



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
2600 ARMY PENTAGON
WASHINGTON, DC 20310-2600

DAEN

29-Jun-2026

SUBJECT: Waccamaw River, Horry County, South Carolina, Flood Risk Management

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on flood risk management recommendations for the Waccamaw River, Horry County, South Carolina, Flood Risk Management Project. It is accompanied by the report of the Charleston District and South Atlantic Division engineers. This study is an interim response to the authorization in Section 445 of the Water Resources Development Act (WRDA) 1999 (Public Law 106-53). The authorization provided that the Secretary of the Army shall conduct a study to determine the feasibility of undertaking a flood control project for the Waccamaw River in Horry County, South Carolina. It was also conducted under the authority of Section 216 of the Rivers and Harbors Act of 1970 (33 U.S.C. § 549a) for evaluation of several completed projects within the Waccamaw River basin, including modifications the Socastee Creek, Horry County, South Carolina Flood Risk Management Project constructed pursuant to Section 205 of the Flood Control Act of 1948, as amended (33 U.S.C. § 701s). Section 216 authorizes the Secretary of the Army, acting through the Chief of Engineers, to review the operation of projects for which construction has been completed and which were constructed by the U.S. Army Corps of Engineers (USACE) in the interest of navigation, flood control, water supply, and related purposes when found advisable due to significantly changed physical or economic conditions, and to recommend to Congress on the advisability of modifying the structures or their operations and for improving the quality of the environment in the public interest. Preconstruction engineering and design activities would continue under the study authority.

2. The reporting officers recommend authorizing a risk management system of features that will reduce the risk of damage from inland flooding to residential and commercial structures, public infrastructure, and critical facilities. The Recommended Plan is the National Economic Development plan for both Conway and Socastee flood impact areas. The Recommended Plan includes the following two separable elements and corresponding structural, nonstructural, and natural and nature-based features (NNBF) that are intended to provide flood risk reduction up to the 65 percent annual exceedance probability event:

a. Conway (structural): The Conway relief bridges consist of installation of culverts with multiple chambers in the City of Conway at three bridge/road locations to increase conveyance through these areas where potential bottlenecking occurs during flood events along the Waccamaw River.

b. Socastee (nonstructural and NNBF): The barrier removal in Socastee includes removal of two existing weirs (low-head dams) on Socastee Creek that are no longer

needed. The weir removal would restore connectivity and provide suitable conditions for a richness of flora and fauna as new habitat features naturally form within the creek and its floodplain.

3. Horry County, South Carolina, is the non-federal cost sharing sponsor for all features of the project. In addition to the Recommended Plan, this study acknowledges and relies upon the non-federal sponsor's additional floodplain management responsibilities and emergency response actions in conjunction with state and Federal Emergency Management Agency related programs to mitigate the plan's residual risk including potential life loss and damages to critical infrastructure. Based on October 2025 price levels, the estimated total project first cost is \$6,340,000 for the relief bridges in Conway and \$1,080,000 for barrier removal in Socastee. The estimated total project first cost for the entire Recommended Plan is \$7,420,000. The total project first cost includes the value of lands, easements, rights-of-way, relocations (LERR). The Recommended Plan requires (a) temporary work area easements for staging and access; (b) pipeline easements (for the cross drains in Conway); and (c) channel improvement easements (for the two weir removals in Socastee). The plan does not propose the acquisition of any non-standard estates. However, there is a possibility that a lesser estate will be required for project features within the South Carolina Department of Transportation right of way. Cost sharing is applied in accordance with the provisions of Section 103 of the WRDA of 1986 (33 U.S.C. § 2213), as follows:

a. The federal share of the project first cost for initial construction of the Conway Relief Bridges is estimated at \$4,120,000 and the non-federal share is \$2,220,000, which includes the cost of LERR estimated at \$631,000. The Socastee Barrier Removal federal cost share is estimated at \$700,000 and the non-federal share is estimated at \$380,000, which includes the cost of LERR estimated at \$95,000. The cost shares equate to 65 percent federal and 35 percent non-federal.

b. The additional annual cost of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) for the Recommended Plan is estimated to be \$10,000. OMRR&R activities include annual inspection and both routine and post-storm clearing of culverts for the relief bridges in Conway while the barrier removal in Socastee is not anticipated to require maintenance. The non-federal sponsor will be responsible for 100 percent of the cost of project OMRR&R.

4. Based on a 3.25 percent discount rate and a 50-year period of analysis, the equivalent average annual benefits are estimated at \$2,200,000 and equivalent average annual costs are estimated at \$320,000, with equivalent average annual net benefits of \$1,880,000 and an overall benefit-to-cost ratio (BCR) of 6.8 to 1. The BCR for the Conway element is 5.3 to 1. The BCR for the Socastee element is 16.1 to 1. All project costs are allocated to the authorized purpose of flood risk management.

5. The project is expected to yield incidental environmental and recreational benefits. The barrier removal in Socastee will help restore the natural hydrology of Socastee Creek (a tributary of the Waccamaw River), improve habitat connectivity for aquatic organisms seeking spawning and foraging areas, and enhance nutrient cycling to support greater

biodiversity. In Conway, the relief bridges/cross drains are designed to help stabilize adjacent natural channels. These environmental improvements are also anticipated to create better recreational opportunities, such as kayaking, canoeing, and fishing, by returning the river environment to a more natural state.

6. This project will enhance flood resiliency for Horry County by directly addressing the critical vulnerability of community isolation during flood events. By improving hydraulic conveyance through relief bridges and barrier removal, the plan is designed to lower water surface elevations and, just as importantly, reduce the duration of inundation. This allows key transportation and evacuation routes to remain passable for longer periods, ensuring that emergency services can access affected areas and residents can evacuate safely. By protecting access to critical infrastructure and bolstering the operational capabilities of the community during a flood, the project strengthens the overall ability of Conway and Socastee to withstand, adapt to, and recover from the disruptive impacts of frequent flooding. The focus on building resilient infrastructure and protecting vulnerable communities directly aligns with the high-priority goals of the current administration.

7. The study report fully describes the flood risk to structures and life safety from the Waccamaw River basin within Horry County. The Recommended Plan was formulated to reduce this risk by enhancing hydraulic conveyance, which can lower water surface elevations incrementally. The project includes targeted measures such as relief bridges to reduce flood depths and durations for localized floods with an approximately 65 percent Annual Exceedance Probability (AEP) but is not designed to prevent damages from larger, less frequent flood events, such as the 10 percent, 4 percent, 2 percent, 1 percent, 0.4 percent, or 0.2 percent AEP events, due to constraints posed by current hydrologic flow dynamics in a vast floodplain and low gradient terrain. Consequently, a high level of residual risk will remain, as the project's measures can be overwhelmed by broader floodplain dynamics during major storms. This residual risk, particularly the potential for transportation route closures that hinder emergency response and evacuation, has been identified. To help manage this risk, the report notes that Horry County will continue to implement its Comprehensive Emergency Management Plan, which includes flood event operational plans, to complement the project's physical measures.

8. No major implementation risks are associated with the Recommended Plan. Strategies for risk management of plan implementation would be a shared responsibility with the non-federal sponsor. The 35 percent design maturity of the Recommended Plan and minimal real estate requirements help to minimize implementation risks of the project. However, changes to LERR requirements as a result of finalization of design, such as utility relocations and additional access easements, present schedule risk for the non-federal sponsor. Schedule contingency must be maintained for LERR activities. Sufficient time, cost, and contingency have been estimated to complete the identified preconstruction engineering and design activities, and for construction of the project. There is no environmental mitigation expected for the project and there are no considerable regulatory risks.

9. All compliance with required applicable environmental laws and regulations has been completed.

10. In accordance with USACE policy on the review of decision documents, all technical, engineering, and scientific work underwent an open, dynamic, and rigorous review process. The comprehensive review process included District Quality Control Review, Agency Technical Review, and Headquarters Policy and Legal Compliance review to confirm the planning analyses, alternative design and safety, and the quality of decisions. Washington-level review indicates that the plan recommended by the reporting officers complies with all essential elements of the U.S. Water Resources Council's Economic and Environmental Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies, as well as other administrative and legislative policies and guidelines. The views of interested parties, including federal, state, and local agencies, were considered and all comments from public reviews have been addressed and incorporated into the final report documents where appropriate.

11. USACE decision documents recognize cost risk and uncertainty surrounding implementation. All cost estimates will carry a degree of uncertainty. The estimated total project first cost for the Recommended Plan at the Abbreviated Risk Assessment's 80 percent confidence interval is \$7,420,000. The Recommended Plan has various construction and non-construction components. The overall Recommended Plan is at 35 percent design, with the Conway relief bridges at 35 percent design and the Socastee barrier removal at 65 percent design. Based on the recommended project design of the construction components and scope definition of the non-construction components, the total project cost is designated as a Class 3 estimate. The total project first cost includes a contingency value of \$1,910,000, which is approximately 35 percent of the estimated base project cost of \$5,510,000. The cost contingencies are intended to cover cost and schedule increases due to the identified project risks and their probability of occurrence. Changes to assumptions or the basis of design can result in additional risks not currently identified. For the Recommended Plan project first costs, the currently known major uncertainty drivers are the following: 1) variation in major material costs and bid assumptions, 2) ability of the non-federal sponsor to provide their share of funds and obtain all required real estate interests in a timely fashion as reflected in the project schedule, and 3) any changes to assumptions on productivity, construction sequencing due to funding allocations and future market conditions can affect overall project cost. As the project moves into the next phase, USACE and the sponsor will focus risk management and mitigation on the few remaining cost and other risk drivers to the extent within our control, primarily additional utility surveys to refine the utility relocation plan. However, there still exists the potential for other unanticipated and uncontrollable changes in environmental or economic conditions that could further increase the total project first cost beyond the current estimate and/or necessitate changes in the project's design.

12. In full consideration of the risks as documented in the preceding paragraphs in this report, I concur with the findings, conclusions, and recommendation of the reporting officers. Accordingly, I recommend that flood risk management improvements for the Socastee and Conway elements be authorized in accordance with the reporting officers' Recommended Plan at an estimated cost of \$7,420,000 for initial construction, with such modifications as in the discretion of the Chief of Engineers may be advisable. My recommendation is subject to cost sharing and other applicable requirements of federal laws, regulations, and policies. Federal implementation of the project for structural and nonstructural, natural, or nature-

DAEN

SUBJECT: Waccamaw River, Horry County, South Carolina, Flood Risk Management

based flood risk management includes, but is not limited to, the following items of local cooperation to be undertaken by the non-federal sponsor in accordance with applicable federal laws, regulations, and policies:

a. Provide a minimum of 35 percent, up to a maximum of 50 percent, of construction costs, allocated to structural flood risk management; and 35 percent of construction costs allocated to nonstructural, natural, or nature-based flood risk management, as further specified below:

1. Provide, during design, 35 percent of design costs in accordance with the terms of a design agreement entered into prior to commencement of design work for the project;

2. Pay, during construction, a contribution of funds equal to 5 percent of construction costs allocated to structural flood risk management;

3. Provide all lands, easements, rights-of-way, and placement areas and perform all relocations determined by the federal government to be required for the project; and

4. Provide, during construction, any additional contribution necessary to make its total contribution equal to at least 35 percent of construction costs.

b. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) that might reduce the level of flood risk reduction the project affords, hinder operation and maintenance of the project, or interfere with the project's proper function;

c. Inform affected interests, at least yearly, of the extent of risk reduction afforded by the flood risk management features; participate in and comply with applicable federal floodplain management and flood insurance programs; prepare a floodplain management plan for the project to be implemented not later than one year after completion of construction of the project; and publicize floodplain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with the project;

d. Operate, maintain, repair, rehabilitate, and replace the project or functional portion thereof at no cost to the federal government, in a manner compatible with the project's authorized purposes and in accordance with applicable federal laws and regulations and any specific directions prescribed by the federal government;

e. Give the federal government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-federal sponsor owns or controls for access to the project to inspect the project, and, if necessary, to undertake work necessary to the proper functioning of the project for its authorized purpose;

f. Hold and save the federal government free from all damages arising from design, construction, operation, maintenance, repair, rehabilitation, and replacement of the project,

DAEN

SUBJECT: Waccamaw River, Horry County, South Carolina, Flood Risk Management

except for damages due to the fault or negligence of the federal government or its contractors;

g. Perform, or ensure performance of, any investigations for hazardous, toxic, and radioactive wastes (HTRW) that are determined necessary to identify the existence and extent of any HTRW regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601-9675, and any other applicable law, that may exist in, on, or under real property interests that the federal government determines to be necessary for construction, operation, and maintenance of the project;

h. Agree, as between the federal government and the non-federal sponsor, to be solely responsible for the performance and costs of cleanup and response of any HTRW regulated under applicable law that are located in, on, or under real property interests required for construction, operation, and maintenance of the project, including the costs of any studies and investigations necessary to determine an appropriate response to the contamination, without reimbursement or credit by the federal government;

i. Agree, as between the federal government and the non-federal sponsor, that the non-federal sponsor shall be considered the owner and operator of the project for the purpose of CERCLA liability or other applicable law, and to the maximum extent practicable shall carry out its responsibilities in a manner that will not cause HTRW liability to arise under applicable law; and

j. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended, (42 U.S.C. 4630 and 4655) and the Uniform Regulations contained in 49 C.F.R Part 24, in acquiring real property interests necessary for construction, operation, and maintenance of the project including those necessary for relocations, and placement area improvements; and inform all affected persons of applicable benefits, policies, and procedures in connection with said act.

13. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program or the perspective of higher review levels within the Executive Branch. Consequently, the recommendation may be modified before it is transmitted to Congress as a proposal for authorization and implementation funding. However, prior to transmittal to Congress, the non-federal sponsor, interested federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.



WILLIAM H. GRAHAM JR.
Lieutenant General, USA
Chief of Engineers