

**FINDING OF NO SIGNIFICANT IMPACT
AND ENVIRONMENTAL ASSESSMENT**

LINCOLN COUNTY

LONG RANGE WASTEWATER IMPROVEMENTS

**RESPONSIBLE AGENCY: NORTH CAROLINA DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES**

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FINDING OF NO SIGNIFICANT IMPACT (FNSI)

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 Applicant: Lincoln County
Project Description: Lincoln County will construct the new Killian Creek Wastewater Treatment Plant (WWTP) with an initial capacity (Phase I) of 1.68 MGD and a final capacity (Phase II) of 3.35 MGD. The Phase I conveyance system will consist of a combination of gravity sewers, force mains, and pump stations between the Forney Creek WWTP and the proposed Killian Creek WWTP. The Phase II wastewater conveyance system consists of 8-inch, 18-inch, and 24-inch gravity sewer to transport wastewater from future developments north of the Middle Forney Creek WWTP.
Project Number: CS370825-01
State Revolving Loan Fund: \$17,500,000
Local Funding: \$78,900

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 and reviews by governmental agencies. An environmental assessment supporting this action is attached. This FNSI 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 FNSI has been published in the North Carolina Environmental Bulletin.

Sincerely,



for Coleen H. Sullins, Director
Division of Water Quality

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ENVIRONMENTAL ASSESSMENT

A. Proposed Facilities and Actions

Figure 1 identifies the location of the proposed wastewater collection-transport facilities.

New Transport and Treatment Facilities: Lincoln County (formerly East Lincoln County Water & Sewer District) proposes to construct the Phase I Lower Forney/Killian Creek wastewater conveyance system and wastewater treatment plant with an initial capacity of 1.68 MGD.

The Killian Creek conveyance system will consist of the construction of approximately 2,750 linear feet (l.f.) of 36-inch diameter gravity interceptor and 2,350 l.f. of 30-inch diameter gravity interceptor with associated manholes, 5,100 l.f. of 20-inch force main, and a 2,900 gpm WWTP influent pump station. The WWTP influent pump station will include duplex pumps, a sewage grinder, SCADA system, and an emergency generator with automatic transfer switch.

The Forney Creek conveyance system will consist of approximately 450 l.f. of 30-inch diameter gravity sewer, 30 l.f. of 18-inch diameter gravity sewer with associated manholes and 3,100 l.f. of 12-inch diameter force main connecting into an existing force main, and a new 1,750 gpm wastewater relief pump station with duplex pumps to be located at the Middle Forney Creek WWTP.

The proposed new Killian Creek WWTP (Phase I, 1.68 MGD) consists of construction of a mechanically cleaned cylindrical bar screen with manually cleaned bypass screen, vortex grit separator, influent Parshall flume, a dual-basin SBR system with retractable air diffuser assemblies, floating mixers, SBR floating decanters, WAS pumps, post equalization basin, two rotating disk filters, a UV disinfection unit, two aerobic digesters, one sludge holding basin, one rotary press sludge dewatering system with liquid polymer feed system and sludge conveyor system, a plant drainage pump station, an office/lab building, a maintenance building, a plant control and SCADA system, an emergency generator, piping, electrical and site work.

The proposed Phase II conveyance system construction will consist of approximately 20,500 l.f. of 24-inch diameter gravity interceptor, 9,000 l.f. of 18-inch diameter gravity interceptor, and 4,700 l.f. of 8-inch gravity interceptor, all within the Forney Creek drainage basin. The proposed Killian Creek WWTP (Phase II) expansion will consist of installation of process equipment to allow the WWTP to expand to 3.35 MGD. Both the Phase II conveyance system and Phase II Killian Creek WWTP expansion are to be constructed at a later date, when funding is available.

Funding Status: Lincoln County proposes to apply for a State Revolving Loan in the amount of \$17,500,000 to cover the proposed Phase I wastewater treatment system projects and Phase I conveyance system. Probable project costs are \$13,269,300 for the proposed Killian Creek WWTP (Phase I) and \$4,309,600 for the Lower Forney/Killian Creek conveyance systems for a total project cost of \$17,578,900. Lincoln County will use the "Lincoln County Sewer Fund" to cover the remaining \$78,900 project cost.

B. Existing Environment

Topography and Soils. Lincoln County is located in the Piedmont physiographic province of North Carolina. The Eastern Slate Belt, Charlotte/Milton Belt, and the Kings Mountain Belt encompass the project area. Elevations within Lincoln County range from 640 feet at the Gaston County Line to 1,000 feet along the Catawba County Line. Within the project area, elevations range from approximately 640 feet to 800 feet. The predominant soils on the proposed Killian Creek WWTP site are of the Cecil and Pacolet series. Soils in the Phase II service area are of the Cecil, Chewacla, Pacolet, Gaston, Georgeville, and Zion-Winnsboro series. Cecil series soils consist of very deep, well-drained, moderately-permeable soils that are found on ridges and side slopes of the Piedmont Uplands. Slopes for Cecil soils range from zero to 25 percent. Chewacla soils are soils that are found on the floodplains of the Piedmont and Coastal Plain river valleys. They are somewhat poorly drained with moderate permeability and slopes ranging from zero to two percent. Gaston soils are soils found on ridges and slopes of the Piedmont Uplands. These soils are very deep, well drained, and moderately permeable with slopes from two to 25 percent. Georgeville soils consist of soils that are well drained and moderately permeable with slopes from two to 50 percent. Pacolet soils are soils that are well drained and moderately permeable that are found in the Piedmont Uplands. Their slopes range from 15 to 25 percent. Zion-Winnsboro soils are soils found in the Piedmont Uplands that are well drained with moderate to slow permeability. Slopes of these soils range from two to 45 percent.

Surface Water. The project is located within the Catwaba River Basin. Lake Norman borders the eastern portion of the service area. Little Creek, Burton Creek, Graham Creek, Lucky Creek, and several unnamed tributaries, all in Sub-basin 03-08-32, drain the portion of the county closest to Lake Norman. Johnson Creek (Sub-basin 03-08-33) drains the area southwest of the intersection of NC 73 and NC 16. Killian Creek and its tributaries, which are Forney Creek, Anderson Creek, Snyder Creek, and Ballard Creek in Sub-basin 03-08-33 drain the service area west of NC 16. Leepers Creek and Hoyles Creek drain the remainder of eastern Lincoln County and are found in Sub-basin 03-08-35. Lake Norman, Burton Creek, Graham Creek, Hoyles Creek, Johnson Creek, Lucky Creek, Killian Creek, Leepers Creek, and Little Creek are classified as WS-IV streams. In addition, Lake Norman, Graham Creek and Lucky Creek are also classified as B. Graham Creek, Lucky Creek, and Johnson Creek have supplemental designation as Critical Areas (CA). Anderson Creek, Ballard Creek, Forney Creek, Killian Creek, Leepers Creek, and Snyder Creek have a water quality designation as C. Water bodies with a WS-IV designation are drinking water supply bodies for water that is used for drinking, culinary, and food processing. Waters that have a B classification are waters that are protected for all uses under Class C and are used for primary recreation, including swimming, skin diving, water skiing, and other similar uses that involve human body contact with the water in an organized manner or on a frequent basis. Class C waters allow for secondary recreation, fishing, wildlife fish consumption, and aquatic life. Secondary recreation is defined as wading, boating, and other uses involving human body contact with water, where activities take place in an infrequent, unorganized, or incidental manner. Streams with a CA classification are contained within land that is within one-half mile upstream and draining to a river intake, or the area within one-half mile and draining to the normal pool elevation of water supply reservoirs. These are areas where the risks associated with pollution are greater than the remaining portions of the

watershed. Killian Creek is listed as impaired for aquatic life from the confluence with Anderson Creek to a point 1.2 miles from its mouth, due to land development.

Water Supply. A portion of eastern Lincoln County receives its drinking water from Lincoln County, whose water source is the Lincoln County Lake Norman Water Treatment Plant (WTP). Additionally, many residents utilize private wells.

C. Existing Wastewater Facilities

The service area for the East Lincoln County Water and Sewer District, which was subsumed by Lincoln County in 2007, consists of approximately 17 square miles in the Catawba Springs Township, which is the easternmost township of Lincoln County. It serves the developing corridor along NC 16, developments adjacent to Lake Norman, and residential areas west of North Egypt Road. The area between the western shore of Lake Norman and NC 16 is served by a low-pressure sewer system. The area west of NC 16 is predominantly served by gravity sewer, pump stations, and force mains.

The collection and conveyance system consists of 250,111 l.f. of low-pressure sewer, 23 pumping stations (excluding individual residential pump stations), 87,771 l.f. of force mains, and 181,686 l.f. of gravity sewer (322.9 inch-miles). In 2004, this system served 2,491 sewer customers with a total daily wastewater flow of approximately 470,000 gallons per day (gpd).

Other areas within eastern Lincoln County (Catawba Springs and Ironton Townships) are not sewered and are served by individual septic systems. Though these areas do not have current reported public health issues, they remain a potentially high risk for groundwater contamination due to a high density of aging septic systems that may fail. Currently, Ironton Station Elementary School and East Lincoln Middle School have recently experienced problems with their drain field systems, as have the Lake Haven and Rock Springs subdivisions.

The Middle Forney Creek WWTP provides wastewater treatment to portions of eastern Lincoln County. This treatment plant was placed into service in 1996 with a design capacity of 0.75 MGD. In 2004, it had an average daily flow of 0.47 MGD. The WWTP consisted of an influent pump station, influent Parshall flume, bar screen aerated grit chamber, an oxidation ditch, two secondary clarifiers, chlorination, two chlorine contact basins, dechlorination, effluent reaeration, two return-activated sludge pumps, waste-activated weir, dissolved air flotation thickener, aerobic sludge digester, gravity thickener, one sludge transfer pump, a holding tank, and land application sludge disposal. In January 2007, modifications to the Middle Forney Creek WWTP increased its capacity to 0.975 MGD. These modifications consisted of a replacement of influent pumps to provide additional peak flow capacity, modifications to the oxidation ditch aeration system to provide additional oxygen transfer capacity, and addition of a new chlorine contact chamber, replacement of the existing chlorine and sulfur dioxide feed system, improvements to the sodium hydroxide chemical storage and feed system, replacement of aeration diffusers in the aerobic digester, an addition of a scum skimmer in the sludge gravity thickener, new scum pumps and wet well mixer, a new thickened sludge transfer pumps and controls, and improvements at the sludge holding tank.

The NPDES permit limits for the Middle Forney Creek WWTP (NC0074012) are:

<u>Parameter</u>	<u>Limit</u>
Flow	0.975 MGD
BOD ₅ (monthly average Summer-Winter)	13.0 mg/L and 26.0 mg/L
NH ₃ -N (monthly average Summer-Winter)	1.3 mg/L and 3.2 mg/L
TSS (monthly average)	30.0 mg/L
Fecal Coliform (monthly average)	200.0 Count 100 mL
Total Residual Chlorine (daily maximum)	23.0 µg/L

D. Need for Proposed Facilities and Actions

Approximately 80 percent of Lincoln County’s residents live in the eastern portion of the county due to access to Lake Norman, and close proximity to several metropolitan areas such as Charlotte and Hickory. Also, the completion of US 321 and the ongoing widening of NC 16 have stimulated growth in this area.

In 2004, the original 0.75 MGD Middle Forney Creek WWTP treated an annual average wastewater flow of 0.47 MGD. In 2006, commitments at the upgraded Middle Forney Creek WWTP exceeded 90 percent of its upgraded 0.975 MGD capacity and prompted the County to begin refusing requests for additional capacity. Current trends indicate that the continued growth will exceed this expanded capacity by 2009.

In eastern Lincoln County, approximately 20 percent of the residents are served by sanitary sewer, and the remaining 80 percent utilize on-site septic systems. Since the estimated population of eastern Lincoln County is expected to increase by 20,869 people for a total of 53,088 people by 2025, approximately 7,935 new septic systems, exclusive of anticipated commercial and industrial growth, would have to be installed to accommodate new development, especially since a moratorium has been placed on new sanitary sewer connections. Though Lincoln County currently has very low reports of septic system malfunctions countywide, (222 malfunctions over the past two years), the potential exists that additional malfunctions may not be reported or will occur over the next several years as other septic systems begin failing, due to age or other problems. Currently, Iron Station Elementary School, East Lincoln County Middle School, and Lake Haven and Rock Springs subdivisions are experiencing septic system malfunctions. Existing and potential malfunctions, due to aging systems and the rising number of new systems installed, increase the risk of contaminating groundwater and surface water during high-precipitation events.

E. Alternatives Analysis

An alternatives analysis was performed on the expansion of the wastewater conveyance system and treatment capacity in eastern Lincoln County. For expansion of the conveyance system, the alternatives considered were: (1) No-Action Alternative, (2) Gravity Interceptors to the Proposed Killian Creek WWTP, (3) Pump Station at Hedrick Property on Lower Forney Creek, (4) Pump Station at Middle Forney Creek, (5) Pump Station with New Force Main, and (6) Lower

Forney-Killian Creek Pump Station. Wastewater treatment system alternatives included: (1) No-Action Alternative, (2) Optimum Operation or Upgrade of Existing Facilities, (3) On-Site Treatment Systems, (4) Land Application, (5) Water Reuse, (6) Regionalization with the City of Lincoln, (7) Regionalization at the Confluence of Killian and Forney Creeks, and (8) Regionalization at the Lincoln/Gaston County Line.

Conveyance System

No-Action Alternative: This alternative would consist of all existing conveyance systems remaining in place with the addition of no new wastewater conveyance infrastructure. Most of eastern Lincoln County would continue to rely on septic systems for wastewater treatment, including areas with known septic system problems (Iron Station Elementary School, East Lincoln Middle School, and the Lake Haven and Rock Springs subdivisions). This alternative was rejected because it would not provide increased conveyance capacity for development and would increase the potential for both surface water pollution during heavy precipitation events and groundwater pollution.

Gravity Interceptors to the Proposed Killian Creek WWTP Alternative: Under Phase I of this alternative, 2,350 l.f. and 2,750 l.f. of 30- and 36-inch gravity sewer would be installed between the existing pump station along Killian Creek and the proposed Killian Creek WWTP. A 30-inch gravity interceptor from the Middle Forney Creek WWTP to the proposed Killian Creek WWTP would be constructed. Phase II would consist of constructing a gravity sewer along the eastern bank of Forney Creek from the Middle Forney Creek WWTP to just south of the intersection of NC 16 with Saint James Church Road. Phase II would be constructed to minimize the impact to environmentally sensitive areas, floodplains, and private property. This alternative would have cost \$5.38 million for Phase I, but this alternative was rejected due to cost.

Pump Station at Middle Forney Creek Alternative: In Phase I for this alternative, 2,350 l.f. of 30-inch and 2,750 l.f. of 36-inch gravity sewer would be constructed between the existing pump station along Killian Creek and the proposed Killian Creek WWTP. A 30-inch gravity interceptor would extend from the Middle Forney Creek WWTP to a point north of a rock quarry owned by Hedrick Industries. A pump station near the Hedrick Industries site, along with a force main would transfer wastewater to the Killian Creek interceptor. A force main would transfer wastewater directly to the proposed Killian Creek WWTP. Phase II would consist of constructing a gravity sewer along the eastern bank of Forney Creek from the Middle Forney Creek WWTP to just south of the intersection of NC 16 with Saint James Church Road. Phase II would be constructed to minimize the impacts to environmentally sensitive areas, floodplains, and private property. Phase I for this alternative would cost \$5.17 million. This alternative was rejected due to cost.

Pump Station at Hedrick Property on Lower Forney Creek Alternative: Phase I for this alternative would consist of installing 2,350 l.f. of 30-inch gravity sewer and 2,750 l.f. of 36-inch gravity sewer along Killian Creek and two new 1,750 gpm relief pumps at the Middle Forney Creek WWTP. A new 12-inch diameter force main would be constructed along Little Egypt Road connected to the existing 12-inch Killian Creek force main, whose flow would be reversed. The Killian Creek WWTP influent pump station would be located near the confluence of Forney

and Killian Creeks with the force main transfer directly to the WWTP. Phase II would consist of constructing a gravity sewer along the eastern bank of Forney Creek from the Middle Creek WWTP to just south of the intersection of NC 16 with Saint James Road. Phase II would be constructed to minimize the impacts to environmentally sensitive areas, floodplains, and private property. Costs for Phase I of this alternative would be \$4.46 million. This alternative was rejected due to cost.

Pump Station at Middle Forney Creek Alternative: Phase I of this alternative would consist of gravity interceptors similar to the above alternative with the construction of a new relief pump station located at the Middle Forney Creek WWTP. Under this alternative, a new force main would extend along Forney Creek and around the Hedrick Industries site to the WWTP influent pump station, which would be located near the confluence of Forney and Killian Creeks with a force main transfer directly to the proposed Killian Creek WWTP. Phase II would be constructed to minimize the impacts to environmentally sensitive areas, floodplains, and private property. Phase I costs for this alternative would be \$5.22 million. This alternative was rejected because of cost.

Killian Creek Pump Station Alternative: Phase I of this alternative would consist of the construction of a relief pump station at the Middle Forney Creek WWTP and a 12-inch force main along South Little Egypt Road to the existing 12-inch force main along Charlie Saine Trail. The existing pump station along Killian Creek would be removed, and the flow in the existing force main would be reversed. The wastewater would be sent to the proposed Killian Creek WWTP via 2,350 l.f. of 30-inch gravity sewer, 2,750 l.f. of 36-inch gravity sewer, and 5,100 l.f. of force main. Phase II would be constructed to minimize the impacts to environmentally sensitive areas, floodplains, and private property. The project cost for Phase I would be approximately \$4.31 million. This alternative is the preferred alternative due to Phase I project costs and the fact that the least-impacting alternative for the Phase II conveyance system will be utilized.

Wastewater Treatment

No-Action Alternative: This alternative would consist of making no improvements to the Middle Forney Creek WWTP. If this alternative were implemented, the economic expansion of eastern Lincoln County would be hindered due to lack of wastewater treatment capacity required to accommodate such growth. Additionally, increased population within the area would require more on-site wastewater treatment systems, including those for commercial developments, schools, and public facilities. The installation of more on-site septic systems would raise the risk of groundwater and surface water contamination from failing septic systems. This alternative was rejected because it would not fulfill the purpose and need of the project.

Optimum Operation or Upgrade of Existing Facilities Alternative: Under this alternative, the upgraded Middle Forney Creek WWTP would operate at its most efficient level. Even with the upgrades that were completed in January 2007 that increased the capacity from 0.75 MGD to 0.975 MGD, the capacity of the Middle Forney Creek WWTP will be depleted in 2009. Additional expansion of the Middle Forney Creek WWTP is not possible because of inadequate area for significant expansion, insufficient assimilative capacity at its current discharge location,

and poor location to extend gravity service to the areas where most of the development is expected to occur. Therefore, this alternative was rejected because it does not meet the purpose and need of the project.

On-Site Treatment Systems Alternative: Under this alternative, on-site wastewater treatment systems such as septic systems and tile field adsorption systems would be used throughout eastern Lincoln County. By 2025, approximately 7,900 on-site wastewater treatment systems would be installed within eastern Lincoln County. As population densities or septic systems failures increased, conveyance systems would be installed to these communities when economically viable. However, the number of unreported septic system failures may increase, as would the number of aging septic systems. Since this would increase the risk of surface water pollution during high precipitation events, as well as groundwater pollution, this alternative was rejected.

Land Application Alternative: This alternative would consist of constructing a secondary wastewater treatment system, treated effluent storage, and a spray irrigation land disposal system. To accommodate land application of the proposed flows, the total site area required would be approximately 804 acres. The project costs for this option would be \$26.1 million. This alternative was rejected both because of the infeasibility of purchasing the needed land and project cost.

Water Reuse Alternative: Under this alternative, effluent would be reused either at local golf courses or in conjunctive reuse with Duke Energy. Due to the amount of land needed (500-plus acres) and the distance between the three golf courses in the areas (at approximately six miles and greater) and the Middle Forney Creek WWTP, reusing all of the effluent from the Middle Forney Creek WWTP would be infeasible. Additionally, while Duke Energy has indicated that they would consider the conjunctive reuse of treated effluent in the future after they have evaluated the quality of the effluent, they are not presently interested in conjunctive reuse. Because of the costs that would be associated with installing a reuse system for golf courses and Duke Energy's lack of interest in presently utilizing treated effluent, this alternative was rejected.

Regionalization with the City of Lincolnton Alternative: Under this alternative, wastewater from eastern Lincoln County would be sent to the City of Lincolnton's WWTP located south of the city on the South Fork Catawba River. The City of Lincolnton WWTP has a capacity of 6.0 MGD with a current flow of 3.5 MGD. The City indicated that to accept flows from eastern Lincoln County, the City of Lincolnton WWTP would have to be expanded. Furthermore, connection to the Lincolnton WWTP would require more than 16 miles of force main and a number of intermediate pump stations to overcome the 300 foot change in elevation. Due to the required expansion of the City of Lincolnton WWTP and the amount of force main and pump stations that would be required to implement this alternative, it was rejected because it is economically infeasible.

Regionalization at the Confluence of Killian and Forney Creeks Alternative: This alternative would consist of locating the proposed Killian Creek WWTP at the confluence of Killian and Forney Creeks. Under Phase I, the WWTP would have a capacity of 1.68 MGD, which would be expanded to 3.35 MGD under Phase II. This site has lower stream flow than the other site

considered. Speculative limits were determined for a 7.0 MGD flow, and the lower stream flow would provide a less favorable limitation with regard to ammonia, nitrogen, total residual chlorine (TRC), and chronic toxicity. Furthermore, no land is available for purchase at this location. Due to the lower NPDES limitations that would be required, as well as the lack of available land for purchase, this alternative was rejected.

Regionalization at the Lincoln/Gaston County Line Alternative: Under this alternative, the proposed Killian Creek WWTP would be located near the Lincoln/Gaston County Line just west of Killian Creek. Under Phase I, the WWTP would have a capacity of 1.68 MGD, which would be expanded to 3.35 MGD under Phase II. This site has a higher stream flow than the other site considered, which would allow for a more favorable limitation for ammonia, nitrogen, TRC, and chronic toxicity. Additionally, a 38-acre parcel is available for purchase at this location. Project costs for Phase I would be approximately \$13.3 million. Because of more favorable effluent limitations and availability of land for the WWTP, this alternative is the preferred alternative.

The project will consist of constructing two phases of the project for both the collection system and the proposed Killian Creek WWTP. The Phase I conveyance system would consist of constructing a relief pump station at the existing Middle Forney Creek WWTP, constructing a 12-inch force main that will connect with the existing 12-inch force main; reversing the flow through this force main and removing a pump station from service; constructing a 30- and 36-inch gravity sewer; adding two influent pump stations, and constructing a 20-inch force main to send wastewater to the WWTP. Project costs for this alternative will be approximately \$4.31 million. The Phase II conveyance system would be constructed from the existing Middle Forney Creek WWTP northward to just south of the intersection of NC 16 and Saint James Church Road. Phase I for wastewater treatment will consist of constructing the proposed Killian Creek WWTP near the Lincoln/Gaston County Line with a capacity of 1.68 MGD. Project costs for this phase will be approximately \$13.26 million. Phase II for wastewater treatment will be an expansion of the Killian Creek WWTP to 3.35 MGD. Project costs for the Phase II conveyance system and WWTP expansion will be determined at a future date when these phases will be designed.

F. Environmental Consequences and Mitigative Measures

Topography and Soils: Construction of the WWTP will impact 20 acres of the 38-acre site. The WWTP will not be constructed in the floodplain. Constructing the Phase I conveyance system will disturb approximately 44 acres. The force main construction will be along roadway, and the gravity sewer along Killian Creek will be in the floodplain (approximately 4,167 l.f.). Construction of Phase II of the project north of the Middle Forney Creek WWTP will occur along Forney Creek and will also be located in the floodplain (approximately 23,032 l.f.). Installation of the conveyance system for both phases will be by open trench construction. Pre-construction contours will be restored after the pipeline is buried. Additionally, new above-grade structures in the floodplain will be limited to manholes designed for greater than 100-year flood protection. These manholes will have a negligible impact on floodway hydrology. Also, the new pump station located at the Middle Forney Creek WWTP will be in the 100-year floodplain within the existing WWTP plant area. The elevation of the pump station and manholes at the Middle Forney Creek WWTP will be designed at two feet above the 100-year

flood elevation. Construction will be in accordance with a North Carolina Department of Environment and Natural Resources (DENR)-approved Erosion and Sedimentation Control Plan and other provisions of the Sedimentation Pollution Control Act of 1973 (SPCA). Construction will also incorporate appropriate best management practices (BMPs). No buildings and permanent structures will be allowed in sewer line rights-of-way.

Land Use: The construction of both phases of the project will encourage the development of residential, commercial, and industrial land uses. However, no changes to the local zoning or land uses will be needed to implement the proposed project. Lincoln County has adopted a number of ordinances directing future land use for eastern Lincoln County in a manner that will manage growth and conserve both natural and cultural resources. These include (1) a Zoning Ordinance, (2) a subdivision ordinance, (3) Mobile Home Park Regulations, (4) Flood Damage Ordinance, and (5) Water Supply Watershed Ordinance. Additionally, the County has adopted a Soil Erosion Control and Sedimentation Ordinance and a streamside Buffer Ordinance that will preserve the natural resources within the project area. Also, development in the project's service area will adhere to other applicable existing ordinances, as well as future ordinances.

Wetlands: Phases I and II construction of the proposed Killian Creek WWTP will not impact any wetlands or cross any streams. Due to ongoing negotiations with Duke Power, the exact potential impact to wetlands for construction of the Phase I conveyance system is not definitively known. However, it is estimated that 0.072 acre of wetlands will be temporarily impacted and 0.018 acre of wetlands will be permanently impacted. Construction of the Phase II conveyance system may temporarily impact approximately 0.02 acre of wetlands and will not permanently impact any wetlands. While the conceptual location of the Phase II conveyance system has been determined, the exact location of the Phase II conveyance system is unknown at this time. The alignment will be designed to minimize environmental impacts to wetlands. In a letter dated April 13, 2006, the United States Army Corps of Engineers (USACE) stated that they anticipated that a Nationwide Permit 12 would be required for this project (Project No. 200630862). The USACE will determine the type of permit required during the final design of both phases of the project. Additionally, the North Carolina Wildlife Commission (NCWRC) recommends that Lincoln County implement the following recommendations:

- All municipalities benefitting from increased sewer services, development, and annexation should incorporate into their local ordinances the same or better environmental protective measures as specified by Lincoln County in this EA [and supporting documentation] prior to the provision by the County of any wastewater connections or services.
- Instead of two-tiered buffers, the provision and protection of undisturbed, contiguous forested buffers and entire floodplains should be promoted for improved long-term stewardship. Regardless of tiers, we prefer and recommend contiguous forested buffers. Buffer averaging may be used provided that maximum available undisturbed forested buffers are provided and protected.
- Proper delineation of jurisdictional waters and wetlands should be provided prior to any development approvals by local governments to ensure project compliance with the Clean Water Act.

Important Farmlands: The Middle Forney Creek WWTP where one pump station will be installed is previously disturbed. Therefore, no impacts to important farmlands from the construction of this pump station will occur. The proposed Killian Creek WWTP site contains 26.3 acres of prime farmland soils (15.8 acres of Cecil sandy loam, 0.95 acre of Chewacla [where protected from flooding], 2.3 acres of Gaston sandy clay loam, 5.7 acres of Pacolet sandy clay loam, and 1.6 acres of Riverview loam). The proposed project's footprint on this site will impact approximately 20 percent (5.2 acres) of the important farmlands on the site. However, this site is not being utilized for farming. Additionally, the installation of the Killian Creek pump station, which contains Cecil sandy loam, will impact 0.2 acre of important farmland that is not being used for farming. Therefore, no impacts to important farmlands will occur. Important farmland impacts for the Phase II conveyance system will be determined during the design process.

Public Lands and Scenic, Recreational, and State Natural Areas: No public lands or scenic, recreational, or state natural areas will be impacted by the construction of either phase of the project.

Cultural Resources: In a letter dated May 1, 2007, the North Carolina State Historic Preservation Office (SHPO) stated that no historic resources would be impacted by either phase of the proposed project (Project No. ER 06-0770).

Air Quality: Construction of both phases of the project will result in a temporary increase in air emissions, including particulate matter, that will cease, once construction is complete. No operational impacts will occur with the exception of periods when particulates may temporarily increase because of testing or use of emergency generators. Odor control mechanisms will be incorporated into the project design to eliminate any nuisance odors. Additionally, contractors must properly maintain their equipment, and frequent wetting of exposed soil and prompt soil stabilization will minimize dust impacts. Contractors will be instructed to sell merchantable timber and chip non-merchantable woody debris for mulch, or pile it along the edges of construction corridors to create brush piles for wildlife. These practices will substitute for open burning. However, if open burning is unavoidable, it must be conducted in accordance with state and county regulations.

Noise Levels: Noise levels will increase during construction of both phases of the project. However, once construction is complete, noise impacts from the operation of both phases of the project will be negligible. Additionally, occasional noise will occur from the testing and use of the emergency generators. Noise levels, due to this testing and use, will be infrequent and therefore insignificant. To mitigate noise impacts from construction, construction activities will occur only during daylight hours.

Water Resources: The proposed Killian Creek WWTP is bounded on the eastern edge of the site by Killian Creek and the southern side by an unnamed tributary. An unnamed tributary with a headwater seep wetland is located on the northeastern portion of the site. Three stream crossings averaging 22 feet per crossing (66 total feet total) will occur during construction of the Phase I conveyance system, while 24 stream crossings totaling approximately 45 feet (average width of 9.5 feet) will occur during the construction of Phase II conveyance system. Pre-construction

contours in streams and wetlands will be restored in accordance with USACE and Division of Water Quality (DWQ) permit conditions. All construction will also be conducted in accordance with the DENR-approved Erosion and Sedimentation Control Plan and the SPCA. Open trench construction at stream crossings will be performed roughly perpendicular to each channel, which will minimize riparian vegetation clearing. After backfilling the trench, the lower banks of the stream channel bed below the bank will be stabilized with rip-rap, and the upper banks will be stabilized using native vegetation and seeding, with a temporary groundcover crop. Development within the service area must adhere to the Erosion and Sedimentation Control Ordinance, and the Streamside Buffer Ordinance as well as any other applicable ordinances that exist or will be developed in the future. Additionally, the NCWRC recommends that Lincoln County implement the recommendations as shown under wetlands, above.

Forest Resources: Of the 38 acres purchased by the County for the proposed Killian Creek WWTP, 20 acres of the currently-forested site will be cleared for Phases I and II construction of the WWTP. The remainder of the site will be retained in its current state. Construction of Phases I and II of the conveyance system will require the disturbance of 12 acres of forested land. Contractors will be instructed to sell merchantable timber and chip non-merchantable woody debris for mulch, or pile it along the edges of construction corridors to create brush piles for wildlife.

Shellfish or Fish and Their Habitat: Killian Creek, the closest stream to the construction site, is located on the eastern edge of the site more than 80 feet east of the project's footprint. Potential impacts to fish and shellfish habitats during construction of the Phase I and Phase II conveyance systems could occur, due to the proximity of the construction to Killian and Forney Creeks. To minimize any potential impacts to shellfish or fish and their habitats, the contractors must follow the provisions in the DENR-approved Erosion and Sedimentation Control Plan, as well as those in the SPCA. Additionally, further development in this area must occur in accordance with the Soil Erosion and Sedimentation Control Ordinance and the Streamside Buffer Ordinance as well as other applicable ordinances that exist or may be developed in the future. Also, the NCWRC recommends that Lincoln County implement the recommendations as shown under wetlands, above.

Wildlife and Natural Vegetation: No protected species, neither flora nor fauna, are expected to be impacted by the construction of either phase of the project. However, an additional threatened and endangered species survey will be required during the detailed design phase of Phase II of the project.

Introduction of Toxic Substances: As part of the construction process, substances such as fuels, lubricants, antifreeze, etc. will be used and may be introduced into the environment through spillage or other events. All construction activity will be performed in accordance with Federal, State, and local rules and regulations to avoid environmental impacts.

The U.S. Fish and Wildlife Service reviewed the proposed project and concluded that the requirements of Section 7(a)(2) of the Endangered Species Act have been fulfilled. The NCWRC, the DWQ Mooresville Regional Office, and the NPDES and PERCS Units concur with the proposed project. The North Carolina Department of Cultural Resources is not aware of

any properties of architectural, historical, or archaeological significance that would be affected by the project. Other state agencies did not submit objections to the project.

G. Public Participation, Sources Consulted

A public hearing was held on November 21, 2005 on the proposed project. The current user charge for residents within the former East Lincoln County Water & Sewer District is \$26.92 at 3,967 gallons per month. The proposed project will result in an increased charge of \$0.40 for a total of \$27.32 for 3,967 gallons per month for the typical user. No opposition to the plan was presented at the public hearing.

Sources consulted about this project for information or concurrence included:

- 1) Lincoln County
- 2) North Carolina Department of Environment and Natural Resources
 - Wildlife Resources Commission
 - DWQ Mooresville Regional Office – Surface water Protection Section
 - DWQ NPDES Unit
 - DWQ PERCS Unit
 - Division of Air Quality
 - Division of Environmental Health
 - Division of Water Resources
 - Division of Forest Resources
 - Office of Legislative and Intergovernmental Affairs
- 3) North Carolina Department of Cultural Resources
- 4) North Carolina State Clearinghouse
- 5) U.S. Fish and Wildlife Service
- 6) U.S. Army Corps of Engineers

