

**FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
CITY OF COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA
PROPOSED SOUTH CAROLINA RESILIENCY PROJECT
EMA-2020-BR-194-0033**

BACKGROUND

The Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) proposes to provide funding to the City of Columbia, South Carolina (subrecipient) for a resiliency project at the Columbia Canal located along the Broad and Congaree rivers. The City of Columbia applied for Building Resilient Infrastructure and Communities (BRIC) Grant Program funding. BRIC grant program is authorized under Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

The project will involve constructing a water intake structure east of the confluence of the Saluda and Broad rivers located at: 34.006249, -81.058307. The resilient water intake would be constructed approximately fifty (50) feet from the east bank into the Congaree River, adjacent to the Canal, and within proximity to the Canal Water Treatment Plant on the east bank. A bridge crossing would be constructed across the canal channel for pipeline transmission to pump into the treatment plant reservoir and utility vehicle traffic connecting to Calhoun Street.

On October 2023, a draft environmental assessment (EA) was prepared by FEMA. A public notice was posted on on FEMA's website and the following City of Columbia websites: <https://columbiascwater.net/columbiacanalproject/> and <https://flood.columbiasc.gov/>.

On December 4, 2023, FEMA finalized the EA and is available for viewing by visiting the following website: <https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa/environmental-assessment-city-columbia>

FINDINGS

The Proposed Action as described in the EA would impact the physical, water, biological, cultural, and socioeconomic resources. Short term impacts to air quality, surface water, wetlands, vegetation, threatened and endangered species, migratory birds, and noise are anticipated. Impacts to geology and soils, climate change, floodplains, general fish and wildlife, visual quality and aesthetics, transportation and traffic, and hazardous materials are negligible and not anticipated to be long-term. Long-term positive impacts to public services, utilities, environmental justice, equity, and protection of children are expected. Long-term adverse effects to historic properties were addressed through a memorandum of agreement between FEMA, City of Columbia, and the State Historic Preservation Office requiring treatment measures to be adhered to. The agreement was executed in October 2023.

In consideration of the overall impacts of the proposed action in relation to impacts from past, present, and reasonably foreseeable future activities, the proposed action is not expected to have significant adverse cumulative impacts on any resource.

CONDITIONS

General Project Conditions

- The subrecipient is responsible for obtaining and complying with all required local, state, and federal permits and approvals.
- If deviations from the proposed scope of work result in substantial design changes, the need for additional ground disturbance, additional removal of vegetation, or any other unanticipated changes to the physical environment, the subrecipient must contact FEMA so that the revised project scope can be evaluated for compliance with NEPA and other applicable environmental and historic preservation laws.

Physical Resources

- Commit to the best available emissions control technologies for project equipment in order to meet the following standards:
 - On-highway vehicles should meet, or exceed, the EPA exhaust emissions standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, shuttle buses, etc.).
 - Non-road vehicles and equipment should meet, or exceed, the EPA Tier 4 exhaust emissions standards for heavy-duty, non-road compression-ignition engines (e.g., construction equipment, non-road trucks, etc.).
 - The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available.
- To reduce the emissions of criteria pollutants, construction equipment engine idling will be minimized to the extent practicable, and engines will be kept properly maintained.
- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- When hauling material and operating non-earthmoving equipment near and within the construction work areas, prevent spillage and limit speeds of 15 miles per hour. Limit speed of earth-moving equipment to 10 miles per hour.

Water Resources

- The subrecipient will obtain a permit for impacts on waters of the U.S. in accordance with Sections 401 and 404 of the Clean Water Act and adhere to all conditions as required in those permits.
- The subrecipient will obtain and adhere to the NPDES Permit and SCDHEC Construction Permit including adhering to all conditions as required by the SCDHEC Surface Water Withdrawal Permit (No 40WS054).
- The subrecipient must obtain written approval or floodplain permit from the local floodplain administrator before work begins and adhere to all conditions identified in the approval or permit.

- Construction activities, equipment staging, and storage activities are not to be located within or adjacent to any nearby wetlands. All materials and equipment should be staged outside of the wetland on paved or previously disturbed areas.

Biological Resources

- To minimize or avoid impacts to potential protected sturgeon species the following conditions are to be applied during in-water construction activities:
 - All construction workers to observe in-water activities for the presence of these species. If a sturgeon is seen within 100 yards of the project site or associated vessels, all appropriate precautions shall be implemented to ensure its protection. Operation of any mechanical construction equipment shall cease immediately if a sturgeon is seen within a 50-ft radius of the equipment. Activities will not resume until the protected species has departed the project area of its own volition.
 - All on-site project personnel are responsible for observing water-related activities for the presence of protected species. All personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing listed species and all marine mammals. To determine which protected species and critical habitat may be found in the transit area, please review the relevant marine mammal and ESA-listed species at Find A Species (<https://www.fisheries.noaa.gov/find-species>) and the consultation documents that have been completed for the project.
 - For construction work that is generally stationary (e.g., barge-mounted equipment dredging a berth or section of river, or shore-based equipment extending into the water):
 - Operations of moving equipment shall cease if a protected species is observed within 150 feet of operations.
 - Activities shall not resume until the protected species has departed the project area of its own volition (e.g., species was observed departing or 20 minutes have passed since the animal was last seen in the area).
 - Any interaction with a protected species shall be reported immediately to NOAA Fisheries SERO PRD and the local authorized stranding/rescue organization.
 - To report to NOAA Fisheries SERO PRD, send an email to takereport.nmfsser@noaa.gov. Please include the species involved, the circumstances of the interaction, the fate and disposition of the species involved, photos (if available), and contact information for the person who can provide additional details if requested. Please include the project's Environmental Consultation Organizer (ECO) number and project title in the subject line of the email reports. These can be obtained from FEMA by emailing FEMA-R4EHP@fema.dhs.gov.
 - To report the interaction to the local stranding/rescue organization, please see the following website for the most up to date information for reporting sick, injured, or dead protected species:
 - <https://www.fisheries.noaa.gov/report> or
 - for sturgeon call the North Carolina Division of Marine Fisheries at 252-241-5119.

- For all project in-water activities work operations hours must be completed between 15 minutes before official sunrise to 15 minutes after official sunset.
- In-water construction work will be conducted outside of the February 1 to April 31 timeframe. During this in-water moratorium, all construction activities would occur within a dewater environment within the cofferdam.
- The applicant or applicant representative will be required to obtain all applicable Federal, state, and local permits and will comply with conditions set forth in each. These requirements include all State of South Carolina and USACE permits. Failure to obtain permits or comply with these conditions may jeopardize the applicant's receipt of FEMA funding.
- Listed below are conservation measures to be utilized during the construction activities for the Proposed Action with the goal of reducing impacts to birds and their habitats protected under the Migratory Bird Treaty Act (MBTA).
 - To the extent practicable, schedule all vegetation removal, trimming, and grading of vegetated areas from September 1st – March 31st, which is outside of the peak breeding season for migratory birds. USFWS's Information, Planning and Conservation system (IPaC) was used to collect bird breeding information.
 - Educate contractors of relevant rules and regulations that protect wildlife. Prior to the onset of construction activities, the contractor's designated lead will conduct a briefing with all construction staff to instruct them on the potential presence of species protected under the MBTA. If work is occurring during a bird's breeding season, briefing boards strategically placed at laydowns area will inform construction staff of the species' scientific and common name, a picture of the bird, timing of breeding, and habitat notes.
 - Do not collect birds (live or dead) or their parts (e.g., feathers) or nests without a valid permit.
 - Provide solid waste receptacles at all project areas. Non-hazardous solid waste (trash) would be collected and deposited in the on-site receptacles. Solid waste would be collected and disposed of in the manner approved by the South Carolina Department of Health and Environmental Control (SCDHEC).
 - Minimize project creep by staying within the project action area that includes the Columbia Canal facility and laydown areas.
 - Implement standard soil erosion and dust control measures.
 - To the extent practicable, limit construction activities to the time between dawn and dusk to avoid the illumination of adjacent habitat areas.
 - The contractor will be required to adhere to all applicable Federal, State, and Local permits and will comply with conditions set forth in each. These requirements include all State of South Carolina and USACE permits.
 - Report any incidental take of a migratory bird, to:
 - U.S. Fish and Wildlife Service
 - Migratory Bird Permit Office
 - 1875 Century Blvd.
 - Atlanta, GA 30345
 - 404-679-4163
 - Resee_Collins@fws.gov

- To minimize the spread of invasive species, it is recommended that construction equipment be washed prior to contact with waters and unpaved areas.
- Removed vegetation (many identified as invasive species) should be disposed of properly to avoid incidentally dispersing invasive plants.
- Disturbed green spaces that will be revegetated shall use South Carolina and region native species.
- The construction is to adhere to all requirements from the existing and any further versions of the FERC Tree Management Plan.
- The construction is to adhere all requirements from the SCDNR approved Mussel Relocation Plan.

Cultural Resources

- Please see Cultural Resources MOA for guidelines on how to respond to inadvertent archaeological discoveries or human remains and burial contexts.
- All borrow or fill material must come from pre-existing stockpiles or commercially procured material from a pre-existing source. If this is not the case, the subrecipient shall inform FEMA of the fill source so required agency consultations can be completed and FEMA approval will be required prior to beginning ground disturbing activities.

Socioeconomic Resources

- To minimize noise impacts, construction activities will adhere to all local noise ordinances.
- To the greatest extent practicable, transport of materials to and from the construction area shall consider avoiding school zones and areas with low income and minority populations.
- To minimize risks to safety and human health, construction activities will be performed using qualified personnel trained to use the required equipment properly.
- The construction area will be secured from public access and signage indicating closed site and only authorized personnel allowed at all entrances and exits.
- All construction activities will be conducted in accordance with the standards specified in the OSHA regulations.
- For ground disturbing activity, if contaminated soil is encountered during construction, it should be treated, stored, and disposed of according to applicable federal, state, and local regulations.
- Any hazardous materials discovered, generated, or used during construction of the proposed action will be disposed of and handled by the subrecipient in accordance with applicable federal, state, and local regulations.
- Construction equipment will be kept in good working order, any equipment to be used over, in, or within 100 feet of water will be inspected daily for fuel and fluid leaks. Any leaks will be promptly contained and cleaned up, and the equipment will be repaired.
- In the event of an inadvertent spill, the subrecipient must immediately call the SCDHEC response line at: 888-481-0125. See more at: <https://scdhec.gov/report-it/reporting-chemical-spills-pollution>.

CONCLUSIONS

Based on the findings of the EA, coordination with the appropriate agencies, lack of comments from the public, and adherence to the project conditions set forth in this FONSI, FEMA has determined that the proposed project qualifies as a major federal action that will not significantly affect the quality of the natural and human environment, nor does it have the potential for significant cumulative effects. As a result of this FONSI, and in accordance with FEMA Instruction 108-1-1, an EIS will not be prepared, and the proposed project as described in the attached EA may proceed.

APPROVAL

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FEMA, Region 4



Environmental Assessment

City of Columbia

Proposed Columbia Canal Resilient Water Supply

EMA-2020-BR-194-0033

Columbia, Richland County, South Carolina

December 2023



FEMA

**U.S. Department of Homeland Security
Federal Emergency Management Agency Region 4
Atlanta, Georgia**

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LIST OF ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
BCA	Benefit Cost Analysis
BPMs	Best Management Practices
BRIC	Building Resilient Infrastructure and Communities
Canal	Columbia Canal
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act of 1980
CFR	Code of Federal Regulations
City	City of Columbia
CWA	Clean Water Act
dBA	A-weighted decibel
EA	Environmental Assessment
EHP	Environmental Planning and Historic Preservation
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FPPA	Farmland Protection Policy Act
GHG	Greenhouse Gas
Greenway	Three Rivers Greenway
HUD	United States Department of Housing and Urban Development
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
MGD	Million Gallons per Day
MGM	Million Gallons per Month
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OSHA	Occupational Safety and Health Administration
PA	Public Assistance
PDM	Pre-disaster Mitigation
PR&G	Principles, Requirements, and Guidelines for Water Resources
RCRA	Resource Conservation and Recovery Act

RHA	Rivers and Harbors Act
SC	South Carolina
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SCNHP	South Carolina Natural Heritage Program
SHPO	State Historic Preservation Office
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
THPO	Tribal Historic Preservation Office
TSCA	Toxic Substances Control Act
US	United States
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compounds
WOTUS	Waters of the United States
WTP	Water Treatment Plant

1.0 INTRODUCTION

South Carolina Emergency Management Division submitted a Building Resilient Infrastructure and Communities (BRIC) grant application to the Federal Emergency Management Agency (FEMA) on the behalf of the City of Columbia (City). Fiscal year 2020 funding would be provided through the BRIC grant program, as authorized under Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). BRIC is designed to promote a national culture of preparedness and public safety through encouraging investments to protect the Nation's communities and infrastructure and through strengthening national mitigation capabilities to foster resilience. Under BRIC, FEMA may provide technical and financial assistance to states and local governments to assist in the implementation of pre-disaster hazard mitigation measures that are cost effective and designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities resulting from natural disasters.

The Proposed Action would construct a water intake structure approximately fifty (50) feet from the Columbia Canal's (Canal) east bank over the Congaree River including a bridge crossing the Canal's channel. The bridge crossing would hold the water pipeline transporting water from the river to the Canal Water Treatment Plant (WTP) for supplying citywide drinking water.

This draft Environmental Assessment (EA) has been conducted in accordance with National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508) and regulations adopted pursuant to the Department of Homeland Security Directive 023-01, Rev 01, and FEMA Directive 108-1. FEMA is required to consider potential environmental and cultural resource impacts before funding and approving actions and projects. FEMA will use the findings in this EA to determine if an Environmental Impact Statement is required, or if the project can be authorized under a Finding of No Significant Impact. FEMA is required to consider potential environmental impacts before funding or approving actions and projects.

A Principles, Requirements, and Guidelines for Federal Investments in Water Resources (PR&G) analysis is required for federal investments that by purpose, directly or indirectly, alter water resources by affecting water quality or quantity, and have at least \$10 million in project costs. The information reviewed under the analysis is included throughout the EA. These water resources projects include those involving navigation, flood control, water supply, hydropower, ecosystem restoration, or recreation. The PR&G is intended to provide a framework for federal agencies to evaluate proposed water resources projects that balances consideration of economic, social, and environmental objectives. FEMA's PR&G Agency Specific Procedures are found in the FEMA Instruction 108-1-1 (FEMA, 2018). The PR&G and NEPA analyses are incorporated together throughout this EA and with consideration of the connected actions to the Canal facility and surrounding areas of potential effects.

2.0 PURPOSE AND NEED

The purpose of FEMA's BRIC is to provide financial assistance to eligible applicants to help implement long-term hazard mitigation measures before disasters strikes to protect life, property, and community resources. Sometimes the applicant is requesting federal assistance for the mitigation or resiliency measures to areas within their communities or organization that has past, recent, and/or cumulative impacts from disasters. The need of the proposed project is to decrease the financial burden to the local community in their endeavors to reduce or eliminate the loss of drinking water availability during future disasters. The Canal facility serves provides drinking water to approximately 430,000 people daily, including 5 major hospitals, (including the only Level 1 trauma facility in the region), 16 police stations, 30 fires stations, six universities and colleges, and numerous government facilities. Drinking water is also served to two (2) military bases: Fort Jackson, the Army's primary training base, and McEntire Joint National Guard Base. Additionally, the resiliency water supply project is one part of the planned projects occurring at the Canal facility. A FEMA Public Assistance grant program (PA) project will be analyzed in a forthcoming environmental assessment to address the 2015 flooding damages to the Canal facility. In conclusion, the purpose and need for the proposed project is to provide resiliency support to the Canal's primary function of supplying citywide drinking water while maintaining the Canal's compliance with FERC's current safety standards and meeting long-term water quantity demands for the City.

3.0 PROJECT LOCATION AND BACKGROUND

The proposed project is located on the west side or riverside of the Canal facility within Richland County, South Carolina (SC) and is owned and maintained by the City. A portion of the proposed project is located within the Congaree River, immediately adjacent to the confluence of the Saluda and Broad rivers, forming the Congaree River. The other portions of the proposed project would cross the Canal water to the east side or cityside of the Canal where the water reservoir and Columbia Water Treatment Facility are located. Directions to the proposed project is as follows: From the Strom Thurmond Federal Building in Columbia, head west on Laurel Street for approximately one mile, then turn right on Richland Street. Head north on Richland Street for approximately 0.2 mile and turn right onto Calhoun Street. The proposed project alternatives begin at the end of Calhoun Street. The single reference point GPS location of the proposed action is 34.006452, -81.056594 (**Appendix A**). The City is the FERC licensee and is required to adhere to all federal and state licensing requirements for operating a drinking water and hydroelectric power generating facility.

At approximately three (3) miles long, the Canal includes a 10-Megawatt hydroelectric power plant, spillway, WTP, and headgates. Earthen dikes extend through the Canal and includes a large section of the Three Rivers Greenway (Greenway) with grassed shoulders and some riprap at the toe of the embankments. The entire Canal and associated structures, buildings, and objects are

listed on the National Register of Historic Places (NRHP). The Canal was originally built between 1820 and 1824 and later expanded in 1891 as a navigable waterway paralleling the Broad and Congaree rivers. The Canal has been used for hydroelectric power generation for the City since 1892 (discharge up to 6,000 cubic feet per second (ft³s) of flow) and as a water source for the city water works since 1895 via the WTM withdrawing up to 60 million gallons per day (MGD).

The Congaree River forms at the confluence of the Broad River to the north and the Saluda River to the west. The Congaree and Broad rivers near the Canal have a moderate to fast water flow with a large amount of rock outcroppings and small islands scattered throughout. The Congaree has an unconsolidated bottom with at least 25% cover of particles smaller than stones and a vegetative cover less than 30%. The project site has areas located adjacent to and within a riverine and freshwater forested/shrub wetland habitat as indicated by review in the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) website (USFWS NWI). A variety of land use range include utility (power and water), transportation with the nearby railroad to the east, parks and greenspace (jogging, special events, and fishing), and urban uses such as the notable commercial and residential development occurring due east of the Canal. The project area along the dikes consists of mixed hardwood forests with a diversity of trees and plant species.

During the 2015-thousand-year flood event, the Columbia Canal overtopped with flood waters causing the breach at the lower, south end of the Canal. This breach prevented the Canal from retaining water and jeopardized the water supply via the current and existing water intake system within the canal water near the WTP. The City undertook emergency measures of constructing a rock dam near Klapman Breach and installed bypass pumping and piping for a temporary, emergency fix to address the impacts to the water supply. Currently, the hydroelectric plant remains inoperable, a large section of the dike has been displaced or breached, and the emergency rock dam implemented during the flood event remains in place. The Greenway starting from the spillway going south to hydroelectric plant is closed off from the public for safety reasons. The Greenway starting north of the spillway remains open to the public and eventually passes the location of the proposed resilient water supply project.

During early coordination in 2020 with the City regarding the PA project, it was noted that the City applied for the FEMA Pre-Disaster Mitigation grant program (PDM) for federal assistance towards the resilient water supply project. FEMA attempted to start drafting a single EA for both the PA project with the pending PDM project but halted when the PDM funding was denied. The City applied through the new BRIC funding and was selected for the funding in mid-summer 2021. FEMA Region 4 Environmental Planning and Historic Preservation (EHP) received the official request to begin the EHP compliance review on September 3, 2021. The next few months consisted of collecting data, surveying, and coordinating with the US Army Corps of Engineers Columbia Regulatory Office (USACE) to establish lead on the EHP compliance review. FEMA and USACE agreed upon lead agency on January 27, 2022. On May 17, 2022, FERC decided to conduct a

separate environmental review for the federal licensing action pending receipt of a request to amend the license initiating their own review. On November 16, 2022, FEMA and FERC resumed coordination once 30% designs for the Columbia Canal repairs (the FEMA PA project) were received by FERC. Coordination is ongoing for the FERC licensing action (amendment) designated p-1895 and the FEMA funding project for the PA including coordination from the City with FERC regarding the United States Department of Housing and Urban Development (HUD) funding project for the replacement gates. On December 1, 2022, FEMA was informed by the City that the proposed action for the resilient water supply project can proceed without the licensing amendment being approved and that FERC Dam Safety reviewed and approved 100% design plans, which are not available due to protected critical energy infrastructure information.

4.0 ALTERNATIVES

Under NEPA, this EA is required to analyze the potential environmental impacts of the No Action Alternative, Proposed Alternative, and reasonable alternatives. Reasonable alternatives are those that meet the purpose and need for the proposed action, are feasible from a technical and economic standpoint, and meet reasonable screening criteria (selection standards) that are suitable to a particular action. Screening criteria may include requirements or constraints associated with operational, technical, environmental, budgetary, and time factors. Alternatives that are determined not reasonable were eliminated from the detailed analysis in this EA.

The seven (7) alternatives considered addressing the stated purpose and need by the City were included in their request for Section 404 and 401 Clean Water Act (CWA) authorization and certification from the USACE are listed below:

- Alternative 1 – No Action Alternative
- Alternative 2 – Lower Saluda River (Tunnel)
- Alternative 3 – Congaree River West Bank Intake via Tunnel
- Alternative 4 – Congaree River West Bank Intake via Aerial Crossing
- Alternative 5 – Congaree River East Bank Intake via Bridge Crossing
- Alternative 6 – Upstream of the Canal
- Alternative 7 – Finished Water Supply to the Canal WTP

See **Appendix B** for the locations of the alternatives considered.

4.1 Alternative 1: No Action Alternative

Under Alternative 1, there would be no FEMA funding assistance provided to the City for the construction of an intake water supply project. After the flood repairs work is completed, the City would either have to look internally to fully finance the project or look for other funding

opportunities. Consequently, the community would not be protected from the potential drinking water functions hindered or completely cut off during future disasters. The surrounding critical infrastructure and services would be adversely affected during and after disasters impacting the ability of critical services to protect property and save lives. Additionally, if the existing Canal water intake is the primary and sole intake, the City would have to make significant modifications throughout the entire Canal such as constructing a 2.9 reinforced concrete wall within the embankment including a backup embankment within the Congaree River. This would be required to bring the Canal to current FERC standards and reducing the FERC hazard rating.

4.2 Alternative 2: Lower Saluda River via Tunnel [DISMISSED]

The raw water intake structure would be constructed on the Lower Saluda River near the Columbia Zoo at approximately 34.008338, -81.069628. A tunnel under the Congaree River would be installed to convey or transport raw water via an eight (8) foot diameter pipe to a pump station that would be constructed at the Canal to lift water into the reservoir at the WTP. Due to the existing water withdrawal occurring downstream and upstream on the Saluda, the City confirmed with the South Carolina Department of Health and Environmental Control (SCDHEC) that this alternative would be very difficult to permit. The average streamflow is less than the minimum instream flows and withdrawals; and there would not be sufficient water capacity available at this location for a new water intake. Current water intake use includes Shaw Industries with a permitted quantity of 1,365 million gallons per month (MGM) and the West Columbia WTP with a permitted quantity of 213 MGM. This alternative is dismissed from further analysis as it would not meet the required needs of water capacity to serve the purpose of supply water to the community as indicated above in the Purpose and Need.

4.3 Alternative 3: Congaree River West Bank Intake via Tunnel [FUTHER ANALYZED]

Location of this alternative would be past the confluence of the Saluda and Broad rivers forming the Congaree River and along the west bank for the river near West Columbia at 33.998776, -81.060304. This alternative would involve construction of a water intake pulling water from the Congaree, transporting via eight (8) foot diameter pipe under the Congaree River to a new water pump station near the Canal WTP reservoir. In contrast to Alternative 2, this location would provide sufficient water capacity for permitting and is further analyzed in this EA.

4.4 Alternative 4: Congaree River West Bank Intake via Aerial Crossing [DISMISSED]

This alternative is the same as alternative 2 in location and general construction with the exception on the method of transporting water from the intake to a new water pump station near the Canal WTP reservoir. Instead of a tunnel under the Congaree River, this alternative would construct an aerial crossing with piers piled into the Congaree River's bedrock and a raw water pipeline over the Congaree River. Although meeting the purpose and need for providing water to the community

and facilitating the licensing requirements, FEMA has practicably dismissed this alternative due to the major safety risks such a crossing would have to anyone recreationally using the river.

4.5 Alternative 5: Congaree River East Bank Intake via Bridge Crossing [FURTHER ANALYZED]

Located within the Congaree River, the water intake would be immediately east of the confluence of the Saluda and Broad rivers located at: 34.006249, -81.058307. The resilient water intake would be constructed approximately fifty (50) feet from the east bank into the Congaree River, adjacent to the Canal, and within proximity to the Canal WTP. A bridge crossing would be constructed across the canal water for pipeline transmission to pump into the WTP reservoir and utility vehicle traffic connecting to Calhoun Street. This alternative would provide the sufficient water capacity and allow direct access for operations.

4.6 Alternative 6: Upstream of the Canal Congaree River at the Broad River [DISMISSED]

This alternative is located on the Lower Broad River near the entryway to the Canal (north of the headgates) upstream of Smith Branch with the water intake construction to occur on the east bank of the Broad River approximately at 34.036787, -81.069172. A water pump station would be constructed next to the intake and require approximately 11,000 feet of 64-inch water main from the pump station south to the water reservoir at the Canal WTP. SCDHEC identified the site as sufficient for having sufficient water capacity for permitting but the construction and maintenance costs associated with the pipeline would be too great. Furthermore, stream and wetland impacts would occur and due to the large pipeline footprint, there is a large area of potential effects to cultural resources both buried and above ground. While this alternative would serve to provide drinking water capacity to the City, the pipelines would be occupying floodplains and would likely be impacted by a similar flood event. Therefore, this alternative is dismissed as it would not provide disaster resiliency to the drinking water function the Canal provides to the community resulting in a repeat scenario.

4.7 Alternative 7: Finished Water Supply to the Canal WTP [DISMISSED]

This alternative would not require the construction of a water intake and would rely on connecting to a water conveyance line from the Lake Murray WTP to the west. The work would include a 54-inch water main from the finished water connection from the Lake Murray WTP to the Canal WTP, including a jack and bore road crossing and a river crossing. It is anticipated that this alternative would require an expansion of the Lake Murray WTP increasing the amount of the significant human and natural impacts. Additionally, there are constraints to utilizing a different WTP's system such as limited maximum water capacity of 80 MGD to the Canal WTP and limitations to keeping up with the growing demand of water as the water demand increases for the City with

projected future demands of 120 MGD. Therefore, FEMA has practicably dismissed this alternative as it would not meet the purpose and need of the project.

4.8 Summary

In addition to meeting the purpose and need, FEMA's PR&G Agency Specific Procedures require the alternatives for the water resources be evaluated against their ability to achieve the Federal Objective and conform to the Guiding Principles.

The Federal Objective specifies that Federal water resources investments shall reflect national priorities, encourage economic development, and protect the environment by:

1. Seeking to maximize sustainable economic development;
2. Seeking to avoid the unwise use of floodplains and flood-prone areas and maximizing adverse impacts and vulnerabilities in any case in which a floodplain or flood-prone area must be used; and
3. Protecting and restoring the functions of natural systems and mitigating any unavoidable damage to natural systems.

The Guiding Principles are the six overarching concepts the Federal government seeks to promote through Federal investments in water resources. The Guiding Principles are:

1. Healthy and Resilient Ecosystems
2. Sustainable Economic Development
3. Floodplains
4. Public Safety
5. Environmental Justice
6. Watershed Approach

Each Guiding Principle is further defined in Section 4.3 of the FEMA EHP Instruction starting on page 45 (FEMA, 2018). The alternatives considered for continued analysis are compared against the Guiding Principles in Table 1 below.

Table 1: PR&G Guiding Principles by Alternatives Not Dismissed

Resource Type	Healthy and Resilient Ecosystems	Sustainable Economic Development	Floodplains	Public Safety	Envir. Justice	Watershed Approach
Alternative 1: No Action Alternative: No Funding and No Construction at Canal	There would be no impacts to riverine wetlands from construction and no water withdrawal would occur from the river.	With no alternative water intake system in place, the Canal would seize hydroelectric and water supply functions to the community relying on and paying for water supply from another municipality. The community, both residents and business owners may see a high increase in water bills.	The regulatory floodway would exist as is and construction and water withdrawal activities would not occur.	Drinking water services would not meet the growing capacity of the community and furthermore would cause critical services to consider contingency plans that may slow response time and increase emergency response costs.	The city limits have a population of 21.8% that is within or below the poverty level. Adverse impacts to low-income communities would likely occur for increase to water bills and decrease in property values.	The Canal's channel would remain as is and would not have a bridge crossing the Canal nor would there be any river crossings.
Alternative 2: Lower Saluda River (Tunnel)	DIMISSED	DIMISSED	DIMISSED	DIMISSED	DIMISSED	DIMISSED

Resource Type	Healthy and Resilient Ecosystems	Sustainable Economic Development	Floodplains	Public Safety	Envir. Justice	Watershed Approach
Alternative 3: Congaree River West Bank Intake via Tunnel	There would be moderate impacts to riverine wetlands from both construction and future maintenance. Withdrawal from the Congaree River would occur as a daily function.	The City would meet the federal licensing requirements and retain legal responsibility of the Canal including the ability to supply drinking water and electric power to the community without having to use a potential more expensive, alternative source that would trickle down to water and power customers.	Construction would occur in the floodplains and water intake functions would occur in the floodplain, although the functions and structure are functionally dependent on occupying floodplain. BMPs would be utilized to minimize the temporary impacts to the floodplain values.	Drinking water services would meet the drinking water capacity that is required for the increasing demands from the growing City for everyday use but also would continue to provide drinking water if such a disaster would occur. If maintenance or repairs would need to be conducted to the water line under the river it may require a costly method to access it or get a visual.	Drinking water services are available to anyone and everyone in the water service district. Populations with limited resources to displace during a disaster would be better situated with continued drinking water services during future disasters.	The Congaree River would have very significant impacts during the construction and many unknowns as the stability of the soil and geology under the river. Construction would require creating a tunnel under the Congaree River and an island in the middle. Displacement of soils is a possibility during construction and post-construction.
Alternative 4: Congaree River West Bank Intake via Aerial Crossing	DISMISSED	DISMISSED	DISMISSED	DISMISSED	DISMISSED	DISMISSED

Resource Type	Healthy and Resilient Ecosystems	Sustainable Economic Development	Floodplains	Public Safety	Envir. Justice	Watershed Approach
Alternative 5: Congaree River East Bank Intake via Bridge Crossing	There would be minor impacts to riverine wetlands from both construction and future maintenance. Withdrawal from the Congaree River would occur as a daily function.	Same as Alternative 2.	Same as Alternative 2.	Very similar to Alternative 2 except for the issues to access and visual maintenance and inspections of the water line. If repairs would be needed during an emergency, personnel would be able to easily access the issue and quickly get everything fully functional.	Same as Alternative 2.	The impact to the watershed is strictly limited to 500 linear feet along the embankment and 220 feet into the river during construction. Post-construction the intake and riprap would be 275 linear feet and go 60 feet into the river. River recreation activities would continue.
Alternative 6: Upstream of the Canal	DISMISSED	DISMISSED	DISMISSED	DISMISSED	DISMISSED	DISMISSED
Alternative 7: Finished Water Supply to the Canal WTP	DISMISSED	DISMISSED	DISMISSED	DISMISSED	DISMISSED	DISMISSED

4.9 Alternatives to be Further Analyzed and Those Dismissed

Six (6) action alternatives and a no action alternative were considered. Three (3) action alternatives were dismissed because of not meeting the purpose and need. This resulted in three (3) action alternatives and the No Action Alternative to remain for further analysis. In Table 1 above, the alternatives remaining were further evaluated as it relates to water resources. The No Action Alternative will remain as a null or default alternative but Alternative 3: Congaree River West Bank Intake via Tunnel is logically dismissed due to moderate impacts to the ecosystem, the significant issues to public safety due to the difficulty in access and maintenance, and the significant impacts to the watershed in terms of linear feet of pipe encroachment under the Congaree River and to water recreational activities. The No Action Alternative and Alternative 5: Congaree River East Bank Intake via Bridge Crossing are analyzed below in Section 5 as to how they may impact various resources. Henceforward, the No Action Alternative and Alternative 5 will simply be called No Action and Proposed Action, respectively.

4.10 Benefit Cost Analysis

As required under PR&G Agency Specific Procedures, FEMA's Benefit Cost Analysis (BCA) online tool was utilized for the BCA regarding the actions at the Columbia Canal. The overall costs reflect 2020 pricing at the time of the analysis. See **Appendix C** for FEMA BCA completed.

4.11 Impact Evaluation

The CEQ notes: "Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial" (40 CFR §1508.8).

When possible, quantitative information is provided to establish potential impacts; otherwise, the potential qualitative impacts are evaluated based on the criteria listed in Table 2 below.

Table 2: Impact Significance and Context Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None/Negligible	The resource area would not be affected and there would be no impact, OR changes or benefits would either be non-detectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale impacts/benefits. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences/benefits on a local or regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

The impact analysis in this EA evaluates the potential environmental direct and indirect impact of the No Action and the Proposed Action alternatives. A summary table of the potential impacts of both alternatives is provided in Table 3 below. Table 4 lists the resources eliminated from the analysis and provides the reasoning.

Table 3: Environmental Consequences and Environmental Protection Measures and Required Permits by Environmental Resource

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Physical Resource: Geology and Soils, and Farmland Protection Policy Act (FPPA)	No Action: <i>No Impact</i> Proposed Action: <i>Negligible Impact – Not Significant</i>	Not applicable.
Physical Resource: Air Quality and Clean Air Act (CAA)	No Action: <i>No Impact</i> Proposed Action: <i>Minor Impact – Not Significant</i>	Construction of the Proposed Action and equipment-generated fugitive dust would be controlled using standard construction best management practices (BMPs), including watering of exposed surfaces, and enclosing or covering stockpiled material. No permitting anticipated.
Physical Resource: Climate Change	No Action: <i>Major Impact – Potentially Significant</i> Proposed Action: <i>Negligible Impact – Not Significant</i>	Not applicable.
Water Resources: Clean Water Act (CWA) and Surface Water	No Action: <i>No Impact</i> Proposed Action: <i>Minor Impact – Not Significant</i>	Use of BMPs during construction of the Proposed Action to minimize impacts would be required, appropriate permits would need to be acquired prior to construction, and all permitting requirements and conditions would be strictly adhered to. Expected permits include Section 404 Permit from USACE, SCDHEC 401 Water Quality Certification, SCDHEC NPDES Permit, SCDHEC State Navigable Waters Permit, SCDHEC Surface Water Withdrawal Permit, SCDHEC Construction Permit for modifying existing public water system.
Water Resource: Floodplain Management (EO 11988)	No Action: <i>Major Impact – Potentially Significant</i> Proposed Action: <i>Negligible Impact – Not Significant</i>	The City would be required to obtain a floodplain permit from the local floodplain administrator before work begins. The Proposed Action would require a FEMA Conditional Letter of Map Revision also known as a CLOMR.
Water Resource: Protection of Wetlands (EO 11990)	No Action: <i>No Impact</i> Proposed Action: <i>Minor Impact – Not Significant</i>	Use of BMPs during construction as required by 401 and 404 Clean Water Act permitting would minimize impacts to downstream and adjacent designated wetlands.

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Biological Resource: Fish and Wildlife	No Action: <i>No Impact</i> Proposed Action: <i>Negligible Impact – Not Significant</i>	Noise generated during construction of the Proposed Action for would be limited to daylight hours to limit the duration of disturbance to wildlife. Additionally, conservation measures pertaining to federally threatened and endangered species would assist in further avoiding or minimizing any impacts to the general fish and wildlife species. Contractor will adhere to the Mussel Relocation Plan requirements prior to construction of the cofferdam.
Biological Resource: Vegetation	No Action: <i>No Impact</i> Proposed Action: <i>Moderate Impact – Not Significant</i>	Vegetative debris generated during construction of the Proposed Action would require adhering to SCDHEC Bureau of Land and Waste Management requirements for staging and final disposal of removed vegetation. The construction work would adhere to the existing Tree Management Plan as agreed upon between City and FERC.
Biological Resource: Threatened and Endangered Species	No Action: <i>No Impact</i> Proposed Action: <i>Minor Impact – Not Significant</i>	See 7.0 for the full list of conditions for construction of the Proposed Action that include halting working if listed species are present, advising on-site personnel on what and when to look for listed species in the area, BMPs with heavy equipment, working during daylight hours, and working in-water during a specific time of the year.
Biological Resource: Migratory Bird Treaty Act (MBTA)	No Action: <i>No Impact</i> Proposed Action: <i>Minor Impact – Not Significant</i>	Construction of Proposed Action would require adhering to applicable nationwide conservation measures that would avoid, minimize, and reduce impacts from noise and vegetation removal activities. See 7.0 for the applicable conservation measures.
Cultural Resource: Historic and Archaeological Resources	No Action: <i>No Impact</i> Proposed Action: <i>Major Impact - Significant</i>	Construction of Proposed Action would result in an Adverse Effect to the Columbia Canal, a National Register Historic District. An MOA between FEMA, the City, South Carolina Emergency Management (SCEMD), and the South Carolina State Historic Preservation Officer (SHPO) was executed to mitigate these adverse impacts. Please see MOA for required cultural resource conditions and mitigation measures.
Socioeconomic Resource: Noise	No Action: <i>No Impact</i> Proposed Action: <i>Minor Impact – Not Significant</i>	Noise generated from construction of Proposed Action would be intermittent, heard only during daytime, and only for the duration of the project activities. Intake and generator sound levels would be expected to be very low and have a negligible impact.
Socioeconomic Resource: Transportation and Traffic	No Action: <i>No Impact</i> Proposed Action: <i>Negligible Impact – Not Significant</i>	Not applicable.

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Socioeconomic Resource: Hazardous Materials/Wastes & Solid Waste	No Action: <i>No Impact</i> Proposed Action: <i>Negligible Impact – Not Significant</i>	Handling of hazardous materials and waste generated or inadvertently discovered would be handled in accordance with applicable state and federal regulations including SCDHEC Bureau of Land and Waste Management requirements.
Socioeconomic Resource: Public Services and Utilities	No Action: <i>Major Impact – Potentially Significant</i> Proposed Action: <i>Beneficial Impact – Not Significant</i>	Not applicable.
Socioeconomic Resource Environmental Justice (EO 12898), Equity, and Protection of Children	No Action: <i>Major Impact – Potentially Significant</i> Proposed Action: <i>Beneficial Impact – Not Significant</i>	Not applicable.

Table 4: Resource Topics Eliminated

Resource Topic	Reason
Bald and Golden Eagle Protection Act	Per internal correspondence with USFWS, the only nearby known bald eagle nest is well beyond the 660-foot management zone. No nest is expected to be in the project area.
Coastal Barrier Resources Act	There are no barrier islands in or near Richland County, South Carolina.
Coastal Zone Management Act	There are no coastal communities in Richland County, South Carolina.
Land Use and Zoning	The no action and proposed action would not change existing land uses and is consistent with the current zoning.
Magnusson-Stevens Fisheries Conservation Act	Work would not take place in or near essential fish habitat designated by National Marine Fisheries Service.
Safe Drinking Water Act	The project area is not located above a sole source aquifer, nor would it affect one.

Wild and Scenic Rivers Act	The Congaree, Saluda, and Broad rivers are not wild and scenic rivers as defined by this law.
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5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

5.1 PHYSICAL RESOURCES

5.1.1 GEOLOGY AND SOILS, AND FARMLAND PROTECTION POLICY ACT (FPPA)

The project area located adjacent to the Congaree River and to the city of Columbia, South Carolina is within the Piedmont physiographic province that spans from Maryland down to South Carolina and across west to Alabama. Much of Piedmont rocks are metamorphic gneiss and schist with igneous intrusions of granite (Foster, 2016). According to the Natural Resources Conservation Service’s (NRCS) soil data, the project area is mostly made up of state sandy loam and urban land soil types. Although the state sandy loam soil type is classified as prime farmland, the project area does not function agriculturally. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses (NRCS, 2019). See **Appendix D** for the soil map.

Table 5: Soils in the Project Area (NRCS, 2022)

Soil Abbreviation	Soil Name	Farmland Classification
StA	State sandy loam, 0 – 2 % slopes	All areas are prime farmland
Ur	Urban land	Not prime farmland

A geotechnical exploration report (**Appendix E**) conducted by F&ME Consultants analysis report dated May 27, 2021, indicates that a Drilling Program Plan or a DPP for boring was submitted to FERC and approved prior to conducting any boring activities. One test boring was started on September 18, 2020 and completed on September 19, 2020. Two additional test borings were both drilled on November 23, 2020, and the final test boring was drilled on March 10, 2021. Soil samples were collected and logged in the field by F&ME personnel, sealed in plastic bags, and transported to a F&ME laboratory. Soil encountered at the boring site on top of the Canal embankment consisted of silty fine to medium sand at the top and rock encountered is weathered granite and river gravel with metagranite as the bedrock. Borings conducted on the city side near the reservoir shows soil as also being silty fine to medium sand but with an additional subsurface layer of stiff and elastic clay with some sand. Rock encountered on the city side resulted in the same findings of weathered granite and metagranite bedrock (Miller & Whitfield, 2021). A major impact to soils is defined as a substantial loss of soil, or a rating of 160 or higher on the Farmland Conservation Impact Rating Form (AD-1006 Form), which would indicate further consideration for protection under the Farmland Protection Policy Act (FPPA). Although, no further

consideration for FPPA is needed as the soils present that are classified as prime farmland are in areas that do not function as farmland.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure and maintenance bridge. Daily scour on the river side to the embankment and canal scour are expected to continue. If a lack of FEMA funding led to the abandonment of constructing a water intake structure, then there would not be any construction activities such as excavation and piling, thus there would be no direct impacts to existing geology and soil conditions.

Proposed Action

Under the Proposed Action, construction activities would require some excavating and piling work to establish both the water supply intake structure and the maintenance bridge. Soils may be disturbed during the removal of vegetation on the city side to establish the laydown and staging areas. Once construction of the intake structure is complete, approximately 26,300 square feet of riprap armoring would be placed under and surrounding the structure. Because the soils at the project area are determined not to be suitable as farmland soils and in consideration of riprap armoring to occur including seismic engineering, FEMA expects impacts to and from geology and soil to be negligible.

5.1.2 AIR QUALITY AND CLEAN AIR ACT

The Clean Air Act requires the Environmental Protection Agency (EPA) to establish national ambient air quality standards for certain common and widespread pollutants based on standards set for the following six common “criteria pollutants:” particle pollution, ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. Areas that meet the air quality standard for the criteria pollutants are designated as being in attainment. Areas that do not meet the air quality standard for one of the criteria pollutants are designated as being in nonattainment for that standard. The proposed action area and surrounding areas of Richland and Lexington counties are located within an attainment area; pollutants in the air do not exceed air quality standards. A major impact on air quality is defined as a violation of an ambient air quality standard or regulatory threshold.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure and maintenance bridge. Without a construction project, there would not be any heavy equipment use resulting in releasing emissions; therefore, the no action would have no impacts to air quality. However, if resiliency is provided to the drinking water function, then it

is likely backups to include the use of generators would need to be utilized resulting in the release of emissions.

Proposed Action

Under the Proposed Action, construction activities would require construction work to establish both the water supply intake structure and the maintenance bridge. Impacts on air quality due to the temporary use of construction equipment during the entire project's construction would result in a temporary increase of exhaust emissions and short-term fugitive dust emissions. Likewise, the removal of vegetation on the city side to establish the staging and laydown areas would result in a loss of a very small carbon sink.

Pollutants that would be emitted from the internal combustion engine exhausts of construction equipment include certain criteria pollutants, volatile organic compounds (VOCs), and certain greenhouse gases (GHGs). Annual construction and demolition emissions are expected to be less than the federal de minimis thresholds for criteria pollutants and VOCs (40 CFR 93 § 153). Fugitive dust would be generated by construction operations and wind action on unpaved surfaces and stockpiled materials. Generated fugitive dust would consist primarily of nontoxic particulate matter and would be controlled at the sites using best management practices (BMPs) such as watering of exposed surfaces and enclosing or covering stockpiled materials. Based on the analysis conducted and the county and the region being in an attainment area, the Proposed Action would have minor impacts on air quality.

5.1.3 CLIMATE CHANGE

Climate change refers to changes in the Earth's climate (not weather) caused by a general warming of the atmosphere and an increase in sea surface temperature as a result of GHGs emitted by both natural processes and human activities, and their accumulation in the atmosphere regulates temperature. GHGs include water vapor, carbon dioxide, methane, nitrous oxides, and other compounds. Climate change is capable of influencing species distribution, temperature fluctuations, sea level dynamics, and regional weather patterns. There are no established thresholds or standards for GHGs. However, according to current guidance from the CEQ, a quantitative analysis and disclosure of GHG emissions is not warranted unless the proposed action's direct annual emissions would be greater than 25,000 metrics tons of carbon dioxide equivalent (Goldfuss, 2016). Further and recent guidance from the CEQ was provided in the Federal Register, (Volume 86, Number 32, February 19, 2021) stating that CEQ would address in a separate notice its review of and any appropriate revisions and updates to the current guidance previously referenced.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure and maintenance bridge; therefore, no GHGs would be emitted. However, the project would continue to be affected by more frequent flooding which may be associated with climate change. The No Action would result in the drinking water capabilities to be significantly impacted by climate change due to lack of resilient measures implemented to the current infrastructure at the Canal. Although the City has seen a relatively stable change in total population, the City has seen an increase in employment, entertainment, and cultural opportunities bringing in more visitors and straining the City's infrastructure including electric power (Columbia, 2020). Without a resilient water supply, the City would be forced to look for alternatives or utilize GHG producing bypass generators during emergencies to provide drinking water to the community. Additionally, the Canal would be out of compliance with FERC's safety standards and would not be able to generate hydroelectric power, a renewable energy resource. Based on this analysis, the No Action would have a major impact to the variables influencing climate change and a major impact from the effects of climate change.

Proposed Action

Under the Proposed Action, construction activities would require construction work to establish both the water supply intake structure and the maintenance bridge. Construction and demolition are estimated to generate below 25,000 metric tons of carbon dioxide equivalent, the suggested reference point per current CEQ guidance for quantitative analysis and disclosure of GHG emissions. The impacts from emissions would be reduced through best management practices for the use of heavy equipment such as reduced idling time and the use of bio-diesel fuel. Once the construction work is completed and the resilient water supply capabilities are initiated, the Canal would then be able to have a reduced FERC hazard rating allowing the hydroelectric plant to produce electric power in lieu of having to possibly rely on less green, renewable energy such as coal or natural gas producing electric plants. Based on the analysis, the Proposed Action would have a negligible impact towards significantly influencing climate change. Hydroelectric power generation is regarded as a renewable energy resource and not a contributor of GHG emissions as it avoids the burning of fossil fuels found at electric generation plants involving coal burning.

5.2 WATER RESOURCES

5.2.1 CLEAN WATER ACT (CWA) AND SURFACE WATER

Under the shared responsibility of the EPA and USACE, the Clean Water Act (CWA) of 1977, 33 U.S.C. § 1251 et seq., establishes the basic structure for regulating discharges of pollutants into the waters of the United States (WOTUS) and regulating quality standards for surface waters (<https://www.epa.gov/laws-regulations/summary-clean-water-act>). Section 404 of the CWA

establishes the USACE permit requirement for the discharge of dredged or fill material into WOTUS, including wetlands. Activities in WOTUS regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into WOTUS, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities). USACE regulation of activities within navigable waters is also authorized under the Rivers and Harbors Act of 1899.

Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES), the EPA regulates both point and non-point pollutant sources, including stormwater and stormwater runoff. Section 401 of the CWA requires that, for any federally licensed or permitted project that may result in a discharge into WOTUS, a water quality certification be issued to ensure that the discharge complies with applicable water quality requirements. SCDHEC's Bureau of Water is responsible for the permitting, compliance, monitoring, and enforcement activities of the NPDES Permit program and administers the Section 401 Water Quality Certification program in South Carolina. A major impact to WOTUS would be a violation of state water quality criteria, a violation of federal or state discharge permits, or an unpermitted dredge or fill within the boundary of a jurisdictional waterbody or wetland.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure with water intake screens and pulling of water from the Congaree River; therefore, no direct impacts to WOTUS would occur.

Proposed Action

Under the Proposed Action, construction activities would require construction work to establish both the water supply intake structure and the maintenance bridge. The impacts to WOTUS would include the construction of and temporary dewatering within a cofferdam, permanent fill associated with the intake structure's footing, riprap along the bank to protect the intake and Canal embankment, and permeant fill with piping required to access the laydown area. The project would result in 0.01-acre of wetland impacts, which is below the 0.10-acre threshold for required compensatory wetland mitigation. The project would require USACE Section 404 Permit, SCDHEC 401 Water Quality Certification, a SCDHEC NPDES Permit, a SCDHEC State Navigable Waters Permit, and a SCDHEC Surface Water Withdrawal Permit. Additionally, a SCDHEC construction permit to modify the existing public water system is required. All permitting requirements would include the use of BMPs and other regional and national conditions to be adhered to, thereby reducing direct impacts to WOTUS during construction activities. Based

on the analysis, the proposed action would have minor impacts to WOTUS. See **Appendix F** for any permitting and authorization documents available prior to drafting of this EA.

5.2.2 FLOODPLAIN MANAGEMENT (EO 11988)

Executive Order (EO) 11988 Floodplain Management, as implemented in 44 CFR Part 9, requires federal agencies “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Each federal agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities.” FEMA uses the 8-Step decision-making process to evaluate potential impacts on and mitigate effects to floodplains in compliance with EO 11988 and 44 CFR Part 9. The South Carolina Department of Natural Resources (SCDNR), Flood Mitigation Program administers and regulates the National Flood Insurance Program in South Carolina.

The Columbia Canal is located within the Special Flood Hazard Area per FEMA Flood Insurance Rate Map within Richland County, dated December 21, 2017, and with panel number 45079C0243L (**Appendix G**). The Columbia Canal is within a designated regulatory floodway Zone AE meaning that portion of the floodplain is effective in carrying flow and the carrying capacity must be preserved. This is expected at the Columbia Canal due to the dependency of utilizing controlled water flow as a way of performing the intended critical functions such as providing the community with hydroelectric power and drinking water. A major impact on floodplains would be an excessive loss of floodplain area and values with an associated increase in floodplain potential creating a dangerous situation to life and property.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no direct impacts to floodplains would occur. Although, the lack of a more resilient water supply to the community would likely leave the local businesses and residents including critical services at risk of losing drinking and clean water during a future flood event. Due to this risk and Canal’s functional occupancy of a floodplain, taking no action would potentially be adversely affected by the floodplain with major impacts to life and safety.

Proposed Action

Under the Proposed Action, construction activities to establish both the water supply intake structure and the maintenance bridge would temporarily occur within the floodplain. Temporary use cofferdams and heavy equipment would result in negligible, direct impacts to floodplain

values. Once the construction phase of the project is complete, the water intake structure with pilings and screens including the riprap armoring would be permanently occupying the floodplain. The trade-off is that the Canal would be better positioned to continue performing functionally dependent critical actions during and after future flooding events preventing drinking water disruptions to the Columbia area. The Proposed Action would have a negligible impact to the floodplain values of the Canal and surrounding properties. The intake structure and the bridge crossing would result in approximately 0.1-foot of rise in the base flood elevation with a temporary rise of 0.7-foot rise just upstream during construction due to the cofferdam. The City would prepare a conditional letter of map revision, coordinate with the Richland County floodplain administrator, and ensure the project meets all state and federal requirements including any avoidance and minimization measures and best management practices. An 8-step checklist, as required by 44 CFR Part 9 (**Appendix H**), has been completed.

5.2.3 PROTECTION OF WETLANDS (EO 11990)

EO 11990, Protection of Wetlands, requires federal agencies “to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.” Information about the wetlands potentially affected by the proposed action was gathered from USFWS NWI Web Map Services (USFWS, 2020). The project area is within and near a designated riverine and freshwater, forested or shrub wetlands (**Appendix G**). There is no South Carolina state specific program for regulating wetlands, and regulation is dependent on adherence to the Clean Water Act (SCDNR, 2020). FEMA uses the 8-step decision-making process to evaluate potential impacts on, and mitigate effects to, wetlands in compliance with EO 11988 and 44 CFR Part 9. Activities that disturb jurisdictional wetlands require a permit from USACE under Section 404 of the CWA. A major impact to wetlands would be a violation of unpermitted dredge or fill within a wetland.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts to designated wetlands would occur.

Proposed Action

Under the Proposed Action, construction activities would require construction work to establish both the water supply intake structure and the canal bridge. Construction including the cofferdam and dewatering would temporarily occur within or near designated wetlands. The permanent impacts within the Congaree River would be from the riprap armoring and the water intake structure’s footer. In comparison to the full width and length of the Congaree River, the riprap and footer footprint and impacts would be minor. As a condition of the grant, construction activities

would be required to adhere to all permitting requirements including best construction practices to minimize impacts to downstream and adjacent designated wetlands. An 8-step checklist (**Appendix H**), as required by 44 CFR Part 9, has been completed.

5.3 BIOLOGICAL RESOURCES

5.3.1 FISH AND WILDLIFE

Wildlife in the area ranges from interior forest species, riparian and aquatic species to species adapted to living alongside humans in developed areas. The mesic mixed hardwood forested areas found intermittently along the west dikes may serve as foraging and refuge habitats for numerous species such as a variety of migratory birds and small mammals. Within the nearby riverine habitats, common freshwater varieties of fish can be found that include bass, carp, shiners, and darters. Anadromous fish species may also be found that include blueback herring (*Alosa aestivalis*) and federally listed shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). A large variety of mussels, some clams and snails, the spotted turtle (*Clemmys guttata*) and the Chamberlain's dwarf salamander (*Eurycea chamberlaini*) may also be found in the nearby riverine habitat. Although one may see the bald eagle (*Haliaeetus leucocephalus*) in the sky, no nests have been observed at the project area and the known bald eagle nest is approximately 1,100 feet away from any proposed construction activities. This is well beyond the 660-foot management zone (Caldwell, 2017). A major impact to fish and wildlife is designated by a loss of individuals which negatively affects the regional population of a species.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts to wildlife and fish populations would occur. Additionally, there would not be any long-term impacts such as routine water intake operations both near and in the Congaree River.

Proposed Action

Under the Proposed Action, construction activities would require construction work to establish both the water supply intake structure and the canal bridge. Construction including the cofferdam and dewatering would temporarily occur within the Congaree River. Some fish and fish habitat may be displaced due to the cofferdam but would be temporary in nature and impacts would be minimal given the small footprint of the intake structure relative to the width of the Congaree River at this location. The intake structure would consist of screens to prevent fish passage into the intake (further discussed in section 5.3.3 below). Some vegetation clearing activities would occur for the proposed laydown and staging area near the WTP reservoir affecting wildlife such as mice and squirrels. It is anticipated that any species of concern or vulnerable won't be moderately impacted

as they have mobility means to navigate between both terrestrial and aquatic habitats such as turtles and salamanders. Fish and avian species would be expected to behaviorally adapt to the construction disturbances through avoidance and alternate site selection. As requested by SCDNR during the USACE permitting process, a mussel survey report (**Appendix I**) was completed on January 18, 2023, and prepared by Three Oaks Engineering. The City will perform the initial mussel relocation effort via consultants in 2023 and coordination with SCDNR when construction is closer to getting started. The mussel relocation plan will become part of the construction contract requirements for additional sweeps or scans for mussels to be performed by the contractor within a set number of days prior to starting the cofferdam construction. See section 5.3.3. and section 5.3.4. below for details and impacts considered for federally listed sturgeon and migratory birds, respectively. In consideration of the direct (temporary construction, vegetation removal) and indirect (water intake operations) impacts and given the quantity and quality of suitable forested and riverine habitat surrounding the proposed action area it is expected the overall impacts to regional fish and wildlife populations would be negligible.

5.3.2 VEGETATION

The mesic mixed hardwood forested habitat found at the project area is typical of the Piedmont region. A variety of flowering plants and vines, ferns, and herbs can be observed adjacent to maintenance access roads, paved roads, and the Three Rivers Trail. Undisturbed habitats consist primarily of evergreen trees such as the pyramid magnolia (*Magnolia pyramidata*) and tend to be wrapped with weedy, fernlike plants such the whiskfern (*Psilotum nudum*). A unique feature of the Canal is the ability to witness the rocky shoals spider lilies (*Hymenocallis coronaria*) that bloom in May of each year in the Broad and Congaree rivers. This spider lily is known to be a hardy plant though they can be adversely impacted by high water levels whether through controlled flow or flood events. A major impact to vegetation is defined by (1) excessive loss or impairment of unique or sensitive vegetative communities, or (2) introduction or spread of exotic plant species.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts to vegetation would occur.

Proposed Action

Under the Proposed Action, construction activities would require removal of vegetation to establish the laydown and staging area on the eastern side of the proposed action area and construct the water intake structure on the western side. Tree clearing activities occurring on the riverside embankment where the intake structure would be constructed consist of 10,150.64 square feet. On the cityside of the Canal, tree clearing activities consist of 38,262.12 square feet. The total area of tree clearing activities for the proposed action is 48,412.76 square feet or approximately 1.1 acres

(**Appendix J**). Due to the need to remove vegetation for both the water intake structure, cityside canal bridge abutment, and the laydown area, moderate impacts are expected to this resource.

5.3.3 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing ESA are the USFWS and the U.S. National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). As relevant to the proposed action, the USFWS has regulatory authority for species occurring on land and in freshwater within the project area and NMFS has regulatory authority for species occurring or deriving from marine habitats including anadromous species such as sturgeon and salmon. The law requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a “take” of any listed species of endangered fish or wildlife. A “take” includes the following actions: “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.”

In accordance with Section 7 of the ESA, the project was evaluated for the potential occurrences and impacts to federally listed threatened and endangered species that may be present in the project area. Federally listed species were identified by accessing the USFWS’s Information for Planning and Consultation (IPaC) database on June 7, 2022, and the South Carolina Natural Heritage Program (SCNHP) database on June 7, 2022. The federally protected species from the IPaC database is the threatened wood stork (*Mycteria americana*) and the endangered red-cockaded woodpecker (*Picoides borealis*), Canby’s dropwort (*Oxypolis canbyi*), rough-leaved loosestrife (*Lysimachia asperulaefolia*), and smooth coneflower (*Echinacea laevigata*). The IPaC listing provided a county overview of the potential species in the area. For higher data resolution based on occurrences, the SCNHP database was utilized. Maintained by SCDNR and in collaboration with NatureServe, other state natural heritage programs, and federal partners the SCNHP provides best available data from information gathered by researchers, biologists, and citizen scientists. The federally endangered shortnose sturgeon was included in the list. None of the plants and the red-cockaded woodpecker from the IPaC Richland County listing were in the SCNHP database as being observed in the proposed action area. There are no designated critical habitats in or near the proposed action areas nor would any designated critical habitats be indirectly impacted by the work. A species check for any newly listed species was completed on October 3, 2023, and the species list remains the same.

Species eliminated from ESA consultation due to a determination that the work would not have any effect on them were the wood stork, Canby’s dropwort, rough-leaved loosestrife, and the smooth coneflower as the proposed action area does not provide suitable habitat. Wood stork and

Canby's dropwort are typically found within or near lentic wetlands and associated with acidic soils typical of bogs, swamps, and cypress ponds. Rough-leaved loosestrife was recorded 200 years ago residing within Fort Jackson but has since not been observed. Smooth coneflower is typically found in open woody areas with little shrubbery and tree overgrowth. Additionally, the red-cockaded woodpecker was determined to not be affected as there is no large tracks of open mature pine that would be suitable for nesting. Most of the canopy cover are hardwoods with some pine-slash mixed in. In addition, the understory in areas of mature hardwoods is dense with shrubs, herbs, and hardwood saplings and these do not provide suitable foraging habitat. The bald eagle while not protected under the Endangered Species Act, they are protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act (see Section 5.3.4. below for details), and the Lacey Act. Section 7 consultation wasn't initiated with the USFWS as based on the above information, the species under their jurisdiction would not be affected by the direct and indirect actions of the proposed action. Although, Section 7 consultation was initiated by FEMA with NMFS for the potential effects to sturgeon.

The SCNHP indicated that shortnose sturgeon have been observed and the Congaree River exhibits all the physical characteristics for sturgeon spawning habitat. The river's rocky shoals and the shallow rock or gravel substrates are suitable for sturgeon eggs to adhere making this section of the Congaree River an ideal spawning ground. Due to the similar life history to shortnose sturgeon, Atlantic sturgeon may also utilize this suitable spawning habitat. Both sturgeon species are anadromous and are under the jurisdiction of NMFS.

Jeopardization of the continued existence of any listed species or adversely modifying designated critical habitats would be considered a major impact to threatened and endangered species under the Endangered Species Act.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts to threatened or endangered species would occur. There would be no temporary and permanent river encroachment if the water intake structure is not to be constructed. Additionally, there would not be any intake velocities occurring in the water.

Proposed Action

Under the Proposed Action, construction activities would require the construction of a temporary cofferdam within the Congaree River. There is the possibility of physically striking listed sturgeon if work is occurring during spawning migration season (February 1 to April 30). It has been agreed upon that by limiting in-water construction work outside the sturgeon spawning migration season, there be no direct impacts to protected sturgeon. Additionally, any work conducted within the

sturgeon spawning migration season would be within a dewatered environment, away from the river and geared towards the Canal channel or on the cityside near the WTP.

Foreseeable and indirect effects to sturgeon would involve the daily water intake operations of drawing water from the Congaree River that may entrain or impinge sturgeon, specifically fry and juveniles. Entrainment is the voluntary or involuntary movement of aquatic organisms from a water body into a surface diversion or through, under, or around screens and results in the loss of the organisms from the population. Impingement is the involuntary contact and entrapment of aquatic organisms on the surface of intake screens caused when the approach velocity exceeds the swimming capability of the organism. The water intake structure is designed for as small as a footprint in the Congaree River as possible and still provide the adequate water supply to the community. The intake structure would house 8 intake screens with a mesh surface and openings no greater than 1.0 millimeter and an intake velocity of 0.5 ft/s. During a hydraulic analysis, it was determined that cross velocities native to the Congaree River in the project location exceed 0.5 ft/s under normal river flow conditions with an average of 0.7 ft/s. FEMA believes that sturgeon fry and juvenile would not be present in the project area due to the high native velocity and the 0.5 ft/s intake velocity is extremely unlikely to entrain or impinge sturgeon.

On May 12, 2022, FEMA initiated informal consultation with NMFS and received concurrence on August 15, 2022, with FEMA's determination that the proposed action may affect sturgeon species, but with the conservation measures to be followed for work in or near the riverine habitats; work is "not likely to adversely affect the sturgeon." See **Appendix K** for informal consultation letters. The conditions to be followed resulting from this informal Section 7 consultation between FEMA and NMFS are listed in Section 7.0. Based on the analysis and consultation conducted, this alternative would have an insignificant, minor impact on threatened and endangered species.

5.3.4 MIGRATORY BIRD TREATY ACT (MBTA)

The Migratory Bird Treaty Act (MBTA) provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency for implementing the MBTA is the USFWS. This law was enacted in 1918 to fulfill the United States' requirement in the 1916 "Convention between the United States and Great Britain for the protection of Migratory Birds" in the hopes of stopping the "take" of migratory birds. The MBTA defines "Take is defined in the Service's general wildlife regulations as "to pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). Additionally, it is "unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell..." (16 U.S.C. § 703). Therefore, incidental, or unintentional take shall be considered with the potential impacts to migratory birds.

The entire state of South Carolina is considered a flyway zone for migratory birds. According to USFWS IPaC, 15 migratory bird species were identified on October 3, 2023, as being potentially present within the project area and have a designated breeding season for each of the listed birds which could occur within the project area. See **Appendix L** for IPaC chart of listed birds. Apart from bald eagles, the IPaC probability chart identifies peak breeding season occurring from April to August. The earliest breeding season for any given year is the second week of March for the swallow-tailed kite and the chimney swift. Red-headed woodpeckers' breeding season is the last to end for any given year during the second week of September. Internal communications with USFWS confirmed the only known bald eagle nest is approximately 1,100 feet from any construction activities and is well beyond the 660-foot management zone.

No Action

Under No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no potential to take migratory birds would exist..

Proposed Action

Under the Proposed Action, construction activities would occur and require the removal of trees, shrubs, and other vegetation to facilitate the construction of the water intake structure. See Section 5.3.2. above for details regarding impacts vegetation.

Construction work near wetlands and the Congaree River will cause a noise disturbance to any breeding populations of migratory birds. To avoid, minimize, and reduce the production of impacts to migratory birds and their nests from both noise and vegetation removal activities, applicable nationwide conservation measures would be conditioned and require contractors to adhere to at the extent practicable. The City has agreed to implement these conservation measures into the construction contracts. Most notable of these conservation measures is to schedule all vegetation removal outside of peak breeding season. This conservation measure would substantially decrease the anticipated minor impacts to migratory birds and nests. If incidental take were to occur, USFWS is to be contacted to assist in rectifying the take. The conservation measures to be followed to the practicable extent are listed in Section 7.0.

5.4 CULTURAL RESOURCES

As a federal agency, FEMA must consider the potential effects of its actions upon cultural resources prior to engaging in any project. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. There are several laws a federal agency must consider when working with and identifying cultural resources. For the Columbia Canal Resilient Water Supply Project,

FEMA will meet this obligation through its Section 106 of the National Historic Preservation Act of 1966 (NHPA) consultation. Section 106 of the NHPA, as amended and implemented by 36 CFR Part 800, outlines the required process for federal agencies to consider a project's effects to historic properties. The NHPA defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register." Eligibility criteria for listing a property on the National Register of Historic Places (NRHP) are found at 36 C.F.R. Part 60. While the definition of a cultural resource under NEPA can be broader, FEMA regularly uses Section 106 to meet its obligations to consider effects to cultural resources. For this project, FEMA determined that it was appropriate to use its NHPA review to fulfill its NEPA obligations.

Cultural resources determined to be potentially significant under the NHPA are subject to a higher level of review and federal agencies must consider the potential effects of their projects on those resources and consider steps to avoid, minimize, or mitigate those effects. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the NRHP. The term "eligible for inclusion in the NRHP" includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Properties and sites that have not been evaluated at the time of the undertaking may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties. The South Carolina Institute of Archaeology and Anthropology (SCIAA) and the South Carolina Department of Archives and History (SCDAH), which is the State Historic Preservation Officer (SHPO), maintains a database of South Carolina's historic properties, the South Carolina ArchSite online Geographic Information System (GIS). FEMA uses this database, along with the NRHP National Resources Information Service (NRIS), as part of its efforts to identify significant cultural resources that may be impacted by a project.

Pursuant to 36 CFR Part 800.16(d), the Area of Potential Effect (APE), "is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist." Within the APE, impacts to cultural resources are evaluated prior to the undertaking for both Standing Structures (above ground resources) and Archaeology (below ground resources). The APE for this undertaking consists of the footprint of ground disturbance for the installation of the new water intake facility which will be anchored on bedrock located within the Congaree River, immediately adjacent to the confluence of the Saluda and Broad rivers, forming the Congaree River. A pipeline transmission and access bridge will be placed across the Canal berm and canal bed to transport water supplies to the east side or cityside of the Canal where the water reservoir and Columbia Water Treatment Facility are located. Ground disturbance within this area will be limited to the placement of one (1) abutment on the canal berm, two (2) bents, consisting of three (3) pilings each, within the canal bed and one (1) abutment on the cityside canal bank. A permanent access road and staging area will be established on the city

side between the canal and water treatment facility. Visual impacts for the intake structure are anticipated to be minor as the proposed design of the water intake structure reflects the 19th and early-20th century industrial history of the canal. The visual impacts of the pipeline transmission and access bridge across the canal are anticipated to have a visual adverse effect to the Columbia Canal Historic District.

In order to fulfill its Section 106 responsibilities, FEMA has initiated consultation on this project in accordance with the South Carolina Statewide Historic Preservation Programmatic Agreement (2014 Statewide Agreement) executed on October 16, 2014, and subsequently amended, among the South Carolina State Historic Preservation Officer (SHPO); SCEMD; and participating tribes. In addition to identifying historic properties that may exist in the proposed project's APE, federal agencies must also determine, in consultation with the appropriate State Historic Preservation Officer (SHPO) and interested Tribal Historic Preservation Officers (THPO), what effect, if any, the action will have on historic properties.

5.4.1 HISTORIC AND ARCHEOLOGICAL RESOURCES

FEMA evaluated potential resources in the Area of Potential Effects (APE) utilizing the National Park Service (NPS) National Register of Historic Places (NRHP) GIS resource, the South Carolina ArchSite (GIS) online resource, and previous cultural resource investigations. The project area is located on the east bank of the Broad River and Congaree River within the city of Columbia, South Carolina. The APE crosses the Columbia Canal, a National Register listed canal and historic district that was originally constructed in 1824 to provide a way to circumnavigate shoals in the river and was expanded in 1891 as a power source. The canal was listed as a historic district in the NRHP in 1979 (NRHP #79002392) and it includes related buildings, structures, and sites such as the 1824 Diversion Dam, the 1820s Bull Sluice, 1891 features including the Waste Weir, Canal Bulkhead, Canal Entry Lock, and Diversion Dam. The district also includes the 1892/1893 Columbia Electric Street Railway, the Light and Power Company Powerhouse Ruins, the 1894 Columbia Mills Powerhouse Ruins, the 1895 Old Water Works Complex, and the 1896 Columbia Hydro Plant. The district is eligible for the information the artifacts and structures can contribute to engineering, transportation/commerce, industry, and invention. The portion of the historic district situated within the APE contains 490 feet of the canal and the embankment that separates it from the Congaree River.

The review identified multiple archaeological sites within close proximity to the APE, as well as the Columbia Canal Historic District. As part of FEMA's consultation process, a Phase I archaeological survey of the APE was conducted in July of 2022. This survey identified one ineligible archaeological site within the APE. Archaeological site 38RD1517 is a Precontact and historic period archaeological site identified during the archaeological survey conducted by Michael Baker International, Inc. (Cultural Resources Survey for the Columbia Resilient Water

Supply Intake Project). The Precontact component of the site consists of quartz lithics. The historic component of the site dates from the early to mid-nineteenth century to the early twentieth century and is made up of architectural debris such as nails, brick, and windowpane glass as well as domestic ceramics. A single piece of iron grape shot may be related to the Civil War era. All artifacts were recovered in a disturbed plow zone with no intact features. Based on the results of the archaeological survey, FEMA recommends that site 38RD1517 is ineligible for NRHP listing.

No Action

If no action is taken, there would be no ground disturbance or new construction resulting in viewshed impacts. Therefore, under the no-action alternative there would be no impact to cultural resources.

Proposed Action

Under the proposed action, there would be a visual adverse effect to the NRHP Listed Columbia Canal Historic District resulting from the construction of a pipeline and access bridge over the canal as part of this project. In accordance with Section 106 of the NHPA, and the implementing regulations, 36 CFR Part 800, on September 15, 2022 FEMA consulted with the South Carolina Department of Archives and History (SHPO) and federally recognized Tribes with an ancestral interest in the project area: the Catawba Indian Nation, the Cherokee Nation, the Eastern Band of Cherokee Indians, the Eastern Shawnee Tribe of Oklahoma, the Muscogee (Creek) Nation, the Seminole Nation of Oklahoma, the Seminole Tribe of Florida, the Shawnee Tribe, the Thlopthlocco Tribal Town, the Tuscarora Nation, and the United Keetoowah Band of Cherokee Indians in Oklahoma with a finding of an Adverse Effect to Historic Properties for this undertaking in accordance with 36 CFR 800.4(d)(1). In addition, FEMA notified the River Alliance, Historic Columbia, the South Carolina State Museum and the South Carolina Institute for Anthropology and Archaeology, identified as interested parties. Responses were received from the Catawba Indian Nation on October 14, 2022, the Eastern Shawnee Tribe of Oklahoma on October 26, 2022, the Eastern Band of Cherokee Indians on October 26, 2022 and the South Carolina SHPO on October 4th, 2022. All consulting parties concurred with FEMA's determination of Adverse Effect to Historic Properties. The SHPO requested that proposed measures to mitigate the Adverse Effect be incorporated in a Memorandum of Agreement (MOA) between FEMA, the City of Columbia, and the SHPO. The Advisory Council on Historic Preservation (ACHP) was notified of this determination of Adverse Effect to Historic Properties on April 12, 2023 and responded on April 28, 2023, declining to participate in the MOA. The MOA executed on October 10, 2023, project conditions and mitigation measures to resolve adverse effects including a Conditions Assessment and Treatment Plan (CATP) that will assess and repair buildings and features within the Columbia Canal Historic District. A context study of the existing water works plant will also be carried out and will inform historic signs along the Three Rivers Greenway. This MOA also specifies procedures to be followed in the event of unexpected archaeological discoveries or unexpected

discovery of burial context. (Please see Appendix M for copies of consultation sent to SC SHPO and a copy of the MOA).

5.5 SOCIOECONOMIC RESOURCES

5.5.1 VISUAL QUALITY AND AESTHETICS

The Columbia Canal has both a high level of historic and natural aesthetics from multiple perspectives. Kayakers or rafters would pass functioning historic structures as they navigate rock outcroppings and riffles as pedestrians walk, run, and play along the Three Rivers Trail. This is just one typical scene at the Canal facility and this backdrop provides the quality and aesthetics expected by renters, homeowners, businesses, and visitors. After the 2015 flood, the damages sustained has limited this quality and impacted the viewshed. Based on 30% designs of the proposed repairs and restoration project for the Canal, the visual quality is to be restored along much of the Canal embankment and especially the lower Canal section near the hydroelectric power plant with slight upgrades to meet current codes and standards. For the analysis of the resilient water intake supply project, the area of the water resilient project is on a smaller scale in size compared to the proposed Canal restoration project. Nonetheless, the project area is within an area of scenic value. Additionally, the Cultural Resources Section above covers the impacts on the historic landscape and feeling that lends to the scenic values. A major impact on visual quality and aesthetics is qualitatively analyzed below that considers the visual context of the project area, potential for changes in character and contrast, assessment of whether the project areas include any places or features designated for protection, the number of people who can view the site and their activities, and the extent to which those activities are related to the aesthetic qualities of the area.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts to the scenic value or visual quality would occur.

Proposed Action

Under the Proposed Action, construction activities would require construction work to establish both the water supply intake structure and the maintenance bridge. During construction work there would be temporary minor impacts due to the construction of a cofferdam and heavy equipment. The water intake structure and bridge with pipes would permanently reside at the Canal introducing a new visual element to the scene. Both the intake structure and bridge would be designed with a blue roof and brick façade to mimic the nearby WTP buildings around the reservoir to instill a feeling of old (brick) and resilient water (blue roof) achieving negligible impacts regarding structures. Additionally, the intake structure would have a pedestrian overlook

enhancing the scenic values with views of the Saluda, Broad, and Congaree rivers. With considerations and conditions to be adhered to from the Section 106 National Historic Preservation Review to retain the historic feeling and landscape and impacts discussed, the Proposed Action would have negligible impacts to visual quality and aesthetics.

5.5.2 NOISE

The Noise Control Act of 1972 establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The Act also serves to one (1) establish a means for effective coordination of Federal research and activities in noise control; two (2) authorize the establishment of Federal noise emission standards for products distributed in commerce; and three (3) provide information to the public respecting the noise emission and noise reduction characteristics of such products. Sound levels are measured in decibels. A-weighted sound measures emphasize the frequency range of human hearing and are expressed in terms of A-weighted decibels (dBA). A major impact is defined as a permanent increase in noise or prolonged periods of nighttime noise in noise-sensitive areas.

No Action

Under the No Action, no construction activity would commence; therefore, no impacts on noise levels in the area would occur. Additionally, there would be no funding for a permeant water intake structure and associated generator producing noise during operations.

Proposed Action

Under the Proposed Action, construction activities would result in temporary increases in noise levels due to heavy equipment use in and around the Canal and the temporary increase of vehicular traffic along routes to and from the construction site. No work is anticipated to occur during nighttime hours and would follow local noise control ordinances.

The closest residential property is an apartment/condo complex located approximately 3,200 feet southeast of the construction site. Once 2015 flood repairs are complete, it is likely the Canal would see an uptick in visitors and locals utilizing parks, greenways, and public parking areas which would cause an increase in the frequency of noise but should not be higher than the ambient noise levels. Once construction is complete the water intake structure would generate an estimated sound level of 60 dBA and the associated generator (northwest corner of the reservoir) would generate an estimated sound level of 78 dBA.

Based on the data presented in the EPA publication, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* the main phases of outdoor construction typically generate noise levels that range from 78 dBA to 89 dBA, approximately 50 feet from the construction site (EPA, 1971). Noise levels are estimated to decrease by approximately 6 dBA

with every doubling of distance from a noise source. Therefore, construction noise from the Canal is expected to be less than the 78 dBA to 89 dBA noise level range for the closest residential property (approximately 70 feet). See **Appendix N** for a sound approximations map.

The Occupational Safety and Health Administration (OSHA) compares 60 dBA to the sound levels of a normal conversation (at 3 feet away), 70 dBA to be that of classroom chatter, 80 dBA compares to a freight train at 100 feet away, and 90 dBA is comparable to a boiler room. OSHA regulations allow up to eight hours of exposure to 90 dBA for workers. The National Institute for Occupational Safety and Health recommends that all worker noise exposure should be controlled below 85 dBA for eight hours to minimize hearing loss.

Based on the expected noise levels, activities under this alternative would have minor noise impacts on residential communities, with the apartment/condo complex near the Klapman Bridge experiencing the greatest impact. Noise that is audible in the nearest residential communities would be intermittent, heard only during the daytime, and only over the duration of the project construction. Regarding the intake and generator sound levels, it is expected that the impacts would be very minor if not negligible.

5.5.3 TRANSPORTATION AND TRAFFIC

There are five (5) bridges crossing over the Canal facility connecting the City of Columbia in Richland County with the City of West Columbia in Lexington County. The Broad River Bridge on US 176 is located approximately a half mile to the south of the Canal headgates, the Highway 126 along with a CSX railway crossing is just northeast of the drinking water reservoir, the Jarvis Klapman Boulevard Bridge is located directly over the emergency closure, and the Gervais Street Bridge on US 1 is located directly south of the hydroelectric plant and over the tailrace. A major impact on transportation would be an elimination of a road without a suitable replacement, a permanent increase in traffic volume within a given area, or an increase in road hazards.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts on existing infrastructure or transportation would occur within the project area.

Proposed Action

Under the Proposed Action, there would be temporary construction activity and would involve the construction of new transportation features but only within the Canal facility. The construction equipment, materials, and mobile offices would utilize a new laydown area but be within the WTP facility. No public road closures are expected during construction that would impact the local community. It is likely that the Greenway would be closed throughout much of the Canal for safety

and liability reasons for the 2015 flood repairs and this would include the construction of the water intake structure and canal bridge. Therefore, anyone using the Greenway as a means of walking or biking transportation would be temporarily affected. Once construction work is completed, an increase in traffic is expected due to the restored and improved recreational benefits the Canal facility would offer to locals and visitors. Based on the analysis conducted, this alternative would have a negligible impact on transportation.

5.5.4 HAZARDOUS MATERIALS AND SOLID WASTES

Hazardous materials and solid wastes are regulated under a variety of federal and state laws, including 40 CFR Part 260, the Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. §§ 6901 et seq.), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. §§ 9601 et seq.), Solid Waste Act, the Toxic Substances Control Act (TSCA), and the Clean Air Act of 1970 (42 U.S.C. §§ 7401 et seq.). The OSHA standards seek to minimize adverse impacts on worker health and safety (29 CFR Part 1926). Evaluations of hazardous substances and wastes must consider whether any hazardous material would be generated by the proposed action activity and/or already exists at or in the general vicinity of the site (40 CFR Part 312.10). If hazardous materials are discovered, they must be handled by permitted entities per the South Carolina Hazardous Waste Management Act (SC Code of Laws Title 44 Chapter 56), the South Carolina Pollution Control Act (SC Code of Law Title 48 Chapter 1), State Regulation 61-79 Hazardous Waste Management Regulations, and State Regulation 61 – 104 Hazardous Waste Management Location Standards.

A 0.5 (half) mile radius search for the Canal from the northern headgates to the hydroelectric plant was completed using EPA’s NEPAassist tool (EPA, 2020). The search identified 4 facilities and sites regulated by RCRA within a half mile of the approximate center of the proposed canal bridge crossing. There are no brownfield or Superfund sites within half mile radius of the defined radial search. The closest Superfund site is across the Congaree River going southeast slightly over five (5) miles from the Canal facility. There are no TSCA regulated sites within the half mile radius. The closest TSCA site is two (2) miles south at Lindau Chemicals Inc on 750 Granby Lane, Columbia, SC 29201 directly south of the Columbia Quarry owned by Vulcan Materials Company. A major impact to hazardous materials and waste would include a release of hazardous materials or waste, or a violation of local, state, or federal regulations pertaining to hazardous materials or waste. Regarding CERCLA and RCRA, a major impact would be if unsafe exposure may occur, the release of hazardous substances, pollutants, or contaminants cannot be avoided, and/or if institutional and/or engineering controls may be breached.

The RCRA regulated sites are listed in Table 5 below.

Table 6: RCRA Regulated Sites Within a 0.5 mile of the Proposed Action Area

Site Name	Handler ID	Address	Waste Type	Distance to Canal
City of Columbia - Columbia Correctional Institution (CCI)	SCD980709612	1515 Gist St Columbia, SC 29221	Ignitable Waste and Corrosive Waste	1867 SC Penitentiary, Not Existing, Replaced with Residential and Commercial Units
Southern Table & Bedding Corp	SC0000110460	400 Calhoun St Columbia, SC 29201	Ignitable Waste and Spent Nonhalogenated Solvents	0.40 mile East of action area Northeast of Drinking Reservoir Over the Railroad Tracks
Bell South Telephone CLMASCCD 90987	SC0000328922	400 Laurel St Columbia, SC 29201	Ignitable Waste	0.25 mile East of action area Aflac and AT&T Complex
City of Columbia Water Plant	SCR000761239	300 Laurel St Columbia, SC 29201	Ignitable Waste and Corrosive Waste	Located adjacent and east of the Canal Connected to Canal's Function for Drinking Water

No Action

Under the No Action, there would not be any construction activities, resulting in no potential to disturb existing hazardous materials or create any potential new hazardous waste sites within the area would occur. Additionally, no impacts to human health or the surrounding environment from hazardous or solid waste would occur.

Proposed Action

Under the Proposed Action, there would be construction activities and an eventual water intake structure. The handling of hazardous materials and waste generated or inadvertently discovered during construction activities would be handled in accordance with applicable RCRA, TSCA, and State regulations for managing solid and hazardous waste materials. Potential for spills from construction equipment would be minimized and handled in accordance with applicable regulations and BMPs. There is no potential for any construction activities related to this project to impact waste sites designated under CERCLA as the nearest superfund site is over five (5) miles from the project location. Based on the analysis conducted, this alternative would have a negligible impact on hazardous materials and solid waste regulated under a variety of federal and state laws.

5.5.5 PUBLIC SERVICES AND UTILITIES

Numerous high-voltage transmission towers and poles are located on the Canal dike running along sections of the Greenway and a few on the eastern side or cityside of the Canal. Additionally, the WTP and associated features such as the reservoir are located on the eastern side of the Canal. Currently, the hydroelectric power generation have ceased in generating electricity while the Canal remains at a significant hazard rating. Permitting of the redevelopment of power generation cannot proceed till the Canal is able to reduce its water supply dependency from within the Canal channel. A major impact to utilities would be an exceedance or the elimination of the existing utility service capacity.

No Action

Under the No Action, FEMA would not provide funding to assist in the construction of a water resilient intake structure; therefore, no impacts to utilities by construction work. Although, the Canal would continue to not be able to provide electrical power and not run at full capacity for supplying drinking water to the community. The Canal would remain at a significant hazard rating hindering the ability to generate electrical power till an alternate water supply is constructed. Furthermore, the next similar flood event would potentially disable the drinking water production completely resulting in major impacts to the public services and electrical utilities.

Proposed Action

Under the Proposed Action, construction work of the water intake structure would not require relocating or decommissioning any functional transmission towers, poles, and other utility lines. One abandoned transmission tower located (34.005252, -81.056478) at the proposed laydown area would be removed. A Dominion Energy letter of approval is not required due to no impacts to functional electrical utilities. Additionally, no impacts to the current water services during construction is expected to occur. Once construction is complete and the water intake structure is operational, it is anticipated the water services would be more resilient to increasing flood events and better able to perform during and after disasters. Additionally, this includes during any seismic activity. With a more resilient water supply and using the Congaree River as the source, there is not a dependence on the Canal channel waters as the source. This would lower the hazard rating, allow relicensing to move forward, and result in electrical power generation to continue since the 2015 flood event. This would have major benefits to community and surrounding area in receiving a clean source of electric power and ensuring water supply to the most critical of services such as hospitals and nursing homes.

5.5.6 ENVIRONMENTAL JUSTICE, EQUITY, AND PROTECTION OF CHILDREN

On February 11, 1994, President Clinton signed EO 12898, entitled, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” The EO directs federal agencies, “to make achieving the environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.”

In January 2021, President Biden issued EO 13985, Executive Order on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce, and EO 14008, Tackling the Climate Crisis at Home and Abroad, to further address the need to achieve environmental justice and equity across the federal government. These new executive orders direct federal agencies to renew their energy, effort, resources, and attention to implement environmental justice and underscore the administration’s commitment to environmental justice.

Guidelines for the protection of children are specified in EO 13045, Protection of Children from Environmental Health Risks and Safety Risk (Federal Register, Volume, 62, Number 78, April 23, 1997). This EO requires that federal agencies make it a high priority to identify and assess policies, programs, and standards addressing disproportionate adverse risks to children resulting from environmental health or safety risks.

The U.S. Census Bureau (U.S. Census Bureau, 2022) estimated the population of Richland County to be 415,759 and 131,674 for the City of Columbia in 2019. Minority populations including African American, American Indian, Alaska Native, Asian, Native Hawaiian/Pacific Islanders, Hispanic or Latino or a mix of these races, account for approximately 51.1% of the population in Columbia, South Carolina. Persons identified within poverty level in the City account for 21.8% of the population. Persons within the City under the age of 5 and 18 is 5.1% and 16.2% of the total City population, respectively. The area of potential effect or buffer distance used is the City of Columbia limits and the analysis below is based on the three purposes and needs of the Canal facility: drinking water, electric utilities, and recreational opportunities.

A major impact to environmental justice is disproportionately high or adverse human health or environmental effects on minority or low-income populations. A significant impact on the protection of children is disproportionate environmental health or safety risks to children.

No Action

Under the No Action, there would not be any construction activities resulting in the continuation of limited production of drinking water and no electricity production from the hydroelectric plant due to sole dependency of using the Canal channel water. Furthermore, the next storm event could

potentially disable water supply capabilities causing a high burden and hazard to minority or low-income populations and families with children. The City may have to continue to rely on other sources for water and electricity that may result in higher utility bills. Additionally, families with children in the household may be indirectly impacted if parents or guardians must adjust a grocery budget or health insurance plans. Based on this analysis conducted, this alternative would have major impacts to minority and low-income populations including children.

Proposed Action

Under the Proposed Action, construction activities would result in an alternate water supply to protect the City's ability to provide clean water to minority or low-income populations including families with children during and after disasters. Additionally, with the means to lower the hazard rating, the City would be able to generate electricity and would not have to offset costs for alternate means to getting power and water leading to no direct increase to utility bills to the community. Utility bills would not be expected to increase with the Canal better protected from future flood events. Based on this analysis conducted, this alternative would have major benefits to all population members including minority and low-income populations.

6.0 CUMULATIVE IMPACTS

Per the CEQ regulations, cumulative impacts refer to the impact on the environment that "results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). In accordance with NEPA, this EA considered the combined effect of the proposed alternative and other actions occurring or proposed in the vicinity of the proposed action area.

Multiple projects are planned with the intent of upgrading infrastructure and improving flood resiliency within the Canal facility. These include: 1) the Rehabilitation of Columbia Canal Headgate Structure project and 2) the FEMA Public Assistance for the restoration of the various damage elements during the 2015 Flood that includes the reconstruction of the lower Canal dike. An environmental assessment will be drafted by FEMA for the Public Assistance proposed project.

Rehabilitation of Columbia Canal Headgate Structure – Work is to include the following various actions: replacement of the existing headgates and gate operators, replacement of the existing timber gate, installation of rock anchors, installation of trash racks, installation of a mechanical trash rake, and construction of a debris container. The existing gates are at the end of their service life and once the work to remove the temporary steel bulkheads and debris beneath the gates are complete, the gates will be replaced allowing the operators to monitor and react from a remote

location. The existing timber gate is deteriorated and will be replaced with a gate consisted of concrete with a timber facing to keep the timber appearance. The installation of the twelve (12) rock anchors will involve extending the anchors down from the stone masonry piers that separate the headgates, filling the holes with concrete, and made flush with the existing deck. Trash racks will be installed to catch debris and logs from getting stuck beneath the headgate and a 200 cubic yard debris container will be built to temporarily hold the caught debris and logs. The replacement of the headgates and improvements listed above is a necessary phase of the Columbia Canal's ability to respond more quickly to future flood events, prevent debris from getting stuck underneath the headgates, initiate the other phases of the Canal's restoration efforts, and assist in the effort to attain a low hazard potential classified by FERC. The headgate rehabilitation efforts are a historic feature of the Canal; therefore, the City and Kleinschmidt have engaged with the SC SHPO in Section 106 Consultation under the NHPA. The proposed gate lifting arrangement will have a historic appearance and proposed modifications will not change the dimensions or appearance of the existing stone masonry structure. Construction associated with these actions would have minor effects on wildlife and vegetation that would be limited to temporary avoidance of active construction areas. The new headgates will neither increase nor decrease the flow of water into the canal channel and therefore floodplain values are expected to remain the same. This project is to be funded through HUD's Community Development Block Grants Mitigation. The environmental and historic preservation review will be approved by HUD's designated staff. At the time of drafting this EA, the headgate project is undergoing FERC review of 100% design plans.

FEMA Public Assistance Grant Program funding for 2015 Flood Damages: – The proposed action would repair and restore the hydroelectric plant, spillway, and various sections along the dike and channel. Much of the impacts to the natural and cultural resources will be caused by the embankment rebuilding at the lower canal area which was heavily damaged during the 2015 catastrophic flood event. As of the drafting of this EA, the Public Assistance funding project is in the FEMA EHP review with an EA in the works and is undergoing continued consultations under the Section 106 of the NHPA for impacts to historic properties. Much like the process for this EA, the public will be notified of a drafted EA and given time to review and comment on.

Additional to infrastructure repairs and improvements to the Canal, there are plans to construct an earthwork amphitheater at the Riverfront Park located northwest of the pedestrian bridge and spillway or at the following coordinate: 34.003033, -81.055037. Prior to the 2015 flood event, this space was being utilized for public and recreational engagements with a bandstand. No significant impacts to natural and cultural resources are to be expected with this type of work. FERC approval has been granted and the City is currently soliciting bids for the construction work. South of the Canal facility, there is a project planned title Columbia Riverfront Gateway Project [Williams Street Extension]. The project proposes to improve existing roads and construct a new roadway between the perimeter of Wheat, Huger, and Senate streets. Landscaping and smart traffic lights are also proposed with this project. Currently, the City is pursuing federal funding opportunities

for this project to improve driver and pedestrian safety and to provide connectivity to the Riverfront Park and Canal. Additionally, this project is to alleviate traffic congestion and reduce travel times. The project is anticipated to include 5,800 feet of new roads, 1,500 feet of improved roads, 4,700 feet of new sidewalks, three electric car charging stations, two bike share stations, and five smart signals. The current level of design work completed for the project includes road alignment established, as well as rough grading limits. No additional studies aside have been completed and there have not been any special studies conducted within the project area (e.g. wetland surveys, biological, cultural surveys, Phase I hazmat, etc.). The City is currently soliciting responses from qualified consultants to assist with an EA that meets the requirements for NEPA.

7.0 PERMIT AND PROJECT CONDITIONS

The subrecipient (City of Columbia) is responsible for compliance with federal, state, and local laws and regulations including obtaining all required federal, state, and local approvals or permits prior to beginning constructions activities, and adhering to any conditions laid out in these approvals or permits. While a good faith effort was made to identify all necessary permits and approvals for this EA, the following list may not include all approvals or permit(s) required for this project. Before, and no later than, submission of a project closeout package, the subrecipient shall provide FEMA with a copy of the required permit(s) from all pertinent regulatory agencies.

1. USACE Section 404 Permit – *In Process*
2. SCDHEC 401 Water Quality Certification – *Approved on 1/10/2022*
3. NPDES Permit – *In Process*
4. SCDHEC Construction Permit to modify existing public water system – *In Process*
5. SCDHEC Surface Water Withdrawal Permit – *Approved on 3/4/2022 Permit No 40WS054*
6. Local Floodplain Administrator Letter of Approval or Permit – *In Process with CLOMR*
7. FEMA Conditional Letter of Map Revision (CLOMR) – *In Process with FEMA*
8. FERC Tree Management Plan – *Existing plan between City and FERC still applies*
9. FERC Drilling Program Plan (DPP) – *Completed as part of design (geotechnical investigation)*
10. FERC Part 12 Independent Safety Inspection – *Applies and will be completed after submittal of the DPP and a Potential Failure Modes Analysis*
11. City or County Tree Removal Letter Approval or Permit – *To be acquired*
12. Fill Source Location(s) to be Existing and Permitted Quarry or Quarries – *Will be included in construction contract.*
13. Mussel Relocation Plan – *No formal permit to be issued but plan to be submitted to SCDNR and will become part of the construction contract requirements.*

The subrecipient (City of Columbia) must adhere to the following conditions should the proposed action be implemented. Failure to comply with FEMA grant conditions may jeopardize federal funding. FEMA requires the following standard conditions for the proposed action:

General Project Conditions

1. The subrecipient is responsible for obtaining and complying with all required local, state, and federal permits and approvals.
2. If deviations from the proposed scope of work result in substantial design changes, the need for additional ground disturbance, additional removal of vegetation, or any other unanticipated changes to the physical environment, the subrecipient must contact FEMA so that the revised project scope can be evaluated for compliance with NEPA and other applicable environmental and historic preservation laws.

Physical Resources

3. Commit to the best available emissions control technologies for project equipment to meet the following standards:
 - a. On-highway vehicles should meet, or exceed, the EPA exhaust emissions standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, shuttle buses, etc.).
 - b. Non-road vehicles and equipment should meet, or exceed, the EPA Tier 4 exhaust emissions standards for heavy-duty, non-road compression-ignition engines (e.g., construction equipment, non-road trucks, etc.).
 - c. The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available.
4. To reduce the emissions of criteria pollutants, construction equipment engine idling will be minimized to the extent practicable, and engines will be kept properly maintained.
5. Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
6. When hauling material and operating non-earthmoving equipment near and within the construction work areas, prevent spillage and limit speeds of 15 miles per hour. Limit speed of earth-moving equipment to 10 miles per hour.

Water Resources

7. The subrecipient will obtain a permit for impacts on waters of the U.S. in accordance with Sections 401 and 404 of the Clean Water Act and adhere to all conditions as required in those permits.
8. The subrecipient will obtain and adhere to the NPDES Permit and SCDHEC Construction Permit including adhering to all conditions as required by the SCDHEC Surface Water Withdrawal Permit (No 40WS054).
9. The subrecipient must obtain written approval or floodplain permit from the local floodplain administrator before work begins and adhere to all conditions identified in the approval or permit.
10. Construction activities, equipment staging, and storage activities are not to be located within or adjacent to any nearby wetlands. All materials and equipment should be staged outside of the wetland on paved or previously disturbed areas.

Biological Resources

11. To minimize or avoid impacts to potential protected sturgeon species the following conditions are to be applied during in-water construction activities:
 - a. All construction workers to observe in-water activities for the presence of these species. If a sturgeon is seen within 100 yards of the project site or associated vessels, all appropriate precautions shall be implemented to ensure its protection. Operation of any mechanical construction equipment shall cease immediately if a sturgeon is seen within a 50-ft radius of the equipment. Activities will not resume until the protected species has departed the project area of its own volition.
 - b. All on-site project personnel are responsible for observing water-related activities for the presence of protected species. All personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing listed species and all marine mammals. To determine which protected species and critical habitat may be found in the transit area, please review the relevant marine mammal and ESA-listed species at Find A Species (<https://www.fisheries.noaa.gov/find-species>) and the consultation documents that have been completed for the project.
 - c. For construction work that is generally stationary (e.g., barge-mounted equipment dredging a berth or section of river, or shore-based equipment extending into the water):
 - i. Operations of moving equipment shall cease if a protected species is observed within 150 feet of operations.
 - ii. Activities shall not resume until the protected species has departed the project area of its own volition (e.g., species was observed departing or 20 minutes have passed since the animal was last seen in the area).

- d. Any interaction with a protected species shall be reported immediately to NOAA Fisheries SERO PRD and the local authorized stranding/rescue organization.
 - i. To report to NOAA Fisheries SERO PRD, send an email to takereport.nmfsser@noaa.gov. Please include the species involved, the circumstances of the interaction, the fate and disposition of the species involved, photos (if available), and contact information for the person who can provide additional details if requested. Please include the project's Environmental Consultation Organizer (ECO) number and project title in the subject line of the email reports. These can be obtained from FEMA by emailing FEMA-R4EHP@fema.dhs.gov.
 - ii. To report the interaction to the local stranding/rescue organization, please see the following website for the most up to date information for reporting sick, injured, or dead protected species:
 - 1. <https://www.fisheries.noaa.gov/report> or
 - 2. for sturgeon call the North Carolina Division of Marine Fisheries at 252-241-5119.
 - e. For all project in-water activities work operations hours must be completed between 15 minutes before official sunrise to 15 minutes after official sunset.
 - f. In-water construction work will be conducted outside of the February 1 to April 31 timeframe. During this in-water moratorium, all construction activities would occur within a dewater environment within the cofferdam.
 - g. The applicant or applicant representative will be required to obtain all applicable Federal, state, and local permits and will comply with conditions set forth in each. These requirements include all State of South Carolina and USACE permits. Failure to obtain permits or comply with these conditions may jeopardize the applicant's receipt of FEMA funding.
12. Listed below are conservation measures to be utilized during the construction activities for the Proposed Action with the goal of reducing impacts to birds and their habitats protected under the Migratory Bird Treaty Act (MBTA).
- a. To the extent practicable, schedule all vegetation removal, trimming, and grading of vegetated areas from September 1st – March 31st, which is outside of the peak breeding season for migratory birds. USFWS's Information, Planning and Conservation system (IPaC) was used to collect bird breeding information.
 - b. Educate contractors of relevant rules and regulations that protect wildlife. Prior to the onset of construction activities, the contractor's designated lead will conduct a briefing with all construction staff to instruct them on the potential presence of species protected under the MBTA. If work is occurring during a bird's breeding season, briefing boards strategically placed at laydowns area will inform

construction staff of the species' scientific and common name, a picture of the bird, timing of breeding, and habitat notes.

- c. Do not collect birds (live or dead) or their parts (e.g., feathers) or nests without a valid permit.
 - d. Provide solid waste receptacles at all project areas. Non-hazardous solid waste (trash) would be collected and deposited in the on-site receptacles. Solid waste would be collected and disposed of in the manner approved by the South Carolina Department of Health and Environmental Control (SCDHEC).
 - e. Minimize project creep by staying within the project action area that includes the Columbia Canal facility and laydown areas.
 - f. Implement standard soil erosion and dust control measures.
 - g. To the extent practicable, limit construction activities to the time between dawn and dusk to avoid the illumination of adjacent habitat areas.
 - h. The contractor will be required to adhere to all applicable Federal, State, and Local permits and will comply with conditions set forth in each. These requirements include all State of South Carolina and USACE permits.
 - i. Report any incidental take of a migratory bird, to:
 - U.S. Fish and Wildlife Service
 - Migratory Bird Permit Office
 - 1875 Century Blvd.
 - Atlanta, GA 30345
 - 404-679-4163
 - Resee_Collins@fws.gov
13. To minimize the spread of invasive species, it is recommended that construction equipment be washed prior to contact with waters and unpaved areas.
 14. Removed vegetation (many identified as invasive species) should be disposed of properly to avoid incidentally dispersing invasive plants.
 15. Disturbed green spaces that will be revegetated shall use South Carolina and region native species.
 16. The construction is to adhere to all requirements from the existing and any further versions of the FERC Tree Management Plan.
 17. The construction is to adhere all requirements from the SCDNR approved Mussel Relocation Plan.

Cultural Resources

18. Please see Cultural Resources MOA for guidelines on how to respond to inadvertent archaeological discoveries or human remains and burial contexts.
19. All borrow or fill material must come from pre-existing stockpiles or commercially procured material from a pre-existing source. If this is not the case, the subrecipient shall

inform FEMA of the fill source so required agency consultations can be completed and FEMA approval will be required prior to beginning ground disturbing activities.

Socioeconomic Resources

20. To minimize noise impacts, construction activities will adhere to all local noise ordinances.
21. To the greatest extent practicable, transport of materials to and from the construction area shall consider avoiding school zones and areas with low income and minority populations.
22. To minimize risks to safety and human health, construction activities will be performed using qualified personnel trained to use the required equipment properly.
23. The construction area will be secured from public access and signage indicating closed site and only authorized personnel allowed at all entrances and exits.
24. All construction activities will be conducted in accordance with the standards specified in the OSHA regulations.
25. For ground disturbing activity, if contaminated soil is encountered during construction, it should be treated, stored, and disposed of according to applicable federal, state, and local regulations.
26. Any hazardous materials discovered, generated, or used during construction of the proposed action will be disposed of and handled by the subrecipient in accordance with applicable federal, state, and local regulations.
27. Construction equipment will be kept in good working order, any equipment to be used over, in, or within 100 feet of water will be inspected daily for fuel and fluid leaks. Any leaks will be promptly contained and cleaned up, and the equipment will be repaired.
28. In the event of an inadvertent spill, the subrecipient must immediately call the SCDHEC response line at: 888-481-0125. See more at: <https://scdhec.gov/report-it/reporting-chemical-spills-pollution>.

8.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

Agency Coordination:

The following is a good faith effort to capture all coordination and consultation with state and federal partners:

- Advisory Council of Historic Preservation
- Federal Energy Regulatory Commission
- U.S. Army Corps of Engineers, Columbia District
- U.S. Fish and Wildlife Service, Charleston Ecological Field Office
- U.S. Fish and Wildlife Service, Migratory Bird Program
- National Marine Fisheries Service, Southeast Regional Office
- National Park Service

- South Carolina Department of Archives and History
- Catawba Indian Nation
- Cherokee Nation
- Eastern Band of Cherokee Indians
- Eastern Shawnee Tribe of Oklahoma
- Muscogee (Creek) Nation
- Seminole Nation of Oklahoma
- Seminole Tribe of Florida
- Shawnee Tribe
- Thlopthlocco Tribal Town
- Tuscarora Nation
- United Keetoowah Band of Cherokee Indians in Oklahoma

Public Involvement:

The public was notified of the availability of this EA for review and comment by posting of the public notice on FEMA’s website, the City of Columbia’s website, and a hard copy of the EA was made available onsite in the Columbia City Hall located at 1737 Main Street, Columbia, SC 29201. Additionally, city hall staff made available the offer to print copies of the EA to anyone interested. The public comment period ended 30 days from November 3, 2023. The public notice can be found in **Appendix O**. FEMA and City of Columbia received no public comments during the comment period.

9.0 LIST OF PREPARERS

Name	Organization	Title
Angelika H. Phillips, DrPH	Region 4 FEMA	Regional Environmental Officer
Scott Fletcher	Region 4 FEMA	Senior Environmental Protection Specialist
Dustin Ducote	Region 4 FEMA	Environmental Protection Specialist and NEPA Lead
Cary Helmuth	Region 4 FEMA	Environmental Protection Specialist
David Abbott, Jr	Region 4 FEMA	Historic Preservation Specialist and S106 Lead
Leslie Johansen	Region 4 FEMA	Historic Preservation Specialist
Kyle Crager	Michael Baker Int.	Water Services Manager
Lee Williams	Michael Baker Int.	Environmental and Planning Manager
Thomas Bodor	Michael Baker Int.	Department Manager – Archaeology
Timothy Zinn	Michael Baker Int.	Department Manager – Architectural

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**Appendices are available for review upon request to
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