FINDING OF NO SIGNIFICANT IMPACT
AND ENVIRONMENTAL ASSESSMENT

CITY OF HENDERSON & WARREN COUNTY
KERR LAKE REGIONAL WATER TREATMENT PLANT UPGRADE

RESPONSIBLE AGENCY: NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

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FINDING OF NO SIGNIFICANT IMPACT

Article I, Chapter 113A of the North Carolina General Statutes requires an action to be subject to the requirements of the North Carolina Environmental Policy Act (NCEPA) if it involves the expenditure of public funds and if a potential impact is anticipated to the environment. The project has been evaluated for compliance with the NCEPA and is determined to be a major agency action, which will affect the environment.

Project Applicants:	City of Henderson, North Carolina Warren County, North Carolina
Project Description:	The Kerr Lake Regional Water System (KLRWS) is a regional water system owned by the City of Henderson, City of Oxford, and Warren County that provides drinking water to municipal and county systems in portions of Vance, Granville, Warren, and Franklin Counties. The proposed project will rehabilitate and expand the existing KLRWS Water Treatment Plant from the current 13.97 million gallons per day (MGD) capacity to 20 MGD. The project will include enhanced treatment to remove additional total organic carbon and reduce concentration of disinfection byproducts in the distribution system. If funds allow, the project will also include installation of 5,500 linear feet of 24-inch ductile iron pipe transmission line and improvements to two booster pump stations.
Project Number:	WIF-1920 (Henderson) H-SRP-D-17-0121 (Henderson) H-SRP-D-17-0152 (Warren County)
Project Cost:	$40,660,860
Drinking Water State Revolving Loan Fund:	$31,893,000 (Henderson)
State Reserve Loan Funding	$2,000,000 (Warren County)
State Reserve Grant Funding	$3,000,000 (Henderson) $3,000,000 (Warren County)
Local Funds:	$767,860 (closing fees)

The review process indicated that significant adverse environmental impacts should not occur if mitigative measures are implemented, and an environmental impact statement will not be required. The decision was based on information in the Engineering Report/Environmental Information Document (ER/EID) submitted by the applicants and reviews by governmental agencies. The attached Environmental Assessment (EA), prepared by the Division based on the

ER/EID, supports this action and outlines mitigative measures that must be followed. This Finding of No Significant Impact (FONSI) completes the environmental review record, which is available for inspection at the State Clearinghouse.

No administrative action will be taken on the proposed project for at least 30 days after notification that the FONSI has been published in the North Carolina Environmental Bulletin.

Sincerely,

Jon Risgaard

Jon Risgaard, Section Chief
State Revolving Fund Section
Division of Water Infrastructure

ENVIRONMENTAL ASSESSMENT

A. Proposed Facilities and Actions

The Kerr Lake Regional Water System (KLRWS) is a regional water system owned by the City of Henderson, City of Oxford, and Warren County that provides drinking water to municipal and county systems in portions of Vance, Granville, Warren, and Franklin Counties. The proposed project will rehabilitate and expand the existing KLRWS Water Treatment Plant (WTP) from the current 13.97 million gallons per day (MGD) capacity to 20 MGD with the following improvements: decommissioning the existing clarification system and installation of two (2) 10 MGD Superpulsator® high-rate clarification system trains; powdered activated carbon slurry system; installation of four (4) additional granular media gravity filters with activated carbon; filter building/pump station expansion, including a four (4) bay expansion with a crane bridge extension, piping, electrical, plumbing, and HVAC improvements; architectural improvements such as the addition of locker rooms/bathrooms, a training room, kitchen, additional offices, and elevator; a new clearwell for additional disinfectant dosage-contact time capacity and reliability; replacement of the anthracite with granular activated carbon in the existing four (4) filters; installation of a new sludge thickener or sludge holding tank with two (2) new sludge pumps, and a new pump station building with connections for contract residuals removal and contract dewatering; installation of a new high service finished water pump and backwash pump with variable frequency drives (VFD); a new permanganate storage building; miscellaneous chemical system expansion and upgrades; miscellaneous site and civil improvements and equipment; instrumentation and controls necessary to integrate the new equipment and systems into the plant's existing computerized supervisory control and data acquisition (SCADA) system; and electrical, instrumentation, HVAC and plumbing upgrades throughout the site.

The project plans also include the following optional components to be constructed if funds are available: coating or membrane covering of the existing clearwell; piping improvements associated with the existing clearwell; replacement of existing out-of-service 400 HP finished water pump with a new 750 HP pump, motor, and VFD; improvements to upgrade existing filters, such as underdrain upgrade, concrete repair, additional gravel and media replacement, and upgraded backwash troughs; laboratory infrastructure and equipment upgrades; asbestos, lead, and hazardous material removal and abatement; modeling and other engineering services, such as pump physical scale modeling, in support of improvements; installation of approximately 5,500 feet of 24" Ductile Iron Pipe (DIP) parallel to an existing 24" DIP transmission line located approximately at the interchange of Interstate 85 and US-158; and miscellaneous associated improvements with two (2) booster pump stations (BPS) at US 158 (Regional BPS 1) and Dabney Road (Regional BPS 2), including pump and electrical replacements and appurtenances. The pump station improvements are needed to accommodate anticipated future need. Although these components are desirable, construction and operation of the WTP expansion can move forward without immediate construction of these optional components if sufficient funding is not available.

Funding Status: The estimated total cost for the project is $40,660,860. The City of Henderson has applied for a Drinking Water State Revolving Fund (DWSRF) loan of $31,893,000 and State Reserve Grant of $3,000,000. Warren County is applying for a State Reserve Loan of $2,000,000

and State Reserve Grant of $3,000,000. Local funds will be used to cover the remaining $767,860 in closing costs.

B. Existing Environment

Topography and Soils. The KLRWS WTP is located in Vance County in the Piedmont physiographic region, including geology in the biotite gneiss and schist formation. Elevations range from approximately 389 feet mean sea level (MSL) at the WTP site, 490 feet at the Regional BPS-1, 500 feet at the Regional PBS-2, and 440 to 516 feet along the water transmission main. Portions of the transmission main are located in the 100-year floodplain, but other proposed improvements are not located in floodplains.

The primary soil types at the WTP site are Wedowee sandy loam with 8 to 15 percent slopes and Vance sandy loam with 2 to 8 percent slopes. Regional BPS-1 and Regional BPS-2 both have Vance sandy loam with 2 to 8 percent slopes. The transmission line crosses a number of soil types including Cecil-Urban land complex, Wedowee sandy loams, Appling sandy loam, Louisburg loamy coarse sand, Cecil sandy clay loam, and Appling-Urban land complex.

Surface Water. The WTP, transmission main route, and Regional BPS-2 are in the Roanoke River subbasin. (HUC 03010102). Regional BPS-1 is in the Tar-Pamlico River subbasin (HUC 03020101). Surface waters in the project areas include the Kerr Lake, Nutbush Creek, and unnamed tributaries to Nutbush Creek. Kerr Lake is classified as Water Supply-B, Class B, Critical Area. Nutbush Creek is classified as Class C.

Water Supply. Kerr Lake is the source of drinking water in the area.

C. Existing Water Facilities

The KLRWS is co-owned by the City of Henderson, City of Oxford, and Warren County. The WTP has been in operation for over 40 years with an original design capacity of 10 MGD but currently operates at 13.97 MGD under a permanent high-rate approval from the Public Water Supply Section. The WTP draws raw water from Kerr Lake via a 36-inch intake. The treatment process includes traditional rapid mix, flocculation, gravity sedimentation, granular media depth filtration, and chlorine disinfection. Finished water is stored in a three million gallon clearwell prior to distribution. The distribution system transmission mains, two BPS, storage tanks, and water meters. Many structures original to the plant are beyond their service life. The treatment process has challenges with removing Total Organic Carbon (TOC), which allows for potential for Disinfection By-Products (DBP) formation to exceed maximum contaminant levels (MCL). The plant has received several Notices of Violation (NOVs) due to levels of total trihalomethanes (TTHMs) exceeding state and national MCLs. Through an Interbasin Transfer (IBT) agreement, KLRWS is approved to transfer 14.2 MGD from the Roanoke River to the Tar River, Fishing Creek, and Neuse River. Water demand in the service area has been increasing as the customer population in the service area has increased.

D. Need for Proposed Facilities and Actions

The proposed project is needed to address aging, meet seasonal demand needs, and improve treatment. The WTP has been in operation since 1975, and many original components are beyond their service life. Demand regularly exceeds 80 percent of the WTP's capacity during summer months. The City of Oxford and their wholesale customers are currently using more than 100 percent of their allocation, and there is no redundancy in case of disruption to the regional transmission line. The WTP's treatment process has challenges with TOC removal, thus allowing for potential formation of DBP exceeding MCLs. The proposed project will meet all of these challenges by replacing and upgrading aged components, expanding capacity, and improving TOC removal.

E. Alternatives Analysis

The alternatives analysis includes five alternatives for the WTP improvements and four alternatives for the optional transmission main as follows:

WTP Alternative 1 – No-Action: In this alternative, the WTP would continue under current operation with no rehabilitation or upgrades. This alternative is rejected because it does not address the needs of aging infrastructure, increasing water demand, and treatment performance issues.

WTP Alternative 2 – Regionalization/Consolidation: The KLRWS system is already considered a regional entity. It operates under a legally binding partnership to provide a regionalized drinking water solution. Further regionalization is not practical and would not meet the project's purpose and need of providing an adequate, high-quality drinking water supply to the region; thus this alternative is rejected.

WTP Alternative 3 – Expansion using Conventional Treatment: Under this alternative, WTP components that have exceeded their useful life would undergo rehabilitation, replacement, and expansion using the same conventional clarification and treatment processes currently in use at the plant. Environmental impacts would be similar to the preferred alternative. The alternative would address needs related to aging equipment and demand, but it would not address the needs for improved treatment of DPB precursors and is not as cost-effective as the preferred alternative. For these reasons, this alternative was rejected.

WTP Alternative 4 – Expansion using Actiflo® Clarifiers: Under this alternative, WTP components that have exceeded their useful life would undergo rehabilitation, replacement, and expansion with a new high-rate clarification system and powdered activated carbon to remove TOC. This alternative would use the Actiflo Carbo® clarification system. Environmental impacts would be similar to the preferred alternative. The alternative would address needs related to aging equipment, demand, and improved treatment; however, the cost for this alternative is significantly higher than the preferred alternative, so it is rejected.

WTP Alternative 5 – Expansion using Superpulsator® Clarifiers (Preferred): Under this alternative, WTP components that have exceeded their useful life would undergo rehabilitation, replacement, and expansion with a new high-rate clarification system with powdered activated carbon and granulated activated carbon to remove TOC. This alternative will use the

Superpulsator® clarification system. Environmental impacts for this alternative may include minor disturbance of soils, forest resources, wildlife and natural vegetation, air quality, and noise levels. Significant impacts are not anticipated. The alternative would address needs related to aging equipment, demand, and improved treatment. This alternative is preferred for the WTP improvements because it meets all of the needs with a lower cost than other alternatives.

Construction of the transmission main is dependent on funding availability, but expansion of the WTP will move forward with or without the immediate construction of the transmission main. The following alternatives have been evaluated to identify the best option for the transmission main in the event that funding is available:

Transmission Main Alternative 1 – No Action: Under this alternative, no work would be done to rehabilitate or upgrade the transmission main; therefore, no additional flow would be provided to City of Oxford or other regional customers. This alternative would not meet the anticipated future demand need or desire for redundancy and is rejected.

Transmission Main Alternative 2 – Water Line Installation via Alternate Routes: Under this alternative, a proposed 24-inch transmission main would be installed beginning at the intersection of Garnett Street and Parham Road, continuing northwest, crossing under highway until turning onto Wesley Drive, continuing parallel to the highway and ending at Alpha Road. This alternative meets the need for growing water demand and redundant infrastructure with approximately the same cost as the preferred alternative. However, this route would have greater construction impacts to local residents; therefore, this alternative is rejected.

Transmission Main Alternative 3 – Replacement of Water Line with Different Size Pipe: Under this alternative, the existing 24-inch transmission main would be replaced with a 36-inch main. This alternative would meet some of the project need to provide additional flow, but it does not address the need for redundancy and has higher capital costs than other alternatives, so this alternative was rejected.

Transmission Main Alternative 4 – Parallel Line Installation (Preferred): This alternative would install a second 24-inch transmission main parallel to the existing main from the Farm Street ramp to Interstate-85, crossing the highway and continuing southwest, running parallel to the highway and ending at Alpha Road. This alternative meets the need for increased water supply and redundant infrastructure for the City of Oxford and other regional customers and minimizes costs and environmental impacts. For these reasons, this is the preferred alternative for the transmission main.

F. Environmental Consequences and Mitigative Measures

Topography and Soils: Impacts to topography and soils will be minimal. Some grading will be needed at the WTP site. Improvements at the BPS sites will use existing buildings with limited ground disturbance. Installation of the transmission main will include temporary of disturbance of topography and soils, including some areas in floodplains, but impacts will be mitigated by restoring the existing conditions along the route. A Floodplain Development Permit will be obtained from the City of Henderson for installation of the transmission main. All work areas

will follow a DEQ-approved Erosion and Sedimentation Control Plan and Stormwater NPDES permit. Secondary and cumulative impacts (SCI) in the service area related to future growth will be minimized through compliance with local flood damage prevention ordinances.

Land Use: Direct impacts to land use will be minimal. Proposed facilities will be constructed on sites that are already used for water treatment and distribution. SCI in the service area will be minimized through land use and zoning ordinances for the surrounding counties and towns.

Wetlands: Construction at the WTP and BPS sites is not expected to affect wetlands. Construction of the transmission main may include one wetland crossing with temporary impacts. Wetlands will be delineated during the design phase of the project, and impacts will be minimized to the extent possible with trenchless construction methods included in the design analysis. Section 404 and 401 permits will be obtained as needed, and the transmission main design will be in compliance with conditions of Nationwide Permit 12. SCI related to future growth will be minimized through adherence to local development ordinances and buffer requirements.

Important Farmlands: Significant impacts to important farmlands are not anticipated. Some construction will occur on soils that are categorized as prime farmland or farmland of statewide importance, but these areas are adjacent to or within areas that have already been disturbed and converted to other uses. No land currently used for agriculture will be disturbed. Future impacts related to growth will be avoided through compliance with development ordinances for the counties and towns in the area. In particular, Vance County developed a Land Use Plan intended to "establish a sustainable rural community by balancing economic development and environmental protection in accord with the carrying capacity of the land."

Public Lands and Scenic, Recreational, and State Natural Areas: Kerr Lake has recreational areas managed by the U.S. Army Corps of Engineers. This project will not impact use of those areas. There are no other formally designated public lands, scenic, recreational, or state natural areas in the project area or service area; thus no impacts are anticipated from construction of the project or future.

Cultural Resources: In a memorandum dated January 18, 2019 (No. ER 18-4237), the North Carolina State Historic Preservation Office (SHPO) stated that they are aware of no historic resources which would be affected by the project.

Air Quality: No significant impacts to air quality are anticipated. Construction activities will create temporary impacts such as increase particulate matter due to dust and exhaust emissions from construction equipment. These impacts will be minimized through dust control measures and emission controls on construction equipment. No longer term operational impacts to air quality are anticipated. SCI due to future growth will be minimized in accordance with local land use plans and development ordinances.

Noise Levels: No significant permanent noise impacts are anticipated. Temporary noise is expected during construction activities. Such activities will be limited to daylight hours except where road closures require partial nighttime work. Construction will in compliance with local

noise ordinances for Vance County. Operation of pumps and equipment at the WTP and BPS sites will result in small amounts of noise but no significant impacts. SCI due to future growth will be minimized through accordance with local land use plans and development ordinances.

Water Resources: No significant impacts to water resources are anticipated. Impacts from construction activities will be mitigated through use of an approved Erosion and Sedimentation Control Plan and adherence to permit and buffer requirements from Division of Water Resources and U.S. Army Corps of Engineers. The Division of Water Resources made a Finding of No Significant Impact for the interbasin transfer of 4.2 MGD from the Roanoke River to the Tar River, Fishing Creek, and Neuse River (January 2015). Mitigative measures outlined in the IBT environmental assessment will be followed to mitigate operational impacts and SCI.

Forest Resources: Impacts to forest resources will be minimal. Improvements at the BPS sites will not require any land clearing or tree removal. Work at the WTP site will require less than 0.08 acre of tree removal. Tree clearing for the transmission main will be minimized with all buffers and property setbacks maintained and no more than 2.2 acres of tree removal. Local development plans and ordinances will mitigate SCI related to future growth.

Shellfish or Fish and Their Habitats: Direct impacts to shellfish, fish, and their habitats are not expected to be significant. An Erosion and Sedimentation Control Plan will be followed for all construction activities to minimize sediment entering water bodies. SCI will be minimized through local development plans and ordinances and compliance with U.S. Army Corps of Engineers and Division of Water Resources regulations and permit requirements and implementation of mitigative measures outlined in the IBT environmental assessment.

Wildlife and Natural Vegetation: No significant impacts to wildlife and natural vegetation are expected. Most construction work will occur in already cleared areas. The project areas do include possible bald eagle habitat, but trees providing such habitat will not be cleared. No other protected species are expected to be in the project area. Construction areas for the transmission main will be reseeded, and wildlife is expected to return upon completion of construction. Local development plans and ordinances will mitigate SCI related to future growth.

Introduction of Toxic Substances: Toxic substances are not expected to be released to the environment. Chemicals such as chlorine used in the treatment process will be properly stored and used to prevent environmental contamination, and construction equipment will be monitored regularly and repaired promptly as needed to minimize potential for accidental release of fuels and lubricants.

The U.S. Fish and Wildlife Service reviewed the proposed project and did not have any comments (email January 31, 2019). The North Carolina Wildlife Resources Commission, Natural Heritage Program, and DWR Raleigh Regional Office concur with the proposed project. The U.S. Army Corps of Engineers was consulted and did not object to the project. The North Carolina Department of Natural and Cultural Resources is not aware of historic resources that would be affected by the project (January 18, 2019, ER 18-4237).

G. Public Participation, Sources Consulted

A public meeting was held on July 13, 2020, including a presentation about the project. There were no comments or questions related to the project. Under the terms of a Cost Sharing Agreement, the KLRWS partners will share the cost burden of the project with the City of Henderson responsible for 60% of the cost and City of Oxford and Warren County each responsible for 20%. As such, each entity has analyzed potential impact to user rates as follows:

Potential Impact to Combined Water/Sewer Rate for Residential Users for 5,000 gallons			
Entity	**Current Rate**	**Potential Future Rate**	**Percent Change**
City of Henderson	$57.10	$73.46	28.65%
City of Oxford	$94.60	$114.40	20.93%
Warren County	$88.00	$99.16	12.68%

Sources consulted about this project for information or concurrence included the following:

1) Warren County
2) City of Henderson
3) City of Oxford
4) Vance County
5) North Carolina Department of Environmental Quality
   -Wildlife Resources Commission
   -Natural Heritage Program
   -DEQ Raleigh Regional Office
   -Division of Air Quality
   -Division of Water Resources
   -Division of Forest Resources
   -Division of Environmental Assistance and Customer Service
   -Division of Waste Management
6) North Carolina Department of Natural and Cultural Resources
7) North Carolina State Clearinghouse
8) North Carolina Department of Public Safety
9) U.S. Fish and Wildlife Service
10) U.S. Army Corps of Engineers

CDM Smith

N

0 1,350 2,700 Feet

1 inch = 1,000 feet

Figure 1-2 Project Location Map
Plant Improvements
Kerr Lake Water Treatment Plant Upgrades
Vance County, North Caroilna

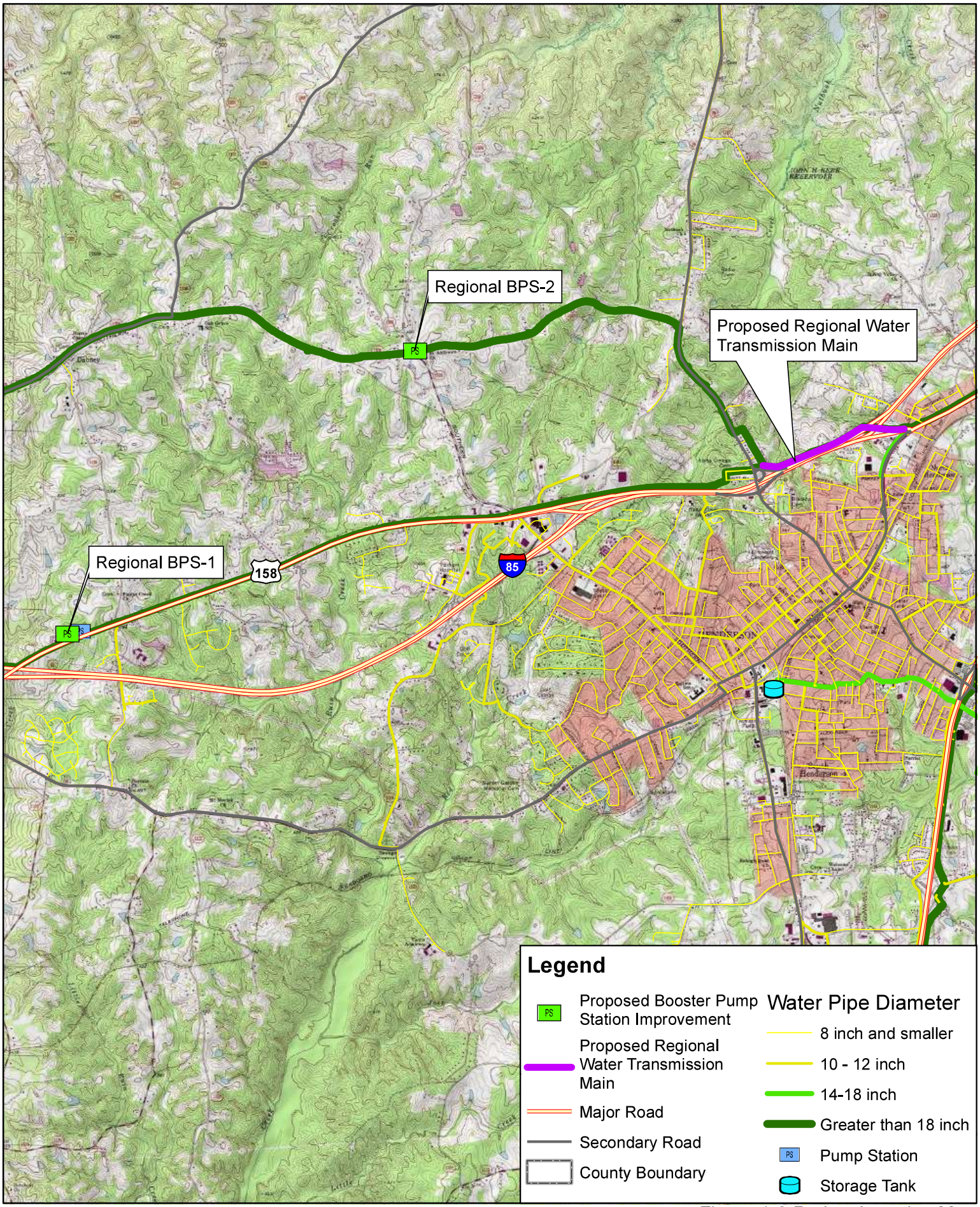

Figure 1-3 Project Location Map
Transmission Line Improvements
Kerr Lake Water Treatment Plant Upgrades
Vance County, North Caroilna