

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

**LINCOLN COUNTY
KILLIAN CREEK WASTEWATER 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 Applicant:	Lincoln County, North Carolina
Project Description:	The proposed project will make improvements at Lincoln County's Killian Creek Wastewater Treatment Plant (WWTP) to expand the capacity from 3.35 million gallons per day (MGD) to 6.6 MGD by duplicating the existing SBR and digester unit processes. Additional improvements will be made to the existing treatment process to improve nutrient removal to meet future effluent limits.
Project Number:	CS370825-02
Project Cost:	\$26,584,200
Clean Water State Revolving Loan Fund:	\$14,000,000
Local Funds:	\$12,584,200

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. The attached Environmental Assessment (EA) 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,



Vincent Jude Tomaino, P.E. Acting Chief
State Revolving Fund Section
Division of Water Infrastructure

ENVIRONMENTAL ASSESSMENT

A. Proposed Facilities and Actions

The proposed project will make improvements at Lincoln County's Killian Creek Wastewater Treatment Plant (WWTP) to expand the capacity from 3.35 million gallons per day (MGD) to 6.6 MGD. The proposed expansion will include the following additions and modifications:

- Headworks system paralleling the existing screening and grit removal systems;
- SBR influent flow splitter combining flow from two headworks systems before dividing between the SBR basins;
- SBR/digester system similar to the existing SBR/digester to include:
 - Two SBR basins with jet aeration, decanters and WAS pumps,
 - One rotary drum thickener with associated polymer system for thickening and transfer to the new aerobic digester #4,
 - New sludge holding tank with transfer pumps to transfer sludge between the new and existing tanks,
 - Sludge pump station with sludge macerator and sludge pumps for transfer of sludge to the new sludge dewatering system, and
 - Blower building and associated blowers for the new SBR and aerobic digesters;
- Sludge dewatering building with two new rotary filter presses;
- Effluent filter building consolidating the effluent filters into one location and consisting of two new effluent disk filter units and three existing filters relocated from the existing Effluent Filter/UV Building;
- Conversion of the existing Effluent Filter/UV Building into a dedicated UV disinfection building containing the existing two channel system and a new two channel, dual bank UV system;
- Modification of existing SBR process from current five (5) – 4.8 hour/cycle process to a four (4) – 6 hour/cycle process to provide longer anoxic contact time for improved biological nitrogen and phosphorus removals to achieve future speculative limits; and
- Provisions for addition of a phosphorus removal chemical to be provided to supplement the biological phosphorus removal to achieve effluent permit conditions.

Funding Status: The estimated total cost for the project is \$26,584,200. The County is applying for a Clean Water State Revolving Fund (CWSRF) loan of \$14,000,000. Local funds, including \$12,304,200 in bonds, will cover the remaining project cost and loan fee.

B. Existing Environment

Topography and Soils. Lincoln County is in the Piedmont Physiographic Province. The plant site elevations range from approximately 650 feet to 730 feet above mean sea level.

The dominant soil at the WWTP site is predominantly Wynott-Winnsboro-Rowan complex with 15 to 25 percent slope (approximately 60 percent of the project area). Other soil complexes in the project area include Lloyd sandy clay loam with 8 to 15 percent slope, Pacolet sandy clay loam

with 2 to 8 percent slope, and Wynott-Winnsboro-Rowan with 8 to 15 percent slope. The predominant soil types in the WWTP's service area include Cecil, Gaston, Georgeville, Zion-Winnsboro, and Pacolet.

Surface Water. The project area is located in the Catawba River Basin (HUC 03050101). Killian Creek, a Class C stream, runs to the east of the project area and receives discharge from the WWTP. An unnamed tributary to Killian Creek runs to the north of the limits of disturbance for the project.

Water Supply. The City of Lincolnton provides drinking water drawn from the Catawba River. Some of the eastern part of the county is served by the Lincoln County's Water Treatment Plant, which draws from Lake Norman, but much of the eastern portion of the county relies on private wells.

C. Existing Wastewater Facilities

The County's Killian Creek WWTP was constructed in November 2010 with a permitted flow of 1.68 MGD. The plant was expanded to 3.35 MGD in 2016. The plant operates under NPDES Permit No. NC0088722 and discharges to Killian Creek. The plant utilizes a sequencing batch reactor (SBR) biological treatment system, and the plant's equipment is in very good operating condition. The County's wastewater collection system includes approximately 68 miles of gravity sewer ranging from 8 inches to 36 inches in diameter, approximately 64 miles of forcemain ranging from 3 inches to 20 inches in diameter, and 39 pump stations.

D. Need for Proposed Facilities and Actions

The proposed project is needed to meet ongoing growth and development in eastern Lincoln County. The current flow is below the design capacity, but the County has flow commitments due to area development approaching 80% of design capacity. The service area is growing rapidly, and the WWTP expansion is needed to meet future capacity demands.

E. Alternatives Analysis

No-Action Alternative: Under the No-Action Alternative, no project would be constructed and the WWTP would continue to operate in its existing condition with no capacity increase. This alternative would limit the County's economic development and would likely lead to increased reliance on private septic systems. This alternative was rejected because the inability to provide adequate wastewater treatment would have a negative impact on the County's economic growth and development and increase in private septic tank systems would potentially have a detrimental impact on the environment.

Alternative 1 – Connection to another existing Wastewater Treatment Plant: This alternative would involve connecting to the City of Lincolnton Sanitary Sewer District's WWTP. Such a

connection would require 17.6 miles of forcemain and multiple pumping stations and would require expansion of the City's WWTP. This alternative was rejected because it is not economically feasible.

Alternative 2 – Water Reuse and Land Application: This alternative evaluated water reuse opportunities with Duke Energy Lincoln Combustion Turbine Station and possible local golf courses but determined that treatment requirements would be more stringent and would involve significant transportation and storage costs. Conjunctive reuse was also evaluated with Duke Energy Lincoln Combustion Turbine, but Duke Energy's water needs would be sporadic and only during peak power demands, and additional treatment would be required to address dissolved solids and salts in wastewater effluent. This alternative also considered land application, which would require approximately 1,400 acres for treatment area and required buffers, and approximately 47 acres for a storage pond. Finding a suitable site would be unlikely. This alternative was rejected because it is technically and economically infeasible.

Alternative 3 – Expansion of Existing SBR WWTP: This alternative would expand the plant's capacity by installing a mirror image of the existing SBR/digester system with modifications to change from 5 cycles per day to 4 cycles per day to increase aeration and anoxic contact periods. This alternative has the advantages of operator familiarity with the process, adjustable process variables to optimize treatment, and lower energy consumption. Disadvantages are large construction footprint and modifications required to meet speculative limits. This alternative is preferred based on capital and present worth cost and compatibility with the existing treatment process for easier operation and maintenance.

Alternative 4 – Expansion utilizing Independent Membrane Bio-Reactor System: This alternative would construct a new independent membrane bio-reactor (MBR) system to replace the existing SBR system. The existing SBR structures would be converted for use as sludge digesters and influent equalization basin. Advantages of this system would include high-quality effluent with potential for reuse, smaller structure and footprint, lower waste activated sludge yield. Significant disadvantages of this system would be larger energy requirement, significant maintenance and operation costs associated with MBR membranes, and challenges for staff to operate a completely new process. This alternative was rejected because the capital and present worth costs are significantly higher than Alternative 3.

F. Environmental Consequences and Mitigative Measures

Topography and Soils: Impacts to topography and soils are not expected to be significant. Some grading will be required at the project site. Soil loss will be minimized by following a DEQ-approved Erosion and Sedimentation Control Plan. The project is not located in the floodplain. Impacts from future development will be mitigated by the County's Flood Protection Ordinance and Streamside Buffer Ordinance, which protect the 100-year floodplain.

Land Use: The project will be constructed on land owned by Lincoln County immediately adjacent to the existing WWTP facilities and will not impact land use. To address impacts from

future development, the County has adopted planning and zoning tools and non-regulatory programs to manage growth and has adopted a Unified Development Ordinance.

Wetlands: There are no wetlands in the project area, and no direct impacts to wetlands are anticipated. Impacts from future development in the service area will be mitigated by the County's Streamside Buffer Ordinance, City and County Water Supply Watershed ordinances, and Section 404/401 permitting requirements. The U.S. Army Corps of Engineers was contacted and did not comment on the project.

Important Farmlands: The project area does not include farmlands. Soil loss will be minimized by following a DEQ-approved Erosion and Sedimentation Control Plan. Potential impacts to important farmlands in the county through growth and development will be minimized through the County's cooperation with The Catawba Lands Conservancy, Foothills Conservancy of NC, and the Voluntary Agricultural District Committee.

Public Lands and Scenic, Recreational, and State Natural Areas: There are no known public lands, scenic, recreational, or state natural areas within five miles of the plant; thus, there will be no negative impacts to public lands or scenic, recreational, or state natural areas. Potential impacts related to future development will be mitigated by review and permitting by appropriate local, state, and federal agencies. Residential development will incorporate public lands such as pocket parks, greenways, and local natural areas.

Cultural Resources: In a memorandum dated October 19, 2018, (No. CH 18-2097), 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. There may be temporary increases in airborne particles from land clearing and construction vehicles. Proper vehicle maintenance and emission controls, wetting of exposed soil, and prompt soil stabilization will minimize these impacts. Emissions from emergency generators during power outages will be minimal. The plant design includes odor controls.

Noise Levels: No significant permanent noise impacts are anticipated. Temporary noise is expected during construction activities and will be limited 7:00 am to 6:00 pm Monday through Friday and confined to the immediate construction area. There may be a slight increase in noise levels compared to current plant operations, but this is mitigated by the distance from the plant to the site boundaries.

Water Resources: No significant impacts to water resources are anticipated. Construction plans will limit disturbance areas, utilize best management practices, and follow a DEQ-approved Erosion and Sedimentation Control Plan. Disturbed soil will be mitigated by seeding and mulching. Impacts from future growth in the service area will be mitigated by the County's Streamside Buffer Ordinance, which requires a mandatory 50-foot wide buffer along perennial and intermittent streams, the County's Flood Protection Ordinance, and City and County Water Supply Watershed ordinances.

Forest Resources: No significant impacts to forest resources are expected. The project will require clearing of 3.65 acres within the existing plant's property boundary. To address impacts from future development, the County has adopted planning and zoning tools and non-regulatory programs to manage growth and has adopted a Unified Development Ordinance.

Shellfish or Fish and Their Habitats: Impacts to shellfish, fish, and their habitats are not expected to be significant. Construction plans will limit disturbance areas, utilize best management practices, and follow a DEQ-approved Erosion and Sedimentation Control Plan. Disturbed soil will be mitigated by seeding and mulching. Impacts from future growth in the service area will be mitigated by the County's Streamside Buffer Ordinance, which requires a mandatory 50-foot wide buffer along perennial and intermittent streams, the County's Flood Protection Ordinance, and City and County Water Supply Watershed ordinances.

Wildlife and Natural Vegetation: No significant impacts to wildlife and natural vegetation are expected. Clearing will be limited to the minimum required for construction. To avoid impacts to the long-eared bat, clearing will be scheduled to avoid the May-August roosting season to the maximum extent practical. To address impacts from future development, the County has adopted planning and zoning tools and non-regulatory programs to manage growth and has adopted a Unified Development Ordinance. The County cooperates with private land conservancies to acquire and voluntarily protect important sites and preserve habitat.

Introduction of Toxic Substances: The project is not expected to introduce toxic substances to the environment. The WWTP maintains a Stormwater Pollution Protection Plan, including provisions for spill protection and monitoring chemical storage areas. Chemical storage areas include secondary containment for spill protection. Construction contracts will require precautions to prevent pollution.

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 (December 18, 2018 Log No. 4—18-388). The North Carolina Wildlife Resources Commission, Natural Heritage Program, and DWR Mooresville Regional Office concur with the proposed project. The U.S. Army Corps of Engineers was contacted and did not comment on the proposed project. The North Carolina Department of Natural and Cultural Resources is not aware of historic resources that would be affected by the project (October 19, 2018, CH 18-2097).

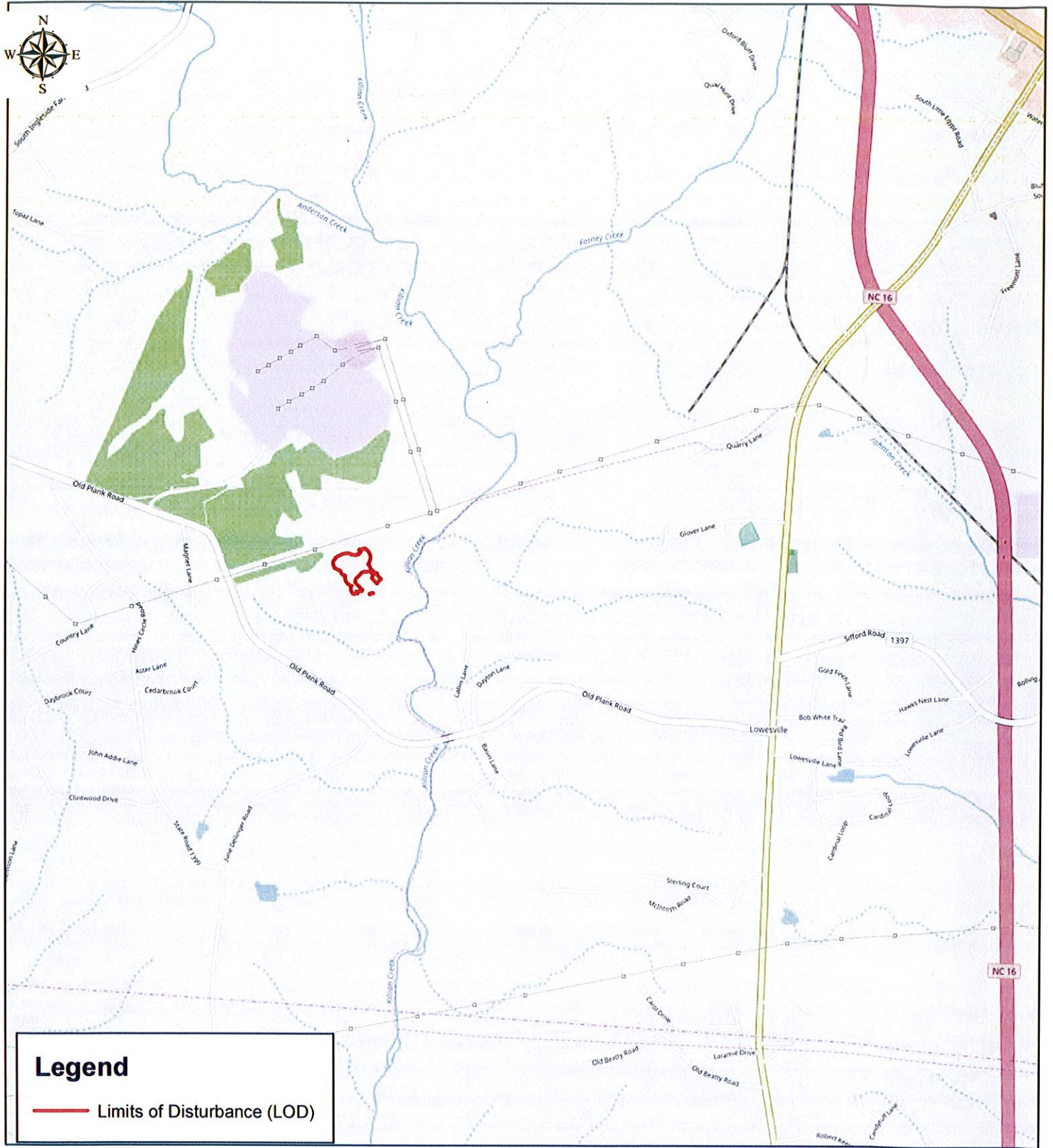
G. Public Participation, Sources Consulted

A public meeting was held on July 15, 2019 including a presentation about the proposed project. There were no comments on the project. The current user charge for a typical customer is \$81.65 per month for 5,000 gallons of water and sewer service combined. The proposed project is expected to increase rates by 10.7% to \$90.36 per month for 5,000 gallons.

Sources consulted about this project for information or concurrence included

- 1) Lincoln County
- 3) North Carolina Department of Environmental Quality
-Wildlife Resources Commission

- Natural Heritage Program
 - DEQ Mooresville 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
- 4) North Carolina Department of Natural and Cultural Resources
 - 5) North Carolina State Clearinghouse
 - 6) North Carolina Department of Public Safety
 - 7) U.S. Fish and Wildlife Service
 - 8) U.S. Army Corps of Engineers



1 inch = 2,000 feet

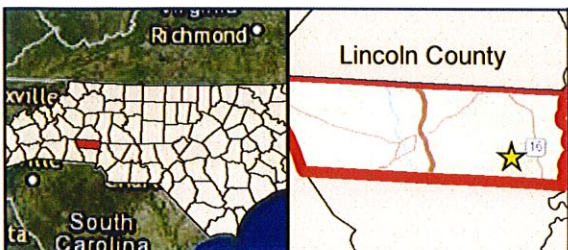
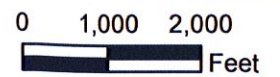


Figure 7.1
General Location

Killian Creek Limits of Disturbance
Lincoln County, NC



