2012 SHEP EIS. The reduction in pool is 2.2 feet using the Corps improper baseline of 114.1 feet elevation in the 2019 PAAR/SEA/FONSI.

In selecting 2-6D as the preferred alternative, the Corps has not complied with WIIN2016. The Corps states "Alternative 2-6 [maintains] the functionality of the pool for water supply and recreation . . . in compliance with WIIN Act, Title I, WRDA of 2016, Section 1319 (c)(1)(A)(ii)." Notwithstanding, the Corps insertion of 'functionality' constitutes an impermissible deviation from the clear language of WIIN2016 and accordingly Alternative 2-6D does not comply with Congress' intent by failing, as the Corps admits, to maintain the pool surface water elevation in existence at the time of enactment of WIIN 2016. The use of a 'functionality' approach was specifically rejected by Senator Lindsay Graham, Senator Johnny Isakson, Senator Tim Scott, Senator David Perdue, Congressman Joe Wilson and Congressman Rick Allen. See Technical Comments, Appendix B, April 9, 2019 Correspondence to Corps of Engineers.

Under either analysis, alternative 2-6D violates WIIN 2016 by reducing pool surface water elevations. The reduction is significant in that portions of the river are shallow and 2-6D will leave river margins and other areas dewatered and shallow by several feet. The result will affect not only municipal water supply but recreation as prohibited in WIIN 2016.

The WIIN Act requirement to maintain the pool surface water elevation of the NSBLD is for explicit purpose of recreation and water supply. Technical comments identify adverse impacts on water supply and recreation. Technical Comments at VII; Appendix G. Recreation and water supply are of critical importance to any Region, but Augusta has been water-dependent since its incorporation including significant investments in water projects, the Augusta Canal, the Augusta and North Augusta waterfront. Under NEPA and Corps regulations, the Corps is required to consider water supply and recreation as well as socioeconomic, environmental and aquatic impacts. Corps regulations specifically identify the purpose of Corps civil works water and related land resources project planning is to contribute to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. ER 1105-2-100 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies, at 1-2, 2-1 (Apr 22 2000)

ii. PAAR documents apply incorrect criteria for Impacts in Violation of WIIN 2016

In the PAAR Engineering report, Appendix A, the Corps states that "the weir configuration for fish passage that is ultimately adopted must balance maintaining a pool for water supply and **minimizing residential flooding impacts, while keeping construction costs reasonable**." Because WIIN2016 requires maintenance of recreation, the Corps placing costs and flooding above WIIN 2016 explicit requirements to maintain pool surface water elevations violates WIIN 2016. In applying incorrect and explicitly rejected criteria, the Corps' analysis is arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law and must be rejected.

iii. The Corps is Prohibited by the WIIN 2016 Act from expending funds except in accordance with the Specific Authorization, Including Maintaining the Pool

As part of the Water Resources Development Act, the Corps is prohibited from expenditures of federal funds inconsistent with or contrary to WIIN 2016; see also 33 C.F.R. 263.15(b). The Corps is prohibited from implementation and expenditures on alternatives which do not meet the WIIN 2016 criteria for pool surface water elevations, or which would implement options other than Option 1: NSBLD Lock Repair and Modification with Fish Passage - 1319 (c)(1)(A)(i), Option 2: NSBLD Removal without Fish Passage - 1319 (c)(1)(A)(ii), or taking no action at the NSBLD.

II. Deauthorization of NSBLD is a Separate Federal Actions for the Purpose of NEPA Analysis

At the time the SHEP was developed, the NSBLD was an authorized Federal project required to be maintained. As set forth in environmental documents:

> A. The lock and dam is a Congressionally-authorized project; therefore, the Corps is obligated to maintain the project as Congress provides funding for such actions.
>
> B. The current authorization language (WRDA 2000), amended in Omnibus Act 2001, calls for repair and rehabilitation of the lock and dam structure, construction of a fish passage, and conveyance of the Lock and Dam to the City of North Augusta.
>
> C. Removal of the structure would adversely impact the freshwater supply of eight major users.

SHEP EIS, Section 5.03.2;2012 SHEP EIS, Appendix C Mitigation Planning, at Section C.1. P. 65

The Record of Decision, in fact, specifies that fish passage will be 'around the New Savannah Bluff Lock and Dam' clearly indicating the dam will be left in place. Record of Decision, at Compensatory Mitigation, item a (Page 2)(Oct. 26, 2012).

WIIN 2016 makes clear the Corps has limited options: Option 1: NSBLD Lock Repair and Modification with Fish Passage - 1319 (c)(1)(A)(i), Option 2: NSBLD Removal without Fish Passage - 1319 (c)(1)(A)(ii), or taking no action at the NSBLD. Under Corps regulations, the Corps is required to designate legislative authority as the primary purpose in NEPA analysis, federal actions, and Corps required reports and activities. 33 C.F.R. 263.15. The SHEP authorization and NSBLD deauthorization are separate legislative pronouncements. Under federal law, the Corps may not implement cross purposes and any interaction between the two must harmonize the language and intent of the statutes. The Corps' Draft Reports omit and ignore the plain language of WIIN 2016, fails to respect clear Congressional intent to maintain pool surface water elevation, and impermissibly selects and presents alternatives not authorized under WIIN 2016.

The stated purpose of the project is to pass sturgeon upstream of the NSBLD. PAAR, at 1.3. That is a different purpose than deauthorization of the NSBLD with the options described in WIIN 2016.

The SHEP and NSBLD actions must be treated separately for purpose of NEPA analysis, and the purpose, intent and language of each enactment must be implemented with fidelity. By failing to

implement WIIN 2016 and combining the NEPA analysis with the separate SHEP project, the Corps is in violation of WIIN 2016 requirements and NEPA.

III. The Corps Failed to Develop an Appropriate No Action Alternative and Baseline

The Corps improperly identified baseline. For the purpose of assessing effects under NEPA, NEPA makes clear that baseline is existing conditions. However, the Corps has considered "the original design is considered the No Action Alternative ("NAA") in the comparison of alternatives during plan formulation." PAAR, Section 1.0. That original design is substantially different from a baseline environmental perspective and NEPA perspective.

Under NEPA, environmental baseline analyzes the effects of past and ongoing human and natural factors leading to the current status of the project and impacted area. Proper baseline is existing conditions, required to identify the environmental consequences of a proposed agency action. Am. Rivers v. FERC, 201 F.3d 1186, 1195 (9th Cir. 1999). The proper baseline is the status quo such that "the reader may compare the other alternatives' beneficial and adverse impacts related to the applicant doing nothing." Kilroy v. Ruckelshaus, 738 F.2d 1448, 1453 (9th Cir. 1984); Ctr. for Biological Diversity v. United States BLM, 746 F. Supp. 2d 1055.

The Corps NAA is also legally invalid because, based upon the Corps' own analysis and statements, the 2012 SHEP Plan is no longer legally available. 2012 SHEP at 3.5.1, Page 61. The status quo, or existing baseline, is the current condition with the NSBLD in place and under normal operations. As noted above, the Corps stated in the 2012 SHEP EIS that baseline was a pool elevation of 115 feet at the NSBLD. In the 2019 PAAR, the Corps drops baseline at the NSBLD. The Corps, impermissibly, attempts to justify its change in baseline by the 2012 SHEP mitigation plan which was never implemented.

Thus, the baseline used by the Corps is incorrect, violates NEPA requirements and is arbitrary, capricious, an abuse of discretion and otherwise not in accordance with law. It is also not representative of existing conditions, or status quo, and therefore cannot provide a meaningful baseline for environmental impact analysis.

Additionally, the 2012 SHEP could not serve as the baseline, because it was developed under a completely different set of assumptions and legal bases. The Corps application of the 2012 SHEP EIS never-constructed mitigation as baseline also violates the WIIN 2016 Act provisions, by completely avoiding any assessment which would compare the Corps' alternatives and proposal to the pool surface water elevations required to be maintained under WIIIN 2016. Thus, the Corps has violated both WIIN 2016 and NEPA.

NEPA requires that an agency's alternatives analysis include a "no build" alternative. 40 C.F.R. § 1502.14(d). "Without [accurate baseline] data, an agency cannot carefully consider information about significant environment impacts . . . resulting in an arbitrary and capricious decision." See N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1085 (9th Cir. 2011). Accordingly, courts not infrequently find NEPA violations when an agency miscalculates the "no build" baseline or when the baseline assumes the existence of a proposed project. See, e.g., Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1037-38 (9th Cir. 2008); N.C. Alliance for Transp. Reform, Inc. v. United States DOT, 151 F. Supp. 2d 661, 690 (M.D.N.C. 2001).

The no build or no action alternative under NEPA, as well as WIIN 2016, is no action – leaving the NSBLD in place with no fish passage and no change in operations. The Corps has failed to analysis or even consider this no build or no action alternative.

By applying the incorrect No Action Alternative, the Corps has failed to assess impacts of the 2012 SHEP Plan. For example, the Corps concludes "adverse environmental impacts to aquatic resources from the NAA are expected to be limited to short term impacts during construction" (PAAR at 3.6.3) for the SHEP 2012 Plan, ignoring the aquatic resource impacts of lowering the pool surface water elevation.

By applying the incorrect baseline, the Corps has underestimated impacts for each of its alternatives. This error requires the Corps to go back and reperform its modeling analysis and impact assessment and compare to current conditions baseline.

IV. The Corps failed to Consider a Reasonable Range of Alternatives

NEPA requires that the Corps analyze a range of reasonable alternatives are to be selected by reference to the project implemented. See 40 C.F.R. § 1502.14; Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n, 146 U.S. App. D.C. 33, 449 F.2d 1109, 1114 (D.C. Cir. 1971);Am. Rivers v. Ferc, 201 F.3d 1186, 1199, 1999 U.S. App. LEXIS 34820; Alaska Wilderness Recreation and Tourism Ass'n, 67 F.3d at 729. An agency should not "disregard alternatives merely because they do not offer a complete solution to the problem." Natural Resources Defense Council, Inc. v. Morton, 148 U.S. App. D.C. 5, 458 F.2d 827, 836 (D.C. Cir. 1972). Once an agency identifies the "reasonable alternatives" to a proposed action, NEPA and Council on Environmental Quality regulations also require an agency to identify the "adverse environmental effects" of each alternative. See 42 U.S.C. § 4332(2)(C)(ii); 40 C.F.R. § 1502.16.

Corps' regulations require that alternative plans shall be formulated to identify specific ways to achieve planning objectives within constraints, so as to solve the problems and realize the opportunities ER 1105-2-100 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies, at 2-4 (Apr 22 2000). The regulations state that "it is essential that planners understand and fully visualize the problems of the planning area and how their plans will address these problems."

Section 904 of the Water Resources Development Act of 1986 (WRDA of 1986) requires the Corps to address the following matters in the formulation and evaluation of alternative plans:

• Enhancing national economic development (including benefits to particular regions that are not transfers from other regions).

• Protecting and restoring the quality of the total environment.

• The well-being of the people of the United States.

• The prevention of loss of life.

• The preservation of cultural and historical values.

WRDA 1986; 1105-2-100 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies, at 2-5 (Apr 22 2000).

The Corps states that the purpose of the action is "to mitigate for impacts to two endangered sturgeon species." PAAR at 1.3. The Corps is referring to impacts from another project, the SHEP Project. An agency may not "define [a] project so narrowly that it foreclose[s] a reasonable consideration of alternatives." Davis v. Mineta, 302 F.3d 1104, 1119 (10th Cir. 2002); see Simmons, 120 F.3d 664 (7th Cir. 1997). Here, although the purpose is incorrect as discussed in Section 2, above, the stated purpose to mitigate for sturgeon habitat impact from the SHEP (PAAR, at Section 1.3.) requires assessment of a full range of reasonable and feasible alternatives to achieve that habitat mitigation purpose – not just removal of the NSBLD and not just action at the NSBLD. There are many other ways to mitigation for sturgeon habitat impacts than action at the NSBLD and the associated significant adverse effects of the Corps' proposal.

As noted above, NOAA-NMFS, in consultation with the Corps under the Endangered Species Act, Section 7, determined in 2011 that the SHEP would adversely affect juvenile Atlantic sturgeon and juvenile, sub-adult, and adult shortnose sturgeon would be adversely affected by habitat alterations resulting primarily from changes in water quality (salinity and dissolved oxygen) due to dredging of the Savannah inner harbor. Data was lacking for NMFS to determine impacts specifically, so NMFS identified habitat loss as a surrogate measure by which to measure and monitor the extent of these effects. NOAA-NMFS, 2017 Biological Opinion Supplement Biological Opinion, Deepening of the Savannah Harbor Federal Navigational Channel in association with the Savannah Harbor Expansion Project (NMFS Consultation No. F/SERJ2010105579)(2011). As noted in the 2012 SHEP EIS, in consultation with NOAA-NMFS, or NOAA-Fisheries), it was determined that the SHEP might 'take' four individual sturgeon though death (20 relocation takes were predicted). SHEP EIS, App. B; NOAA-NMFS, Biological Opinion, Deepening of the Savannah Harbor Federal Navigational Channel in association with the Savannah Harbor Expansion Project (NMFS Consultation No. F/SERJ2010105579) (Nov. 4, 2011). Actual documented sturgeon take is very low – the Corps reports "Throughout CESAD (including Savannah Harbor), only 10 sturgeon takes have been documented since 1990, all of which were Atlantic sturgeon and consisted of 1 take by a clamshell dredge and 9 by a hopper dredge. Though pipeline (hydraulic cutterhead) take of Shortnose sturgeon have been documented in CENAD (n=5) no incidental take of Shortnose or Atlantic sturgeon have been documented by pipeline (hydraulic cutterhead) dredging activities in CESAD." 2012 SHEP EIS, App. B Biological Assessment.

The Corps failed to consider a full range of reasonable and feasible alternatives to mitigate for impacts to two endangered species. Numerous other mitigation alternatives to address the impacts of the Savannah Harbor Expansion are available.

- Habitat: Because NOAA-NMFS and the Corps used habitat as a surrogate for species impact to mitigate for potential take, habitat alternatives should have been assessed. The Corps failed to consider potential enhancement for sturgeon in other areas of the Savannah River. Assessment and enhancement in areas known to be currently utilized by sturgeon provide greater potential benefits to the species than opening a new area above the NSBLD where it is not known whether the species would use the habitat area. Habitat enhancement, opening of other habitat, removal of other obstructions, and other habitat options were available and not considered.
- Notably, On August 17, 2017 NMFS and USFWS designated critical habitat for the Atlantic sturgeon pursuant to the Endangered Species Act (ESA). 82 Fed. Reg. 39160 (Aug. 17, 2017).

In designating critical habitat for distinct population segments of the Atlantic Sturgeon, NMFS and USFWS limited to the designation the main stem Savannah River from the New Savannah Bluff Lock and Dam downstream to rkm 0 (South Atlantic Unit 3). Thus, the area above NSBLD is not critical habitat and was excluded by NMFS and USFWS as species recovery priority habitat under the ESA. Mitigation within critical habitat designation area is appropriate, not outside the critical habitat designation area. The critical habitat designation identifies numerous specific areas which are already accessible and suitable for habitat enhancement measures, but none has been considered by the Corps or NMFS-NOAA. Habitat enhancement in these areas is more likely to result in successful benefits to sturgeon population for both species than the Corps' proposal and without the concomitant significant adverse effects and unknown risks to the species itself from poor habitat conditions.

- Any introduction of sturgeon to the area would constitute an experimental population requiring specific ESA determination and procedures including separate public participation regarding boundaries and analysis of extent the population would be affected, be able to survive or establish in the future. ESA Section 10, 16 U.S.C. § 1539. Experimental population introduction "should be viewed as an agreement among the Federal agencies, the state fish and wildlife agencies and any landowners involved." H.R. Rep. No. 567, 97th Cong., 2d Sess. 34 (1982)). Having excluded the area from critical habitat, the determination to pass sturgeon into the area is arbitrary and inconsistent with the critical habitat designation. The Corps has failed to assess the habitat upstream of the NSBLD, as discussed in greater detail in Section IX, below. The Corps has also failed to analyze the effects of introducing species into the area as a potential experimental population.
- Due to upstream dam releases, pollutants and pollution as well as natural environmental conditions, it is known that the area upstream of the NSBLD and below Stevens Creek and the Thurmond Dam often experience low dissolved oxygen ("DO"). Low DO is a known threat to sturgeon. Actions which would place protected species at risk from low DO or other conditions require assessment under NEPA as well as consideration and consultation with resource agencies. The Corps has not assessed the habitat that it is placing sturgeon, at all. The alternative fail to assess habitat suitability and water quality issues. Data indicate toxic compounds in sediment, supersaturation of total dissolved gases, and with the changes proposed by the Corps no habitat study has been performed to determine suitability of habitat post dam removal or alteration. Without study, it is highly likely that the Corps will be required to make additional adjustment and changes to the river channel, habitat, and even the Thurmond dam upstream. None of these potential future actions have been considered. . As a result, it is highly likely that other habitat alternatives other than removal or passage around the NSBLD would provide appropriate habitat mitigation to meet the Corps and NOAA-NMFS resource goals for mitigation for the SHEP.
- Alternative Passage: The Corps has not assessed other passage methods that would not involve lowering the pool surface water elevation and would otherwise meet WIIN 2016. As an example, species relocation and placement (trap and truck) has not been considered as an alternative, although it would meet the purpose of the PAAR/SEA/FONSI and maintain pool surface water elevations. Other methodologies such as fish ladders, Denil ladders, elevation systems or fish lifts, vertical slot, lock passage (NSBLD locks have been inoperational), steeppass, pool and weir, and other common alternatives in fish passage assessments have

not been considered. Failing to consider these other alternatives renders the NEPA document deficient and is in violation of NEPA requirements for a full assessment of a range of reasonable alternatives.

- Adjustable Gate Alternatives: It is highly likely that any alternative will need to include gates and/or require a significantly widened rock ramp (much wider than the proposed 500 feet) to meet fish passage and maintenance of the upstream pool objectives. However, a gate type or configuration different from those currently installed at the NSBLD is advantageous to readily integrate with a rock ramp passage as proposed in most of the presented alternatives. Adjustable gates, commonly used at hydropower dam in a variety of settings provide much greater flow control than typical spillways and great benefits for refining fish passage flows as well as maintaining pool surface water elevations as required by WIIN 2016. This common engineering alternative was not even considered by the Corps in the Draft Reports.
- Dissolved Oxygen Enhancement: According to the National Marine Fisheries Service (NMFS, or NOAA-Fisheries), the primary impact of "[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." 2012 SHEP EIS, App'x. Z at p. 189. Additional DO enhancement in the harbor or other areas of the Savannah River would meet the species benefit goals without the significant adverse impacts to the Augusta Region as proposed by the Corps.

With respect to the alternatives that were analyzed, the Corps omitted locational alternatives for the fish passage structure, and the Draft Report and associated documents fail to describe locational alternatives, their location, and why they were excluded from analysis. PAAR, at 3.2.1.

Without assessment of a full range of alternatives, the Corps is in violation of NEPA and risks significant and drastic impact to the Augusta Region. The Corps must assess these and other alternatives. Augusta has developed an alternative utilizing adjustable gates on the existing structure which will maintain the pool surface water elevation and allow for adaptive management, and includes fish passage.

V. Alternative Evaluation Criteria Fail to Adequately Compare Impacts

The Corps' alternative analysis fails to adequately assess impacts between alternatives, omitting consideration altogether of the greatest impact of the proposal – socioeconomics, as well as historic resource impacts of alternatives and benefits of leaving the NSBLD in place, the construction related impacts which are vastly increased for each dam removal alternatives, and failing to assess significant and important distinctions amongst alternatives during low flow or critical conditions (e.g. 3,600 cfs to 5,000 cfs) when effects on water supply, recreation, recreational navigation, socioeconomics, property rights and riparian rights, are greatest, and environmental impacts. The Draft Report, which is a NEPA reports specifically requiring assessment of effects on the environment, environmental impacts were not even identified as a preliminary screening criteria even though the differential in effects between alternatives are substantial. PAAR, at 3.1-3.5. Two of the seven criteria are economics but only as to Corps' expenditures for construction costs and operation and maintenance. PAAR, Table 15. Fish passage effectiveness – which is the identified purpose of the project at Section 1.3 of the PAAR – is also omitted from screening criteria but then appears to have been applied to

eliminate alternatives in Section 3.4 (Table 20), but without any justification, support, or information for public review and consideration. By omitting economic impact to the Augusta Region but including economic costs as two of seven screening criteria, the Corps has failed to take a hard look at and consider the effects of alternatives in violation of NEPA.

As noted in the Technical Comments at V.A., one of the most significant impacts of the proposed project is impact on pool surface water elevation and flows. Direct impacts will be experienced in the seventeen mile pool upstream and several miles downstream. The Technical Comments point out that the Corps' analysis failed to compare or even assess low flow which will represent critical conditions for most impacts: recreation, water supply, aquatic habitat. Flow between 3,600 cfs and 5,000 cfs will occur **24% of the time** and is also much more likely to occur during summer recreational periods where greatest impact will occur, and during high water use periods where water demands and withdrawals are greatest. Technical Comments at V.G. Alternatives must address critical conditions, or these low flows below 5,000 cfs, as some of the more significant effects of the action. The Technical Comments identify significant failures to adequately assess impact on water surface elevation, recreation, special events, docks and other resources.

The Corps failed to assess critical conditions impacts for each alternative, thereby underestimating effects and precluding comparison of alternative effects. The Corps also failed to assess historic resource impacts of alternatives. As noted in Section IX.B, below, the Georgia DNR Historic Protection Division determined the Corps proposal will affect historic resources. However, the affect is significantly greater for removal alternatives as opposed to alternatives such as 1-1 which maintain the NSBLD in place with the only historic effects relating to the lock repair and necessary modifications. Alternatives leaving the NSBLD in place also have the historic resource benefit of providing opportunities for historic resource education, preservation, and tourism.

The Corps failed to consider socioeconomic impacts among the alternatives. As noted below, the Corps' socioeconomic effects analysis is deficient, and socioeconomics was identified by the public and local officials as one of the greatest adverse impacts of the proposed action. See Technical Comments, generally; Technical Comments, Appendix I (March 31, 2019 Public Hearing). As between dam removal and dam remaining with lock repair alternatives, socioeconomic impact is vastly disparate. Similarly, socioeconomic effects are significant for any alternative which lowers pool elevation. Failure to assess socioeconomic effects amongst alternatives renders the alternatives analysis flawed.

The Corps arbitrarily considered costs without concomitant economic impacts of the alternatives, which skews alternative screening and analysis. Moreover, two of the seven screening categories represent economic costs to the Corps, further skewing alternatives analysis overweighting project economics (which is also not a NEPA category for analysis of effects to the human environment and environment generally), without any consideration of economic effects to the Augusta Region.

The Corps has also failed to assess construction related impacts, skewing the alternatives analysis. WIIN 2016 Option 1 alternatives which leave the NSBLD in place have significantly reduced construction related impacts as compared to removal of the NSBLD, but these effects were not considered in the alternatives analysis. Additionally, the Corps failed to assess historic resource impacts in alternatives screening and assessment. WIIN Option 1 alternatives have vastly reduced historic resource effects, and leaving the NSBLD in place actually has historic resource benefits that

have been omitted from consideration. See Section X.B., below. From a historic resource perspective, Alternative 1-1 is superior but this benefit is not considered.

As discussed in the Technical Comments and in Section IV, above, the Corps did not even consider adjustable gates which have become common and have documented benefits for pool control, adaptive management for ecosystem protection, and flood control.

The analysis that is provided is insufficient and obscure. The Corps states "Regarding Alternative 2-6, NOAA has provided information to USACE that this design is the second most favorable alternative design being evaluated for shortnose and Atlantic sturgeon and does not anticipate any major fish passage issues with the concept" but has not provided any citation to such information, assesses such information, or provided the public with this information for public participation and comment information. See PAAR, at 3.6.6.4; 3.6.6.5. Mere provision of a position from another federal agency is insufficient analysis and justification under NEPA, and places the Corps' responsibilities for NEPA compliance and analysis with another Federal agency which is not lead agency for the proposed action and not otherwise involved in the NEPA process. If NOAA's determinations and this undisclosed information forms the basis for alternatives analysis, then the action should involve NOAA as lead agency and decisionmaker, and at a minimum provide basis for the analysis and justification. In actuality, so little is known regarding sturgeon passage and so few examples of successful passage are available that distinctions between the alternatives respecting fish passage are arbitrary and capricious, without scientific bases, and given the very small sample sizes scientifically statistically insignificant.

With omission of the most significant impacts from the alternatives analysis, and failure to disclose or justify the distinctions between the alternatives on fish passage which is the stated purpose of the project, the alternatives analysis fails to meet the requirements of NEPA.

VI. The Corps Improperly Eliminated Alternatives Prior to the Close of the Comment Period and Prior to Receiving Comment

The Corps eliminated alternative 1-1 prior to close of the comment period, in violation of NEPA requirements. Of the alternatives, 1-1 represented the highest pool surface water elevation and of the alternatives presented, 1-1 was the alternative chosen by Augusta and North Augusta of all of the issued alternatives as the least damaging alternative to the Augusta region. However, during the comment period, the Corps improperly eliminated alternatives, specifically including the alternative which had the least impact on pool level and surface water elevation – Alternative 1-1. According to the Corps blog of March 26, 2019, just three weeks prior to the close of the public comment period the Corps eliminated Alternative 1-1. "Alt 2-6d is not the only in-channel alternative", USACE March 26, 2019 (last accessed March 27, 2019, at https://balancingthebasin.armylive.dodlive.mil/2019/03/26/alt-2-6d-is-not-the-only-in-channel-alternative/).

Because the Corps modeling has demonstrated errors and was proven erroneous by the field observations February 8 through 15, its basis for eliminating 1-1 is arbitrary and capricious, an abuse of discretion and otherwise not in accordance with law.

The Corps has procedurally erred in eliminating alternatives prior to receiving comment, prior to the close of the comment period, and without affording Due Process and opportunity for comment and response. The improper elimination of 1-1 will irreversibly affect public comments, misleading members of the public and tainting the public comment process. The Corps must renotice its proposal and either include 1-1, or eliminate 1-1 in the proposal and state why in the PAAR/SEA/FONSI documents the alternative is eliminated with a full analysis.

VII. The Corps Predetermined the Action Prior to Public Comment in Violation of NEPA

In accordance with NEPA a federal entity may not predetermine outcome prior to public notice and comment and full consideration of alternatives, or applying resources to the outcome. Davis v. Mineta, 302 F.3d 1104 (10th Cir. 2002). Predetermining the outcome violates NEPA's requirement for a full and robust consideration of alternatives, a full consideration of effects of the action, and requirements for mitigation. Corps regulations require public involvement, collaboration and coordination in Civil Works planning. ER 1105-2-100 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies, at 1-4 (Apr 22 2000).

A. Because the Corps did not Assess Habitat Alternatives to the Purpose of SHEP Mitigation, the Corps Improperly Predetermined it Would Implement Fish Passage at the NSBLD

As discussed in Sections IV and V, the Corps limited its alternatives to mitigate for sturgeon habitat 180 miles downstream to only alternatives that would remove the NSBLD (passage around the NSBLD was also improperly eliminated prior to receipt of comment) and limited alternatives of leaving the NSBLD in place but with significant effects on pool elevation and other resources. The Corps did not assess any other alternative that would achieve the habitat goal for the sturgeon, which would include habitat enhancement in numerous potential areas in the Savannah River watershed. Critical habitat has been designated for the Atlantic Sturgeon and NOAA-NMFS and Fish and Wildlife Service excluded the area upstream of the NSBLD.

By eliminating other alternatives, the Corps predetermined the NEPA decision that it would remove the NSBLD.

B. The Corps Applied for a Revision to the Endangered Species Act Biological Opinion Illegally Pre-Disposing has Already Determined it Will Implement Fish Passage in Violation of the WIIN 2016 Act

The Corps initiated consultation on the fish passage proposed February 14, 2019 on January 24, 2017. In doing so, the Corps improperly and in violation of NEPA pre-disposed its decision regarding the federal action. The Corps had decided and initiated consultation on only two alternatives, both of which failed to meet WIIN 2016 requirements for maintaining pool surface water elevation.

NMFS responded providing a schedule. NMFS stated "The current timeline for the in-river fish passage feature estimates that a construction contract for the fish passage would be awarded in January 2021 and that fish passage would be completed in October 2022 (i.e., approximately 8 months after the end of the Inner Harbor Dredging)." 2017 Biological Opinion, at 9.

The SHEP schedule does not justify violation of NEPA, shortening public participation and comment, rushing field verification and data analysis, improperly reducing the range or eliminating alternatives, or predisposing the decision before the public has had full opportunity to assess impacts.

C. NOAA-NMFS States that the Decision to Remove the NSBLD Has been Made

Even NOAA-NMFS public documents state, impermissibly, that the decision to remove the NSBLD and install a rock-arch fishway has already been made.

D. Issuing the Draft FONSI before Receiving Comments on the Proposal Violates NEPA and Due Process

The Corps has violated NEPA procedural requirements in combining a finding of no significant impact (FONSI) regarding significant changes to the Augusta Region with a separate federal action involving the SHEP 180 miles downstream. The SHEP PAAR/SEA/FONSI requests comments on alternatives, impacts, and opportunity to present additional alternatives. Issuing a FONSI before even hearing from the public on the proposal is arbitrary, capricious, an abuse of discretion, and not in accordance with the law which requires a meaningful opportunity to comment, a deliberative comment response from the Corps, and a final decision consistent with public input, legal requirements, and full assessment of effects.

NEPA prohibits commitment of irreversible and irretrievable resources prior to NEPA process, public input and preparation of environmental documentation. By proceeding with a biological opinion regarding proposals not yet issues for public comment and not yet finalized, issuing its draft FONSI, and other action described herein and in the Technical Comments, the Corps has predisposed its determination in violation of NEPA.

E. *By Committing Irreversible and Irretrievable Resources, the Corps has Impermissibly Predetermined the Outcome in Violation of NEPA*

The Corps has committed irreversible and irretrievable commitment of resources prior to completion of the NEPA process and public participation, in violation of NEPA. SHEP dredging has commenced and is ongoing; expenditures for contracts and other work are ongoing; and significant expenditures in furtherance of the Corps' desired proposal have been made.

VIII. 401 Certifications and Coastal Zone Management Act Consistency

Proposals to remove the NSBLD are not certified under Section 401 of the Clean Water Act. Coastal Zone Management Act consistency certification for the proposal is not complete and is required.

IX. The Corps Proposal and Analysis is Arbitrary, Capricious, and an Abuse of Discretion

The Corps has reversed and contradicted itself on several key facts and engineering determinations, rendering its proposal arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law.

In 2012, the Corps determined "removal of the NSBL&D is not feasible at this time." 2012 SHEP EIS, Appendix C Mitigation Planning, at Section C.1. P. 65. In 2019, the Corps determined removal is not only feasible but preferred. The reason the Corps determined removal of the NSBLD was infeasible is

due to "unacceptable due to the development that now occurs upstream along the pool created by the dam." 2012 SHEP EIS, App. C Mitigation Plan, at 71. Augusta is currently contemplating a whitewater venue which would be precluded by either option proposed by the Corps, due to pool surface water elevation reductions as well as other project impacts. Technical Comments, at V.G Economic figures from a similar project in Columbus, Georgia, demonstrated economic benefits of $74 million in capital investment, along with 42 new businesses, several university extensions, 400 new jobs, and $24 million in gross revenues attributable to the quality of life improvements, recreational opportunities, and other direct and ancillary benefits of river recreation, which would be precluded by the Corps proposal. Technical Comments, Appendix F, River Vision Plan, McLaughlin Whitewater (April 2019). The Corps has not assessed the significant economic impacts to the Augusta Region of its proposal, at all.

With respect to fish passage, the 2012 SHEP EIS concluded that any of the three possible fish passage designs would "satisfactorily pass Shortnose sturgeon in both upstream and downstream directions, allowing SNS access to historic spawning areas at the Augusta Shoals." 2012 SHEP EIS, App. C, at 81. However, in the 2019 PAAR, the Corps concludes that alternative 1-1 and 2-8 would be scored a 'zero' because of 'risk of failure to reach the prime spawning ground during spawning season after a delay is an unacceptable risk.' 2019 PAAR, at 100, Table 29. Corps documents and consultation information do not justify the absolute reversal in the 2019 PAAR from the 2012 SHEP conclusions regarding fish passage efficacy. As noted in the summary, there are no existing successful sturgeon passages in the Southeastern United States, and very limited success for related species. We can find no report of successful passage of sturgeon at the Cape Fear project, which NOAA-NMFS states is similar to the proposed NSBLD design and being assessed for efficacy for the NSBLD. Justification is therefore lacking for this wholesale change and reversal in position in the 2019 PAAR/SEA/FONSI regarding efficacy of Alternative 1-1. Scientific data is lacking, sample sizes too small, and success has not been established such that the conclusions in the 2019 PAAR/SEA/FONSI are supported and justified. Accordingly, the scoring is arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law.

The Corps estimated that impacts from the 2012 SHEP EIS Mitigation proposals would result in $ 30 million in impacts to water intakes including municipal water supply. Since that time, Augusta has significant investment in its water infrastructure system, including water and wastewater. For the 2019 PAAR, the Corps estimates the impact to Augusta will be $228,000 for vacuum assisted priming for surface water pumps. The SHEP PAAR/SEA/FONSI was issued for public comment on February 14 with inadequate time for calibrating the model or assessing the drastically different field observations and conditions from the anticipated modeled effects on water intakes. The Corps drawdown was commenced February 8 and continuing through February 15, 2019, rendering it impossible to assess within the public comment period. Additionally, as noted in the Technical Comments, the Corps HECRAS modeling appears to be in error underestimating drawdown elevations. Technical Comments at Section V.A. See also Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019).

As discussed in the Technical Comments at Section V.F., the highest flow rate for Augusta's water intake was modeled at 19.5 Mgal/d and the modeling indicated the existing system required modification. Actual constructed pump station capacity (with pump changeout) is 30 Mgal/d.

Augusta has designed the river intake system to be capable of delivering 60 Mgal/d at current water surface elevations. pump system No analysis was provided for this condition.

X. The Corps Failed to Fully Assess All Direct, Indirect and Cumulative Effects, and Impermissibly Limited Geographic Scope of Analysis

NEPA requires the Corps analyze direct, indirect and cumulative effects of the action. 40 C.F.R. Part 1508. The Technical Comments detail deficiencies in the Corps direct, indirect, and cumulative effects analysis, including (but not intended to limit) the following:

A. Wetland, Fringe Wetland, and Sensitive Riparian Areas

The Corps has not assessed direct, indirect and cumulative effects to wetland, fringe wetland, and sensitive riparian habitat (Section V.K, Impacts to Wetlands not Adequately Identified, Evaluated or Mitigated). The analysis was limited to the direct area in the vicinity of the NSBLD, and was based upon assessment from the 2012 SHEP. Hydrologic effects of dropping pool surface water elevations for the fifteen miles as will result from the Corps proposal and alternatives was not considered. The lowering of pool surface elevation will potentially affect fringe wetlands on the 15 mile reach of the Savannah River above the NSBLD, and wetlands with hydrologic surface connection to the river affected by reduction in pool elevations below existing surface water elevations. The Technical Comments document potential effects to thousands of acres of wetland, fringe wetland, and sensitive riparian habitat which has not been assessed in the Draft Report. The Corps failed to assess both direct and indirect effects as well as cumulative effects of the proposal and alternatives on these sensitive areas which are protected pursuant to Section 404 of the Clean Water Act. Technical Comments, Section V.K (documented potentially hundreds and possibly thousands of acres of wetland, fringe, and riparian habitat affected). Section 2.2 of the PAAR addresses only areas in the immediate vicinity of the NSBLD and includes no assessment of pool surface elevation lowering on the seventeen mile mainstem stretch and the direct and indirect effect on wetland, fringe wetland, and sensitive riparian habitat and ecosystem features. The proposal will affect wetland, fringe habitat and sensitive riparian areas through pool lowering as well, increased fluctuation in river elevation, and flooding along the seventeen mile reach as well as downstream. See also, Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019).

For the wetland delineation included in the PAAR, in addition to being limited to the immediate vicinity of the NSBLD, the delineation is over five years old, and should be revisited and updated pursuant to the Corps' own regulation and guidance. Corps, RGL 90-06 ("delineations will not remain valid for an indefinite period of time")

B. Historic Resources

The Corps has not assessed direct, indirect and cumulative effects to historic resources. (Section V.M, Cultural Resources and Historical Considerations; Section V.G.7, 14 (Recreational). The Augusta, North Augusta Region has a rich historic and cultural history with the Savannah River serving as the central feature for the region's history. The Corps failed to assess effects on historic resources. Due to the underestimate of effects on pool surface elevations, the Corps failed to fully assess effects to historic resources as required pursuant to 36 CFR Part 800 and the National Historic Protection Act (NHPA) Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, the Abandoned

Shipwreck Act of 1987, and the Native American Graves Protection and Repatriation Act of 1990 ("Historic Resource Protection Laws").

The NHPA and regulations require assessment of effects on historic resources within an area of potential effect. "Area of the undertaking's potential environmental impact" or APE is defined as "that geographical area within which direct and indirect effects generated by the undertaking could reasonably be expected to occur and thus cause a change in the historical, architectural, archeological, or cultural qualities possessed by a National Register or eligible property." 36 C.F.R. § 800.2; NHPA Regulations at 36 CFR Part 800, Protection of Historic Properties; Final Rule, 65 Fed. Reg. 77,698 (Tuesday, December 12, 2000 / Rules and Regulations) Because the Corps underestimated pool surface water elevations (Technical Report at V.A.), the Corps' APE does not address all areas of direct and indirect effect. The Corps has failed to properly consider the scale and nature of the undertaking, which for direct effects of the Corps proposal is the 17 mile Savannah River Corridor that will experience reduced pool surface water elevations along the entire surface, as well as historic properties affected by the aesthetic change resulting from the pool elevation reduction. Indirect effects to historic resources have not been considered at all.

The Corps identified only fourteen historic properties are located within the APE, one of which is the NSBLD, but did not conduct a historic resource survey in the area of direct effect, indirect effect and APE. PAAR, at 35. Historic resource consultation, and NEPA analysis, cannot take place until the APE is surveyed and all eligible properties identified in consultation with the State Historic Protection Officer. The majority of the Corps analysis in the PAAR is simply photographs of select few of the fourteen resources it considered to be the totality of historic resources in the area. Augusta was founded in 1735 with a rich pre-settlement cultural history, and the river served as the focal point. By identifying only fourteen potentially affected resources, the Corps has inadequately considered historic and cultural resource effects and failed to meet the requirements of NEPA and the NHPA, and other Historic Resource Protection Laws.

For similar projects involving removal of dams, the Corps and other federal agencies have required in stream historic resource surveys.

The Corps must perform a cultural resource survey to properly identify historic resources, determine eligibility, and assess effects including all areas of direct and indirect effect within a proper APE, in consultation with Georgia DNR Historic Protection Division. Historic resource surveys including shovel tests should be conducted for the area of direct effect, including dewatered areas which have been fully or partially inundated since the NSBLD construction. As noted in Technical Comments at Section V.M., there is a high probability of encountering remains of previous occupations of Native Americans at New Savannah Bluffs. For similar projects involving dam removal, dewatering of river bottom and changes to flows, the Corps has conducted in-water assessments and found historic remains including native American historic effects, civil war related items, and others. No in stream work has been conducted here, and no shovel or other archeological survey standard studies.

Consultation documents attached to the PAAR consist largely of documents relating to the SHEP. The documents prove that the Corps undertook a much more detailed assessment of impacts to historic resources for the SHEP project, where here it simply lists fourteen historic resources with little to no analysis, and has done no survey or assessment. The Corps did contact the Georgia HPD, which wrote back that "HPD is unable to comment on the effects of the fish passage on archaeological resources or the effects of the related conveyance of the park and recreation area to Augusta-

Richmond County without additional information." HPD re-confirmed the adverse effect of the project on the NSBLD. The Corps provided no information on water levels such that HPD could assess pool surface water elevation effects on historic resources. Consultation is not complete and must include survey information, eligibility determination and study, and effects report.

Under the NHPA and Historic Resource Laws, the direct effect on the NSBLD alone is sufficient to eliminate any alterative which would constitute removal or significant alteration of the NSBLD. The Corps has failed to consider and assess the beneficial effects of interpretive centers, educational and historic tourism under Alternatives 1-1 and 1-2 which leave the NSBLD in place. Similar projects, such as the City Mills and Eagle and Phenix dams in nearby Columbus Georgia, have had great historic resource benefits to the area and the Nation's historic and cultural resource goals and preservation.

The Draft Reports conclude, erroneously, that "In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, the USACE determined that historic properties would be adversely affected by the recommended plan." FONSI, at iii. This contradicts the direct conclusion of Georgia HPD and is of course incorrect when the removal of an eligible historic resource is involved.

The Corps has proposed no effective mitigation for the loss of historic resources.

Finally, issuing the Draft Reports before completion of historic resource consultation is complete is premature and in violation of the NHPA and NEPA, depriving the public and governments of Due Process and the ability to comment on effects to historic resources of the project. Without Georgia and South Carolina SHPO professional involvement in assisting with survey, eligibility, and effects determinations as well as mitigation, the public and local governments are deprived of the assistance of state and federal programs in determining historic and cultural resource effects and the ability to understand and comment on the effects, alternatives and benefits of leaving the NSBLD in place and eliminating effects of pool elevation on historic resources.

C. Environmental Impacts

Because the Corps underestimated pool surface water elevations, assessment of direct and indirect effects on environmental resources required by NEPA is incomplete.

As discussed in Technical Comments at V.A, each alternative presents drastic changes in pool surface water elevations, as well as flows, for a seventeen mile portion of the Savannah River. In addition to pool elevation impacts on habitat which were not assessed, the Corps' proposal will drastically increase fluctuation of river level, scour, release and sluice sediment affecting benthic habitat, and increase flooding frequency. Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019). Additionally, removal of the NSBLD will permanently and significantly effect flows downstream of the NSBLD. The Corps has not conducted assessment of environmental effects of the changes in flows, surface water elevations, and associated aquatic habitat, impact on species including life cycle stages, and associated impacts on resources such as recreation as required under NEPA. As noted in the Technical Comments, the area of direct effect includes habitat for ESA Candidate Species Robust Redhorse as well as numerous other species of importance and their habitat, including recreational fishing and protected birds. Technical Comments, Section V, V.J.1.

The Corps has also failed to assess construction related impacts. Alternatives which remove the NSBLD will have significant construction related direct and indirect impacts, and the alternatives and proposal involve several acres (10.24 to 11.88) of in-stream habitat alteration. PAAR, 3.6.3.3. The Corps has no analyzed effects of construction.

Construction related impacts have not been quantified or assessed and the construction analysis in the Draft Reports is insufficient lacking detail of the significant construction impacts which will affect environmental resources and will include direct impacts to the immediate NSLBD area as well as the over ten acres of river bottom altered by the proposal, and downstream effects from sediment release, disturbance, and required construction features. Hydraulic analysis of effects during construction, which will be substantial, were not assessed. Technical Comments, Appendix F, River Vision Plan, McLaughlin Whitewater (April 2019).

D. Aquatic Habitat Impacts

Contemporary standard environmental effects practice under these circumstances involves studies of the effect of changes on aquatic organisms and habitat, through studies and analysis such as the Instream Flow Incremental Methodology (IFIM). The Corps' "Instream Flow Incremental Methodology: A Synopsis with Recommendations for Use and Suggestions for Future Research (Nestler, Corps Environmental Laboratory, March 29, 1993) identifies IFIM studies as required to obtain impact assessment data which is 'quantifiable, repeatable, accepted, and defensible' to allow 'regulators, resource agencies, developers, and development agencies to determine relative impacts of different water resources development plans. The Corps identifies the USGS Physical Habitat Simulation System (PHABSIM) model as a recommended method to assess relationship between streamflow and physical habitat for various life stages of a species of fish or a recreational activity. Indeed, the City of Augusta canal, which is under proceedings with the Federal Energy Regulatory Commission under the Federal Power Act, 16 U.S.C. 791 et seq., conducted IFIM studies for a federal action which simply leaves the canal in place with no operations. IFIM studies have been used to assess suitability for sturgeon habitat. It would be arbitrary to require a local government to conduct IFIM studies to study alternatives in keeping the Augusta Canal in place, but not conduct any studies on the effects to flow and habitat presented by the wholesale removal of a dam which control the entire river flow but is proposed for removal.

Similarly, upstream and downstream habitat will be significantly modified including scour and sediment loss in benthic habitats, significantly increased fluctuations in river elevation and associated wetted habitat, increased flooding which creates habitat and stranding issues for aquatic organisms, and general effects overall of the substantial lowering of the seventeen mile reach of the Savannah River. Downstream reaches will also experience scour and sediment loss, increased fluctuations and flooding, and less stable depths and elevations. The Corps has not assessed these impacts in the Draft Reports in violation of NEPA. See Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019).

Failing to conduct IFIM, PHABSIM, Sediment Transport Models, or similar studies renders the entire concept of passage to move sturgeon upstream of the NSBLD arbitrary and capricious, because without studies of habitat at the true anticipated habitat upstream of the NSBLD which is provided only through IFIM, PHABSIM and similar assessments, the Corps and NOAA-NMFS have no idea whether the habitat will be suitable for sturgeon. IFIM/PHABSIM will provide modeling of habitat

quality, water depths, flows and amount of habitat. Without IFIM/PHABSIM, the Corps may very well create a fish passage option which results in stranding of sturgeon, dewaters spawning habitat damaging egg and larval stages or preventing fertilization which would constitute take. Georgia EPD and South Carolina Department of Health and Environmental Control (SCDHEC) have identified the reach of Savannah River upstream of the NSBLD as impaired for several pollutants, and due to impairments Total Maximum Daily Loads and ongoing water quality assessments for dissolved oxygen, mercury, and other pollutants are in place. However, the Corps fails to include any assessment. Upstream Thurmond Dam has implemented dissolved oxygen measures, however, sturgeon can be particularly sensitive to oxygen supersaturation including artificial oxygenation systems, suffering mortality particularly at larval and juvenile stages. Dissolved gas supersaturation has negative effects on fish species as has been observed in other river systems in similar circumstances. Counihan et al., The Effects of Dissolved Gas Supersaturation on White Sturgeon Larvae Issues; NMFS, Modeling the Effects of Dissolved Gas Supersaturation on Resident Aquatic Biota in the Mainstem Snake and Columbia Rivers (AR-1237)(undated). Oxygen supersaturation data at Section V. of the Technical Comments shows exceedance of supersaturation in the Savannah River in the habitat which the Corps seeks to introduce sturgeon. Levels as high as 120% have been documented, above the 103% identified as effecting salmonids and Current U.S. Environmental Protection Agency water quality criteria for saturation is 110%. In other river systems, sturgeon have shown proclivity to lay eggs at or near farthest upstream reach below dams, suffering from scour, egg displacement and other effects which would include lethal effects. The Corps regularly studies effects of supersaturation and it would be arbitrary and capricious and potentially constitute take under the ESA for the Corps to introduce sturgeon to habitat where eggs and larval stages would suffer harm and potential lethal effect. See, e.g. McGrath et al., "Total Dissolved Gas Effects on Fishes of the Lower Columbia River" Prepared for the U.S. Army Corps of Engineers Portland District, Portland, Oregon (Mar. 2006); Corps, Total Dissolved Gas Effects on Incubating Chum Salmon Below Bonneville Dam (Jan. 2009).

NOAA-NMFS and USFWS have concluded in other river system that dam operations constitute take of sturgeon due to effects of releases, scouring of substrate, and related dam water quality. See USFWS, Biological Opinion for ACF Water Control Manual (2016). As noted in the Technical Comments, Appendix J North Savannah Bluff Hydraulic Modeling Discrepancies Observed During Drawdown (McLaughlin Whitewater/Merrick & Company April 2019), the project is likely to create sediment scour, affecting habitat which can be important for spawning for sturgeon and other species including fishes, crayfish and other invertebrates, reduce sediment, and the design will actually promote sediment sluicing. The Corps has not considered these habitat issues or the potential for take of sturgeon within the upstream habitat, or the potential effect on upstream dam operations which would be required to be modified to avoid take under prohibitions under Section 9 of the ESA making take unlawful. If the purpose of the project is successful in introducing sturgeon, these impacts are direct, indirect and cumulative effects of the action which must be considered.

Additional assessment of upstream NSBLD habitat is necessary and appropriate where the Corps intends to place an endangered or threatened species in the area. Impacts from low dissolved oxygen, excessive oxygen supersaturation

E. Endangered and Protected Species

The Corps developed a list of protected species which omitted the seventeen mile upstream area from the NSBLD which will experience pool surface water elevation reductions up to several feet.

The Corps list, from the USFWS Information for Planning and Consultation identified only the immediate geographic area of the NSBLD. PAAR, Appendix C1. Therefore, the Corps has failed to assess direct and indirect and cumulative effects on protected species in violation of NEPA and the ESA.

F. Sediments

Dams retain sediment, and older dams are likely to accumulate materials which might include compounds, pollutants and elements which are banned or no longer utilized but persistent in the environment. Upon disturbance of the dam, or removal, these sediments become resuspended releasing pollutants, and would otherwise become available for exposure to aquatic organisms and recreational users. The Corps has not assessed sediments. The Corps states that sediment behind the dam will not be removed as part of this project (PAAR at 3.6.3.3) and therefore sediment release, resuspension, and exposure is an impact requiring assessment under NEPA.

As noted in the Technical Comments at V.I, limited data is available on sediment above the NSBLD, with some indication of toxic compounds and pollutants. Sturgeon particularly at the juvenile and larval stage spend life cycle at or near bottom sediments and accordingly exposure would be increased as compared to other aquatic species. A sediment screening analysis in accordance with EPA sediment toxicity screening criteria should be performed to assess impact of sediment release from any dam disturbance or breach; potential risks to downstream water supplies; and risks to the protected sturgeon which tend to utilize bottom habitat and could be exposed to the point of a take under the ESA by passage upstream. EPA, Sediment Toxicity Identification Evaluation (TIE) EPA/600/R-07/080 (Sept. 2007). These studies must be performed prior to agency action, and assessed in a publicly noticed environmental document.

G. Socioeconomic Impacts on the Augusta Region

The Corps has not performed analysis of socioeconomic impacts to the Augusta Region resulting from the proposal. Among NEPA's requirements are the mandate to analyze effects on the human environment. 42 U.S.C. § 4332(C). 2.2.14.1 Except limited real estate considerations which are limited, economic impact was not even considered in evaluation criteria. PAAR, at 3.1.1. Technical Comments at Section V.H identify flaws and omitted economic impacts. As part of the direct, indirect and cumulative effects analysis, impacts on tourism, recreation, fishing, government investment and general overall economic vitality of the area is required under NEPA. As noted throughout this document and the Technical Comments, including testimony of Congressmen Joe Wilson and Rick Allen, Mayors Hardie Davis, Jr. of Augusta and Bob Pettit of North Augusta, and Gary Bunker, Chairman of the Aiken County Council (incorporated into the Technical Comments at Appendix I, March 31, 2019 Hearing Transcript) the project will have significant economic effects on the Region.

For its environmental justice assessment, the Corps utilized the entire Augusta-Aiken GA-SC Metropolitan Statistical Area (Aiken County, Edgefield County, Richmond County, Columbia County, Burke County, McDuffie County). PAAR at 2.2.14.1. To not assess socioeconomic effect on the region while applying the regional demographic to determine environmental justice effects is arbitrary. We note that the Corps has failed to assess individual demographics in the vicinity of its proposal dam removal and the vicinity of the pool surface water elevations, to determine economic and social impact, potential effects on subsistence fishing and recreation, and other socioeconomic effect.

The Corps has failed to even consider riparian (water) rights of landowners, governments, and other entities resulting from the proposed project. The proposal affects riparian rights along a stretch of the Savannah River for the seventeen mile upstream area of direct impact, plus effects on tributaries of declining elevation in the mainstem resulting in lower tributary levels and increased flows, as well as the downstream effects which would include several miles (but has not even been contemplated by the Corps in the Draft Reports). Under the laws of both Georgia and South Carolina, owners of land adjacent to or underlying the affected waterbodies possess rights in the use of the water, as well as the increased property values resulting from uses and location including recreation, aesthetics, and water supply. The Corps has not assessed effects on riparian and water rights.

The proposal will result in significant diminution of property values, which has not been assessed by the Corps. Compensation under Constitutional provisions will be required.

H. Recreation Effects

As with wetland, riparian and fringe habitat, endangered species, historic resources and other resource areas, because the Corps failed to assess direct effects of the action on the seventeen mile stretch of the Savannah River upstream of the NSBLD, the Corps has failed to assess recreation effects. NEPA requires assessment of direct, indirect and cumulative effects on recreation, and in the case of this project WIIN 2016 specifically requires the pool surface water elevation be maintained to protect recreation. See Section I.

The Technical Comments at Section V.G. discusses recreation impacts.

XI. Coordination and Assessment of Impacts on Federal Power Act, 16 U.S.C. §§ 791 et seq., is Required

The Augusta Canal is undergoing proceedings under the Federal Power Act with Federal Energy Regulatory Commission ("FERC"). Three hydropower projects in the vicinity are also potentially subject to Federal Power Act proceedings. The Corps must consider direct, indirect, and cumulative effects on Federal Power Act projects and resources.

XII. Despite Significant Impacts, the Corps Has Failed to Propose Mitigation

The Corps proposes to forever change over seventeen miles of river, affect potentially thousands of acres of wetland, fringe, and riparian habitat, reconstruct and alter over ten acres of in-stream habitat, and has not proposed mitigation for effects. The Corps proposed only mitigation for 0.41 acres of wetland, limiting its own analysis to wetlands within the immediate vicinity of the NSBLD.

The Corps has proposed no mitigation for historic resources, despite its own conclusion of adverse effect and determination by the applicable State Historic Preservation Officers of adverse effect. As noted above, historic resource effects are underestimated and significant, and additional studies are necessary. In failing to assess historic resources, the Corps has failed to consider and apply mitigation measures.

The Corps has proposed no mitigation for construction related impacts.

The Corps has proposed no mitigation for socioeconomic effects, including economic effects to the Augusta Region, effects on subsistence fisheries long term and disruptions during construction.

The Corps has proposed no mitigation for impacts to recreation, despite clear and significant impacts and despite clear instruction from Congress to maintain the pool so as to avoid recreational impacts.