Killian Creek Wastewater Treatment Plant Upgrade
Engineering Report and Environmental Information Document

For

Lincoln County, North Carolina
115 West Main Street
Lincolnton, NC 28092

Prepared by:

William B. Keaton, PE
WK Dickson & Co., Inc.
616 Colonnade Drive
Charlotte, NC 28205
Phone: (704) 334-5348

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1.0 EXECUTIVE SUMMARY

1.1 BRIEF DESCRIPTION OF PROJECT

The Lincoln County Killian Creek WWTP, Phase 1 was completed in November 2010 with funding assistance from the North Carolina Department of Environmental & Natural Resources (DENR) SRF CS370825-01 to serve the eastern area of Lincoln County. The Phase 1 plant was permitted under NPDES Permit NC0088722 for a flow of 1.68 mgd with provisions for a Phase 2 expansion to 3.35 mgd. To accommodate an area growth commitment for additional committed treatment capacity, Lincoln County (County) recently completed the Phase 2 upgrade of the facility in 2016 allowing the NPDES permitted flow to be increased from 1.68 mgd to an average daily flow capacity of 3.35 mgd.

The County has now reached 80% of the permitted 3.35 mgd capacity for the Killian Creek in commitments for future flow from area developments and an allowance for industrial/commercial growth. The County is now planning and beginning design for a Phase 3 upgrade of the Killian Creek WWTP to meet the future projected area wastewater treatment demands. To assist with the funding for the proposed upgrade, the County has applied and received a Clean Water State Revolving Fund (CWSRF) loan of $14,000,000 under Project No. CS370825-02.

This Engineering Report/Environmental Information Document (ER/EID) was prepared per the NCDWQ guidelines as required by the CWSRF loan conditions for the proposed Killian Creek WWTP upgrade.

The proposed project consists of an upgrade of the existing Killian Creek WWTP to increase the permitted capacity from 3.35 mgd to 6.6 mgd by the duplication of the existing unit processes currently employed by the plant per the original long-range plans and ER/EID prepared in 2007.

1.2 REASONS FOR PROJECT

This project is needed to meet the future rapid area development needs of the service area for the Killian Creek WWTP. The access to Lake Norman, close proximity to Charlotte and Hickory combined with Highway 16 providing a four (4) lane divided highway through this area has accelerated the development and growth in the area. Area wastewater flows are projected to approach 6.6 mgd by the year 2037.

1.3 RESULTS OF ALTERNATIVE ANALYSIS

The following alternatives were analyzed for meeting the identified wastewater treatment projections:

- No Action
- Connection into an Existing WWTP
- Land Application

- Water Reuse
- Continued Surface Water Discharge Via NPDES Permit

Based upon the alternative analysis and 20-year Present Value Cost Analysis (PVCA), the recommended alternative consists of the expansion of the existing Killian Creek WWTP and continued discharge into Killian Creek via a NPDES Permit. Speculative limits for the discharge were received from the NCDWQ NPDES Permit Complex Permitting Unit in a letter dated July 26, 2017. An application for a new NPDES Permit has also been submitted and is currently pending approval upon receipt of a Findings of No Significant Impact (FONSI).

1.4 SUMMARY OF ENVIRONMENTAL IMPACTS

Environmental impacts from the proposed project and related mitigation measures are detailed within the "Environmental Information Document" included within Section 7.0 of this ER/EID. Potential impacts generally summarized as follows:

A. Topography and Floodplains –

1) Project will require clearing and grading throughout a 5.4-acre area adjacent to the existing WWTP and on the existing site property. Land disturbance will be conducted following the Lincoln County erosion and sediment control practices and an approved DEQ Erosion and Sediment Control Plan.

2) Secondary impacts facilitated by the plant expansion to accommodate area development and growth will be minimized by the County's Streamside Buffer and Flood Protection Ordinance.

B. Soils – The project expansion area has no special soil conditions or known contaminated soil locations.

C. Prime and Unique Farmland –

1) The project expansion area is not considered prime farmland.

2) Soil loss during construction will be minimized by following a DEQ approved Erosion and Sedimentation Control Plan.

3) Contractors will be required to minimize soil contamination due to leakage and emissions from construction vehicles by proper equipment maintenance and collection of used vehicle fluids.

D. Land Use – Secondary impacts associate with induced population and commercial growth will be controlled by Lincoln County's adopted land planning, zoning tools and non-regulatory programs to manage growth and conserve natural and cultural resources. Related ordinances include a Unified Development Ordinance with articles on Zoning, General Development, Subdivisions, Floodplain protection, and Natural Resource Protection.

E. Forest Resources - Permanent impacts to existing mature hardwoods within the proposed project site will total approximately 3.65 acres and are not considered a true forest resource.

F. Wetlands and Streams – No waters of the US or State are located within the limits of disturbance. No impacts to Killian Creek located approximately 600 feet to the east of the project area or a unnamed tributary immediately north of the project area are expected.

G. Water Resources - Negative surface water quality impacts from construction will only be realized if a significant storm events occur, or if erosion and sedimentation control measures are not followed. Construction plans and Best Management Practices will be followed to minimize erosion and sediment loss during construction and vegetative cover is to be established as disturbed areas are backfilled and completed.

H. Coastal Resources – The site is in North Carolina's Piedmont region and does not contain coastal resources.

I. Shellfish, Fish and Their Habitats - No negative impacts to protected aquatic species or aquatic resources are anticipated because of this project.

J. Wildlife and Natural Vegetation – No significant impacts to wildlife and natural vegetation are anticipated.

K. Public Lands and Scenic, Recreational and State Areas – The project is located on a parcel currently owned by Lincoln County and will not impact any lands designated as scenic, recreational or state natural areas.

L. Areas of Archeological or Historical Value - The North Carolina State Historic Preservation Office's (SHPO) GIS Service indicates that there are no areas listed on the National Register of Historic Places (NRHP) or other areas of historical value located within either project area. SHPO's response to scoping (no comment) confirms this, as well as the lack of archaeological resources within or in the vicinity of the project area.

M. Air Quality - A slight short termed increase in airborne particulates from land clearing and exhaust emissions from construction vehicles will occur throughout construction, but the public health impacts of these emissions will be negligible due to the rural and isolated nature of the site.

N. Noise Levels – The site is located in a relative rural, forested area and the operation is not expected to generate abnormal noise levels off the property site. The existing WWTP has not received any noise complaints from nearby residents in eight (8) years of operation. The largest on-site noise source will be from positive displacement blowers which are contained within a buildings to mitigate noise.

O. Introduction of Toxic Substances – The plant utilizes an ultraviolet disinfection process and does not utilize chlorine in the treatment process. Potential toxic substances on site include diesel fuel utilized for on-site emergency generators, alum or polyaluminum chloride chemical to assist with phosphorus removal and 25% caustic soda for pH control. These chemical storage areas include secondary containment for spill prevention. Petroleum based lubricants used for equipment maintenance are stored in small volumes in areas with secondary containment. Absorbent materials and containment booms are maintained at various areas on site for related chemical cleanup and containment in the event of a spill.

P. The proposed project area is located within an area currently surrounded by forested land with the nearest residential dwellings approximately 0.3 miles away. As a result, no negative direct, secondary, or cumulative impacts to employment, property values, land use, or other factors effecting minority and/or low-income density and/or distribution are anticipated.

1.5 PROJECT FUNDING AND USER FEES

Based upon funding the proposed project from user fees, it is projected that the monthly sewer bill for a residential user will increase from the current $34.98/5,000 gallons to approximately $62.25/5,000 gallons. This user fee is estimated to be a 77.99% change in the sewer bill. The County also plans to utilize a combination of revenue bonds and capacity development fees to off set the capital and operation / maintenance cost to reduce these projected user fees. Over the 5-year period 2013 to 2017 the capacity development fee has averaged $747,512 per year with an upward growth trajectory in recent years. These capacity development fees alone are expected to significantly impact the required use fee assessment.

2.0 CURRENT SITUATION

The Lincoln County Killian Creek WWTP, Phase 1 was completed in November 2010 with funding assistance from the North Carolina Department of Environmental & Natural Resources (DENR) SRF CS370825-01 to serve the eastern area of Lincoln County. The Phase 1 plant was permitted under NPDES Permit NC0088722 for a flow of 1.68 mgd with provisions for a Phase 2 expansion to 3.35 mgd. The initial plant was constructed for a design flow of 3.3 mgd but withheld the installation of needed equipment (i.e. blowers, post equalization pumps, effluent filter and sludge dewatering equipment) that was necessary for increasing the flow from 1.68 mgd to 3.35 mgd. To accommodate an area growth commitment for additional capacity, Lincoln County recently completed the Phase 2 upgrade of the facility in 2016 adding the omitted equipment items and provisions for sludge thickening. This allowed the NPDES permitted flow to be increased from 1.68 mgd to the current permitted average daily flow capacity of 3.35 mgd.

2.1 COLLECTION SYSTEM

The Killian Creek WWTP currently provides wastewater treatment services for the sewage collection system serving the eastern side of Lake Norman, the Forney Creek and Killian Creek drainage basins primarily in the Catawba Springs Township. Long range County planning proposes future sewer system expansions into the Anderson Creek, Leepers Creek and Hoyle Creek drainage basins of the Ironton Township by the transfer of sewage from these drainage basins to the Killian Creek WWTP. Areas further to the west in the Howards Creek and Lincolnton Townships are currently served by the Town of Lincolnton WWTP and are not considered as potential service areas for the Killian Creek WWTP. There are no proposed collection system modifications or expansions included within the scope of this ER/EID.

The existing collection and conveyance system are further described within Table 2.1 on the following page.

Table 2.1. Overview of Collection System
Killian Creek WWTP Phase 3 Upgrade
Lincoln County

Provide information related to the Collection System and related issues (I/I, SSOs) in accordance with Section 3.3.1 of the guidance.

Figure Number for Collection System map:	Appendix E, Figure E.1

For use with programs funded or co-funded with the CWSRF, WW-SRP, WW-SEL, and CDBG-I programs.

Supporting information appendix reference:	Appendix E

Complete this table in accordance with Subchapter 2.2.1 of Part B of the guidance.

The Lincoln County gravity sewage collection system consists of the following:

Lincoln County Gravity Sewers			
Diameter (in)	**Length (ft)**	**Length (mi)**	**IDM**
8	306,628	58.1	4648
12	7,961	1.5	18.1
15	18,636	3.5	52.9
18	4,952	0.9	16.9
24	16,807	3.2	76.4
30	2,814	0.5	16.0
36	2,884	0.5	19.7
Total	**360,682**	**68.3**	**4848**

Lincoln County has thirty-nine (39) sewage pump stations. A master listing of pump stations with related information is provided in Appendix E.4. The following is a tabulation of force mains and low-pressure sewers within the system:

Table 2.1. Overview of Collection System
Killian Creek WWTP Phase 3 Upgrade
Lincoln County

Lincoln County Force mains			
Diameter (in)	**Length (ft)**	**Length (mi)**	**IDM**
3”	3,426	0.6	1.9
4”	65,116	12.3	49.3
6”	150,289	28.5	170.8
8”	17,297	3.3	26.2
10”	12,465	2.4	23.6
12”	31,388	5.9	71.3
20”	5,146	1.0	19.5
4” LP*	46,779	8.9	35.4
6” LP*	4,224	0.8	4.8
Total	**336,130**	**63.7**	**402.9**

*LP – Low Pressure Sewer

There are no expansions or improvements of the sewage collection and conveyance proposed within the subject project.

2.2 LINCOLN COUNTY SEWER FLOW SUMMARY

Date: June 25, 2019

Lincoln County Sewer Flow		
Current Plant Flow (12-month average) (measured)	1.255	MGD
Plant Flow at End of 2019 (from Sheet 3.22)	1.4788	MGD
Obligated Flow Not Yet Allocated (from LCP)	1.603	MGD
Permitted Flow to Date (from LCP.) (includes above)	3.785	MGD
Future Population Change from 2019 to 2038 (Sheet 3.1)	31,056	people
Flow for Population Change (12-Month Average) (31,056 x 100 gpd) ADDITIONAL FLOW*	3.106	MGD
Current + Obligated not yet allocated + future flow	**5.964**	**MGD**

*Note: 100 gpd flow for each capita provided by DEQ.

Current Plant Flow (12-Month Average) 1.255 MGD

- This is the current 12-month average daily flow for the Killian Creek Wastewater Treatment Plant.

Plant Flow at End of 2019 (Sheet 3.2) 1.478 MGD

- This is the projected average daily flow for the Killian Creek Wastewater Treatment Plant at the end of 2019.

Obligated Flow Not Yet Allocated (LCP) 1.603 MGD

- This the flow that is currently allocated to the treatment plant. The attached report outlines each project with its remaining allocated not yet contributory flow and the associated NCDEQ permit number. This flow plus the current plant flow is 2.858 MGD. This is what triggered the need for the plant expansion project.

Flow for Population Change (12-Month Average) 3.106 MGD

- This is the additional flow based on the population change that is predicted. Using Sheet 3.1, the difference in population from 2038 to 2018 is 31,056 people. DEQ provides 100 gpd flow per capita. After multiplying the difference in population by the flow per capita, it results in an increased flow of 3.106 MGD

Current + Obligated Not Yet Allocated + Future Flow 5.964 MGD

- This is the sum of the current plant flow (12-month average), obligated flow not yet allocated, and the future flow for population change (12-month average).

We recommend including plant recirculation and inflow/infiltration in this calculation. Doing so would bring the flow to 7.298 MGD in 20 years. As stated, we are pursuing a future, two-tiered NPDES permit for this project: 4.9 MGD and 6.6 MGD.

2.3 EXISTING WASTEWATER TREATMENT PLANT

The existing wastewater treatment plant condition is generally described in Table 2.3.1 and Table 2.3.2 with additional evaluations of existing specific equipment provided in Tables 2.3.3 to Tables 2.3.11.

<table>
<tr><th colspan="4">Table 2.3.1. General WWTP Condition</th></tr>
<tr><th colspan="4">Killian Creek WWTP Phase 3 Upgrade</th></tr>
<tr><th colspan="4">Lincoln County</th></tr>
<tr><td colspan="2">Project Location Figure Reference:</td><td colspan="2">Appendix A</td></tr>
<tr><td colspan="4">For use with projects funded or co-funded with the CWSRF, WW-SRP, WW-SEL, and CDBG-I programs.</td></tr>
<tr><td colspan="4">Provide a brief description of the WWTP condition and treatment processes in accordance with Subchapter 2.1.1 of Part B of the guidance.</td></tr>
<tr><td colspan="4">The initial Killian Creek WWTP was constructed and placed into operation in the fall of 2010 with a permitted flow of 1.68 mgd. The plant was upgraded in 2016 in response to flow commitments to local development, by modifications for the installation of equipment omitted in the original construction increasing the permitted capacity to 3.3 mgd. The modifications and equipment added in the 2016 upgrade generally included:
• Ten (10) retrievable aeration diffuser racks in the two (2) existing Sequencing Batch Reactor (SBR) basins.
• Two (2) positive displacement blowers serving the SBR and aerobic digesters.
• Two (2) additional post equalization basin pumps.
• Four (4) submersible mixers in poste equalization basin.
• One (1) new effluent disc filter.
• One (1) ultraviolet disinfection system with 2 banks.
• One (1) rotary drum thickener system with associated pumps and polymer feed system.
• One (1) rotary lobe sludge transfer pump.
• One (1) rotary filter sludge press system with associated conveyors and a polymer feed system.
The overall plant has now been in service approximately 9 years with the equipment considered to be in very good operating condition.</td></tr>
<tr><td colspan="4">Provide the average daily flows for the past four years and the current flow in accordance with Section 5.3.2.1 of the guidance.</td></tr>
<tr><td colspan="2">NPDES or Non-Discharge Permit No.</td><td colspan="2">NC0088722</td></tr>
<tr><td>Year</td><td>ADF (MGD)</td><td>Year</td><td>ADF (MGD)</td></tr>
<tr><td>2014</td><td>0.884</td><td>2016</td><td>0.979</td></tr>
<tr><td>2015</td><td>1.004</td><td>2017</td><td>0.945</td></tr>
<tr><td colspan="2">Current Flow (MGD):</td><td colspan="2">1.20 (January to July) 2018 (Influent)</td></tr>
<tr><td colspan="2">WWTP Permitted Flow (MGD):</td><td colspan="2">3.35</td></tr>
<tr><td colspan="2">Percentage of Capacity Currently Utilized:</td><td colspan="2">35.8 %</td></tr>
</table>

Table 2.3.1. General WWTP Condition	
Killian Creek WWTP Phase 3 Upgrade	
Lincoln County	
Provide information related to any NOVs the WWTP may have received or any special orders that may be in place.	
NOVs	Special Orders
Does the WWTP have any NOVs? ☐ Yes ☒ No ☐ N/A (new construction only)	Does the WWTP have any Special Orders or pending SOCs? ☐ Yes, Special Order is finalized ☐ Yes, Special Order is pending ☒ No
If yes, then describe and provide supporting information in an appendix of the ER/EID.	*If yes, then describe and provide supporting information in an appendix of the ER/EID.*
Appendix Reference: N/A	Appendix Reference: N/A
Discuss the NPDES or other permit(s) related to this facility.	
Appendix Reference for permit:	Appendix B
The existing Killian Creek WWTP operates under NPDES Permit No. NC0088722 and is permitted for a 3.35 mgd point source discharge to the Killian Creek. A copy of this permit is included in Appendix B. The Killian Creek WWTP is also permitted for the discharge of stormwater under the North Carolina General Permit No. NCG110000.	

Table 2.3.2. Description of Treatment Train
Killian Creek WWTP Phase 3 Upgrade
Lincoln County

For use with projects funded or co-funded with the CWSRF, WW-SRP, WW-SEL, and CDBG-I programs.

Supporting Information Appendix Reference:	C	Photo Appendix (if applicable):	C

Check the box(es) that apply in accordance with Subchapter 2.1.2 of Part B of the guidance.

Project is located in:
☒ Liquid Treatment Train
☒ Sludge/Solids Treatment Train

Project repairs/replaces the following:
The project is not replacing or repairing the existing process equipment but is proposed to duplicate the existing process to provide additional treatment capacity to meet future flow commitments for continued service area growth. Several minor modifications are proposed within the existing system to improve efficiency as required to meet anticipated future permit limits.

Describe the treatment train(s) where the proposed project will occur.

The proposed expansion will add capacity to the headworks (screening and grit removal), SBR biological treatment, tertiary filters, effluent UV disinfection, sludge thickening, aerobic sludge digestion and sludge dewatering systems.

Size	Age	Condition
3.35 mgd overall capacity	9 years	☒ Good ☐ Fair ☐ Poor

Provide any additional information related to the treatment train(s) where the project will occur.

The proposed project will provide additional capacity by the duplication of the existing treatment process and integration of the new and existing treatment systems.

Table 2.3.3 Specific Equipment Description					
Killian Creek Phase 3 Upgrade					
Lincoln County					
Headworks – Preliminary Treatment System					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4, Photo #1-6	Diagram Reference:	C.1	Additional Information Reference:	C.2

Condition	**Age**	**Size**
☒ Good ☐ Fair ☐ Poor ☐ N/A	9 years	4.2 mgd (Based upon influent pumps)

Additional Information

Provide any additional information that may be helpful in describing the equipment discussed above.

The existing headworks system consists of an influent mechanically cleaned cylindrical bar screen, by-pass manually cleaned bar screen, vortex grit separator with air fluidizing and air lift pump, grit classifier and influent Parshall flume with flow meter/recorder. The design flow of 4.2 mgd for the headworks system is sized for the capacities of the existing Pump Station No. 13 and No. 37 transferring flow into the Kilian Creek WWTP.

The headworks is currently functioning as designed for the removal of solids and grit from the influent wastewater with all related equipment in service.

Table 2.3.4 Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Sequencing Batch Reactor Biological Treatment System					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4 Phot # 7-12	Diagram Reference:	C.1	Additional Information Reference:	C.3

Condition	**Age**	**Size**
☒ Good ☐ Fair ☐ Poor ☐ N/A	4 to 9 years	3.35 mgd

Additional Information

Provide any additional information that may be helpful in describing the equipment discussed above.

The sequencing batch reactor (SBR) biological treatment system consists of the following:

- Influent flow splitter with two (2) influent, motor actuated sluice gates to control flow to the SBR basins.
- Two (2) SBR basins each containing a 75 Hp floating mixer, 11 retractable diffused aeration assemblies, a waste activated sludge (WAS) pump and decanter assembly.
- Four (4) positive displacement blowers in the adjacent Blower Building serving both SBR basins complete with 100 Hp, variable speed motors and automatic control valves on the air header to divert air on demand to the respective SBR basins.
- One (1) post equalization basin to receive effluent decanted from each SBR basin with four (4), 7.5 Hp submersible mixers to maintain solids in suspension and five (5) variable speed transfer pump for transferring SBR effluent to the effluent filters at a equalized flow rate.

The SBR system currently operates satisfactorily with each SBR basin on five (5), 4.8-hour cycles per day and is achieving consistent compliance with the current NPDS Permit.

Table 2.3.5. Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Effluent Filter System					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4, Photo #17-19	Diagram Reference:	C.1	Additional Information Reference:	C.2

Condition	**Age**	**Size**
☒ Good ☐ Fair ☐ Poor ☐ N/A	2 filters – 9 years 1 filter – 4 years	4.2 mgd /filter unit

Additional Information
Provide any additional information that may be helpful in describing the equipment discussed above.
The effluent filter system consists of three (3), automatic backwash disc filters. Each filter has 10 discs with polyester filter cloth having 10 µm filter pore size and designed to produce an effluent suspended solid concentration of 5 mg/L or less. When the head loss through the filter media creates a preset head, the filter backwash system is automatically activated to clean the filter media. Each of the filters has a peak hydraulic capacity to 4.2 mgd. The filter system is functioning well and producing a high-quality effluent with low suspended solids.

Table 2.3.6 Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Effluent Ultraviolet Disinfection System					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4, Photo #20-22	Diagram Reference:	C.1	Additional Information Reference:	C.2

Condition	Age	Size
☒ Good ☐ Fair ☐ Poor ☐ N/A	1 UV Channel – 9 years 1 UV Channel – 4 years	4.2 mgd /UV Channel

Additional Information

Provide any additional information that may be helpful in describing the equipment discussed above.

The ultraviolet (UV) disinfection system consists of two (2) channels containing two (2) UV banks per channel with thirty (30) UV lamps/bank. Each UV channel is designed for a maximum flow of 4.2 mgd with one UV bank in operation and the second bank as standby.

The second UV channel was placed in operation in 2014 with the plant expansion to 3.35 mgd. The UV system is functioning as designed and consistently achieving a design effluent fecal coliform level below the effluent permit of 200 colonies/100 ml.

The effluent from the UV disinfection system passes over a 90^{o} V-notch weir for final flow measurement and sampling.

Table 2.3.7 Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Effluent Reaeration					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4 Photo # 26	Diagram Reference:	C.1	Additional Information Reference:	C.2

Condition	**Age**	**Size**
☒ Good ☐ Fair ☐ Poor ☐ N/A	9 years	8.4 mgd Peak Flow

Additional Information
Provide any additional information that may be helpful in describing the equipment discussed above.
The effluent reaeration is accomplished as the final effluent travel down a 42-foot long structure with projections to create aeration eddies inducing air into the effluent along the travel path prior to discharge into the Killian Creek.

Table 2.3.8 Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Aerobic Digesters & Rotary Drum Sludge Thickener (RDT) System					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4 Photo # 23-30	Diagram Reference:	C.2	Additional Information Reference:	C.3

Condition	Age	Size
☒ Good ☐ Fair ☐ Poor ☐ N/A	Digesters - 9 years RDT – 4 years	WAS Production from 3.35 SBR Process

Additional Information

Provide any additional information that may be helpful in describing the equipment discussed above.

The aerobic digestion and RDT system consist of the following components:

Digester No. 1:

- 488,700-gallon tank
- 25 Hp floating mixer
- Coarse bubble diffuser system
- Manually operated supernatant decanter
- Sludge pump for transfer to Digester No. 2 or SHT

Rotary Drum Thickener (RDT) System:

- Two (2) RDT supply pumps
- Polymer dilution / feed system
- Rotary drum thickener
- Thickened sludge transfer pump

Digester No. 2:

- 1,814,000-gallon tank
- 40 Hp floating mixer
- Coarse bubble diffuser system
- Manually operated supernatant decanter
- Sludge pump for transfer to the SHT or return to Digester No. 1

Sludge Holding Tank:

- 267,400-gallon tank
- Two (2). 7.5 floating mixers
- Coarse bubble diffuser system
- Manually operated multi-level decanter system
- Sludge pump for transfer of sludge to truck loading station

Positive Displacement Blowers:

- Two (2), 100 Hp blowers
- Two (2), 50 Hp blowers

Waste activated sludge (WAS) removed from the SBR process is pumped directly to Digester No. 1 for initial aerobic stabilization and flow equalization for feeding the RDT unit. WAS is then periodically transferred by the RDT transfer pumps to the RDT where a polymer is added and the WAS is thickened from approximately 0.5-0.8% solids to approximately 2% solids and returned to Digester No. 1 or transferred to Digester No. 2 for further aerobic digestions.

Digester provides additional aerobic digestion and storage. Upon completion of the digestion process, the final sludge is transferred to the SHT for storage and final transfer to the dewatering system or to a truck for land application disposal.

The digestion system is currently functioning well and producing a Class B final sludge product acceptable for land application or dewatering and landfill disposal.

Table 2.3.9 Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Sludge Pump System					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4 Photo# 31-33	Diagram Reference:	C.2	Additional Information Reference:	C.3

Condition	Age	Size
☒ Good ☐ Fair ☐ Poor ☐ N/A	9 years 1 Rotary Lobe Pump - 4 years	120 gpm / pump 600 gpm - macerator

Additional Information
Provide any additional information that may be helpful in describing the equipment discussed above.
The sludge pump system consists of a sludge macerator and three (3) rotary lobe sludge transfer pumps. Digested sludge from the SHT passes through the sludge macerator (grinder) to reduce the size of any solids and to the rotary lobe pumps for transfer to the rotary filter press (RFP) sludge dewatering. Operation of rotary lobe pumps is controlled directly from the RFP control panel. Operation of the sludge macerator is interlocked with the rotary lobe pumps to activate the macerator when any of the sludge pumps is operational.

Table 2.3.10 Specific Equipment Description					
Killian Creek WWTP Phase 3 Upgrade					
Lincoln County					
Rotary Filter Press (RFP) Sludge Dewatering and Truck Loading Station					
For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.					
Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.					
Picture Reference:	C.4 Photo # 37-42	Diagram Reference:	C.2	Additional Information Reference:	C.3

Condition	Age	Size
☒ Good ☐ Fair ☐ Poor ☐ N/A	RFP System #1 - 9 years RFP System #2 – 4 years	510 to 600 dry lbs/day / RFP

Additional Information

Provide any additional information that may be helpful in describing the equipment discussed above.

The Rotary Filter Press (RFP) sludge dewatering system consists of two RFP with associated polymer feed systems and screw conveyors for transportation of sludge from the RFP discharge to the waste sludge dumpsters. Sludge is received with a solids consistency of approximately 1.5 to 2% solids and dewatered to a final sludge product of approximately 16 to 18% solids acceptable for landfill disposal at the Lincoln County landfill.

The sludge dewatering building also provides a truck loading station for the transfer of final liquid sludge from the sludge holding tank into tank trucks for transfer to land application sites.

Table 2.3.11 Specific Equipment Description

Killian Creek WWTP Phase 3 Upgrade

Lincoln County

Sodium Hydroxide (Caustic) Feed System

For use with projects funded or co-funded by the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.

Complete this table in accordance with Subchapter 2.2.2.2 of Part B of the guidance.

Picture Reference:	C.4 Photo # 34-36	Diagram Reference:	C.2	Additional Information Reference:	C.3

Condition	Age	Size
☒ Good ☐ Fair ☐ Poor ☐ N/A	9 years	N/A

Additional Information

Provide any additional information that may be helpful in describing the equipment discussed above.

Sodium Hydroxide (Caustic) can be fed at a 25% solution to the SBR basins, digesters and SHT to maintain a desired pH control. The system consists of the following components:

- 5000-gallon caustic (25%) storage tank
- 44 gpm recirculation pump
- Five (5) caustic metering pumps
- Four (4) rotameter dilution systems

Caustic (25%) is received from a tank truck and transferred into the caustic tank for storage. A recirculation pumps keeps the tank mixed and provides a supply of caustic to the five metering pumps. Two (2) of the metering pumps are devoted for the transfer of caustic to each SBR with a third pump serving as a standby pump for either SBR. The remaining two (2) metering pumps are provided for the transfer of caustic to the SHT or either digester. Each of the caustic metering pump systems is interlocked with a solenoid valve and rotameter to provide a carrier water to mix with the caustic supply for conveyance to the final source.

The caustic to the SBR tanks is automatically turned on and off based on pH sensors within each SBR tank to maintain the SBR liquid within a preset pH range. The pumps providing caustic to the SHT and digester are manually turned on and off based upon field pH measurements.

2.4 WASTEWATER TREATMENT PLANT EXPANSION

Lincoln County currently has flow commitments for the Killian Creek WWTP approaching the present permitted plant capacity of 3.35 mgd. To meet the ongoing rapid development and demand for future treatment capacity in the service area, Lincoln County proposes to expand the existing WWTP. To assist with funding, Lincoln County has applied to the NC Division of Infrastructure and has been approved for funding through the Clean Water State Revolving Fund (CWSRF). Project No. CS370825-02 has been issued for this project and this ER/EID was prepared per the CWSRF guidelines in support of the planned expansion of this facility.

Table 2.4.1 NPDES Permit Information	
Killian Creek WWTP Phase 3 Upgrade	
Lincoln County	
For use with projects funded or co-funded with the CWSRF, WW-SRP, WW-SEL, or CDBG-I programs.	
Supporting Information Appendix Reference:	B
NPDES or Non-Discharge Permit No.	NC0088722
Describe the information provided in the permit in accordance with 2.2.2.3 of Part B of the guidance	
The existing Killian Creek WWTP operates under NPDES Permit No. NC0088722 and is permitted for a 3.35 mgd point source discharge to the Killian Creek. A copy of the current permit is included in Appendix B.1. The original design concept for the plant was for a future expansion in phases by duplication of the existing sequencing batch reactor (SBR) treatment process with a continued surface discharge to the Killian Creek. To assist with the planned Killian Creek WWTP expansion, the NCDEQ NPDES Complex Permitting Unit was requested to provide speculative NPDES permit limits for the Killian Creek WWTP based upon tiered flows of 4.9 and 6.6 mgd. A copy of the speculative limits provided is included in Appendix B.2. The speculative NPDES Permit limits for the proposed plant expansion to the requested tiered flows included significant reductions in the effluent limits for BOD_5 and NH3-N, plus added limits for Total Nitrogen and Total Phosphorus and a change in the chronic toxicity from 52% to 77%.	

Table 2.4.2. Historical Wastewater Flow Data
Killian Creek WWTP Phase 3 Upgrade
Lincoln County

For use with projects funded or co-funded with CWSRF, WW-SRP, WW-SEL, or the CDBG-I programs.

Provide historical flows in accordance with Subchapter 2.2.4 of Part B of the guidance.

			Historical Flow Appendix Reference:	F
	Year	**Annual Average Daily Flow (MGD) ***	**Maximum Monthly Average Flow (MGD) ***	**Minimum Monthly Average Flow (MGD) ***
1	2014	0.882	0.941	0.822
2	2015	1.006	1.018	0.954
3	2016	0.978	1.075	0.914
4	2017	0.947	1.013	0.900
	$Q_{4\text{-yr}}$:	**0.953**	1.012	0.898

* Flow values reflect effluent flow.

Provide additional discussion of flow variations in accordance with Section 3.3.2.2 of the guidance.

Killian Creek has had a considerable development activity impacting flow in 2018. Between January and July 2018, the monthly average flow was 1.201 MGD for the plant influent. Graphical presentations reflecting the daily Killian Creek effluent daily flows variations for 2014 through 2017 are provided in Appendix F.2.

The collection system is considered to have a low infiltration/inflow (I/I). The peaking factor (maximum daily flow / average daily flow) over the period 2014 to 2017 ranges from 1.36 to 2.1. This is partially attributed to the fact that the collection system is less than thirty (30) years old and includes a substantial portion of low-pressure sewers in the Lake Norman area.

System I/I determinations were recently completed utilizing 2016 flows and rainfall data with supporting calculations included in Appendix E. These calculations indicate an infiltration rate of 228 gpd/inch diameter mile of gravity collection sewer. The inflow was calculated at a rate of 22 gpd/capita. Based on these determinations, it was concluded that the current collection system is not subject to excessive I/I.

Copies of the Killian Creek Discharge Monitoring Reports (DMR's) reflecting the effluent monitoring parameters for 2017 are included in Appendix F.1 with the 2017 monitoring data summarized below.

Table 2.4.2. Historical Wastewater Flow Data
Killian Creek WWTP Phase 3 Upgrade
Lincoln County

SUMMARY OF KILLIAN CREEK WWTP DMR EFFLUENT MONITORING – 2017

PARAMETER	UNITS	DAILY AVERAGE	DAILY MAXIMUM	DAILY MINIMUM	NPDES MONTHLY PERMIT LIMIT*
Flow	mgd	0.945	1.612	0.571	3.35
BOD_5	mg/L	5.4	17.6	< 2.0	30/45
TSS	mg/L	2.6	6.8	< 2.5	30/45
NH3-N	mg/L	0.7	6.1	< 0.5	1.5/4.5** 4.3/12.9***
Fecal Coliform	#/100 ml	77	950	2	200/400
Total P	mg/L	3.5	4.9	2.5	N/A
Total N	mg/L	3.1	6.5	1.5	N/S

*NPDES Permit effluent limitations - monthly average/weekly average limits at 3.35 mgd.
**NH3-N limits for April 1 to October 31
***NH3-N limits for November 1 to March 31

2.5 CURRENT POPULATION

Lincoln County is in the upper-piedmont region of the State of North Carolina and consists of approximately 308 square miles of area. Approximately 297 square miles of this area are potentially developable land with the remaining 11 square miles consisting of water surfaces in Lake Norman and smaller lakes or river surface areas. A general location map is provided in Appendix A.1. As shown in the township map provided in Appendix A.2, Lincoln County is divided into five (5) townships: Catawba Springs, Ironton, Howards Creek, Lincolnton, and North Brooke Townships. Based upon U.S. Census data for Lincoln County, approximately 55.4% of the county's total 79,740 population (2013) resides in the eastern Ironton and Catawba Springs Townships which comprise approximately 44.59% of the County total land area.

The attractiveness of the eastern Lincoln County area is due to the metropolitan areas in southern and eastern Lincoln County. Additionally, the quality schools, rural feel and potential for commercial/industrial growth makes Lincoln County desirable. This has generated a steady growth rate in this area which has been further stimulated by the completion of the Highway 16 construction providing four lanes of divided highway to this area from Charlotte and Hickory, NC. Additionally, the North Carolina Department of Transportation (NCDOT) has recently announced plans to improve a 25 mile stretch of NC Highway 73 to at least four (4) lanes extending from Highway 16 in Denver to US 29 in Concord with a similar project planned for NC Highway 150. This is expected to further stimulate growth in eastern Lincoln County.

Based upon the US Census Bureau data, Lincoln County grew from a population of 32,932 in 1970 to a population of 79,740 in 2013 representing an average growth of approximately 1,088 capita per year. Assuming the same continued average growth, the projected growth in population to 2037 (representing a 20-year planning period), the County population is projected to be approximately 105,865 people. This population projection compares favorably with a September 19, 2016 projection provided by the North Carolina Office of Budget and Management (NC OSBM) projecting a Lincoln County population of 104,056 in 2036.

The Killian Creek WWTP planning is primarily based on the commercial and industrial growth of the county. Other factors include Lincoln County's long-range capital improvement plan which reflects a regional wastewater treatment facility within the Killian Creek drainage basin serving the sewer needs of Catawba Springs and Ironton Township including the Forney Creek, Killian Creek, Anderson Creek, Leepers Creek and Hoyle Creek drainage basins. Four (4) options were considered for the projection of the respective township populations as follows:

A. **Option 1 -** Project township population growth proportional to the land area of the respective townships to the County land area. The County has a total area of approximately 308 square miles with approximately 11 square miles of water area primarily from Lake Norman and smaller rivers and streams and approximately 297 square miles of total land area. Assuming the County water area is primarily in the Catawba Springs Township area of 65.02 square miles, this leaves approximately 54.02 square miles of land area or 18.19% of the total County area. The Ironton Township has an area of 72.31 square miles or approximately 24.35% of the County total land area. Population projections were then computed assuming a population growth proportional to the land area as shown in Table 2.5.1.

B. **Option 2** – Project the respective townships growth in proportion to the current population percentage of the townships to the total County population projections. The year 2013, population within the Catawba Springs Township was reported to be 23,131 and the Ironton Township population reported to be 21,170. Based upon the 2013 County population reported at 80,036, the Catawba Springs Township had 28.9% and Ironton Township had 26.5% of the County total population. The population projections based on the Option 2 methodology assuming growth proportional to the current population percentages is shown in Table 2.5.1.

C. **Option 3** – Project the respective townships continued growth at the same rate as the respective township growth between 2000 and 2014. The Catawba Springs Township population grew from 14,817 in the year 2000 to 23,131 in the year 2013 or an average of 639.5 capita per year. The Ironton Township population grew from 17,602 in the year 2000 to 21,170 in the year 2013 or an average of 274.5 capita per year. Assuming the same continued average annual township growth rate, the respective township populations were projected and are reflected at Option 3 in Table 2.5.1.

Utilizing the forgoing alternative analysis, the current population analysis following the NCDEQ methodology (Option 1) is reflected in Table 2.5.2.

Table 2.5.1. Lincoln County Township Residential Population Projections

Planning Year:	July 2018	July 2020	July 2025	July 2030	July 2035	July 2038
Lincoln County Population*	84,799	87,248	93,304	99,374	105,459	107,858
Option 1 - % Land Area						
• Catawba Springs @ 18.19%	15,425	15,870	16,972	18,076	19,182	19,619
• Ironton @ 24.35%	20,649	21,245	22,720	24,198	25,679	26,263
Combined Townships Population	36,074	37,115	39,692	42,274	44,862	45,883
Option 2 - % of 2018 Population						
• Catawba Springs @ 28.90%	24,507	25,215	26,965	28,719	30,478	31,172
• Ironton @ 26.45%	22,429	23,077	24,679	26,284	27,894	28,528
Combined Townships Population	46,936	48,292	51,644	55,004	58,372	58,699
Option 3 – Township Growth						
• Catawba Sp. @ 639.5 cap/yr	26,329	27,608	30,805	34,003	37,201	38,480
• Ironton @ 274.5 cap/yr	22,543	23,092	24,464	25,836	27,208	27,457
Combined Township Population	48,872	50,700	55,269	59839	64,409	66,237

* Population for 2018 based on population projections provided by the North Carolina OSBM for Lincoln County last updated October 2, 2017

Table 2.5.2 Current Population Analysis Killian Creek WWTP Phase 3 Upgrade Lincoln County	
Complete the areas shown in gray. Links are to U.S. Census Bureau websites for use with this table.	
U.S. Census Place or County:	Lincoln County
Appendix Reference for U.S. Census Information:	D
Total Population from ACS *:	84,799
Persons per Square Mile in LGU:	286
LGU Land Area (miles^2):	297.0
WWTP Service Area (miles^2):	126.3
% of LGU in WWTP Service Area:	42.54%
Current Population in Service Area:	**35,549**

*Population for 2018 based on population projections provided by the North Carolina OSBM for Lincoln County last updated October 2, 2017.

2.6 CURRENT WASTEWATER FLOW

The current average daily wastewater treated at the WWTP is 1.255 MGD at the Killian Creek WWTP. Lincoln County's water and sewer billing records for the one-year period April 1, 2015 to March 31, 2016 were obtained and compared to the historical wastewater records previously reported in Table 2.4.2. Water usage records for all current sewer customers by classification in the Killian The current average daily wastewater treated at the WWTP is 1.255 MGD Creek service area reflect an average daily potable water consumption summarized as follows:

Table 2.6.1. Summary of Annual Water/Sewer Billing Records in the Killian Creek Service Area - 4/2015 to 3/2016:

User Classification	Average Daily Water Use * (GPD)	Percentage of Total Water Use	Number of Meters
Residential Users	779,536	65.8%	5,021
Commercial	169,307	14.3%	359
Industrial	170,050	14.4%	48
Institutional	64,773	5.5%	36
Total Potable Water Use:	**1,183,666**	**100%**	**5,464**

*Water consumption based on billing records for period April 1, 2-15 to March 31, 2016

The County population currently served by the Killian Creek WWTP resides totally within the Catawba Springs Township. The latest population census indicates an average of 2.62 capita per residence. Based on the current residential water/sewer customers, the population currently served by sewer service within the Catawba Springs Township is estimated to be approximately 15,126 or approximately 57.5% of the overall 2018 Catawba Springs Township population of 26,329. The Ironton Township is not currently served by a sewer system but is projected to be included as the County continues growth to the west.

Assuming an approximate 10% consumption of the water utilization, the projected current wastewater produced is estimated to be 1,263,501 gpd. This is very consistent with the noted historical wastewater records reported in Table 2.4.2.

3.0 FUTURE SITUATION

Lincoln County is facing capacity issues at the Killian Creek WWTP due to the current flow allocation commitments now approaching 80% of the permitted capacity of 3.35 mgd and is not currently withholding future flow allocations in compliance with the NC Administrative Code.

3.1 POPULATION PROJECTIONS

Future population projections for the Killian Creek service area within the Catawba Spring and Ironton Townships based upon the population projections published by North Carolina OSBM for Lincoln County in October 2017. Supporting population data from the NC OSBM is included in Appendix D.

Alternative population projections were also compiled utilizing data developed by the Metrolina Community Viz Model (MCVM) developed by Kimberly Horn & Associates utilizing socioeconomic inputs for housing and employment data provided by the various impacted Counties. This population projection methodology is believed to be more reliable than projections based solely on past population growth history trends.

The resulting population projections based on the percentage of population and the alternate data from the MCVM is provided in Table 3.1. The percentage method forecast a 2038 future service area population of 45,878 capita versus a MCVM forecast of 74,418 capita.

3.2 FUTURE WASTEWATER PROJECTIONS

The following table illustrates the future flows estimated for the project area by 2038.

Lincoln County Sewer Flow		
Current Plant Flow (12-month average) (measured)	1.255	MGD
Plant Flow at End of 2019	1.478	MGD
Obligated Flow Not Yet Allocated (from LCP)	1.603	MGD
Permitted Flow to Date (from LCP.) (includes above)	3.785	MGD
Future Population Change from 2019 to 2038 (Sheet 3.1)	31,056	people
Flow for Population Change (12-Month Average) (31,056 x 100 gpd) ADDITIONAL FLOW	3.106	MGD
Current + Obligated not yet allocated + future flow	**5.964**	**MGD**

The following items explain each of the items delineated above.

Plant Flow at End of 2019 (Sheet 3.2) 1.478 MGD

- This is the projected average daily flow for the Killian Creek Wastewater Treatment Plant at the end of 2019.

Current Plant Flow (12-Month Average) 1.255 MGD

- This is the current 12-month average daily flow for the Killian Creek Wastewater Treatment Plant.

Flow for the Population Change (12-month Average) 3.106 MGD

- This is the additional flow based on the population change that is predicted. Using Sheet 3.1, the difference in population from 2038 to 2018 is 31,056 people. DEQ provides 100 gpd flow per capita. After multiplying the difference in population by the flow per capita, it results in an increased flow of 3.106 MGD

Obligated Flow Not Yet Allocated (LCP) 1.603 MGD

- This the flow that is currently allocated to the treatment plant. The attached report outlines each project with its remaining allocated not yet contributory flow and the associated NCDEQ permit number. This flow plus the current plant flow is 2.858 MGD. This is what triggered the need for the plant expansion project.

Current + Obligated Not Yet Allocated + Future Flow 5.964 MGD

- This flow is the sum of the current plant flow (12-month average), obligated flow not yet allocated to the plant and the future flow for the future population from 2019 to 2038.

Table 3.1. Future Population Analysis
KILLIAN CREEK WWTP UPGRADE
Lincoln County

Complete the cells in gray. Note that some cells may contain pulldown menu. If so, please use pulldown menus to select data.

		SDC Data Appendix Reference:	
Current LGU Population:	84,799	County Name:	Lincoln County
Current Service Area Population:	35,549	Most Current County Population:	84,799
Percentage of LGU Population in County:	100.00%	Percentage of Service Area in LGU:	42.54%

		State Data Center			Alternate Data Source:	Option 3 - Township Growth History*	
	Year	County Population	LGU Population	Service Area Population	County Population	Township Population	Service Area Population **
1	2019	86,023	86,023	36,590	86,023	49,785	18,305
2	2020	87,248	87,248	37,111	87,248	50,699	19,668
3	2021	88,594	88,594	37,684	88,594	51,613	21,062
4	2022	89,841	89,841	38,214	89,841	52,527	22,485
5	2023	91,034	91,034	38,722	91,034	53,441	23,939
6	2024	92,172	92,172	39,206	92,172	54,355	25,422
7	2025	93,304	93,304	39,687	93,304	55,269	26,936
8	2026	94,452	94,452	40,175	94,452	56,183	28,480
9	2027	95,640	95,640	40,681	95,640	57,097	30,054
10	2028	96,865	96,865	41,202	96,865	58,011	31,659
11	2029	98,117	98,117	41,734	98,117	58,925	33,293
12	2030	99,374	99,374	42,269	99,374	59,839	34,958
13	2031	100,625	100,625	42,801	100,625	60,753	36,653
14	2032	101,856	101,856	43,325	101,856	61,667	38,378
15	2033	103,069	103,069	43,841	103,069	62,581	40,133
16	2034	104,266	104,266	44,350	104,266	63,495	41,918
17	2035	105,459	105,459	44,857	105,459	64,409	43,734
18	2036	106,653	106,653	45,365	106,653	65,323	45,579
19	2037	107,858	107,858	45,878	107,858	66,237	47,455
20	2038	107,858	107,858	45,878	107,858	67,151	49,361

If using an alternative source of data, provide a justification for use of this data below and provide supporting information in an appendix of the ER/EID.

Appendix Reference: D

*The alternate population projection is based upon a projected growth rate of the Catawba Springs Township of 639.5 capita per year and the Ironton Township growth rate of 274.5 capita per year.

**Approximately 13,155 capita (53.89%) of the Catawba Springs Township population was served by sewer in 2015 with no sewer service within the Ironton Township. It is assumed that the population served by sewer will increase within the Catawba Springs from 53.89% (2015) to approximately 80% by the year 2037 and the Ironton Township population served by sewer will increase from 0% (2015) to 60% in 2037 as sewer lines are extended into the Ironton area. Assuming an equal annual growth rate within the Township yields an overall sewered population growth of approximately 2.66.% per year.

Table 3.2 Township Flows

	Year	Cat Sp & Ironton Total Population	Cat Sp Pop Area Pop	% Sewered	Cat Springs Sewered Pop	Ironton Area Pop	% Sewered **	Ironton Sewered Pop	Total Sewered Pop Cat. Sp. & Ironton	Residential Q Increase	Commercial	Ind.	Total
	2015	46129	24410	53.89%	13155	21719	0	0	13,155				
	2016	47043	25050	55.08%	13797	21994	3%	600	14,397				
	2017	47957	25689	56.3%	14454	22268	5%	1216	15,670				1,043,000
	2018	48871	26329	57.5%	15126	22543	8%	1846	16,973	91,188	19,540	109,773	1,263,501
0	2019	49785	26968	58.6%	15814	22817	11%	2492	18,305	184,487	39,533	121,102	1,388,122
1	2020	50699	27608	59.8%	16516	23092	14%	3152	19,668	279,898	59,978	132,688	1,515,564
2	2021	51613	28247	61.0%	17234	23366	16%	3827	21,062	377,421	80,876	144,530	1,645,827
3	2022	52527	28887	62.2%	17967	23641	19%	4518	22,485	477,056	102,226	156,628	1,778,910
4	2023	53441	29526	63.4%	18715	23915	22%	5223	23,939	578,802	124,029	168,983	1,914,814
5	2024	54355	30166	64.6%	19479	24190	25%	5943	25,422	682,660	146,284	181,594	2,053,539
6	2025	55269	30805	65.8%	20257	24464	27%	6679	26,936	788,630	168,992	194,462	2,195,084
7	2026	56183	31445	66.9%	21051	24739	30%	7429	28,480	896,711	192,152	207,586	2,339,450
8	2027	57097	32084	68.1%	21860	25013	33%	8194	30,054	1,006,904	215,765	220,967	2,486,636
9	2028	58011	32724	69.3%	22684	25288	35%	8975	31,659	1,119,208	239,830	234,604	2,636,643
10	2029	58925	33363	70.5%	23523	25562	38%	9770	33,293	1,233,625	264,348	248,497	2,789,470
11	2030	59839	34003	71.7%	24378	25837	41%	10580	34,958	1,350,153	289,318	262,647	2,945,118
12	2031	60753	34642	72.9%	25247	26111	44%	11405	36,653	1,468,792	314,741	277,053	3,103,587
13	2032	61667	35282	74.1%	26132	26386	46%	12246	38,378	1,589,544	340,617	291,716	3,264,876
14	2033	62581	35921	75.3%	27032	26660	49%	13101	40,133	1,712,407	366,944	306,635	3,428,986
15	2034	63495	36561	76.4%	27947	26935	52%	13971	41,918	1,837,382	393,725	321,811	3,595,917
16	2035	64409	37200	77.6%	28878	27209	55%	14856	43,734	1,964,468	420,957	337,243	3,765,668
17	2036	65323	37840	78.8%	29823	27484	57%	15756	45,579	2,093,666	448,643	352,931	3,938,240
18	2037	66237	38479	80.0%	30784	27758	60%	16671	47,455	2,224,976	476,781	368,876	4,113,632
19	2038	67151	39119	81.2%	31760	28033	63%	17602	49,361	2,358,397	505,371	385,077	4,291,845
20	2039	68065	39758	82.4%	32751	28307	66%	18547	51,297	2,493,930	534,414	401,534	4,472,878
	% Increase	43.6%	57.6%		134.0%	27.8%							

*Assume Catawba Springs sewered population will grow from 53.89% in 2015 to 82.4% in 2039

**Assume Ironton sewered population will grow from 0% to 66% in 2039

3.3 ENERGY EFFICIENCY

The subject project is not for energy usage reduction or energy generation. No funding is being requested due to energy usage reduction or generation. Specific steps are being taken with the utilization of high efficiency motors and energy efficient aeration to promote energy efficiency.

4.0 NEED AND PURPOSE

The proposed project is needed to meet the ongoing growth and development needs of eastern Lincoln County. While the flow to the Killian Creek WWTP is currently well below the design capacity, Lincoln County has current flow commitments due to area development that are now approaching 80% of the design capacity. The County is presently withholding approval of additional flow commitments for the facility in accordance with 15A NCAC 02T 0.0118.

The purpose of this project is to meet the future development and growth demands within the designated service area by providing additional capacity to meet these future treatment capacity demands. The proposed project does not include any provisions for the expansion of the present collection system infrastructure.

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5.0 ALTERNATIVES ANALYSIS

The following alternatives were identified for addressing the future wastewater treatment needs of the County:

- No Action
- Connection into another existing WWTP.
- Land Application.
- Expansion of existing Sequencing Batch Reactor (SBR) WWTP.
- Expansion of the existing WWTP utilizing an Independent Membrane Bio-Reactor (MBR) WWTP.

To assist with the alternative evaluations requiring a continued surface water discharge into Killian Creek, speculative NPDES permit limits were requested and received from the NC DEQ, NPDES Complex Permitting Unit. A copy of these speculative limits are provided in Appendix B.2.

5.1 ALTERNATIVES DESCRIPTION

Table 5.1.1 Alternatives Description **Killian Creek WWTP Phase 3 Upgrade** **Lincoln County** **No-Action Alternative**	
Use this table for projects funded or co-funded by the WW-SRP, WW-SEL, and CDBG-I programs.	
Provide a description of the above alternative in accordance with Subchapter 5.1 of Part B of the guidance.	
Supporting Information Appendix Reference:	N/A
Description	
In the no action alternative, Lincoln County must continue to refuse applications for future flow capacity, impacting the future growth and economic development of the County. The County currently has flow commitments approaching 80% of the permitted plant capacity.	
Is Figure Included? ☐ Yes ☒ No	If Yes, Figure #: N/A
Alternative Feasibility: ☐ Feasible	☒ Infeasible
Capital Cost: $0	**Present Worth:** $0
Environmental Impact Description	
Provide a qualitative description of the environmental impacts and compare the impacts to that of the Preferred Alternative.	

Table 5.1.1 Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
No-Action Alternative

The no action alternative would impact the future economic development of Lincoln County and likely result in an increase in private septic tank disposal systems due the inability to obtain a commitment for treatment capacity within the Killian Creek WWTP. An increase in septic tank system could have a detrimental impact on local water sheds.

Environmental Impact Analysis

- ☒ Greater than Preferred Alternative
- ☐ Less than Preferred Alternative
- ☐ Same as Preferred Alternative
- ☐ Preferred Alternative

Acceptance/Rejection

Alternative: ☐ Accepted ☒ Rejected

Rationale for Acceptance/Rejection

Discuss the rationale for acceptance/rejection of the above-referenced alternative.

The no action alternative was rejected due to the impact to the future County economic development and growth.

Table 5.1.2 Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Connection To Another Existing WWTP

Use this table for projects funded or co-funded by the CWSRF program only.

Provide a description of the above alternative in accordance with Subchapter 5.1 of Part B of the guidance.

Supporting Information Appendix Reference:	N/A

Description

The existing Killian Creek WWTP was constructed based upon an approved "201 Facilities Plan" for East Lincoln County prepared in 2007. As part of that planning process, the connection into other area wastewater treatment facilities was evaluated. The nearest area wastewater treatment facility is the City of Lincolnton Sanitary Sewer District's WWTP located south of the City of Lincolnton on the South Fork of the Catawba River. Connection to this facility would require 17.6 miles of force main extending along several major County highways with an elevation differential of 350 feet and multiple pumping stations.

When the City of Lincolnton (City) was contacted in 2006 it was indicated that acceptance of flow from eastern Lincoln County would require expansion of their existing 6.0 mgd WWTP to permit acceptance of the projected future eastern County wastewater flows. With the added cost of the transportation, multiple pump stations and cost of expansion of the City's treatment plant expansion, this alternative was not considered to be economically feasible.

Is Figure Included? ☐ Yes ☒ No	If Yes, Figure #: N/A
Alternative Feasibility: ☐ Feasible	☒ Infeasible
Capital Cost: N/A	**Present Worth:** N/A

Environmental Impact Description

Provide a <u>qualitative</u> description of the environmental impacts and compare the impacts to that of the Preferred Alternative.

The transfer of wastewater from eastern Lincoln County to the City of Lincolnton WWTP would have a significant short termed environment impact associated with the 17.6 miles of force main along major County highways. Additionally, multiple pumping stations would increase the potential for an unauthorized release of sewage associated with pump station failure.

Environmental Impact Analysis

☒ Greater than Preferred Alternative
☐ Less than Preferred Alternative
☐ Same as Preferred Alternative
☐ Preferred Alternative

Acceptance/Rejection

Table 5.1.2 Alternatives Description **Killian Creek WWTP Phase 3 Upgrade** **Lincoln County** **Connection To Another Existing WWTP**
Alternative: ☐ Accepted ☒ Rejected
Rationale for Acceptance/Rejection
Discuss the rationale for acceptance/rejection of the above-referenced alternative.
The cost associated with the pumping, force main conveyance plus funding an expansion of another WWTP make this alternative economically infeasible.

Table 5.1.3. Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Water Reuse and Land Application

Use this table for projects funded or co-funded by the WW-SRP, WW-SEL, and CDBG-I programs.

Provide a description of the above alternative in accordance with Subchapter 5.1 of Part B of the guidance.

Supporting Information Appendix Reference:	Appendix G

Description

Water Reuse

Water reuse opportunities were evaluated with the adjacent Duke Energy Lincoln Combustion Turbine Station and possible local golf courses with the following conclusions:

- Treatment requirements will be more stringent for reuse than a surface discharge system increasing the cost of treatment to meet the required turbidity, suspended solids and fecal coliform levels.
- Golf course irrigation rates typically have lower hydraulic application rates than a dedicated application site due to restrictions on application periods limiting disposal options.
- The reuse system would avoid the cost associated with land for the dedicated application site but would add significant costs for transportation to reuse sites 5 to 10 miles away, site storage and the associated cost of administration of the reuse system.
- The added cost to a regional treatment system for an effluent reuse system would not be economically cost effective compared to a regional treatment with point source discharge.

Conjunctive Reuse

A potential conjunctive use opportunity was identified at the adjacent Duke Energy Lincoln Combustion Turbine Plant, but the following considerations make this option infeasible:

- Duke Energy needs for effluent water would be sporadic and only during peak power demands when the turbine power plant is in operation.
- The wastewater would be used for cooling with a required discharge only delaying the discharge to the stream.
- Duke Energy has expressed significant concerns regarding the presence of dissolved solids and salts within the wastewater. This would require further membrane or ion exchange treatment prior to use within their heat exchangers and produce a secondary waste stream adding a substantial sewer user cost.
- This conjunctive reuse opportunity has been reviewed in meetings with Duke Energy and rejected.

Land Application

The Killian Creek WWTP site is in the Piedmont physiographic providence of North Carolina with a flow greater than 130,000 gpd and does not meet the general criteria required by the NCDWI for a land application evaluation. Recent communication with the NC DEQ NPDES Complex Permitting Unit, however, requested an economic evaluation be performed as part of the alternative evaluations.

Table 5.1.3. Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Water Reuse and Land Application

Land application as an alternative to surface water discharge was evaluated based upon the following assumptions:

1. A water balance was prepared considering typical area soil percolation rates, average precipitation and evapotranspiration rates. This projected a maximum hydraulic loading rate of 78.20 inches per year (1.50 inches/week).
2. A spray application area utilizing a southern pine crop with a nitrogen uptake rate of 220 Kg/ha-year yielded an annual hydraulic loading based upon nitrogen limits of 4.2 inches/week. Accordingly, the hydraulic loading of 1.5 inches/week controls.
3. Based upon the design flow of 6.6 mgd and the hydraulic loading of 1.5 inches/week, the minimum spray irrigation site requirement is estimated to be 1131 acres without consideration for unusable areas due to unacceptable topography, streams, etc. When a minimum 400-foot buffer is added around the site, the absolute minimum spray irrigation site area is estimated approximately 1404 acres.
4. In addition to the spray irrigation site, NCDEQ requires a minimum 30-day storage or approximately 198 million gallons based upon the 6.6 mgd design flow. Using a depth of 15-foot, 3:1 side slopes and 3-foot free board, an additional minimum best-case area of approximately 47 acres is needed for a storage pond.
5. For land application, secondary treatment is still required and with effluent disinfection. Utilizing ultraviolet disinfection consistent with the existing system, the proposed treatment for land application effluent disposal will be essentially the same as that required for a surface discharge with the added cost of effluent transfer, a large storage pond, spray irrigation system and the general up keep of the application site.
6. For the land application cost evaluation, it was assumed that an approximate 1500-acre (1451-acre x 1.25%) acceptable application site is available within 6,000 feet of the site.
7. Land cost was also assumed to be approximately $8000/acre based upon input from the Lincoln County Planning Director.

The resulting present worth cost analysis of the land application alternative using the NCDWQ estimating forms with the resulting costs are included in Section 5.2 with associated computations provided in Appendix G

Is Figure Included? ☐ Yes ☒ No	If Yes, Figure #: N/A
Alternative Feasibility: ☐ Feasible	☒ Infeasible
Capital Cost: $58,809,800	**Present Worth:** $87,232,264

Environmental Impact Description

Provide a qualitative description of the environmental impacts and compare the impacts to that of the Preferred Alternative.

The land application will require a minimum of 1451 acres of idea topography and soil characteristics for the land application site and storage pond with restricted access.

Table 5.1.3. Alternatives Description **Killian Creek WWTP Phase 3 Upgrade** **Lincoln County** **Water Reuse and Land Application**
This would create a significant environmental impact associated with land disturbance and potential impact to groundwater and site runoff over and above the surface discharge alternatives.
Environmental Impact Analysis
☒ Greater than Preferred Alternative ☐ Less than Preferred Alternative ☐ Same as Preferred Alternative ☐ Preferred Alternative
Acceptance/Rejection
Alternative: ☐ Accepted ☒ Rejected
Rationale for Acceptance/Rejection
Discuss the rationale for acceptance/rejection of the above-referenced alternative.
The cost evaluations and potential environmental impact render this alternative technically and economically infeasible. It is also highly unlikely that the required land area with topography and soil characteristics suitable for a land application site could be acquired in the general area of the plant site.

Table 5.1.4 Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Expansion of Existing SBR WWTP

Use this table for projects funded or co-funded by the WW-SRP, WW-SEL, and CDBG-I programs.

Provide a description of the above alternative in accordance with Subchapter 5.1 of Part B of the guidance.

Supporting Information Appendix Reference:	B and H

Description

The existing Killian Creek WWTP operates under NPDES Permit No. NC0088722 and is permitted for a 3.35 mgd point source discharge to the Killian Creek. The original design concept for the plant was for a future expansion up to 6.6 mgd by duplication of the existing sequencing batch reactor (SBR) treatment process with a continued surface discharge to the Killian Creek.

Speculative effluent NPDES permit limitations were obtained during planning for the existing facility in March 2004 for a future 7.0 mgd discharge in the general vicinity of the final Killian Creek WWTP location on Killian Creek. At that time, the expanded 7.0 mgd plant was expected to have secondary treatment limits similar to the 3.3 mgd with 30 mg/L monthly average for BOD_5 and TSS.

The speculative effluent limits for an expansion to 6.6 mgd were recently updated by the NCDEQ in correspondence of July 26, 2017. A copy of this correspondence is provided in Appendix B and summarized below:

Killian Creek WWTP 2017 Updated Speculative Effluent Limitations			
Effluent Characteristics	Monthly Average	Weekly Average	Daily Maximum
Flow	4.9 mgd / 6.6 mgd		
BOD5	5 mg/L	7.5 mg/L	
NH3 as N	1 mg/L	3 mg/L	
Dissolved Oxygen			5.0 mg/L (Minimum)
TSS	30 mg/L	45 mg/L	
TRC			28 ug/L

Table 5.1.4 Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Expansion of Existing SBR WWTP

Fecal Coliform (geometric mean)	200/100 ml	400/100 ml	
Total Nitrogen	6 mg/L (April – Oct)		
Total Phosphorus	1 mg/L		
Chronic Toxicity Pass / Fail (Quarterly Test)	70% / 77%		

The 2017 updated speculative limits reflect anticipated significant reductions in BOD5, no winter limits for ammonia nitrogen and the addition of total nitrogen and phosphorus limits associated with an increase in flow to 6.6 mgd.

Expansion of the existing SBR process is proposed by the installation of a mirror image of the existing SBR/Digester structure with the same design concept as the original plant. As shown in the preliminary site layout provided in Appendix H.1, the proposed addition will include the following new additions:

- Headworks system paralleling the existing screening and grit removal systems.
- SBR influent flow splitter combining the flow from the two headwork systems for distribution to the proposed four (4) SBR basins.
- SBR and aerobic digesters duplicating the existing system to include:
- Two (2) SBR basins with related diffused aeration, decanters, WAS pumps and piping. Based upon operational issues experienced by the Owner with the existing floating mixers and retrievable diffused aeration system, it is proposed to utilize a jet mixing/aeration system within the new SBR basins.
- Two (2) new aerobic digesters with jet mixing/aeration.
    - One (1) new rotary drum thickener (RDT) with associated polymer system for thickening of the waste activated sludge within the new SBR system. The new aerobic digester #3 is proposed to receive the waste activated sludge (WAS) from SBR #3 and #4 for periodic transfer to the new RDT. The existing Digester #1 and Sludge Holding Tank (SHT) #1 are to have interconnecting piping and valves permitting transfer between the digesters to provide the flexibility of thickening and distribution to either the existing Digester #2 or the new Digester #4. The two (2) new aerobic digesters #3 and #4 are proposed to be equal in size to the existing aerobic digester #1 and #2.

Table 5.1.4 Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Expansion of Existing SBR WWTP

  - New sludge holding tank of equal size to the existing sludge holding tank. Transfer pumps are proposed to be capable of transferring digested sludge between the two sludge holding tanks for flexibility in dewatering operations.
  - Sludge pump station with sludge macerator and sludge pumps for transfer of sludge to the new sludge dewatering system.
  - Blower building and associated blowers for the new SBR and aerobic digesters.
- Sludge dewatering building with two (2) new rotary filter presses.
- Effluent filter building consolidating the effluent filters into one location and consisting of two (2) new effluent disk filter units and the three (3) existing filters relocated from the current location.
- Conversion of the existing Effluent Filter/UV building into a dedicated UV disinfection building containing the existing two (2) channel system and a new two (2) channel, dual bank UV system.
- Replacement of existing effluent 90-degree v-notch weir with a 120-degree weir capable of monitoring the design effluent flows.

A proposed basis of design for the expansion of the existing SBR/digester system is provided in Appendix H.2 with block flow diagrams of the proposed process provided in Appendix H.4 and H.5.

In evaluating the proposed SBR process expansion, recent effluent discharge monitoring reports (DMR's) were reviewed to determine the current SBR process performance with respect to the speculative limits and are summarized in Appendix H.3. Based upon the existing SBR reported process performance over the three-year period 2015 to 2017, the following conclusions were derived:

- The SBR process will require improved performance to achieve compliance with the speculative effluent limits for BOD_5, ammonia nitrogen, total nitrogen and phosphorus.
- It is proposed to change the SBR process to utilize 4 cycles per day opposed to the current 5 cycles per day to increase the aeration and anoxic contact periods. These cycle time changes and minor modifications to optimize the process variables are expected to enable compliance with the speculative effluent BOD_5, ammonia nitrogen and total nitrogen limits.
- Adjustment of the cycle time and increased anoxic contact is expected to achieve a biological reduction of the effluent phosphorus; however, achievement of the 1.0 mg/L speculative effluent limit will likely require a chemical addition to consistently achieve the 1.0 mg/L limit.

Table 5.1.4 Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Expansion of Existing SBR WWTP

Advantages and disadvantages of the expansion of the existing SBR process alternative are identified as follows:

Advantages -

- Operator familiarity with the process and related equipment.
- The SBR process variables can be adjusted to achieve performance optimization and the process has a proven track record for achieving the proposed speculative limits. The optimizations can be implemented with the existing process without significant cost to permit evaluation as the expansion is being designed and constructed.
- Less energy overall required than the alternative MBR process alternative.

Disadvantages –

- Expansion of the SBR system will require a large footprint area requiring construction in an area with significant excavation and potential rock.
- The performance record of the existing SBR process over the period 2015 to June 2017 reflects needed process modifications to optimize performance to achieve the speculative permits limits.
- The process will require the continued utilization of effluent filters to achieve the speculative limits.

Is Figure Included? ☒ Yes ☐ No	If Yes, Figure #: H.1 (Appendix H)
Alternative Feasibility: ☒ Feasible	☐ Infeasible
Capital Cost: $26,304,200	**Present Worth:** $48,881,394

Environmental Impact Description

Provide a qualitative description of the environmental impacts and compare the impacts to that of the Preferred Alternative.

The primary environment impact of this alternative will be the increased volume of effluent discharged into Killian Creek plus the land area disturbance on the existing site required for the expansion.

Environmental Impact Analysis

☐ Greater than Preferred Alternative
☐ Less than Preferred Alternative
☐ Same as Preferred Alternative
☒ Preferred Alternative

Acceptance/Rejection

Alternative: ☒ Accepted ☐ Rejected

Rationale for Acceptance/Rejection

Table 5.1.4 Alternatives Description **Killian Creek WWTP Phase 3 Upgrade** **Lincoln County** **Expansion of Existing SBR WWTP**
Discuss the rationale for acceptance/rejection of the above-referenced alternative.
This alternative is accepted as the preferred alternative based upon the capital and present worth cost and compatibility with the existing treatment process for operation and maintenance.

Table 5.1.5. Alternatives Description **Killian Creek WWTP Phase 3 Upgrade** **Lincoln County** **Expansion Utilizing an Independent Membrane Bio-Reactor System**	
Use this table for projects funded or co-funded by the WW-SRP, WW-SEL, and CDBG-I programs.	
Provide a description of the above alternative in accordance with Subchapter 5.1 of Part B of the guidance.	
Supporting Information Appendix Reference:	I
Description	

Expansion utilizing an independent membrane bio-reactor (MBR) system proposes the construction of a new independent MBR system in a separate reactor structure replacing the SBR process. Once the MBR system is completed and placed into service, the existing SBR structure is proposed to be modified to convert the SBR #2 basin into two (2) additional aerobic sludge digesters and the SBR #1 basin modified to provide an influent peak flow equalization basin.

As shown in Figure I.1 in Appendix I, the proposed MBR process will include the following additions and modifications:

- New headworks with a mechanical primary screen, by-pass manually cleaned screen, vortex grit removal and influent Parshall flume flow monitoring system.
- New flow splitter structure permitting diversion of peak influent flows to a peak flow equalization basin (former SBR #1 basin).
- MBR influent rotary drum screen(s) with 2 mm diameter screen openings providing improved solids removal for protection of the MBR system and additional reduction of influent organic loading reducing the process aeration and waste solids processing requirements.

Table 5.1.5. Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Expansion Utilizing an Independent Membrane Bio-Reactor System

- MBR system in new independent structure including dual anoxic zones, pre-aeration zones and four (4) MBR basins containing the MBR units and a return activated sludge (RAS) basin.
- MRR blower building containing pre-aeration blowers and MBR air scour blowers.
- MBR pump station containing MBR permeate pumps and WAS pumps for transfer of WAS to the rotary drum thickener (RDT)/aerobic digestion system.
- Conversion of existing SBR #1 basin into an equalization basin utilizing the existing retrievable aeration assemblies and floating mixer for aeration/mixing and installing new submersible pumps for the return of wastewater back to the influent flow splitter.
- Conversion of the existing effluent filter building into a dedicated UV disinfection building by removal of the effluent filters no longer needed with the MBR effluent and installation of a new UV channel with dual UV banks.
- Replacement of existing effluent 90-degree v-notch weir with a 120-degree weir capable of monitoring the design effluent flows.
- Sludge handling system modifications to include:
    - Conversion of existing SBR #2 basin into Aerobic Digesters #3 and #4.
    - New rotary drum thickening system to supplement existing rotary drum thickener.
    - Expanded sludge pump station with new sludge feed pumps capable of directing sludge to either the existing rotary sludge press system or the proposed new dewatering system.
    - New sludge dewatering building with two (2) new sludge dewatering rotary filter presses or equivalent dewatering systems.

The proposed preliminary basis of design for the plant expansion utilizing a new MBR treatment system in an independent structure is provided in Appendix I.2. Advantages and disadvantages of the expansion utilizing an independent MBR process alternative are identified as follows:

Advantages -

- MBR process produces a high-quality effluent for consistent achievement of the future effluent permit limitations and offering a potential for effluent reuse.
- The complete MBR system consisting of pre-aeration and anoxic basins and MBR zones requires a significantly smaller structure and related footprint compared to the SBR process expansion and minimizes the potential costs associated the excavation and rock removal.

Table 5.1.5. Alternatives Description
Killian Creek WWTP Phase 3 Upgrade
Lincoln County
Expansion Utilizing an Independent Membrane Bio-Reactor System

- MBR process permits the elimination of the tertiary effluent filters permitting the existing effluent filter/UV building to be utilized for expansion of the UV disinfection units without construction of a separate effluent filter building.
- MBR process utilizes a significantly higher mixed liquor solids concentration of approximately 10,000 mg/L resulting in a lower waste activated sludge (WAS) yield, a significant reduction in waste activated sludge volume, reduced sludge thickening requirements, increased process stability and improved stability of the nitrification process for ammonia nitrogen removal.
- MBR process is not as susceptible to process upsets from filamentous bacteria.
- Consolidation of aerobic digesters in a central area with the conversion of SBR #2 into two (2) aerobic digesters utilizing the existing SBR blowers, diffusers and mixers.
- SBR #1 basin can be converted into a 1.82 million-gallon peak flow equalization basin with minor modifications providing significant process flexibility.
- The high quality MBR effluent is expected to improve the UV system performance and reduce maintenance requirements.
- The MBR process effluent will improve the quality of effluent discharged into Killian Creek and improve overall stream quality.
- The MBR process is essentially a continuous flow process eliminating the need for equalization before the UV system and associated issues with algae growth.

Disadvantages -

- The MBR process has a larger energy requirement than the SBR process for the scour aeration to clean the MBR membranes in addition to large return sludge (feed forward) pumps and permeate pumps.
- MBR membranes have an estimated life of approximately 10 years requiring replacement at a significant intermittent operation cost.
- The MBR membranes require chemical cleaning with sodium hypochlorite approximately four (4) times per year as well an acid cleaning an average of once per year utilizing oxalic or citric acid. These cleaning cycles require storage and handling of potentially hazardous chemicals.
- The MBR process will be an entirely new process to the operational staff and will require training and familiarization for the operation and maintenance associated with the new equipment and process.

Is Figure Included? ☒ Yes ☐ No	If Yes, Figure #: Appendix I, Figure # I.1
Alternative Feasibility: ☒ Feasible	☐ Infeasible
Capital Cost: $30,418,400	**Present Worth:** $60,776,592

Table 5.1.5. Alternatives Description Killian Creek WWTP Phase 3 Upgrade Lincoln County Expansion Utilizing an Independent Membrane Bio-Reactor System
Environmental Impact Description
Provide a qualitative description of the environmental impacts and compare the impacts to that of the Preferred Alternative.
The primary environment impact of this alternative will be the increased volume of effluent discharged into Killian Creek plus the land area disturbance on the existing site required for the expansion
Environmental Impact Analysis
☐ Greater than Preferred Alternative ☐ Less than Preferred Alternative ☒ Same as Preferred Alternative ☐ Preferred Alternative
Acceptance/Rejection
Alternative: ☐ Accepted ☒ Rejected
Rationale for Acceptance/Rejection
Discuss the rationale for acceptance/rejection of the above-referenced alternative.
This alternative was rejected based upon the capital and present worth costs associated with the process which were greater than the selected alternative.

5.2 PRESENT WORTH ANALYSIS

As outlined within the respective alternative descriptions, the following alternatives were rejected because they were not deemed reasonable or feasible for the future needs of Lincoln County or obvious capital and operation/maintenance costs or technical considerations:

- No Action
- Connection into another WWTP
- Effluent Reuse
- Conjunctive Reuse

The remaining alternatives consisted of the following:

- Expansion of Existing SBR/Aerobic Digester System and Continued Discharge to Killian Creek
- Expansion Utilizing a MBR system and Continued Discharge to Killian Creek
- Upgrade of Existing SBR System with Effluent Land Application

The cost effectiveness of each of the feasible alternatives was further evaluated by a present worth analysis using a 20-year planning period and a discount rate of 4.875%, inflation rate for replacement cost based upon a Construction Cost Index of 2.97% and operation and maintenance costs based on a Municipal Cost Index of 0.09% consistent with the North Carolina Division of

Water Infrastructure guidelines. The present worth cost analysis for each alternative are provided in Tables 5.2.1 through Table 5.2.3. These evaluations include opinions of capital cost (equipment, labor, installation, design and construction phase engineering costs), equipment replacement costs, operation and maintenance costs and the associated conversion into present worth costs. The respective costs for each alternative are summarized in Table 5.2.4.

Table 5.2.2.1. Capital Costs
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY

Complete the areas shown in gray below. Where shown, use pulldown menus to select options. The spreadsheet will calculate the capital costs.

Alternative:	**INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM**			
Project Administration ($):	$2,244,000			
Component	**Unit Cost[a]**	**Unit**	**Quantity**	**Total Cost**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$725,700
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$672,500	LS	1	$672,500
Yard Piping -	$197,200	LS	1	$197,200
Headworks:				
Ultrasonic Flow Meter	$3,600	LS	1	$3,600
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$403,200
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,300	LS	1	$412,300
Influent Fine (2 mm) Screens & Conc. Pad	$449,900		1	$449,900
Influent Flow Splitter				
Structure, Inf. Gates, Grating, Etc	$98,500	LS	1	$98,500
MBR (Separate Structure with Kubota MBR				
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	$10,250,000	LS	1	$10,250,000
MBR Building for Pumps, Blowers, Etc	$600,000	LS	1	$600,000
MBR Structure, Piping Complete	$4,750,000	LS	1	$4,750,000
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	$60,700	LS	1	$60,700
Alum Feed System	$57,000	LS	1	$57,000
Alum Recirculation Pump	$20,500	LS	1	$20,500
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	$86,100	LS	1	$86,100
Rotary Drum Thickener	$491,700	LS	1	$491,700
Rotary Drum Thickener Pump Station	$154,600	LS	1	$154,600
Rotary Drum Thickener Building & Piping	$76,500		1	$76,500
Blower Building & Air Piping (Blowers w/ SBR Equip):	$412,600	LS	1	$412,600
Sludge Pump Building Expansion:				$0
Rotary Lobe Sludge Pumps to Dewatering (2 new)	$83,400	LS	1	$83,400
Misc. Piping, Pump Relocation, Etc.	$109,700	LS	1	$109,700
Sludge Dewatering Building:				$0
Rotary Sludge Press System Incl Conveyor	$566,300	LS	1	$566,300
RSP Polymer System	$34,900	LS	1	$34,900
Building, HVAC, Piping, Etc. Complete	$593,100	LS	1	$593,100
Existing Effluent Building Converted into UV Building				
New UV System	$695,600	LS	1	$695,600
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$320,300
Convert SBR #2 to Digester Divider Wall (Budget)	$186,500	LS	1	$186,500
New Aerobic Digester Equipment	$360,000	LS		$0
Convert SBR #1 into Equalization Basin (Budget)	$100,000	LS	1	$100,000
EQ Return Pumps	$60,000	LS	1	$60,000
Instrumentation & Controls:	$197,400	LS	1	$197,400
Electrical Systems:				$0
Project Startup	$103,300	LS	1	$103,300
Blower Building	$77,100	LS	1	$77,100
Sludge Pump Building	$17,700	LS	1	$17,700
Sludge Dewatering Building	$69,300	LS	1	$69,300
Effluent Filter Building Add New UV & Remove Filters	$18,100	LS	1	$18,100
Headworks:	$67,100	LS	1	$67,100
MBR & Related Blower, Pump Building (Assume = SBR)	$104,200	LS	1	$104,200
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$817,900
Generator & ATS	$668,600	LS	1	$668,600
Allowance Items:				$0
Testing	$300,000	LS	1	$300,000
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$500,000	LS	1	$500,000
				$0
				$0
				$0
[a]Unit costs are in today's dollars, not future dollars.			**Total Construction Cost:**	**$25,613,100**
			Construction Contingency Cost:	**$2,561,310**
			Project Administration Cost:	**$2,244,000**
			Total Capital Cost:	**$30,418,410**

Table 5.2.1.2 Project Cost Life Cycle Assumptions			
KILLIAN CREEK WWTP EXPANSION			
LINCOLN COUNTY			
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM			
Complete the areas shown in gray.			
Component	**Expected Life Cycle**	**Replacement Expected?†**	**Rationale for Expected Life Cycle**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.			
Sitework - Erosion Cont., Grading, Paving Fencing, etc.			
Yard Piping			
Headworks:			
Ultrasonic Flow Meter	10	2029	Mechanical Instrumentation
Influent Screening, Vortex Grit & Grit Classifer Equip.	20	2039	Mechanical Equipment
Excavation, Structures, Piping, Painting, Grating, Etc.			
Influent Flow Splitter:			
Structure, Sluice Gates, Grating, etc.			
SBR, Digesters & RDT System:			
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	20	2039	Mechanical Equipment
Post EQ Submersible Pumps	20	2039	Mechanical Equipment
Post EQ Submersible Mixers	20	2039	Mechanical Equipment
Rotary Drum Thickener	20	2039	Mechanical Equipment
Rotary Drum Thickener Pump Station	20	2039	Mechanical Equipment
Rotary Drum Thickener Building & Piping			
SBR & Digester Structure, Piping Complete			
Blower Building & Air Piping (Blowers w/ SBR Equip)			
0			
Sludge Pump Building:			
Rotary Lobe Sludge Pumps to Dewatering System	20	2039	Mechanical Equipment
In-Line Sludge Grinder	20	2039	Mechanical Equipment
Building, HVAC, Piping, Etc. Complete			
Sludge Dewatering Building:			
Rotary Sludge Press System Incl Conveyor	20	2039	Mechanical Equipment
RSP Polymer System	20	2039	Mechanical Equipment
Building, HVAC, Piping, Etc. Complete			
New Effluent Building:			
New Effluent Filters	20	2039	Mechanical Equipment
Relocate Existing 3 Filters			
Building, HVAC, Piping, Etc. Complete			
Existing Effluent Building Converted into UV Building:			
New UV System	20	2039	Mechanical Equipment
Building Modifications to install new UV Channel(s)			
Alum Feed System:			
Alum Tank			
Alum Feed System	20	2039	Mechanical Equipment
Alum Recirculation Pump	20	2039	Mechanical Equipment
Piping, Conc. Containment Area, Ladder, Grating, Etc.			
Instrumentation & Controls:	10	2029	Mechanical Equipment
Electrical Systems:			
Project Startup			
Blower Building			
Sludge Pump Building			
Sludge Dewatering Building			
Effluent Filter Building			
Headworks			
SBR, Post EQ			
Site Conduit, Lighting, Switchgear, Etc			
Generator & ATS	20	2039	Mechanical Equipment
Allowance Items:			
Testing & Special Inspections			
†Period for replacement would be Years 1 through 20 only.			

Table 5.2.1.3. Replacement Costs (Years 1 to 5)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM								
Current Inflation Rate based on Construction Cost Index: 2.97%			EPA Discount Rate: 4.875%					
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**1**	**2**	**3**	**4**	**5**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$0
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$0
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building:				$0	$0	$0	$0	$0
New Effluent Filters	$1,429,100	LS	1	$0	$0	$0	$0	$0
Relocate Existing 3 Filters	$200,000	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System:				$0	$0	$0	$0	$0
Alum Tank	$42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$0
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing & Special Inspections	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$997,600	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 1 to 5):				**$0**	**$0**	**$0**	**$0**	**$0**

Table 5.2.1.4. Replacement Costs (Years 6 to 10)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM

Current Inflation Rate based on Construction Cost Index: 2.97% EPA Discount Rate: 4.875%

				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**6**	**7**	**8**	**9**	**10**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$2,998
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$0
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building:				$0	$0	$0	$0	$0
New Effluent Filters	$1,429,100	LS	1	$0	$0	$0	$0	$0
Relocate Existing 3 Filters	$200,000	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System:				$0	$0	$0	$0	$0
Alum Tank	$42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$164,386
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing & Special Inspections	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$997,600	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 6 to 10):				**$0**	**$0**	**$0**	**$0**	**$167,384**

Table 5.2.1.5. Replacement Costs (Years 11 to 15)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**11**	**12**	**13**	**14**	**15**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$0
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$0
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building:				$0	$0	$0	$0	$0
New Effluent Filters	$1,429,100	LS	1	$0	$0	$0	$0	$0
Relocate Existing 3 Filters	$200,000	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System:				$0	$0	$0	$0	$0
Alum Tank	$42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$0
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing & Special Inspections	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$997,600	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 11 to 15):				**$0**	**$0**	**$0**	**$0**	**$0**

Table 5.2.1.7. Present Value of Operations and Maintenance Costs (Years 1-10)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM

Complete the cells shown in gray below.

Current Inflation Rate Based on Municipal Cost Ind	0.09%												EPA Discount Rate:	4.875%
				Present Value of O&M Costs for Year:										
Component	**Unit Cost**	**Unit**	**Quantity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Labor - 5 People @ 2080 hr/yr & $40/Hr Ave	$83,200	Ea	5	$397,006	$378,879	$361,580	$345,070	$329,315	$314,278	$299,929	$286,234	$273,165	$260,693	
Chemicals (6.6 x $46,000 @ ~ 1 mgd)	$303,600	Ea	1	$289,738	$276,509	$263,884	$251,835	$240,336	$229,363	$218,890	$208,896	$199,358	$190,256	
Supplies & Services	$57,000	Ea	1	$54,397	$51,914	$49,543	$47,281	$45,122	$43,062	$41,096	$39,220	$37,429	$35,720	
Permitting /Regulatory/Training	$25,000	Ea	1	$23,859	$22,769	$21,730	$20,737	$19,791	$18,887	$18,025	$17,202	$16,416	$15,667	
Sludge & Grit Disposal (6.6 x $23,000 @ 1 mgd)	$151,800	Ea	1	$144,869	$138,254	$131,942	$125,917	$120,168	$114,681	$109,445	$104,448	$99,679	$95,128	
Headworks (5.5 Hp x 2 @ 6 hr/day & 70% Eff)	$1,006	Ea	1	$960	$916	$874	$834	$796	$760	$725	$692	$661	$630	
SBR Mixers (75 Hp x 70% x 3.85 hr/cycle x 4 cy x 4 SBR)	$70,419	Ea	1	$67,203	$64,135	$61,207	$58,412	$55,745	$53,200	$50,771	$48,452	$46,240	$44,129	
SBR Blowers (300 Hp/SBR x 2.7 hr/cycle & 70% x 4 cy/d)	$197,538	Ea	1	$188,518	$179,911	$171,696	$163,857	$156,375	$149,235	$142,421	$135,918	$129,713	$123,790	
Post EQ Mixers (4 x 7.5 Hp x 2 @ 18 hr/day & 70%)	$16,461	Ea	1	$15,710	$14,993	$14,308	$13,655	$13,031	$12,436	$11,868	$11,327	$10,809	$10,316	
Post EQ Pumps (4 x 7.5 Hp x 70% x 19 hr/day)	$8,688	Ea	1	$8,291	$7,913	$7,551	$7,207	$6,878	$6,564	$6,264	$5,978	$5,705	$5,444	
Digester Mixers (160 Hp x 24 hr/day & 70%)	$58,530	Ea	1	$55,857	$53,307	$50,873	$48,550	$46,333	$44,218	$42,199	$40,272	$38,433	$36,679	
Digester Blowers (350 Hp x 18 hr/day & 70%)	$96,025	Ea	1	$91,641	$87,457	$83,463	$79,653	$76,016	$72,545	$69,233	$66,071	$63,055	$60,176	
Digester Transfer Pumps (5 Hp x 4 x ~ 4 hr/day & 70%)	$1,524	Ea	1	$1,455	$1,388	$1,325	$1,264	$1,207	$1,152	$1,099	$1,049	$1,001	$955	
Effluent Filters (54 KVA x 24 Hr/Day)	$37,843	Ea		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Eff Filter Drives, UV Rec & Plt Drain PS (~45 Hp, 6hr/d)	$4,115	Ea	1	$3,927	$3,748	$3,577	$3,414	$3,258	$3,109	$2,967	$2,832	$2,702	$2,579	
Sludge PS & Dewater (~67 Hp x 2 @ 8 Hr/day & 260 d/yr)	$11,639	Ea	1	$11,108	$10,601	$10,117	$9,655	$9,214	$8,793	$8,392	$8,008	$7,643	$7,294	
RDT Equip (~19 Hp x 2 @ 2080 Hr/yr)	$3,301	Ea	1	$3,150	$3,006	$2,869	$2,738	$2,613	$2,494	$2,380	$2,271	$2,167	$2,068	
Alum Addition for P removal @ ~15 Gal/MG & $0.84/gal	$0.84	Gal	36,135	$28,967	$27,645	$26,383	$25,178	$24,028	$22,931	$21,884	$20,885	$19,931	$19,021	
Total Present Value of Yearly O&M Expenses (Years 1-10):				**$1,386,657**	**$1,323,343**	**$1,262,921**	**$1,205,257**	**$1,150,226**	**$1,097,708**	**$1,047,587**	**$999,756**	**$954,108**	**$910,544**	

Table 5.2.1.8. Present Value of Operations and Maintenance Costs (Years 11-20)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM

Current Inflation Rate Based on Municipal Cost Index:	0.09%										EPA Discount Rate:	4.875%
				Present Value of O&M Costs for Year:								
Component	**Unit Cost**	**Unit**	**Quantity**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Labor - 5 People @ 2080 hr/yr & $40/Hr Ave	$83,200	Ea		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Chemicals (6.6 x $46,000 @ ~ 1 mgd)	$303,600	Ea	1	$181,569	$173,278	$165,367	$157,816	$150,610	$143,734	$137,171	$130,908	$124,931	$119,226
Supplies & Services	$57,000	Ea	1	$34,089	$32,533	$31,047	$29,630	$28,277	$26,986	$25,753	$24,578	$23,455	$22,384
Permitting /Regulatory/Training	$25,000	Ea	1	$14,951	$14,269	$13,617	$12,995	$12,402	$11,836	$11,295	$10,780	$10,287	$9,818
Sludge & Grit Disposal (6.6 x $23,000 @ 1 mgd)	$151,800	Ea	1	$90,784	$86,639	$82,683	$78,908	$75,305	$71,867	$68,585	$65,454	$62,465	$59,613
			1										
Headworks (5.5 Hp x 2 @ 6 hr/day & 70% Eff)	$1,006	Ea	1	$602	$574	$548	$523	$499	$476	$455	$434	$414	$395
SBR Mixers (75 Hp x 70% x 3.85 hr/cycle x 4 cy x 4 SBR)	$70,419	Ea	1	$42,114	$40,191	$38,356	$36,605	$34,933	$33,338	$31,816	$30,363	$28,977	$27,654
SBR Blowers (300 Hp/SBR x 2.7 hr/cycle & 70% x 4 cy/d)	$197,538	Ea	1	$118,138	$112,744	$107,596	$102,683	$97,995	$93,521	$89,250	$85,175	$81,286	$77,575
Post EQ Mixers (4 x 7.5 Hp x 2 @ 18 hr/day & 70%)	$16,461	Ea	1	$9,845	$9,395	$8,966	$8,557	$8,166	$7,793	$7,438	$7,098	$6,774	$6,465
Post EQ Pumps (4 x 7.5 Hp x 70% x 19 hr/day)	$8,688	Ea	1	$5,196	$4,959	$4,732	$4,516	$4,310	$4,113	$3,925	$3,746	$3,575	$3,412
Digester Mixers (160 Hp x 24 hr/day & 70%)	$58,530	Ea	1	$35,004	$33,406	$31,880	$30,425	$29,036	$27,710	$26,445	$25,237	$24,085	$22,985
Digester Blowers (350 Hp x 18 hr/day & 70%)	$96,025	Ea	1	$57,428	$54,806	$52,304	$49,915	$47,636	$45,461	$43,386	$41,405	$39,514	$37,710
Digester Transfer Pumps (5 Hp x 4 x ~ 4 hr/day & 70%)	$1,524	Ea	1	$912	$870	$830	$792	$756	$722	$689	$657	$627	$599
Effluent Filters (54 KVA x 24 Hr/Day)	$37,843	Ea	1	$22,632	$21,599	$20,613	$19,672	$18,773	$17,916	$17,098	$16,317	$15,572	$14,861
Eff Filter Drives, UV Rec & Plt Drain PS (~45 Hp, 6hr/d)	$4,115	Ea	1	$2,461	$2,349	$2,242	$2,139	$2,042	$1,948	$1,859	$1,774	$1,693	$1,616
Sludge PS & Dewater (~67 Hp x 2 @ 8 Hr/day & 260 d/yr)	$11,639	Ea	1	$6,961	$6,643	$6,340	$6,050	$5,774	$5,510	$5,259	$5,019	$4,789	$4,571
RDT Equip (~19 Hp x 2 @ 2080 Hr/yr)	$3,301	Ea	1	$1,974	$1,884	$1,798	$1,716	$1,637	$1,563	$1,491	$1,423	$1,358	$1,296
Alum Addition for P removal @ ~15 Gal/MG & $0.84/gal	$1	Gal	36,135	$18,153	$17,324	$16,533	$15,778	$15,058	$14,370	$13,714	$13,088	$12,490	$11,920
Total Present Value of Yearly O&M Expenses (Years 11-20):				**$642,812**	**$613,462**	**$585,452**	**$558,720**	**$533,210**	**$508,864**	**$485,630**	**$463,456**	**$442,295**	**$422,101**
							Total Present Value of Annual O&M Costs (Life of Project):						**$16,594,108**

Table 5.2.2.1. Capital Costs				
KILLIAN CREEK WWTP EXPANSION				
LINCOLN COUNTY				
Complete the areas shown in gray below. Where shown, use pulldown menus to select options. The spreadsheet will calculate the capital costs.				
Alternative:	**INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM**			
Project Administration ($):	$2,244,000			
Component	**Unit Cost[a]**	**Unit**	**Quantity**	**Total Cost**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$725,700
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$672,500	LS	1	$672,500
Yard Piping -	$197,200	LS	1	$197,200
Headworks:				
Ultrasonic Flow Meter	$3,600	LS	1	$3,600
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$403,200
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,300	LS	1	$412,300
Influent Fine (2 mm) Screens & Conc. Pad	$449,900		1	$449,900
Influent Flow Splitter				
Structure, Inf. Gates, Grating, Etc	$98,500	LS	1	$98,500
MBR (Separate Structure with Kubota MBR				
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	$10,250,000	LS	1	$10,250,000
MBR Building for Pumps, Blowers, Etc	$600,000	LS	1	$600,000
MBR Structure, Piping Complete	$4,750,000	LS	1	$4,750,000
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	$60,700	LS	1	$60,700
Alum Feed System	$57,000	LS	1	$57,000
Alum Recirculation Pump	$20,500	LS	1	$20,500
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	$86,100	LS	1	$86,100
Rotary Drum Thickener	$491,700	LS	1	$491,700
Rotary Drum Thickener Pump Station	$154,600	LS	1	$154,600
Rotary Drum Thickener Building & Piping	$76,500		1	$76,500
Blower Building & Air Piping (Blowers w/ SBR Equip):	$412,600	LS	1	$412,600
Sludge Pump Building Expansion:				$0
Rotary Lobe Sludge Pumps to Dewatering (2 new)	$83,400	LS	1	$83,400
Misc. Piping, Pump Relocation, Etc.	$109,700	LS	1	$109,700
Sludge Dewatering Building:				$0
Rotary Sludge Press System Incl Conveyor	$566,300	LS	1	$566,300
RSP Polymer System	$34,900	LS	1	$34,900
Building, HVAC, Piping, Etc. Complete	$593,100	LS	1	$593,100
Existing Effluent Building Converted into UV Building				
New UV System	$695,600	LS	1	$695,600
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$320,300
Convert SBR #2 to Digester Divider Wall (Budget)	$186,500	LS	1	$186,500
New Aerobic Digester Equipment	$360,000	LS		$0
Convert SBR #1 into Equalization Basin (Budget)	$100,000	LS	1	$100,000
EQ Return Pumps	$60,000	LS	1	$60,000
Instrumentation & Controls:	$197,400	LS	1	$197,400
Electrical Systems:				$0
Project Startup	$103,300	LS	1	$103,300
Blower Building	$77,100	LS	1	$77,100
Sludge Pump Building	$17,700	LS	1	$17,700
Sludge Dewatering Building	$69,300	LS	1	$69,300
Effluent Filter Building Add New UV & Remove Filters	$18,100	LS	1	$18,100
Headworks:	$67,100	LS	1	$67,100
MBR & Related Blower, Pump Building (Assume = SBR)	$104,200	LS	1	$104,200
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$817,900
Generator & ATS	$668,600	LS	1	$668,600
Allowance Items:				$0
Testing	$300,000	LS	1	$300,000
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$500,000	LS	1	$500,000
				$0
				$0
				$0
[a]Unit costs are in today's dollars, not future dollars.			**Total Construction Cost:**	**$25,613,100**
			Construction Contingency Cost:	**$2,561,310**
			Project Administration Cost:	**$2,244,000**
			Total Capital Cost:	**$30,418,410**

Table 5.2.2.2 Project Cost Life Cycle Assumptions KILLIAN CREEK WWTP EXPANSION LINCOLN COUNTY INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM			
Complete the areas shown in gray.			
Component	**Expected Life Cycle**	**Replacement Expected?†**	**Rationale for Expected Life Cycle**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.			
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.			
Yard Piping -			
Headworks:			
Ultrasonic Flow Meter	10	2029	
Influent Screening, Vortex Grit & Grit Classifer Equip.	20	2039	
Excavation, Structures, Piping, Painting, Grating, Etc.			
Influent Fine (2 mm) Screens & Conc. Pad	20	2039	
Influent Flow Splitter			
Structure, Inf. Gates, Grating, Etc			
MBR (Separate Structure with Kubota MBR			
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	20	2039	
MBR Building for Pumps, Blowers, Etc	20	2039	
MBR Structure, Piping Complete			
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	20	2039	
Alum Feed System	20	2039	
Alum Recirculation Pump	20	2039	
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	20	2039	
Rotary Drum Thickener	20	2039	
Rotary Drum Thickener Pump Station	20	2039	
Rotary Drum Thickener Building & Piping			
Blower Building & Air Piping (Blowers w/ SBR Equip):			
Sludge Pump Building Expansion:			
Rotary Lobe Sludge Pumps to Dewatering (2 new)	20	2039	
Misc. Piping, Pump Relocation, Etc.			
Sludge Dewatering Building:			
Rotary Sludge Press System Incl Conveyor	20	2039	
RSP Polymer System			
Building, HVAC, Piping, Etc. Complete			
Existing Effluent Building Converted into UV Building			
New UV System	20	2039	
Building Modifications to install new UV Channel(s)			
Convert SBR #2 to Digester Divider Wall (Budget)			
New Aerobic Digester Equipment	20	2029	
Convert SBR #1 into Equalization Basin (Budget)	20	2039	
EQ Return Pumps	20	2039	
Instrumentation & Controls:	10	2029	
Electrical Systems:			
Project Startup			
Blower Building			
Sludge Pump Building			
Sludge Dewatering Building			
Effluent Filter Building Add New UV & Remove Filters			
Headworks:			
MBR & Related Blower, Pump Building (Assume = SBR)			
Site Conduit, Lighting, Switchgear, Etc	20	2039	
Generator & ATS			
Allowance Items:			
Testing			
Rock Excavation, Unsuitable Soil, Off-Site Disposal			
0			
0			
0			
†Period for replacement would be Years 1 through 20 only.			

Table 5.2.2.3. Replacement Costs (Years 1 to 5)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM								
Current Inflation Rate based on Construction Cost Index:	2.97%		EPA Discount Rate:	4.875%				
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**1**	**2**	**3**	**4**	**5**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$672,500	LS	1	$0	$0	$0	$0	$0
Yard Piping -	$197,200	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$0
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,300	LS	1	$0	$0	$0	$0	$0
Influent Fine (2 mm) Screens & Conc. Pad	$449,900		1	$0	$0	$0	$0	$0
Influent Flow Splitter				$0	$0	$0	$0	$0
Structure, Inf. Gates, Grating, Etc	$98,500	LS	1	$0	$0	$0	$0	$0
MBR (Separate Structure with Kubota MBR				$0	$0	$0	$0	$0
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	$10,250,000	LS	1	$0	$0	$0	$0	$0
MBR Building for Pumps, Blowers, Etc	$600,000	LS	1	$0	$0	$0	$0	$0
MBR Structure, Piping Complete	$4,750,000	LS	1	$0	$0	$0	$0	$0
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	$60,700	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	$86,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$491,700	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500		1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip):	$412,600	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building Expansion:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering (2 new)	$83,400	LS	1	$0	$0	$0	$0	$0
Misc. Piping, Pump Relocation, Etc.	$109,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$566,300	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$593,100	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Convert SBR #2 to Digester Divider Wall (Budget)	$186,500	LS	1	$0	$0	$0	$0	$0
New Aerobic Digester Equipment	$360,000	LS		$0	$0	$0	$0	$0
Convert SBR #1 into Equalization Basin (Budget)	$100,000	LS	1	$0	$0	$0	$0	$0
EQ Return Pumps	$60,000	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$0
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$17,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building Add New UV & Remove Filters	$18,100	LS	1	$0	$0	$0	$0	$0
Headworks:	$67,100	LS	1	$0	$0	$0	$0	$0
MBR & Related Blower, Pump Building (Assume = SBR)	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$500,000	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 1 to 5):				**$0**	**$0**	**$0**	**$0**	**$0**

Table 5.2.2.4. Replacement Costs (Years 6 to 10)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**6**	**7**	**8**	**9**	**10**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$672,500	LS	1	$0	$0	$0	$0	$0
Yard Piping -	$197,200	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$2,998
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,300	LS	1	$0	$0	$0	$0	$0
Influent Fine (2 mm) Screens & Conc. Pad	$449,900		1	$0	$0	$0	$0	$0
Influent Flow Splitter				$0	$0	$0	$0	$0
Structure, Inf. Gates, Grating, Etc	$98,500	LS	1	$0	$0	$0	$0	$0
MBR (Separate Structure with Kubota MBR				$0	$0	$0	$0	$0
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	$10,250,000	LS	1	$0	$0	$0	$0	$0
MBR Building for Pumps, Blowers, Etc	$600,000	LS	1	$0	$0	$0	$0	$0
MBR Structure, Piping Complete	$4,750,000	LS	1	$0	$0	$0	$0	$0
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	$60,700	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	$86,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$491,700	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500		1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip):	$412,600	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building Expansion:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering (2 new)	$83,400	LS	1	$0	$0	$0	$0	$0
Misc. Piping, Pump Relocation, Etc.	$109,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$566,300	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$593,100	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Convert SBR #2 to Digester Divider Wall (Budget)	$186,500	LS	1	$0	$0	$0	$0	$0
New Aerobic Digester Equipment	$360,000	LS		$0	$0	$0	$0	$0
Convert SBR #1 into Equalization Basin (Budget)	$100,000	LS	1	$0	$0	$0	$0	$0
EQ Return Pumps	$60,000	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$164,386
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$17,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building Add New UV & Remove Filters	$18,100	LS	1	$0	$0	$0	$0	$0
Headworks:	$67,100	LS	1	$0	$0	$0	$0	$0
MBR & Related Blower, Pump Building (Assume = SBR)	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$500,000	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 6 to 10):				**$0**	**$0**	**$0**	**$0**	**$167,384**

Table 5.2.2.5. Replacement Costs (Years 11 to 15)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM

Current Inflation Rate based on Construction Cost Index: 2.97% EPA Discount Rate: 4.875%

				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**11**	**12**	**13**	**14**	**15**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$672,500	LS	1	$0	$0	$0	$0	$0
Yard Piping -	$197,200	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$0
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,300	LS	1	$0	$0	$0	$0	$0
Influent Fine (2 mm) Screens & Conc. Pad	$449,900		1	$0	$0	$0	$0	$0
Influent Flow Splitter				$0	$0	$0	$0	$0
Structure, Inf. Gates, Grating, Etc	$98,500	LS	1	$0	$0	$0	$0	$0
MBR (Separate Structure with Kubota MBR				$0	$0	$0	$0	$0
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	$10,250,000	LS	1	$0	$0	$0	$0	$0
MBR Building for Pumps, Blowers, Etc	$600,000	LS	1	$0	$0	$0	$0	$0
MBR Structure, Piping Complete	$4,750,000	LS	1	$0	$0	$0	$0	$0
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	$60,700	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	$86,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$491,700	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500		1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip):	$412,600	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building Expansion:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering (2 new)	$83,400	LS	1	$0	$0	$0	$0	$0
Misc. Piping, Pump Relocation, Etc.	$109,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$566,300	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$593,100	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Convert SBR #2 to Digester Divider Wall (Budget)	$186,500	LS	1	$0	$0	$0	$0	$0
New Aerobic Digester Equipment	$360,000	LS		$0	$0	$0	$0	$0
Convert SBR #1 into Equalization Basin (Budget)	$100,000	LS	1	$0	$0	$0	$0	$0
EQ Return Pumps	$60,000	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$0
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$17,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building Add New UV & Remove Filters	$18,100	LS	1	$0	$0	$0	$0	$0
Headworks:	$67,100	LS	1	$0	$0	$0	$0	$0
MBR & Related Blower, Pump Building (Assume = SBR)	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$500,000	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 11 to 15):				**$0**	**$0**	**$0**	**$0**	**$0**

Table 5.2.2.6. Replacement Costs (Years 16 to 20)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**16**	**17**	**18**	**19**	**20**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$672,500	LS	1	$0	$0	$0	$0	$0
Yard Piping -	$197,200	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$2,497
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$279,612
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,300	LS	1	$0	$0	$0	$0	$0
Influent Fine (2 mm) Screens & Conc. Pad	$449,900		1	$0	$0	$0	$0	$311,997
Influent Flow Splitter				$0	$0	$0	$0	$0
Structure, Inf. Gates, Grating, Etc	$98,500	LS	1	$0	$0	$0	$0	$0
MBR (Separate Structure with Kubota MBR				$0	$0	$0	$0	$0
MBR - Membranes, Blowers, Diffusers, Pumps, Etc.	$10,250,000	LS	1	$0	$0	$0	$0	$7,108,183
MBR Building for Pumps, Blowers, Etc	$600,000	LS	1	$0	$0	$0	$0	$0
MBR Structure, Piping Complete	$4,750,000	LS	1	$0	$0	$0	$0	$0
MBR Traveling Bridge Crane & Hoist @ ~ 115' over MBR	$60,700	LS	1	$0	$0	$0	$0	$42,094
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$39,528
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$14,216
Alum Tank, Piping, Containment Area, Ladder, Grating, Etc.	$86,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$491,700	LS	1	$0	$0	$0	$0	$340,985
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$107,212
Rotary Drum Thickener Building & Piping	$76,500		1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip):	$412,600	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building Expansion:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering (2 new)	$83,400	LS	1	$0	$0	$0	$0	$57,836
Misc. Piping, Pump Relocation, Etc.	$109,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$566,300	LS	1	$0	$0	$0	$0	$392,718
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$24,202
Building, HVAC, Piping, Etc. Complete	$593,100	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$482,386
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Convert SBR #2 to Digester Divider Wall (Budget)	$186,500	LS	1	$0	$0	$0	$0	$0
New Aerobic Digester Equipment	$360,000	LS	1	$0	$0	$0	$0	$249,653
Convert SBR #1 into Equalization Basin (Budget)	$100,000	LS	1	$0	$0	$0	$0	$69,348
EQ Return Pumps	$60,000	LS	1	$0	$0	$0	$0	$41,609
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$136,893
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$17,700	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building Add New UV & Remove Filters	$18,100	LS	1	$0	$0	$0	$0	$0
Headworks:	$67,100	LS	1	$0	$0	$0	$0	$0
MBR & Related Blower, Pump Building (Assume = SBR)	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$567,198
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing	$300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$500,000	LS	1	$0	$0	$0	$0	$0
Total Present Value of Replacment Costs (Years 16 to 20):				**$0**	**$0**	**$0**	**$0**	**$10,268,169**
Total Present Value of Replacement Costs (Life of Project):								**$10,435,552**

Table 5.2.2.7. Present Value of Operations and Maintenance Costs (Years 1-10)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM

Complete the cells shown in gray below.

Current Inflation Rate Based on Municipal Cost Index:	0.09%										EPA Discount Rate:	4.875%
				Present Value of O&M Costs for Year:								
Component	**Unit Cost**	**Unit**	**Quantity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Labor - 4 People @ 2080 hr/yr & $40/Hr Ave	$83,200	Ea	4	$317,605	$303,103	$289,264	$276,056	$263,452	$251,423	$239,943	$228,987	$218,532	$208,554
Chemicals (6.6 x $46,000)	$303,600	Ea	1	$289,738	$276,509	$263,884	$251,835	$240,336	$229,363	$218,890	$208,896	$199,358	$190,256
Supplies & Services	$57,000	Ea	1	$54,397	$51,914	$49,543	$47,281	$45,122	$43,062	$41,096	$39,220	$37,429	$35,720
Permitting /Regulatory/Training	$25,000	Ea	1	$23,859	$22,769	$21,730	$20,737	$19,791	$18,887	$18,025	$17,202	$16,416	$15,667
Sludge & Grit Disposal (5 x $23,000)	$115,000	Ea	1	$109,749	$104,738	$99,956	$95,392	$91,037	$86,880	$82,913	$79,127	$75,514	$72,066
MBR Chem Clean				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Hypochlorite - 4/year @ 730 Gallon/ea & $50/drum	$2,655	Ea	1	$2,533	$2,418	$2,307	$2,202	$2,101	$2,005	$1,914	$1,826	$1,743	$1,664
Oxalic Acid - 1/year @ 304 Gallon/ea & $50/drum	$276	EA	1	$264	$252	$240	$229	$219	$209	$199	$190	$181	$173
Alum for P removal @ ~15 Gal/MG & $0.84/gal	$0.84	Gal	36,135	$28,967	$27,645	$26,383	$25,178	$24,028	$22,931	$21,884	$20,885	$19,931	$19,021
Headworks (5.5 Hp x 2 @ 6 hr/day & 70% Eff)	$1,006	Ea	1	$960	$916	$874	$834	$796	$760	$725	$692	$661	$630
MBR Pre- Air Mixers (4 ea @ 5 Hp, 24 hr/d, 70%)	$7,316	Ea	1	$6,982	$6,663	$6,359	$6,069	$5,792	$5,527	$5,275	$5,034	$4,804	$4,585
MBR Pre-Air Aeration (2 ea 125 Hp, 20/day, 70%)	$76,211	Ea	1	$72,731	$69,410	$66,241	$63,216	$60,330	$57,575	$54,946	$52,438	$50,043	$47,758
MBR Aeration (4 ea 175 Hp, 24/day, 70%)	$256,067	Ea	1	$244,376	$233,218	$222,569	$212,407	$202,709	$193,453	$184,620	$176,191	$168,146	$160,469
Feed Forward Pumps (2 ea 65 Hp, 24 hr/d, 70%)	$47,555	Ea	1	$45,384	$43,312	$41,334	$39,447	$37,646	$35,927	$34,287	$32,721	$31,227	$29,801
Permeate Pumps (6.6 mgd/2546 gpm, 10.8 hr/d , 20 Hp,	$52,683	Ea	1	$50,277	$47,982	$45,791	$43,700	$41,705	$39,801	$37,983	$36,249	$34,594	$33,015
UV System (70 Kva = 56 KW)	$39,245	Ea	1	$37,453	$35,743	$34,111	$32,553	$31,067	$29,649	$28,295	$27,003	$25,770	$24,593
Aerobic Digestion & SHT (375 Hp, 18 Hr, 70%)	$102,884	Ea	1	$98,187	$93,704	$89,425	$85,342	$81,445	$77,727	$74,178	$70,791	$67,559	$64,474
Sludge PS & Dewater (~20 Hp @ 1573 hr/yr)	$32,844	Ea	1	$31,344	$29,913	$28,547	$27,244	$26,000	$24,813	$23,680	$22,598	$21,567	$20,582
RDT Equip (~20 Hp @ 8 Hr/D & 260 d/yr)	$1,737	Ea	1	$1,658	$1,582	$1,510	$1,441	$1,375	$1,312	$1,252	$1,195	$1,141	$1,089
Total Present Value of Yearly O&M Expenses (Years 1-10):				**$1,416,464**	**$1,351,789**	**$1,290,068**	**$1,231,165**	**$1,174,951**	**$1,121,304**	**$1,070,106**	**$1,021,246**	**$974,617**	**$930,117**

Table 5.2.2.8. Present Value of Operations and Maintenance Costs (Years 11-20)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM

Current Inflation Rate Based on Municipal Cost Index:	0.09%											EPA Discount Rate:	4.875%
				Present Value of O&M Costs for Year:									
Component	**Unit Cost**	**Unit**	**Quantity**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Labor - 4 People @ 2080 hr/yr & $40/Hr Ave	83200	Ea	4	$199,032	$189,944	$181,271	$172,995	$165,096	$157,558	$150,364	$143,498	$136,946	$130,694
Chemicals (6.6 x $46,000)	303600	Ea	1	$181,569	$173,278	$165,367	$157,816	$150,610	$143,734	$137,171	$130,908	$124,931	$119,226
Supplies & Services	57000	Ea	1	$34,089	$32,533	$31,047	$29,630	$28,277	$26,986	$25,753	$24,578	$23,455	$22,384
Permitting /Regulatory/Training	25000	Ea	1	$14,951	$14,269	$13,617	$12,995	$12,402	$11,836	$11,295	$10,780	$10,287	$9,818
Sludge & Grit Disposal (5 x $23,000)	115000	Ea	1	$68,776	$65,636	$62,639	$59,779	$57,049	$54,445	$51,959	$49,586	$47,322	$45,162
MBR Chem Clean		EA	1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Hypochlorite - 4/year @ 730 Gallon/ea & $50/drum	2654.5455	Ea	1	$1,588	$1,515	$1,446	$1,380	$1,317	$1,257	$1,199	$1,145	$1,092	$1,042
Oxalic Acid - 1/year @ 304 Gallon/ea & $50/drum	276.36364	EA	1	$165	$158	$151	$144	$137	$131	$125	$119	$114	$109
Alum for P removal @ ~15 Gal/MG & $0.84/gal	0.84	Gal	36,135	$18,153	$17,324	$16,533	$15,778	$15,058	$14,370	$13,714	$13,088	$12,490	$11,920
Headworks (5.5 Hp x 2 @ 6 hr/day & 70% Eff)	1005.9791	Ea	1	$602	$574	$548	$523	$499	$476	$455	$434	$414	$395
MBR Pre- Air Mixers (4 ea @ 5 Hp, 24 hr/d, 70%)	7316.2118	Ea	1	$4,375	$4,176	$3,985	$3,803	$3,629	$3,464	$3,306	$3,155	$3,011	$2,873
MBR Pre-Air Aeration (2 ea 125 Hp, 20/day, 70%)	76210.54	Ea	1	$45,578	$43,497	$41,511	$39,615	$37,807	$36,080	$34,433	$32,861	$31,360	$29,929
MBR Aeration (4 ea 175 Hp, 24/day, 70%)	256067.41	Ea	1	$153,142	$146,149	$139,476	$133,108	$127,030	$121,230	$115,695	$110,412	$105,371	$100,560
Feed Forward Pumps (2 ea 65 Hp, 24 hr/d, 70%)	47555.377	Ea	1	$28,441	$27,142	$25,903	$24,720	$23,591	$22,514	$21,486	$20,505	$19,569	$18,675
Permeate Pumps (6.6 mgd/2546 gpm, 10.8 hr/d , 20 Hp, 70%)	52682.856	Ea	1	$31,507	$30,069	$28,696	$27,385	$26,135	$24,942	$23,803	$22,716	$21,679	$20,689
UV System (70 Kva = 56 KW)	39244.8	Ea	1	$23,470	$22,399	$21,376	$20,400	$19,469	$18,580	$17,731	$16,922	$16,149	$15,412
Aerobic Digestion & SHT (375 Hp, 18 Hr, 70%)	102884.23	Ea	1	$61,530	$58,721	$56,040	$53,481	$51,039	$48,709	$46,485	$44,362	$42,337	$40,404
Sludge PS & Dewater (~20 Hp @ 1573 hr/yr)	32843.611	Ea	1	$19,642	$18,745	$17,889	$17,073	$16,293	$15,549	$14,839	$14,162	$13,515	$12,898
RDT Equip (~20 Hp @ 8 Hr/D & 260 d/yr)	1737.1827	Ea	1	$1,039	$991	$946	$903	$862	$822	$785	$749	$715	$682
Total Present Value of Yearly O&M Expenses (Years 11-20):				**$887,648**	**$847,119**	**$808,441**	**$771,528**	**$736,301**	**$702,682**	**$670,598**	**$639,979**	**$610,758**	**$582,872**
							Total Present Value of Annual O&M Costs (Life of Project):						**$18,839,752**

Table 5.2.3.1. Capital Costs				
KILLIAN CREEK WWTP EXPANSION				
LINCOLN COUNTY				
Complete the areas shown in gray below. Where shown, use pulldown menu to select options. The spreadsheet will calculate the capital costs.				
Alternative:	**SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION**			
Project Administration ($):	$4,910,000			
Component	**Unit Cost[a]**	**Unit**	**Quantity**	**Total Cost**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$725,700
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$771,400	LS	1	$771,400
Yard Piping	$348,800	LS	1	$348,800
Headworks:				$0
Ultrasonic Flow Meter	$3,600	LS	1	$3,600
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$403,200
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$412,200
Influent Flow Splitter:				$0
Structure, Sluice Gates, Grating, Etc.	$98,500	LS	1	$98,500
SBR, Digesters & RDT System:				$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$2,772,600
Post EQ Submersible Pumps	$94,600	LS	1	$94,600
Post EQ Submersible Mixers	$141,000	LS	1	$141,000
Rotary Drum Thickener	$563,100	LS	1	$563,100
Rotary Drum Thickener Pump Station	$154,600	LS	1	$154,600
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$76,500
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$5,782,500
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$330,100
Sludge Pump Building:				
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$101,500
In-Line Sludge Grinder	$26,700	LS	1	$26,700
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$232,100
Sludge Dewatering Building:				
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$692,200
RSP Polymer System	$34,900	LS	1	$34,900
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$1,159,400
New Effluent Building: (NEEDED FOR UV)				
New Effluent Filters	$1,429,100	LS	1	$1,429,100
Relocate Existing 3 Filters	$200,000	LS	1	$200,000
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$697,800
Existing Effluent Building Converted into UV Building:				
New UV System	$695,600	LS	1	$695,600
Alum Feed System: DELETED W/ LAND APPLICATION				
Alum Tank	$42,200	LS	1	
Alum Feed System	$57,000	LS	1	
Alum Recirculation Pump	$20,500	LS	1	
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	
Instrumentation & Controls:	$197,400	LS	1	$197,400
Electrical Systems:				$0
Project Startup	$103,300	LS	1	$103,300
Blower Building	$77,100	LS	1	$77,100
Sludge Pump Building	$66,600	LS	1	$66,600
Sludge Dewatering Building	$69,300	LS	1	$69,300
Effluent Filter Building	$59,900	LS	1	$59,900
Headworks	$67,100	LS	1	$67,100
SBR, Post EQ	$104,200	LS	1	$104,200
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$817,900
Generator & ATS	$668,600	LS	1	$668,600

Table 5.2.3.1 Continued Next Page

Table 5.2.3.1 Capital Costs
SBR-Aerobic Digestion System W/ Land Application Continued

Land Application System (Assume Best Case as Adjacent Site and Total Site Usable for Land Application):				
WWTP Effluent Transfer PS to Irrigation Pond:				
Wet Well Exc / Backfill	$10,000	LS	1	$10,000
Wet Well (16' x 12' x 12' D)	$30,000	LS	1	$30,000
Ver. Turbine Pumps (6 ea - 5 duty & 1 standby)	$25,000		6	$150,000
30" DIP FM to Irrig. Pond (Assume 6000 lf - 30")	$100		6,000	$600,000
				$0
Pond Excavation (Assume balance cut & fill)	$5	cy	490,196	$2,450,981
Compaction of Dike Areas	$3	cy	490,196	$1,470,589
Spray Irrigation Wet Well (10' Dia MH)	$12,000	ea	1	$12,000
Irrigation Ver Turbine Pumps (4 ea - 2 duty & 2 standby)	$25,000	ea	4	$100,000
Force Main to Spray Field (24" HDPE)	$75	lf	6,000	$450,000
Grid Distribution Pipe (12" HDPE)	$50	lf	90,000	$4,500,000
Sprinkler Distribution Pipe (6" HDPE)	$8	lf	180,000	$1,440,000
Sprinkler Assemblies (112' Dia Throw)	$50	ea	6,660	$333,000
Conc. Achor Pads	$100	ea	6,660	$666,000
Rain Gauge	$1,000	ea	1	$1,000
Electro Mechanical Controls	$50,000	ea	4	$200,000
Control Valves, Press Reg. Stations	$1,000	ea	50	$50,000
Application Site Equip. (tractor, etc.)	$100,000	ea	1	$100,000
Site Fencing (Post & Barb Wire)	$3	lf	28,080	$84,240
Land Cost (Per Andrew Bryant, Lincoln Co. Planning)	$8,000	ac	1,814	$14,510,000
Electrical Costs @ 10% Equip Cost	$45,000		1	$45,000
Allowance Items:				
Testing & Special Inspections	$300,000	LS	1	$300,000
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$997,600	LS	1	$997,600
[a]Unit costs are in today's dollars, not future dollars.			**Total Construction Cost:**	$48,999,810
			Construction Contingency Cost:	**$4,899,981**
			Project Administration Cost:	**$4,909,983**
			Total Capital Cost:	**$58,809,774**

Table 5.2.3.2. Project Cost Life Cycle Assumptions			
KILLIAN CREEK WWTP EXPANSION			
LINCOLN COUNTY			
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION			
Complete the areas shown in gray.			
Component	**Expected Life Cycle**	**Replacement Expected?†**	**Rationale for Expected Life Cycle**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.			
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.			
Yard Piping			
Headworks:			
Ultrasonic Flow Meter	10	2029	Mechanical Instrumentation
Influent Screening, Vortex Grit & Grit Classifer Equip.	20	2039	Mechanical Equipment
Excavation, Structures, Piping, Painting, Grating, Etc.			
Influent Flow Splitter:			
Structure, Sluice Gates, Grating, Etc.			
SBR, Digesters & RDT System:			
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	20	2039	Mechanical Equipment
Post EQ Submersible Pumps	20	2039	Mechanical Equipment
Post EQ Submersible Mixers	20	2039	Mechanical Equipment
Rotary Drum Thickener	20	2039	Mechanical Equipment
Rotary Drum Thickener Pump Station	20	2039	Mechanical Equipment
Rotary Drum Thickener Building & Piping			
SBR & Digester Structure, Piping Complete			
Blower Building & Air Piping (Blowers w/ SBR Equip)			
Sludge Pump Building:			
Rotary Lobe Sludge Pumps to Dewatering System	20	2039	Mechanical Equipment
In-Line Sludge Grinder	20	2039	Mechanical Equipment
Building, HVAC, Piping, Etc. Complete			
Sludge Dewatering Building:			
Rotary Sludge Press System Incl Conveyor	20	2039	Mechanical Equipment
RSP Polymer System	20	2039	Mechanical Equipment
Building, HVAC, Piping, Etc. Complete			
New Effluent Building: (NEEDED FOR UV)			
New Effluent Filters	20	2039	Mechanical Equipment
Relocate Existing 3 Filters			
Building, HVAC, Piping, Etc. Complete			
Existing Effluent Building Converted into UV Building:			
New UV System	20	2039	Mechanical Equipment
Building Modifications to install new UV Channel(s)			
Alum Feed System: DELETED W/ LAND APPLICATION			
Alum Tank			
Alum Feed System	20	2039	Mechanical Equipment
Alum Recirculation Pump	20	2039	Mechanical Equipment
Piping, Conc. Containment Area, Ladder, Grating, Etc.			
Instrumentation & Controls:	10	2039	Mechanical Equipment
Electrical Systems:			
Project Startup			
Blower Building			
Sludge Pump Building			
Sludge Dewatering Building			
Effluent Filter Building			
Headworks			
SBR, Post EQ			
Site Conduit, Lighting, Switchgear, Etc			
Generator & ATS	20	2039	Mechanical Equipment

Table 5.2.3.2 Continued Next Page

Table 5.2.3.2 Project Cost Life Cycle Assumptions
SBR-Aerobic Digestion System W/ Land Application Continued

Land Application System (Assume Best Case as Adjacent Site and Total Site Usable for Land Application):			
WWTP Effluent Transfer PS to Irrigation Pond:			
Wet Well Exc / Backfill			
Wet Well (16' x 12' x 12' D)			
Ver. Turbine Pumps (6 ea - 5 duty & 1 standby)	20	2039	Mechanical Equipment
30" DIP FM to Irrig. Pond (Assume 6000 lf - 30")			
0			
Pond Excavation (Assume balance cut & fill)			
Compaction of Dike Areas			
Spray Irrigation Wet Well (10' Dia MH)			
Irrigation Ver Turbine Pumps (4 ea - 2 duty & 2 standby)	20	2039	Mechanical Equipment
Force Main to Spray Field (24" HDPE)			
Grid Distribution Pipe (12" HDPE)			
Sprinkler Distribution Pipe (6" HDPE)			
Sprinkler Assemblies (112' Dia Throw)			
Conc. Achor Pads			
Rain Gauge			
Electro Mechanical Controls	10	2039	Mechanical Equipment
Control Valves, Press Reg. Stations			
Application Site Equip. (tractor, etc.)	20	2039	Mechanical Equipment
Site Fencing (Post & Barb Wire)			
Land Cost (Per Andrew Bryant, Lincoln Co. Planning)			
Electrical Costs @ 10% Equip Cost			
[a]Unit costs are in today's dollars, not future dollars.			
0			
[†]Period for replacement would be Years 1 through 20 only.			

Table 5.2.3.3. Replacement Costs (Years 1 to 5)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**1**	**2**	**3**	**4**	**5**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:	FALSE			$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$0
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, Etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$0
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building: (NEEDED FOR UV)				$0	$0	$0	$0	$0
New Effluent Filters	$ 1,429,100	LS	1	$0	$0	$0	$0	$0
Relocate Existing 3 Filters	$ 200,000	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$ 697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$ 695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$ 320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System: DELETED W/ LAND APPLICATION				$0	$0	$0	$0	$0
Alum Tank	$ 42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$ 57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$ 20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$ 43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$ 197,400	LS	1	$0	$0	$0	$0	$0
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$ 103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$ 77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$ 66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$ 69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$ 59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$ 67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$ 104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$ 817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$ 668,600	LS	1	$0	$0	$0	$0	$0

Table 5.2.3.3 Continued Next Page

Table 5.2.3.3. Replacement Costs (Years 1 to 5)
SBR-Aerobic Digestion System W/ Land Application Continued

Land Application System (Assume Best Case as Adjacent Site				$0	$0	$0	$0	$0
WWTP Effluent Transfer PS to Irrigation Pond:				$0	$0	$0	$0	$0
Wet Well Exc / Backfill	$ 10,000	LS	1	$0	$0	$0	$0	$0
Wet Well (16' x 12' x 12' D)	$ 30,000	LS	1	$0	$0	$0	$0	$0
Ver. Turbine Pumps (6 ea - 5 duty & 1 standby)	$ 25,000		6	$0	$0	$0	$0	$0
30" DIP FM to Irrig. Pond (Assume 6000 lf - 30")	$ 100		6,000	$0	$0	$0	$0	$0
Pond Excavation (Assume balance cut & fill)	$ 5	cy	490,196	$0	$0	$0	$0	$0
Compaction of Dike Areas	$ 3	cy	490,196	$0	$0	$0	$0	$0
Spray Irrigation Wet Well (10' Dia MH)	$ 12,000	ea	1	$0	$0	$0	$0	$0
Irrigation Ver Turbine Pumps (4 ea - 2 duty & 2 standby)	$ 25,000	ea	4	$0	$0	$0	$0	$0
Force Main to Spray Field (24" HDPE)	$ 75	lf	6,000	$0	$0	$0	$0	$0
Grid Distribution Pipe (12" HDPE)	$ 50	lf	90,000	$0	$0	$0	$0	$0
Sprinkler Distribution Pipe (6" HDPE)	$ 8	lf	180,000	$0	$0	$0	$0	$0
Sprinkler Assemblies (112' Dia Throw)	$ 50	ea	6,660	$0	$0	$0	$0	$0
Conc. Achor Pads	$ 100	ea	6,660	$0	$0	$0	$0	$0
Rain Gauge	$ 1,000	ea	1	$0	$0	$0	$0	$0
Electro Mechanical Controls	$ 50,000	ea	4	$0	$0	$0	$0	$0
Control Valves, Press Reg. Stations	$ 1,000	ea	50	$0	$0	$0	$0	$0
Application Site Equip. (tractor, etc.)	$ 100,000	ea	1	$0	$0	$0	$0	$0
Site Fencing (Post & Barb Wire)	$ 3	lf	28,080	$0	$0	$0	$0	$0
Land Cost (Per Andrew Bryant, Lincoln Co. Planning)	$ 8,000	ac	1,814	$0	$0	$0	$0	$0
Electrical Costs @ 10% Equip Cost	$ 45,000		1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Testing & Special Inspections	$ 300,000	LS	1	$0	$0	$0	$0	$0
Rock Excavation, Unsuitable Soil, Off-Site Disposal	$ 997,600	LS	1	$0	$0	$0	$0	$0
aUnit costs are in today's dollars, not future dollars.								
Total Present Value of Replacement Costs (Years 1 to 5):				**$0**	**$0**	**$0**	**$0**	**$0**

Table 5.2.3.4. Replacement Costs (Years 6 to 10)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**6**	**7**	**8**	**9**	**10**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$2,998
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, Etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$0
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building: (NEEDED FOR UV)				$0	$0	$0	$0	$0
New Effluent Filters	$1,429,100	LS	1	$0	$0	$0	$0	$0
Relocate Existing 3 Filters	$200,000	LS	1	$0	$0	$0	$0	$166,551
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System: DELETED W/ LAND APPLICATION				$0	$0	$0	$0	$0
Alum Tank	$42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$164,386
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0

Table 5.2.3.4 Continued Next Page

Table 5.2.3.4. Replacement Costs (Years 6 to 10)
SBR-Aerobic Digestion System W/ Land Application Continued

Land Application System (Assume Best Case as Adjacent Site				$0	$0	$0	$0	$0
WWTP Effluent Transfer PS to Irrigation Pond:				$0	$0	$0	$0	$0
Wet Well Exc / Backfill	$10,000	LS	1	$0	$0	$0	$0	$0
Wet Well (16' x 12' x 12' D)	$30,000	LS	1	$0	$0	$0	$0	$0
Ver. Turbine Pumps (6 ea - 5 duty & 1 standby)	$25,000		6	$0	$0	$0	$0	$0
30" DIP FM to Irrig. Pond (Assume 6000 lf - 30")	$100		6,000	$0	$0	$0	$0	$0
Pond Excavation (Assume balance cut & fill)	$5	cy	490,196	$0	$0	$0	$0	$0
Compaction of Dike Areas	$3	cy	490,196	$0	$0	$0	$0	$0
Spray Irrigation Wet Well (10' Dia MH)	$12,000	ea	1	$0	$0	$0	$0	$0
Irrigation Ver Turbine Pumps (4 ea - 2 duty & 2 standby)	$25,000	ea	4	$0	$0	$0	$0	$0
Force Main to Spray Field (24" HDPE)	$75	lf	6,000	$0	$0	$0	$0	$0
Grid Distribution Pipe (12" HDPE)	$50	lf	90,000	$0	$0	$0	$0	$0
Sprinkler Distribution Pipe (6" HDPE)	$8	lf	180,000	$0	$0	$0	$0	$0
Sprinkler Assemblies (112' Dia Throw)	$50	ea	6,660	$0	$0	$0	$0	$0
Conc. Achor Pads	$100	ea	6,660	$0	$0	$0	$0	$0
Rain Gauge	$1,000	ea	1	$0	$0	$0	$0	$0
Electro Mechanical Controls	$50,000	ea	4	$0	$0	$0	$0	$166,551
Control Valves, Press Reg. Stations	$1,000	ea	50	$0	$0	$0	$0	$0
Application Site Equip. (tractor, etc.)	$100,000	ea	1	$0	$0	$0	$0	$0
Site Fencing (Post & Barb Wire)	$3	lf	28,080	$0	$0	$0	$0	$0
Land Cost (Per Andrew Bryant, Lincoln Co. Planning)	$8,000	ac	1,814	$0	$0	$0	$0	$0
Electrical Costs @ 10% Equip Cost	$45,000		1	$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 6 to 10):				**$0**	**$0**	**$0**	**$0**	**$500,486**

Table 5.2.3.5. Replacement Costs (Years 11 to 15)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**11**	**12**	**13**	**14**	**15**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$0
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$0
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, Etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$0
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$0
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$0
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$0
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building: (NEEDED FOR UV)				$0	$0	$0	$0	$0
New Effluent Filters	$1,429,100	LS	1	$0	$0	$0	$0	$0
Relocate Existing 3 Filters	$200,000	LS	1	$0	$0	$0	$0	$0
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$0
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System: DELETED W/ LAND APPLICATION				$0	$0	$0	$0	$0
Alum Tank	$42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$0
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$0

Table 5.2.3.5 Continued Next Page

Table 5.2.3.5. Replacement Costs (Years 11 to 15)
SBR-Aerobic Digestion System W/ Land Application Continued

Land Application System (Assume Best Case as Adjacent Site				$0	$0	$0	$0	$0
WWTP Effluent Transfer PS to Irrigation Pond:				$0	$0	$0	$0	$0
Wet Well Exc / Backfill	$10,000	LS	1	$0	$0	$0	$0	$0
Wet Well (16' x 12' x 12' D)	$30,000	LS	1	$0	$0	$0	$0	$0
Ver. Turbine Pumps (6 ea - 5 duty & 1 standby)	$25,000		6	$0	$0	$0	$0	$0
30" DIP FM to Irrig. Pond (Assume 6000 lf - 30")	$100		6,000	$0	$0	$0	$0	$0
Pond Excavation (Assume balance cut & fill)	$5	cy	490,196	$0	$0	$0	$0	$0
Compaction of Dike Areas	$3	cy	490,196	$0	$0	$0	$0	$0
Spray Irrigation Wet Well (10' Dia MH)	$12,000	ea	1	$0	$0	$0	$0	$0
Irrigation Ver Turbine Pumps (4 ea - 2 duty & 2 standby)	$25,000	ea	4	$0	$0	$0	$0	$0
Force Main to Spray Field (24" HDPE)	$75	lf	6,000	$0	$0	$0	$0	$0
Grid Distribution Pipe (12" HDPE)	$50	lf	90,000	$0	$0	$0	$0	$0
Sprinkler Distribution Pipe (6" HDPE)	$8	lf	180,000	$0	$0	$0	$0	$0
Sprinkler Assemblies (112' Dia Throw)	$50	ea	6,660	$0	$0	$0	$0	$0
Conc. Achor Pads	$100	ea	6,660	$0	$0	$0	$0	$0
Rain Gauge	$1,000	ea	1	$0	$0	$0	$0	$0
Electro Mechanical Controls	$50,000	ea	4	$0	$0	$0	$0	$0
Control Valves, Press Reg. Stations	$1,000	ea	50	$0	$0	$0	$0	$0
Application Site Equip. (tractor, etc.)	$100,000	ea	1	$0	$0	$0	$0	$0
Site Fencing (Post & Barb Wire)	$3	lf	28,080	$0	$0	$0	$0	$0
Land Cost (Per Andrew Bryant, Lincoln Co. Planning)	$8,000	ac	1,814	$0	$0	$0	$0	$0
Electrical Costs @ 10% Equip Cost	$45,000		1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 11 to 15):				**$0**	**$0**	**$0**	**$0**	**$0**

Table 5.2.3.6. Replacement Costs (Years 16 to 20)								
KILLIAN CREEK WWTP EXPANSION								
LINCOLN COUNTY								
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION								
Current Inflation Rate based on Construction Cost Index:	2.97%			EPA Discount Rate:	4.875%			
				Present Value of Replacement Costs in Year:				
Component	**Unit Cost**	**Unit**	**Quantity**	**16**	**17**	**18**	**19**	**20**
General Conditions - Bonds, Permits, Jobsite Costs & Mobil.	$725,700	LS	1	$0	$0	$0	$0	$0
Sitework - Erosion Cont., Grading, Paving Fencing, Etc.	$771,400	LS	1	$0	$0	$0	$0	$0
Yard Piping	$348,800	LS	1	$0	$0	$0	$0	$0
Headworks:				$0	$0	$0	$0	$0
Ultrasonic Flow Meter	$3,600	LS	1	$0	$0	$0	$0	$2,497
Influent Screening, Vortex Grit & Grit Classifer Equip.	$403,200	LS	1	$0	$0	$0	$0	$279,612
Excavation, Structures, Piping, Painting, Grating, Etc.	$412,200	LS	1	$0	$0	$0	$0	$0
Influent Flow Splitter:				$0	$0	$0	$0	$0
Structure, Sluice Gates, Grating, Etc.	$98,500	LS	1	$0	$0	$0	$0	$0
SBR, Digesters & RDT System:				$0	$0	$0	$0	$0
SBR/Digester - Blowers, Diffusers, Mixers, Decanters, Etc.	$2,772,600	LS	1	$0	$0	$0	$0	$1,922,746
Post EQ Submersible Pumps	$94,600	LS	1	$0	$0	$0	$0	$65,603
Post EQ Submersible Mixers	$141,000	LS	1	$0	$0	$0	$0	$97,781
Rotary Drum Thickener	$563,100	LS	1	$0	$0	$0	$0	$390,499
Rotary Drum Thickener Pump Station	$154,600	LS	1	$0	$0	$0	$0	$107,212
Rotary Drum Thickener Building & Piping	$76,500	LS	1	$0	$0	$0	$0	$0
SBR & Digester Structure, Piping Complete	$5,782,500	LS	1	$0	$0	$0	$0	$0
Blower Building & Air Piping (Blowers w/ SBR Equip)	$330,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building:				$0	$0	$0	$0	$0
Rotary Lobe Sludge Pumps to Dewatering System	$101,500	LS	1	$0	$0	$0	$0	$70,388
In-Line Sludge Grinder	$26,700	LS	1	$0	$0	$0	$0	$18,516
Building, HVAC, Piping, Etc. Complete	$232,100	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building:				$0	$0	$0	$0	$0
Rotary Sludge Press System Incl Conveyor	$692,200	LS	1	$0	$0	$0	$0	$480,028
RSP Polymer System	$34,900	LS	1	$0	$0	$0	$0	$24,202
Building, HVAC, Piping, Etc. Complete	$1,159,400	LS	1	$0	$0	$0	$0	$0
New Effluent Building: (NEEDED FOR UV)				$0	$0	$0	$0	$0
New Effluent Filters	$1,429,100	LS	1	$0	$0	$0	$0	$991,054
Relocate Existing 3 Filters	$200,000	LS	1	$0	$0	$0	$0	$138,696
Building, HVAC, Piping, Etc. Complete	$697,800	LS	1	$0	$0	$0	$0	$0
Existing Effluent Building Converted into UV Building:				$0	$0	$0	$0	$0
New UV System	$695,600	LS	1	$0	$0	$0	$0	$482,386
Building Modifications to install new UV Channel(s)	$320,300	LS	1	$0	$0	$0	$0	$0
Alum Feed System: DELETED W/ LAND APPLICATION				$0	$0	$0	$0	$0
Alum Tank	$42,200	LS	1	$0	$0	$0	$0	$0
Alum Feed System	$57,000	LS	1	$0	$0	$0	$0	$0
Alum Recirculation Pump	$20,500	LS	1	$0	$0	$0	$0	$0
Piping, Conc. Containment Area, Ladder, Grating, Etc.	$43,900	LS	1	$0	$0	$0	$0	$0
Instrumentation & Controls:	$197,400	LS	1	$0	$0	$0	$0	$136,893
Electrical Systems:				$0	$0	$0	$0	$0
Project Startup	$103,300	LS	1	$0	$0	$0	$0	$0
Blower Building	$77,100	LS	1	$0	$0	$0	$0	$0
Sludge Pump Building	$66,600	LS	1	$0	$0	$0	$0	$0
Sludge Dewatering Building	$69,300	LS	1	$0	$0	$0	$0	$0
Effluent Filter Building	$59,900	LS	1	$0	$0	$0	$0	$0
Headworks	$67,100	LS	1	$0	$0	$0	$0	$0
SBR, Post EQ	$104,200	LS	1	$0	$0	$0	$0	$0
Site Conduit, Lighting, Switchgear, Etc	$817,900	LS	1	$0	$0	$0	$0	$0
Generator & ATS	$668,600	LS	1	$0	$0	$0	$0	$463,662

Table 5.2.3.6 Continued Next Page

Table 5.2.4.6. Replacement Costs (Years 16 to 20)
SBR-Aerobic Digestion System W/ Land Application Continued

Land Application System (Assume Best Case as Adjacent Site				$0	$0	$0	$0	$0
WWTP Effluent Transfer PS to Irrigation Pond:				$0	$0	$0	$0	$0
Wet Well Exc / Backfill	$10,000	LS	1	$0	$0	$0	$0	$0
Wet Well (16' x 12' x 12' D)	$30,000	LS	1	$0	$0	$0	$0	$0
Ver. Turbine Pumps (6 ea - 5 duty & 1 standby)	$25,000		6	$0	$0	$0	$0	$104,022
30" DIP FM to Irrig. Pond (Assume 6000 lf - 30")	$100		6,000	$0	$0	$0	$0	$0
Pond Excavation (Assume balance cut & fill)	$5	cy	490,196	$0	$0	$0	$0	$0
Compaction of Dike Areas	$3	cy	490,196	$0	$0	$0	$0	$0
Spray Irrigation Wet Well (10' Dia MH)	$12,000	ea	1	$0	$0	$0	$0	$0
Irrigation Ver Turbine Pumps (4 ea - 2 duty & 2 standby)	$25,000	ea	4	$0	$0	$0	$0	$69,348
Force Main to Spray Field (24" HDPE)	$75	lf	6,000	$0	$0	$0	$0	$0
Grid Distribution Pipe (12" HDPE)	$50	lf	90,000	$0	$0	$0	$0	$0
Sprinkler Distribution Pipe (6" HDPE)	$8	lf	180,000	$0	$0	$0	$0	$0
Sprinkler Assemblies (112' Dia Throw)	$50	ea	6,660	$0	$0	$0	$0	$0
Conc. Achor Pads	$100	ea	6,660	$0	$0	$0	$0	$0
Rain Gauge	$1,000	ea	1	$0	$0	$0	$0	$0
Electro Mechanical Controls	$50,000	ea	4	$0	$0	$0	$0	$138,696
Control Valves, Press Reg. Stations	$1,000	ea	50	$0	$0	$0	$0	$0
Application Site Equip. (tractor, etc.)	$100,000	ea	1	$0	$0	$0	$0	$0
Site Fencing (Post & Barb Wire)	$3	lf	28,080	$0	$0	$0	$0	$0
Land Cost (Per Andrew Bryant, Lincoln Co. Planning)	$8,000	ac	1,814	$0	$0	$0	$0	$0
Electrical Costs @ 10% Equip Cost	$45,000		1	$0	$0	$0	$0	$0
Allowance Items:				$0	$0	$0	$0	$0
Total Present Value of Replacement Costs (Years 16 to 20):				**$0**	**$0**	**$0**	**$0**	**$5,983,842**
Total Present Value of Replacement Costs (Life of Project):								**$6,484,327**

Table 5.2.3.7. Present Value of Operations and Maintenance Costs (Years 1-10)

KILLIAN CREEK WWTP EXPANSION

LINCOLN COUNTY

SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION

Complete the cells shown in gray below.

Current Inflation Rate Based on Municipal Cost Index: 0.09%

EPA Discount Rate: 4.875%

				Present Value of O&M Costs for Year:									
Component	**Unit Cost**	**Unit**	**Quantity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Labor - 7 People @ 2080 hr/yr & $40/Hr Ave	$83,200	Ea	7	$555,808	$530,430	$506,212	$483,098	$461,041	$439,990	$419,900	$400,728	$382,431	$364,970
Chemicals (6.6 x $46,000 @ ~ 1 mgd)	$303,600	Ea	1	$289,738	$276,509	$263,884	$251,835	$240,336	$229,363	$218,890	$208,896	$199,358	$190,256
Supplies & Services	$57,000	Ea	1	$54,397	$51,914	$49,543	$47,281	$45,122	$43,062	$41,096	$39,220	$37,429	$35,720
Permitting /Regulatory/Training	$25,000	Ea	1	$23,859	$22,769	$21,730	$20,737	$19,791	$18,887	$18,025	$17,202	$16,416	$15,667
Sludge & Grit Disposal (6.6 x $23,000 @ 1 mgd)	$151,800	Ea	1	$144,869	$138,254	$131,942	$125,917	$120,168	$114,681	$109,445	$104,448	$99,679	$95,128
Headworks (5.5 Hp x 2 @ 6 hr/day & 70% Eff)	$1,006	Ea	1	$960	$916	$874	$834	$796	$760	$725	$692	$661	$630
SBR Mixers (75 Hp x 70% x 3.85 hr/cycle x 4 cy x 4 SBR)	$70,419	Ea	1	$67,203	$64,135	$61,207	$58,412	$55,745	$53,200	$50,771	$48,452	$46,240	$44,129
SBR Blowers (300 Hp/SBR x 2.7 hr/cycle & 70% x 4 cy/d)	$197,538	Ea	1	$188,518	$179,911	$171,696	$163,857	$156,375	$149,235	$142,421	$135,918	$129,713	$123,790
Post EQ Mixers (4 x 7.5 Hp x 2 @ 18 hr/day & 70%)	$16,461	Ea	1	$15,710	$14,993	$14,308	$13,655	$13,031	$12,436	$11,868	$11,327	$10,809	$10,316
Post EQ Pumps (4 x 7.5 Hp x 70% x 19 hr/day)	$8,688	Ea	1	$8,291	$7,913	$7,551	$7,207	$6,878	$6,564	$6,264	$5,978	$5,705	$5,444
Digester Mixers (160 Hp x 24 hr/day & 70%)	$58,530	Ea	1	$55,857	$53,307	$50,873	$48,550	$46,333	$44,218	$42,199	$40,272	$38,433	$36,679
Digester Blowers (350 Hp x 18 hr/day & 70%)	$96,025	Ea	1	$91,641	$87,457	$83,463	$79,653	$76,016	$72,545	$69,233	$66,071	$63,055	$60,176
Digester Transfer Pumps (5 Hp x 4 x ~ 4 hr/day & 70%)	$1,524	Ea	1	$1,455	$1,388	$1,325	$1,264	$1,207	$1,152	$1,099	$1,049	$1,001	$955
Effluent UV (54 KVA x 24 Hr/Day)	$37,843	Ea	1	$36,115	$34,466	$32,893	$31,391	$29,958	$28,590	$27,284	$26,039	$24,850	$23,715
Eff Filter Drives, UV Rec & Plt Drain PS (~45 Hp, 6hr/d)	$686	Ea	1	$655	$625	$596	$569	$543	$518	$495	$472	$450	$430
Sludge PS & Dewater (~67 Hp x 2 @ 8 Hr/day & 260 d/yr)	$11,639	Ea	1	$11,108	$10,601	$10,117	$9,655	$9,214	$8,793	$8,392	$8,008	$7,643	$7,294
RDT Equip (~19 Hp x 2 @ 2080 Hr/yr)	$3,301	Ea	1	$3,150	$3,006	$2,869	$2,738	$2,613	$2,494	$2,380	$2,271	$2,167	$2,068
Alum Addition for P removal @ ~15 Gal/MG & $0.84/gal - N/A for Land App	$0.00		0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Effluent Transfer Pumps to Land Appl. ~ 50 Hp x 3 @ 2300 gpm/ea & 5 mgd ADF, 10 hr/d	$9,145	ea	3	$26,183	$24,988	$23,847	$22,758	$21,719	$20,727	$19,781	$18,878	$18,016	$17,193
Land Appl. Spray Irrigation Pumps ~ 50 hp x 3 @ 2300 gpm/ea & 5 mgd ADF & 10 hr/d Ave	$9,145	ea	3	$26,183	$24,988	$23,847	$22,758	$21,719	$20,727	$19,781	$18,878	$18,016	$17,193
Land Appl. Site Maintenance	$50,000	budget	1	$47,717	$45,538	$43,459	$41,475	$39,581	$37,774	$36,049	$34,403	$32,832	$31,333
Total Present Value of Yearly O&M Expenses (Years 1-10):				**$1,649,417**	**$1,574,106**	**$1,502,234**	**$1,433,644**	**$1,368,185**	**$1,305,715**	**$1,246,097**	**$1,189,201**	**$1,134,904**	**$1,083,085**

Table 5.2.3.8. Present Value of Operations and Maintenance Costs (Years 11-20)
KILLIAN CREEK WWTP EXPANSION
LINCOLN COUNTY
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION

Current Inflation Rate Based on Municipal Cost Index:	0.09%										EPA Discount Rate:	4.875%
				Present Value of O&M Costs for Year:								
Component	**Unit Cost**	**Unit**	**Quantity**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Labor - 7 People @ 2080 hr/yr & $40/Hr Ave	$83,200	Ea	7	$348,306	$332,402	$317,225	$302,741	$288,918	$275,726	$263,137	$251,122	$239,656	$228,714
Chemicals (6.6 x $46,000 @ ~ 1 mgd)	$303,600	Ea	1	$181,569	$173,278	$165,367	$157,816	$150,610	$143,734	$137,171	$130,908	$124,931	$119,226
Supplies & Services	$57,000	Ea	1	$34,089	$32,533	$31,047	$29,630	$28,277	$26,986	$25,753	$24,578	$23,455	$22,384
Permitting /Regulatory/Training	$25,000	Ea	1	$14,951	$14,269	$13,617	$12,995	$12,402	$11,836	$11,295	$10,780	$10,287	$9,818
Sludge & Grit Disposal (6.6 x $23,000 @ 1 mgd)	$151,800	Ea	1	$90,784	$86,639	$82,683	$78,908	$75,305	$71,867	$68,585	$65,454	$62,465	$59,613
Headworks (5.5 Hp x 2 @ 6 hr/day & 70% Eff)	$1,006	Ea	1	$602	$574	$548	$523	$499	$476	$455	$434	$414	$395
SBR Mixers (75 Hp x 70% x 3.85 hr/cycle x 4 cy x 4	$70,419	Ea	1	$42,114	$40,191	$38,356	$36,605	$34,933	$33,338	$31,816	$30,363	$28,977	$27,654
SBR Blowers (300 Hp/SBR x 2.7 hr/cycle & 70% x 4 cy/d)	$197,538	Ea	1	$118,138	$112,744	$107,596	$102,683	$97,995	$93,521	$89,250	$85,175	$81,286	$77,575
Post EQ Mixers (4 x 7.5 Hp x 2 @ 18 hr/day & 70%)	$16,461	Ea	1	$9,845	$9,395	$8,966	$8,557	$8,166	$7,793	$7,438	$7,098	$6,774	$6,465
Post EQ Pumps (4 x 7.5 Hp x 70% x 19 hr/day)	$8,688	Ea	1	$5,196	$4,959	$4,732	$4,516	$4,310	$4,113	$3,925	$3,746	$3,575	$3,412
Digester Mixers (160 Hp x 24 hr/day & 70%)	$58,530	Ea	1	$35,004	$33,406	$31,880	$30,425	$29,036	$27,710	$26,445	$25,237	$24,085	$22,985
Digester Blowers (350 Hp x 18 hr/day & 70%)	$96,025	Ea	1	$57,428	$54,806	$52,304	$49,915	$47,636	$45,461	$43,386	$41,405	$39,514	$37,710
Digester Transfer Pumps (5 Hp x 4 x ~ 4 hr/day & 70%)	$1,524	Ea	1	$912	$870	$830	$792	$756	$722	$689	$657	$627	$599
Effluent UV (54 KVA x 24 Hr/Day)	$37,843	Ea	1	$22,632	$21,599	$20,613	$19,672	$18,773	$17,916	$17,098	$16,317	$15,572	$14,861
Eff Filter Drives, UV Rec & Plt Drain PS (~45 Hp, 6hr/d)	$686	Ea	1	$410	$391	$374	$357	$340	$325	$310	$296	$282	$269
Sludge PS & Dewater (~67 Hp x 2 @ 8 Hr/day & 260 d/yr)	$11,639	Ea	1	$6,961	$6,643	$6,340	$6,050	$5,774	$5,510	$5,259	$5,019	$4,789	$4,571
RDT Equip (~19 Hp x 2 @ 2080 Hr/yr)	$3,301	Ea	1	$1,974	$1,884	$1,798	$1,716	$1,637	$1,563	$1,491	$1,423	$1,358	$1,296
Alum Addition for P removal @ ~15 Gal/MG & $0.84/gal - N/A for Land App	$0		0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Effluent Transfer Pumps to Land Appl. ~ 50 Hp x 3 @ 2300 gpm/ea & 5 mgd ADF, 10 hr/d	$9,145	ea	3	$16,408	$15,659	$14,944	$14,262	$13,610	$12,989	$12,396	$11,830	$11,290	$10,774
Land Appl. Spray Irrigation Pumps ~ 50 hp x 3 @ 2300 gpm/ea & 5 mgd ADF & 10 hr/d Ave	$9,145	ea	3	$16,408	$15,659	$14,944	$14,262	$13,610	$12,989	$12,396	$11,830	$11,290	$10,774
Land Appl. Site Maintenance	$50,000	budget	1	$29,903	$28,537	$27,234	$25,991	$24,804	$23,672	$22,591	$21,559	$20,575	$19,635
Total Present Value of Yearly O&M Expenses (Years 11-20):				**$1,033,632**	**$986,438**	**$941,398**	**$898,414**	**$857,394**	**$818,246**	**$780,886**	**$745,231**	**$711,204**	**$678,732**
							Total Present Value of Annual O&M Costs (Life of Project):						**$21,938,163**

Table 5.2.4. Total Present Worth for Feasible Alternatives KILLIAN CREEK WWTP EXPANSION LINCOLN COUNTY						
	Capital Costs	Replacement Costs Present Worth	O&M Costs Present Worth			Total Present Worth
			Annual	Intermittent	Total	
DUPLICATION OF EXISTING SBR - AEROBIC DIGESTION SYSTEM	$26,304,160	$5,983,125	$16,594,108	$0	$16,594,108	$48,881,394
INDEPENDENT MEMBRANE BIO-REACTOR SYSTEM	$30,418,410	$10,435,552	$18,839,752	$1,082,877	$19,922,629	$60,776,592
SBR-AEROBIC DIGESTION SYSTEM W/ LAND APPLICATION	$58,809,774	$6,484,327	$21,938,163	$0	$21,938,163	$87,232,264

5.3 ALTERNATIVE ANALYSIS SUMMARY

The below Table 5.3.1 provides a summary comparison of alternative costs and impacts with the rational for alternative selection.

Table 5.3.1 Alternative Analysis Summary

		No-Action	Independent Membrane Bio-Reactor System	SBR-Aerobic Digestion W/ Land Application	Preferred Alternative Duplication of Existing SBR-Aerobic Digestion System
Capital Cost		$0	$29,899,300	$58,809,800	$26,304,200
Present Worth		$0	$19,922,629	$21,938,163	$16,594,108
Feasibility		☐ Feasible ☒ Infeasible	☒ Feasible ☐ Infeasible	☐ Feasible ☒ Infeasible	
Impact Analysis	**Capital Costs**	☒ Less than Preferred ☐ Greater than Preferred ☐ Same as Preferred	☐ Less than Preferred ☒ Greater than Preferred ☐ Same as Preferred	☐ Less than Preferred ☒ Greater than Preferred ☐ Same as Preferred	
	Present Worth	☒ Less than Preferred ☐ Greater than Preferred ☐ Same as Preferred	☐ Less than Preferred ☒ Greater than Preferred ☐ Same as Preferred	☐ Less than Preferred ☒ Greater than Preferred ☐ Same as Preferred	
	Environmental	☐ Less than Preferred ☒ Greater than Preferred ☐ Same as Preferred	☒ Less than Preferred ☐ Greater than Preferred ☐ Same as Preferred	☐ Less than Preferred ☒ Greater than Preferred ☐ Same as Preferred	
Rationale for Rejection/Acceptance		Environmental Impact and Economic Impact to County.	Capital and Present Worth Cost	Capital and Present Worth Cost & Envir. Impact	Owner preference, Capital and Present Worth Cost.

The "No-Action" alternative is not acceptable as it would impact the future economic growth and development of Lincoln County resulting from inadequate wastewater treatment capacity. Future growth and development would be required to utilize small localized treatment systems or septic tank systems.

"Land Application" was considered unacceptable and infeasible due to the capital and present worth costs plus the land area required for the application and effluent storage site. This alternative was evaluated assuming approximately 1,500 acres of land suitable for land application and effluent storage was available within 6,000 feet of the site. This is not the case due to the local topography and high clay content of the local soils. Even with this "best possible" condition, the capital and present worth cost far exceeded the other alternatives.

Expansion of the existing SBR process or addition of an independent MBR treatment process with continued discharge to Killian Creek were both considered feasible treatment approaches. Both processes have the capability of producing a high-quality effluent meeting the anticipated future nitrogen, phosphorus and biological effluent permit limits. The MBR process offers a slightly smaller footprint resulting in less land disturbance but has high energy and membrane replacement cost impacting the present worth cost.

Expansion of the existing SBR process with continued discharge to Killian Creek was selected as the cost-effective preferred alternative. This alternative also provides a process and utilizes equipment familiar to the existing operational staff.

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6.0 PROPOSED PROJECT DESCRIPTION

Based upon the foregoing cost and alternative evaluations, it is recommended that Lincoln County proceed with the expansion of the Killian Creek WWTP by the planned expansion of the existing SBR and aerobic digestions system to meet a future design capacity of 6.6 mgd.

The proposed expansion will be on the existing Killian Creek WWTP site located at 7085 Old Plank Road, Stanley, NC 28164 and will not require acquisition of any additional property. The total estimated disturbed area required for the expansion is expected to be approximately 6 acres. The proposed expansion as shown in Figure 6.1 on the next page, is to include the following unit process additions and modifications:

- Headworks system paralleling the existing screening and grit removal systems.
- SBR influent flow splitter combining the flow from the two headwords systems before dividing between the SBR basins.
- SBR/digester system of a similar design to the existing SBR/digester to include:
  - Two (2) SBR basins with jet aeration, decanters, and WAS pumps. Based upon operational issues experienced by the Owner with the existing SBR floating mixers and retrievable diffused aeration system, it is proposed to utilize a jet mixing/aeration system within the new SBR basins and digesters for improved mixing and aeration.
  - One (1) new rotary drum thickener (RDT) with associated polymer system for thickening and transfer to the new aerobic digester #4. The new aerobic digester #3 is proposed to receive the waste activated sludge (WAS) from SBR #3 and #4 for periodic transfer to the new RDT. Existing Digester #1 and #3 are to have interconnecting piping and valves permitting transfer between these digesters to provide the flexibility of thickening and distribution to either the existing Digester #2 or the new Digester #4. The two (2) new aerobic digesters #3 and #4 are proposed to be equal in size to the existing aerobic digester #1 and #2.
  - New sludge holding tank of equal size to the existing sludge holding tank. Transfer pumps are proposed to be capable of transferring digested sludge between the two sludge holding tanks for flexibility in dewatering operations.
  - Sludge pump station with sludge macerator and sludge pumps for transfer of sludge to the new sludge dewatering systems.
  - Blower building and associated blowers for the new SBR and aerobic digesters.
- Sludge dewatering building with two (2) new rotary filter presses.
- New effluent filter building consolidating the effluent filters into one location and consisting of two (2) new effluent disk filter units and the three (3) existing filters relocated from the current Effluent Filter /UV Building.
- Conversion of the existing Effluent Filter/UV building into a dedicated UV disinfection building containing the existing two (2) channel system and a new two (2) channel, dual bank UV system.

The basis of design for the proposed unit processes for the process expansion to 6.6 mgd is provided in Appendix H.

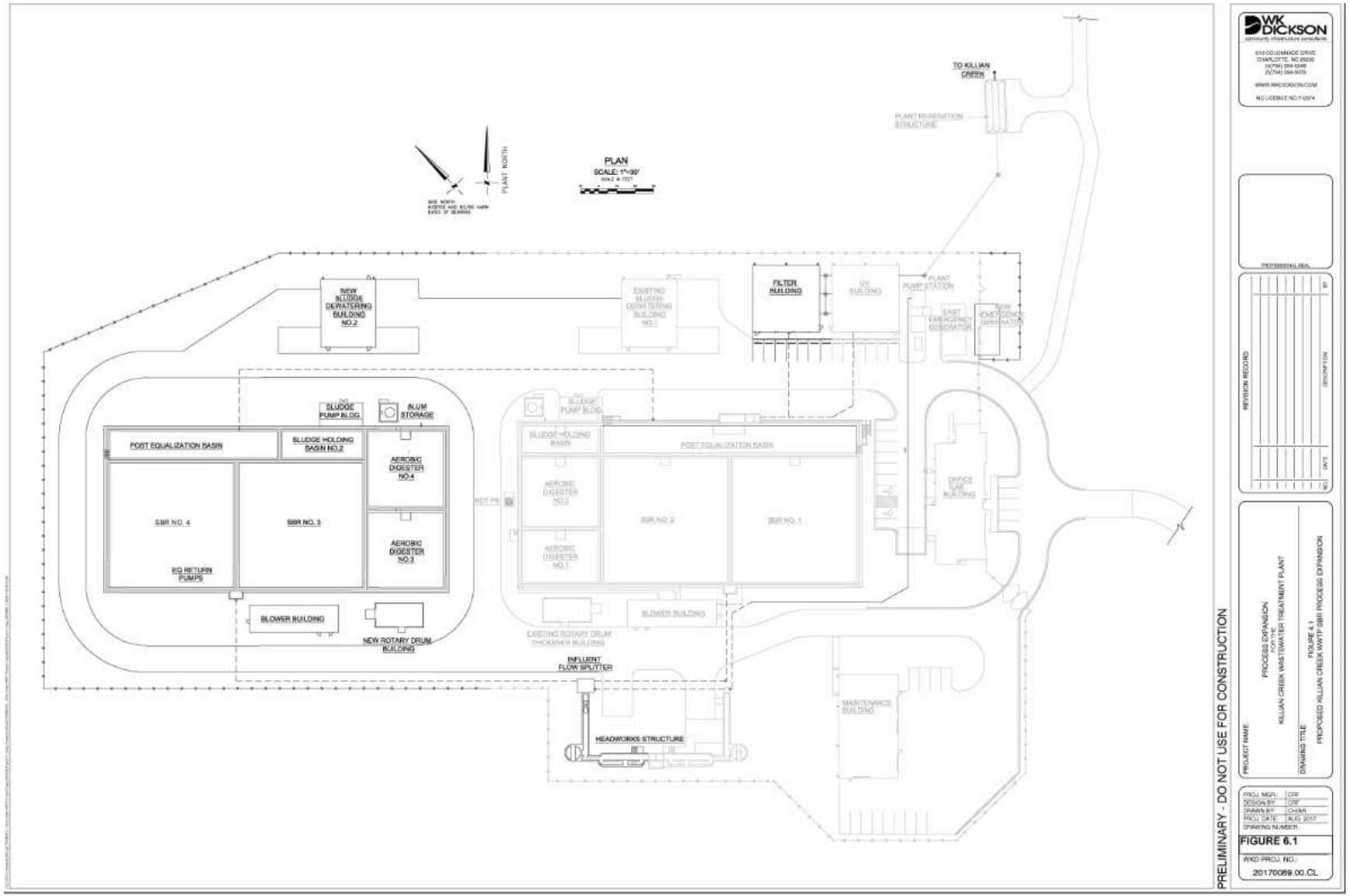


Figure 6.1 Proposed Killian Creek SBR Process Expansion Site Plan

The environmental impacts associated with the proposed plant expansion will be very minor and limited to the following areas:

- Existing plant areas immediately adjacent to the existing plant structures with no impact to wetland or streams.

- Wastewater to and from the expanded facilities will connect into the existing plant influent and effluent piping and will not require modification to the existing plant outfall or impact to Killian Creek other than increased flow.

- The rainfall drainage from the area impacted by the construction is to be contained and diverted into the expanded existing sediment detention basin prior to release to minimize the impact of the site construction.

The existing treatment process is to be upgraded to achieve the future speculative effluent limits for total nitrogen, ammonia nitrogen and phosphorus by the following process modifications:

- The existing SBR process is to be modified from the current five (5) – 4.8 hour/cycle process to a four (4) – 6 hour/cycle process to provide a longer anoxic contact time for improved biological nitrogen and phosphorus removals.

- Provisions for addition of a phosphorus removal chemical (alum, polyaluminum chloride or equivalent) additions are to be provided to supplement the biological phosphorus removal as needed to achieve effluent permit conditions.

There are no changes proposed for the existing office/lab and maintenance buildings which are considered adequate for the proposed expanded facilities.

The estimated probable capital cost for the proposed plant upgrade is $26,304,200 with a present worth value of $16,594,108. As noted in Section 5, the selected alternative has the lowest probable capital and present worth cost and is considered to be the cost effective alternative.

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6.1 PROPOSED SCHEDULE

Draft Schedule for review.

NC DOT	Complete	
NC DEQ Erosion	Complete	
NC DEQ Public WS -Submit	Complete	
Public Hearing Advertise	Sunday, June 30, 2019	
Public Hearing BOC	Monday, July 15, 2019	15
Start of 30 Day FONZI	Wednesday, July 24, 2019	9
End of 30 Days FONZI	Friday, August 23, 2019	30
NC DEQ - ATC Permit	Friday, August 23, 2019	
Advertise	Tuesday, August 13, 2019	-10
PreBid	Thursday, September 5, 2019	23
Bid Date	Thursday, September 19, 2019	14
Submit to BOC Clerk	Thursday, September 26, 2019	7
Board	Monday, October 7, 2019	11
Notice to Award	Tuesday, October 8, 2019	1
Contract Executed	Friday, October 18, 2019	10
Pre Construction	Tuesday, October 22, 2019	4
Notice to Proceed	Tuesday, October 29, 2019	7
Project Complete	Monday, April 19, 2021	538

7.0 ENVIRONMENTAL INFORMATION DOCUMENT

7.1 TOPOGRAPHY AND FLOOD PLAINS

The proposed Killian Creek Wastewater Treatment Plant (WWTP) Upgrade Project is located in the eastern part of Lincoln County, North Carolina. The project site is approximately 2 miles west of NC-16 and is located off Old Plank Rd (Figure 1).

7.1.1 Existing Environment

Of the approximately 5.4 acres contained within the limits of disturbance (LOD) of this project area, 3.65 acres are forested, and 1.75 acres are maintained (mowed grass).

The project site is not within the 100-year FEMA flood zone but is immediately adjacent to it.

The proposed project is entirely located within North Carolina's Piedmont physiographic province and is between approximately 650 and 730 feet above mean sea level (Figure 5).

7.1.2 Impacts and Mitigation

The project will require clearing and grading throughout the 5.4-acre site. Land disturbance will be conducted in accordance with NC-DENR and Lincoln County erosion and sedimentation control practices.

The Lincoln County Streamside Buffer Ordinance applies to perennial and intermittent streams. The ordinance provides protection to the 100-year floodplain as identified by FEMA, within which no clearing can occur, or mandatory 50-foot wide riparian buffers along perennial and intermittent streams, whichever is greater. Streams will be identified by their presence on the most recent USGS topographic mapping, or as determined by Lincoln County. It also requires delineated buffers on all plans submitted. The ordinance applies to all lands within the County's jurisdiction.

As the Catawba Springs/Ironton Township service area becomes more urbanized and rainfall infiltration is reduced, flood elevations and corresponding peak flows in the service area and downstream may rise. Lincoln County has adopted a Flood Protection Ordinance to reduce flood damage and preserve the stability of stream channels and floodplains.

The Ordinance contains measures to control the alteration of natural floodplains, stream channels, and natural flood protection barriers. Ordinances developed by the county regulate filling, grading, and other land disturbance that may increase erosion or flood damage; and regulate the construction of flood barriers that divert floodwaters or increase flood hazards to other lands. City and County Water Supply Watershed Ordinances and DEQ's Catawba River Buffer Rule will further help to minimize alteration of the near-stream portions of floodplains within the service area.

7.2 SOILS

7.2.1 Existing Environment

The dominant soils present in the project area are Wynott-Winnsboro-Rowan complex (WyD) 15 to 25 percent slopes which makes up 59.7 percent of the project area (3.2 acres), Lloyd sandy clay loam (LdC2) 8 to 15 percent slopes occupies 18.3 percent (1.0 acres), Pacolet sandy clay loam (PeB2) 2 to 8 percent slopes occupies 11.2 percent (0.6 acres), and Wynott-Winnsboro-Rowan complex (WyC) 8 to 15 percent slopes occupies 10.8 percent (0.6 acres). LdC2 and WyC are farmland of statewide importance and PeB2 is prime farmland. WyD, the most dominant of the soils in the project area, is not prime farmland. The project has no special soil conditions or known contaminated soil locations.

Table 7.2: Soils

Soil series	Slope	Percent of Project Area (%)
Wynott-Winnsboro-Rowan (WyD)	15-25%	59.7%
Lloyd sandy clay loam (LdC2)	8-15%	18.3%
Pacolet sandy clay loam (PeB2)	2-8%	11.2%
Wynott-Winnsboro-Rowan (WyC)	8-15%	10.8%

7.2.2 Impacts and Mitigation

Impacts to soils within the boundaries of the project will result as soil is temporarily side cast and permanently removed during construction. Upon completion of installation, side cast soil material will be approximately returned to its original location and/or removed from the site.

Soil loss during construction will be minimized by following a DEQ-approved Erosion and Sedimentation Control Plan, submitted to the DEQ at least 30 days prior to construction.

Secondary impacts, including minor soil contamination due to leakage and emissions from construction vehicles (oil, fuel, antifreeze, etc.) may occur during construction. Contractors will be required to observe proper equipment maintenance and proper collection and disposal of used vehicle fluids.

7.3 PRIME AND UNIQUE FARMLAND

7.3.1 Existing Environment

Lincoln County has 90,955 acres of prime and unique farmland. The project area is made up of 40.3 percent soil that is considered to be farmland of statewide importance or prime farmland (LdC2, PeB2, WyC), and 59.7 percent is considered not prime farmland (WyD).

7.3.2 Impacts and Mitigation

Soil loss during construction will be minimized by following a DEQ-approved Erosion and Sedimentation Control Plan, submitted to DEQ at least 30 days prior to construction.

Secondary impacts, including minor soil contamination due to leakage and emissions from construction vehicles (oil, fuel, antifreeze, etc.) may occur during construction. Contractors will be required to observe proper equipment maintenance and proper collection and disposal of used vehicle fluids.

In recognition of the importance of farmland to the local economy, Lincoln County has established a Voluntary Agricultural District Committee. This committee encourages the voluntary preservation of farmland from non-farm development and provides notice to surrounding landowners to help avert conflicts and nuisance lawsuits from resulting from new residential development adjacent to agricultural operations. The county also cooperates with two private land conservancies working with landowners to voluntarily preserve farmland and forest land: The Catawba Lands Conservancy and Foothills Conservancy of NC.

7.4 LAND USE

7.4.1 Existing Environment

The proposed WWTP upgrade site is located on existing land owned by Lincoln County, immediately adjacent to the facilities existing sequencing batch reactor (SBR). Killian Creek is located approximately 600 feet to the east of the project site. Old Plank Rd. is located approximately 1,500 feet to the west of the project site.

7.4.2 Impacts and Mitigation

The proposed expansion of the facility's existing sequencing batch reactor treatment capacity from 3.3 MGD to 6.6 MGD is necessary to provide adequate treatment capacity for the currently allocated and anticipated future flows for the next 20 years in growing Lincoln County.

The expansion will support roughly 23,000 people (sewered population), based on a maximum daily demand of 70 gpd/capita for residential properties and 15 gpd/capita for commercial properties. This is consistent with the service areas' projected sewered population increase of 15,107 people, between 2008 and 2025 (PER report). Construction of new sewerlines and

treatment capacity will induce population growth, leading to residential and commercial construction through the projected planning timeline as described in the PER. Proposed growth in the service area will result in unknown quantity and rate of land clearing commensurate with this growth. Progressive conversion of forested and agricultural land to urban and suburban uses will affect local forestry and agricultural production, scenic and recreational uses, historic and pre-historic resources, fish and wildlife populations, streams and floodplains, wetlands, water quality, air quality, and other resources discussed in the EA sections below. Similar land use trends are ongoing in adjacent counties, including Gaston, Mecklenburg, Iredell, and Catawba Counties, resulting in cumulative impacts not attributable to the Lincoln County project. The Charlotte-Gastonia-Rock Hill Metropolitan Statistical Area (MSA) which includes five NC counties (south of Lincoln County) plus York County SC grew from 1,330,448 people in 2000 to 2,474,314 in 2016 and continues to add about 50,000 people per year.

To address impacts from future development, Lincoln County has adopted a variety of planning and zoning tools and non-regulatory programs to manage growth and conserve natural and cultural resources. Lincoln County enacted a Unified Development Ordinance in 2009 (amended November 2016), with articles on Zoning, General Development, Subdivisions, Floodplain protection, and Natural Resource Protection. In addition, the county enforces a Junkyard Control Ordinance (updated July 2008), a Solid Waste Ordinance (updated July 2008), and Mobile Home Park Regulations (updated May 1988).

As part of the Natural Resource Protection (Article 7), Watershed Regulations contain all protective measures required by NC-DEQ for WS-II, WS-III, and WS-IV protected waters and their critical areas, including 30 foot minimum vegetated buffers along perennial waters, 100-ft minimum vegetative buffer for all new high-density development, development density restrictions, stormwater controls for high density development, wastewater discharges, landfills, and agricultural BMPs. Lincoln County's Planning Department and Soil & Water Conservation Commission provide guidance and enforcement of the Watershed Regulations. NCDEQ's Catawba River Buffer Rule applies to Lake Norman and the Catawba River main stem below the lake; this rule requires 50 foot vegetated buffers, of which the inner 30 feet must be kept forested if it was forested when the Rule took effect in June 2001. Under Lincoln County's subdivision regulations, new subdivisions within one thousand feet from the shoreline of Lake Norman must include a stormwater drainage system designed to the standards of the NC Department of Transportation. Lincolnton and Lincoln County are not subject to US-EPA Stormwater Management Rules.

Because the entire project area is owned by Lincoln County, no impacts to planned land use are anticipated. Mitigation will, therefore, not be necessary.

7.5 FOREST RESOURCES

7.5.1 Existing Environment

The project area is 5.4 acres with 1.75 acres within the existing plant's disturbed/maintained (mowed) footprint. The remaining 3.65 acres are dominated by mature hardwood and mixed pine/hardwood forest.

7.5.2 Impacts and Mitigation

While not a true forest resource, permanent impacts to existing, mature hardwoods within the proposed project site will total approximately 3.65 acres.

7.6 WETLANDS AND STREAMS

7.6.1 Existing Environment

The Catawba Springs/Ironton Township wastewater service area contains many miles of perennial and intermittent streams. Some streams have contiguous flood plain wetlands, but most streams in eastern Lincoln County have relatively narrow floodplains and limited wetlands. Non-floodplain wetlands may occur at headwater seeps or springs and in upland depressions.

Killian Creek is a Class C, perennial tributary and is located approximately 600 feet to the east of the project area. Except for mercury (statewide) Killian Creek is classified as fully supporting its designated use.

No waters of the US or waters of the state are located within the limits of disturbance. An unnamed tributary to Killian Creek is located just outside the LOD's northern border.

7.6.2 Impacts and Mitigation

Lincoln County's Watershed Ordinance requires stormwater runoff controls for new high-density development. Defined as greater than 24 percent impervious in WS-II-CA, greater than 30 percent impervious in WS-II or WS-III-CA, greater than 50 percent impervious in WS-III or WS-IV-CA, or greater than 70 percent impervious in WS-IV. Killian Creek, Leepers Creek, upper Clark Creek and their tributaries are Class C waters with no special stream protection requirements and may thus be more vulnerable to aquatic habitat degradation. However, Lincoln County's Soil Erosion and Sedimentation Control Ordinance and Streamside Buffer Ordinance Districts, discussed below, provide additional protection to all streams in Lincoln County's jurisdiction. Section 404/401 permitting through US-ACE and NC-DEQ is also required for most construction impacts in streams and will help minimize impacts to jurisdictional waters of any classification.

Due to Killian Creek being located approximately 600 feet to the east of the project area, no impacts are expected. In addition, no direct impacts are expected to take place at the unnamed tributary immediately north of the project area.

Indirect impacts to wetlands and streams may accrue in the service area as new residential and commercial development is completed. These may include both construction impacts and post-construction impacts from land clearing, drainage improvements, and stormwater runoff.

Future development supported by the WWTP and service area expansion may adversely affect jurisdictional wetlands and non-wetland waters (streams, ponds, lakes) in the expanded wastewater service area, based on the growth projections. Headwater wetlands and small streams are often piped and filled to accommodate new development, and medium to larger streams may be altered for new road and utility crossings, in accordance with US-ACE and NC-DEQ Section 404/401 permitting regulations and the County's Flood Damage Prevention Ordinance. Even where streams and wetlands are not intentionally altered, development on adjacent uplands may cause indirect stream and wetland damage from increased stormwater runoff, sediment, and pollution. Some perennial streams in water supply watersheds and the main stem of the Catawba River receive partial protection from local Water Supply Watershed Ordinances and the Catawba River Buffer Rule. Many streams in the service area have no special protection rules, including perennial streams not mapped on USGS topographic quadrangles, intermittent streams, and all streams outside of sewersheds (Forney Creek, Killian Creek, Anderson Creek, Leepers Creek, upper Clark Creek, and their tributaries). On streams with vegetated buffer requirements, buffer width and vegetation type may not always be adequate to prevent damage from upland development impacts. Potential stream impacts are discussed further in section 4.8, and measures to mitigate impacts are discussed further in section 5.2.

7.7 WATER RESOURCES

7.7.1 Existing Environment

The WWTP expansion area is in the Catawba River Basin (USGS HUC 03050101). Killian Creek is a Class C stream and passes approximately 600 east of the project area. Except for mercury (statewide) Killian Creek is classified as fully supporting its designated use.

Drinking water for the City of Lincolnton comes from the Catawba River with water for eastern side of Lincoln County coming from Lake Norman. The Lincolnton Water Treatment Plant (WTP) has a treatment capacity of 12 million gallons per day and the County WTP has a capacity of 3.99 million gallons per day. The majority of Lincoln County and the City of Lincolnton are in the Igneous-Felsic Intrusive hydrogeologic unit, with an average yield of 17.5 gallons per minute (Daniel and Payne, 1990). Except for the Lincolnton water and sewer service area and the easternmost portions of Lincoln County near Lake Norman served by the County, much of eastern Lincoln County does not have municipal water or sewer service and relies on private groundwater wells and septic systems.

7.7.2 Impacts and Mitigation

Negative surface water quality impacts from construction will only be realized if significant storm events occur, or if erosion and sedimentation control measures are not followed. This could include: increased turbidity and other negative ambient water quality impacts, aquatic habitat degradation, and reduction of benthic macroinvertebrate population size and diversity. There will be no long-term negative impacts to surface water quality due to the construction of the proposed wastewater treatment plant upgrade/expansion.

Construction plans will limit the disturbance area and best management practices will be followed to minimize erosion and sediment loss from site construction. Once backfilled, soil will be stabilized by seeding and mulching to establish a vegetative cover.

With future expansion of the Lincoln County sewer systems, dependence on septic systems will decrease. Retirement of older septic systems, some of which may be contributing to stream and groundwater quality degradation (especially excess nutrients and bacteria), will reduce pollutant inputs from these sources. Fewer new septic systems will be installed than would occur without a public sewer system.

Expansion of public wastewater collection and treatment facilities will support residential and commercial development in areas that may have been less economically feasible to develop without these utilities. The proposed capacity increase from 3.3 MGD to 6.6 MGD will support the projected 20-year population growth of about 16,000 people in Catawba Springs Township and 10,000 people in Ironton Township (W.K.Dickson & Company, 2005). Approximately 80 percent of Catawba Springs Township households and 60 percent of Ironton Township are expected to eventually connect to public sewer. Additional sewer lines will be needed to serve these residents. This future urban growth may adversely affect surface water quality and quantity by a variety of mechanisms: When forests and fields are replaced with lawns and impervious surfaces, rainfall infiltration decreases, and peak storm flow rates typically increase, often exacerbating channel erosion. Base flows during dry weather may be reduced, concentrating pollutants and creating high temperature and low-oxygen problems during summer. Typical pollutants in urban stormwater may include eroded soil, metals, pesticides, fertilizers, solvents, detergents, petroleum products, vehicle fluids, and trash. These impacts will be partially offset by reduced erosion and pollutant loading from agricultural sources as farmland is converted to other uses.

Where vegetated riparian buffers are sufficiently wide and receive diffuse rather than channelized stormwater flow, some of this pollution is trapped or detoxified before reaching surface waters. Stormwater that is channeled through buffers, either intentionally (pipes or ditches) or unintentionally (erosion gullies) transports most of its pollutant load directly into surface waters. Riparian forest removal, culverts, dams, drainage improvements, and poor channel stabilization practices may also contribute to destabilization of stream channels and water quality degradation. Destabilized streams may aggrade (fill with sediment) or degrade (down cut), and the existing gravel/cobble substrata important for stream ecosystems may be replaced by silt and fine sand, or scoured down to bedrock. The magnitude of these potential impacts will depend on the amount and types of development and local planning regulations intended to mitigate these impacts.

To mitigate potential indirect and cumulative impacts of new development, Lincoln County has adopted water supply watershed protection regulations that apply in the Catawba/Lake Norman watershed, Catawba/Mountain Island Lake watershed, Johnson Creek watershed, South Fork Catawba/Hoyle Creek watershed, and Maiden Creek watersheds in eastern Lincoln County. The County's regulations conform to those established by DEQ for WS-II, WS-IV and WS-IV-CA watersheds, including development density

limits, stormwater control requirements for high-density development, and vegetated buffer requirements along USGS-mapped perennial streams. No watershed protection regulations apply in the Dutchmans Creek watershed (Killian, Forney, Anderson, and Leepers Creeks) which contains Class C waters. Lincoln County also has an ordinance regulating development in floodplains, based on FEMA compliance standards.

Lincoln County's Streamside Buffer regulations applies to perennial and intermittent streams. The ordinance provides protection to the 100-year floodplain as identified by FEMA, within which no clearing can occur, or mandatory 50-foot wide riparian buffers along perennial and intermittent streams, whichever is greater. Streams are identified by their presence on the most recent USGS topographic mapping, or as determined by Lincoln County. The regulations also require delineated buffers on all plans submitted for construction. The ordinance applies to all lands in the County's jurisdiction.

7.8 COASTAL RESOURCES

7.8.1 Existing Environment

This project area is located in Lincoln County which is in North Carolina's Piedmont region, and therefore does not contain coastal resources.

7.8.2 Impacts and Mitigation

Because there are no coastal resources within the project area, impacts are not anticipated, and mitigation will, therefore, not be necessary.

7.9 SHELLFISH, FISH AND THEIR HABITATS

7.9.1 Existing Environment

Aquatic habitats in the eastern Lincoln County include Lake Norman, a 32, 510-acre hydroelectric impoundment on the Catawba River; the Catawba River below Lake Norman; Dutchmans Creek tributaries (Forney Creek, Killian Creek, Anderson Creek, Leepers Creek, Lippard Creek, and others); and South Fork Catawba River and its tributaries (Hoyle Creek, Muddy Creek, Clark Creek, Howards Creek, and others).

Free-flowing perennial streams near the project area such as Killian Creek, range from low-gradient sand and gravel dominated channels to moderate gradient gravel, cobble, and bedrock dominated channels, depending on local geology and topography. These support rosyside dace (*Clinostomus funduloides*), bluehead chub (*Nocomis leptocephalus*), golden shiner (*Notemigonus crysoleucas*), eastern silvery minnow (*Hybognathus regius*), greenfin shiner (*Cyprinella chloristia*), greenhead shiner (*Notropis chlorocephalus*), sandbar shiner (*Notropis scepticus*), white sucker (*Catostomus commersoni*), creek chubsucker (*Erimyzon oblongus*), striped jumprock (*Scartomyzon rupiscartes*), V-lip redhorse (*Moxostoma collapsum*), margined madtom (*Noturus insignis*), flat bullhead (*Ameiurus platycephalus*), speckled killifish (*Fundulus rathbuni*), redbreast sunfish (*Lepomis auritus*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), tesselated darter (*Etheostoma olmstedi*), seagreen darter (*Etheostoma thalassinum*), and fantail darter (*Etheostoma flabellare*), based on Menhinick (1991) and NC-DEQ data.

The Highfin carpsucker (*Carpiodes velifer)* is listed as a special concern in the state of North Carolina. However, it is found in the Lake Norman North USGS quadrangle, and the project site is in the Lowesville quadrangle.

Table 7.9 Lincoln County Protected Aquatic Species

Common name	**Scientific Name**	**Status (Federal, State)**	**Present on USGS Quad(s)***	**Habitat Present in LOD**
Highfin carpsucker	*Carpiodes velifer*	SC	LN	no

*LN = Lake Norman North

*SC = Special Concern

7.9.2 Impacts and Mitigation

Due to observance of Best Management Practices (BMPs) during construction, and its minimal impact to water resources, no negative impacts to aquatic protected species are anticipated. The closest water body to the limits of disturbance is the unnamed tributary to Killian Creek, which is located immediately north of the LOD. Best Management Practices will reduce and avoid runoff and sedimentation from construction of this project. No negative impacts to protected aquatic species or aquatic resources are anticipated as a result of this project.

The highfin carpsucker (*Carpiodes velifer)* occurs in Lake Norman and the Catawba River adjacent to the wastewater service area, but impacts should be minor due to: 1) state and local regulations requiring protection of vegetated buffers along these waters; and 2) the major spawning area for this fish are at the head of Lake Norman upstream of Lincoln County. Killian Creek and its unnamed tributary are too small to serve as a spawning stream, and therefore, it is unlikely that highfin carpsuckers will be affected by this project.

Potential indirect impacts of new development in the waste water service area that may affect fish and aquatic habitats include clearing of riparian forests for future utility lines and other development; channel erosion due to excessive stormwater runoff from increasing impervious surface area; increased loading of sediment, nutrients, and pollutants; reduced base flows; dams and culverts that impede fish passage and alter flow and sediment conveyance; in-filling of floodplains; and other methods of channel alteration to accommodate development. Stream substrata dominated by gravel and cobble may be replaced with fine sand, silt, and clay, which provide poor habitat. Forest canopy removal and channelization of small streams may destroy habitat structure and disrupt the physical, chemical, and biological processes in streams. During summer low flow conditions, small streams without forest canopy may become too warm for sensitive species of fishes and invertebrates. Because small streams provide important ecological

and hydrologic functions to downstream habitats, degradation of small streams in the service area may adversely affect aquatic communities in large streams such as Dutchmans Creek and South Fork Catawba River.

Water quality protection measures discussed in section 7.7 above will help to protect fish and aquatic habitats in designated sewersheds by reducing land disturbance within 30 feet of USGS mapped perennial streams and prohibiting channelized stormwater flow through protected stream buffers. No special stream protection measures apply to intermittent streams or other streams not mapped on USGS topographic quadrangles. The Watershed Ordinance also requires stormwater runoff controls for new high density development, defined as greater than 24 percent impervious in WS-II-CA, greater than 30 percent impervious in WS-II or WS-III-CA, greater than 50 percent impervious in WS-III or WS-IV-CA, or greater than 70 percent impervious in WS-IV). Killian Creek, Leepers Creek, upper Clark Creek, and their tributaries are Class C waters with no special stream protection requirements and may be more vulnerable to aquatic habitat degradation. However, Section 404/401 permitting though US-ACE and NC-DEQ is required for most construction impacts in streams and will help minimize impacts to jurisdictional waters of any classification.

7.10 WILDLIFE AND NATURAL VEGETATION

7.10.1 Existing Environment

Approximately 1.75 acres of the land within the 5.4-acre limits of disturbance, is within the existing plant's disturbed/maintained footprint. The remaining 3.65 acres is dominated by mature hardwood and mixed pine/hardwood forest.

Seven state or federal protected species of flora and fauna are known from Lincoln County (including the highfin carpsucker), and two other species are known from adjacent counties on the eight USGS topographic quadrangles that contain the East Lincoln County. Three of these, the northern long-eared bat, dwarf-flowered heartleaf and Michaux's sumac, are protected under both federal and state laws. The remaining five are protected under NC state law only: loggerhead shrike (*Lanius ludovicianus*), bog turtle (*Clemmys muhlenbergii*), timber rattlesnake (*Crotalus horridus*), dwarf threetooth snail (*Triodopsis fulciden*), and Georgia aster (*Aster georgianus*).

Formal surveys for dwarf-flowered heartleaf and Michaux's sumac were completed in the project area, both prior to the original WWTP construction (2004) and in 2018. Neither species were observed. Suitable habitat for the northern long-eared bat is present.

Table 7.10 Lincoln County Protected Terrestrial Species

Common name	Scientific Name	Status (Federal, State)	Present on USGS Quad(s)*	Habitat Present in LOD
Dwarf-flowered heartleaf	*Hexastylis naniflora*	T, T	MA, LE	no
Michaux's sumac	*Rhus michauxii*	E, E		no
Northern long-eared bat	*Myotis septentrionalis*	T, T		yes
Georgia aster	*Aster georgianus*	C, T	LO	yes
Loggerhead shrike	*Lanis ludovicianus*	SC		no
Bog turtle	*Clemmys muhlenbergii*	TSA, SC	LN, LS, LO, LE, LW	no
Timber rattlesnake	*Crotalus horridus*	SC		yes
Dwarf threetooth snail	*Triodopsis fulciden*	SC		no

* MA = Maiden, LE = Lincolnton East, LO = Lowesville, LN = Lake Norman North, LS = Lake Northman South, LW = Lincolnton West

*T = Threatened, E = Endangered, C = Candidate for federal E or T listing, SC = Special Concern, TSA = Threatened by similarity of appearance (applies to interstate trade; not habitat protection)

7.10.2 Impacts and Mitigation

Because Michaux's sumac and dwarf-flowered heartleaf are not present within the project area, impacts are not anticipated. Pursuant to USFWS' 4(d) rule (implemented in 2016), because Lincoln County is not included in the list of consultation areas, impacts to this species are not anticipated. Because impacts to these species are not anticipated, mitigation will not be necessary.

The Killian WWTP Upgrade Project will result in permanent changes to existing land use and community type. Specifically, the LOD, which will be converted into an expansion of the facilities existing sequencing batch reactor (SBR) treatment capacity from 3.3 mgd to 6.6 mgd. Because the project will result in nominal changes to existing environmental resources, no significant impacts to these resources are anticipated.

The project will support future residential and commercial development in eastern Lincoln County. Based on the population growth assumptions, roughly five to seven square miles of undeveloped land (mainly forest and agricultural lands) will likely be converted to urban and suburban uses by 2025. These estimates are speculative, and actual land use impacts will depend on many socio-economic factors including regional economic conditions, housing market demand, success of Lincoln County in retaining and recruiting industry, and condition of existing wells and septic systems in the service area. Progressive conversion of forested and agricultural land to urban and suburban uses will reduce forest acreage and affect some local wildlife populations, particularly those that prefer large tracts of contiguous forest. Aquatic wildlife will also be affected, as discussed in section 7.9 above.

To address the potential loss of forests, farmland and wildlife habitat due to future development, Lincoln County has adopted a variety of planning and zoning tools and non-regulatory programs to manage growth and conserve natural and cultural resources. These include the Zoning Ordinance, Subdivision Ordinance, Mobile Home Park Regulations, Flood Damage Ordinance, and Water Supply Watershed Ordinance. NC-DEQ's Catawba River Buffer Rule, which applies to Lake Norman and the Catawba River main stem below the lake, will also help preserve 30 to 50-foot wide forested buffers along these waterways. Several non-regulatory Lincoln County boards and committees are also involved in protecting natural resources.

Lincoln County has no regulatory program to protect habitat for terrestrial protected species but cooperates with private land conservancies to acquire and voluntarily protect ecologically important sites. The County's Voluntary Agricultural District may help preserve habitat for the loggerhead shrike.

7.11 PUBLIC LANDS AND SCENIC, RECREATIONAL AND STATE NATURAL AREAS

7.11.1 Existing Environment

The proposed WWTP expansion project area is located on a parcel currently owned by Lincoln County. The project area does not run through lands that are designated as scenic, recreational, or state natural areas. The nearest natural area is the Stephens Road Nature Preserve which is approximately 5.1 miles slightly southeast of the project area.

7.11.2 Impacts and Mitigation

Because no public lands, scenic, recreational, or state natural areas are located within in the project area, no impacts are anticipated.

7.12 AREAS OF ARCHEOLOGICAL OR HISTORICAL VALUE

7.12.1 Existing Environment

The North Carolina State Historic Preservation Office's (SHPO) GIS Service indicates that there are no areas listed on the National Register of Historic Places (NRHP) or other areas of historical value located within either project area. SHPO's response to scoping (no comment) confirms this, as well as the lack of archaeological resources within or in the vicinity of the project area.

7.12.2 Impacts and Mitigation

Because no historic or archaeological resources are present within the project area, no direct impacts are anticipated. Future development is the expanded wastewater service area may affect known or unknown archaeological or historic resources, based on the growth projections discussed in section 4.1.3. Lincoln County does not have development regulations intended to preserve archaeological or historic uses, but cooperates with private land conservancies (Catawba Lands Conservancy and Foothills Conservancy of NC) that work with landowners to preserve natural and historic sites.

7.13 AIR QUALITY

7.13.1 Existing Environment

The principle air quality pollutants emitted are particulates (TSP and PM-10), sulfur oxides (SO_x), nitrogen oxides (NO_x), and carbon monoxide (CO). The major source of these emissions is transportation, fuel consumption, industrial processes, solid waste disposal, forest fires, burning, and non-industrial solvent use (U.S. Environmental Protection Agency, 1990). Ozone (O_3), a reactive and toxic gas, is created by the photochemical reaction of nitrogen oxides with ultraviolet sunlight.

7.13.2 Impacts and Mitigation

All phases of construction could temporarily contribute to air pollution. A slight increase in airborne particulates from land clearing and exhaust emissions from construction vehicles will occur throughout construction, but the public health impacts of these emissions will be negligible. Proper vehicle maintenance, frequent wetting of exposed soil, and prompt soil stabilization will minimize impacts. All construction equipment contains factory-installed emission control devices, per federal regulations. However, it is the contractor's responsibility to ensure that its equipment is in compliance with any and all federal emission control standards for highway and off-road vehicles and equipment.

Sewer vents, pumping stations and the WWTP may emit some nuisance odors produced by bacterial metabolism, but odor control mechanisms will be incorporated into the design. Airborne particulates may temporarily increase when emergency generators are used during power outages. These episodes will affect air quality negligibly.

Urban growth in the service area may cause an increase in air pollutant emissions from vehicles, construction, and industrial activities. Transportation planning, growth management, industrial and vehicle emission controls, and other programs will in part mitigate the potential adverse air quality impacts of increasing population and traffic. No further mitigation for direct air quality impacts is proposed.

Adverse secondary impacts on air quality may result when population growth results in more emissions of pollutants from transportation, heating, and industrial uses. The contribution to lead emissions from transportation are now insignificant due to the phasing out of leaded gasoline in the 1980s, but nitrogen oxides, carbon monoxide, and volatile organic compound emissions from motor vehicles have changed little, as benefits from fuel efficiency and pollution control technology were offset by the increase in vehicle miles traveled. With an expected population growth of 27,000 people over 20 years (section 2.2), about 18,900 additional cars and trucks will be on the road in Lincoln County by 2025, based on the state-wide average of 0.7 registered motor vehicles per capita (NC Division of Motor Vehicles website). Mitigation for air quality impacts of urban growth is addressed at the state and federal level, rather than locally, although local incentives to promote cluster development and multi-use development may reduce the miles traveled per person, which will reduce and minimize the cumulative impacts to air quality from service area expansion.

7.14 NOISE LEVELS

7.14.1 Existing Environment

Existing WWTP operations create minor noise levels which are difficult to detect east of Old Plank Rd. The existing sequencing batch reactor (SBR) does not generate noise that is detectable outside the Lincoln County parcel on which it is located. The largest potential source of noise is the positive displacement blowers. These are located within buildings to minimize noise to the surrounding area. Because the existing SBR and proposed WWTP upgrade is located in a relatively rural, forested area, they currently generate no abnormal noise levels. Expansion of treatment capacity is not anticipated to significantly increase noise levels outside the WWTP parcel.

Noise is subject to the federal Noise Control Act of 1972 (PL-92-574) and Quiet Communities Act of 1978 (PL-95-6009), which require standards of compliance and recommend approaches to abatement for stationary sources such as airports, highways and industrial facilities. Lincoln County has ordinances to regulate nuisance noise. Noise from the existing WWTP is minor, and the county has not received noise complaints about the existing WWTP from nearby residents.

7.14.2 Impacts and Mitigation

The operation of construction-related machinery and activities throughout the proposed project area, during the hours of 7am through 6pm, Monday through Friday, may result in temporary

increases in noise levels throughout the construction phase. Weekend and after-hours work is not anticipated. Construction related noise will be temporary and confined, for the most part, to the immediate construction area.

Upon completion and beginning of operations, the proposed WWTP expansion will generate noise levels greater than current levels in the immediate vicinity of the plant site. As with post-construction odors, the slight increase of noise levels near the WWTP will be offset by distancing the site from the parcel boundaries to the maximum extent practicable.

As a result, no significant, permanent impacts to noise levels are anticipated to be detectible outside the existing Lincoln County parcel.

Urban growth induced by this and other public infrastructure projects in the service area may affect long-term regional noise levels due to traffic and construction in rural areas that are presently relatively quiet. Careful planning and zoning, preservation of buffers, and construction of noise barriers for stationary sources such as highways and major commercial roads will help protect residential areas from excessive noise.

7.15 INTRODUCTION OF TOXIC SUBSTANCES

7.15.1 Existing Environment

The existing WWTP uses an ultraviolet disinfection process opposed to chlorine in its treatment process. Chemicals currently utilized with the treatment process and stored in bulk on site include diesel fuel for emergency generators and 25% caustic soda. Alum or polyaluminum chloride for phosphorus removal will be added with the proposed expansion. These bulk chemicals storage areas include secondary containment for spill protection. Miscellaneous lubricating oils and coolants for equipment are stored in small volumes of 5 gallons or less within the Maintenance Building with secondary area containment. The WWTP maintains a Stormwater Pollution Protection Plan (SPPP) that include provisions for spill protection and monitoring of the chemical storage areas. The plant also maintains spill kits with absorption materials and containment socks within various plant areas for cleanup of small spills.

7.15.2 Impacts and Mitigation

The project is not expected to introduce toxic substances into the environment. The dumping of chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste into or alongside of streams or impoundments, or into natural or man-made channels will be prohibited. Provisions in the construction contract will require the contractor to exercise every reasonable precaution during construction to prevent the pollution of areas in or adjacent to the project area.

Upon completion, the proposed WWTP will use chlorine, alum, and lime as part of its tertiary treatment process. Like the existing WWTP, the proposed WWTP will store diesel fuel and petroleum-based lubricants onsite for emergency power generation and equipment maintenance, respectively.

Because toxic materials' use and storage within the proposed WWTP will comply with local, state, and federal regulations, no impacts are anticipated.

7.16 ENVIRONMENTAL JUSTICE

7.16.1 Existing Environment

An analysis of race and income demographics was completed using U.S. Environmental Protection Agency's EJSCREEN Tool (Table 7.15). The only census bloc group within the project area has a minority population significantly less than half (30%). A little less than half of the bloc group is low-income (48%) (Figure 7.15).

Table 7.16 Environmental Justice

County	Census Block Group	Total Population	Minority Population	Percent Minority Population (%)	Significant Minority Population?	Low-Income Population	Percent Low-Income Population	Significant Low-Income Population
Lincoln	371090710022	1,434	430	30	no	688	48	no

7.16.2 Impacts and Mitigation

The proposed project area is located within an area currently surrounded by forested land with the nearest residential buildings approximately 0.3 miles away. As a result, no negative direct, secondary, or cumulative impacts to employment, property values, land use, or other factors effecting minority and/or low-income density and/or distribution are anticipated.

8.0 FINANCIAL ANALYSIS

Lincoln County contracted with Raftelis Financial Consultants to assess the County's current financial situation and project the impact of the project on the user rates This information can be found in Appendix J.

This basis for the following tables can be found in Appendix J.

Current and Projected Monthly Sewer Rates

	Approved **FY 2018**	*Approved* **FY 2019**	*Projected* **FY 2020**	*Projected* **FY 2021**	*Projected* **FY 2022**	*Projected* **FY 2023**
Minimum Bill						
0-2.5 kgal	$ 22.00	$ 25.30	$ 29.10	$ 33.46	$ 33.46	$ 33.46
Sewer-only customers	$ 31.89	$ 36.67	$ 42.17	$ 48.50	$ 48.50	$ 48.50
% Change	*0.0%*	*15.0%*	*15.0%*	*15.0%*	*0.0%*	*0.0%*
Residential Charge per Kgal						
Tier 1: 2.5-12 kgal	$ 5.19	$ 5.97	$ 6.86	$ 7.89	$ 7.89	$ 7.89
Tier 2:						
> 12 kgal No Restrictions	$ 6.29	$ 7.23	$ 8.32	$ 9.57	$ 9.57	$ 9.57
> 12 kgal Voluntary Restrictions	$ 7.86	$ 9.04	$ 10.39	$ 11.95	$ 11.95	$ 11.95
> 12 kgal Mandatory Restrictions	$ 12.58	$ 14.47	$ 16.64	$ 19.13	$ 19.13	$ 19.13
% Change		*15.0%*	*15.0%*	*15.0%*	*0.0%*	*0.0%*
Commercial Charge per Kgal	$ 5.92	$ 6.81	$ 7.83	$ 9.00	$ 9.00	$ 9.00
Industrial Charge per Kgal (>2.5 Kgal) (1)	$ 5.92	$ 6.81	$ 7.83	$ 9.00	$ 9.00	$ 9.00
% Change	*0.0%*	*15.0%*	*15.0%*	*15.0%*	*0.0%*	*0.0%*

(1) Industrial customers that receive both water and sewer service are billed for usage; only sewer-only customers have a flat fee without usage charges.

Current and Projected Monthly Water Rates and Charges

Approved	*Approved*	*Projected*	**FY 2018**	*Projected* **FY 2019**	*Projected* **FY 2020**	*Projected* **FY 2021**	**FY 2022**	**FY 2023**
	Inside County		$ 20.00	$ 21.20	$ 22.26	$ 23.37	$ 23.37	$ 23.37
	Outside County		$ 40.00	$ 42.40	$ 44.52	$ 46.75	$ 46.75	$ 46.75
		% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*
	Residential Charge per Kgal							
	Tier 1: 2.5-12 kgal		$ 4.72	$ 5.00	$ 5.25	$ 5.52	$ 5.52	$ 5.52
	Tier 2:							
	> 12 kgal No Restrictions		$ 5.72	$ 6.06	$ 6.37	$ 6.68	$ 6.68	$ 6.68
	> 12 kgal Voluntary Restrictions		$ 7.15	$ 7.58	$ 7.96	$ 8.36	$ 8.36	$ 8.36
	> 12 kgal Mandatory Restrictions		$ 11.44	$ 12.13	$ 12.73	$ 13.37	$ 13.37	$ 13.37
	Bulk Water		$ 8.00	$ 8.48	$ 8.90	$ 9.35	$ 9.35	$ 9.35
		% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*
	Commercial Charge per Kgal							
	> 2.5 kgal		$ 5.72	$ 6.06	$ 6.37	$ 6.68	$ 6.68	$ 6.68
	Interruptible Agricultural Rate		$ 4.00	$ 4.24	$ 4.45	$ 4.67	$ 4.67	$ 4.67
	Bulk Water		$ 8.00	$ 8.48	$ 8.90	$ 9.35	$ 9.35	$ 9.35
		% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*
	Industrial Charge per Kgal (>2.5 Kgal)		$ 4.72	$ 5.00	$ 5.25	$ 5.52	$ 5.52	$ 5.52
		% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*

8.1 FINANCIAL TABLES

The County's current financial condition and water and sewer user rates are reflected in Table 8.1. A copy of the Town's independent auditors' report for the Financial Report for the Fiscal Year ending June 30, 2018 is available upon request. The current Lincoln County's "Schedule

of Fees and Charges for Water and Sewer Services, Effective July 01, 2017" are included in Appendix J.2. An analysis of the impact of the project on local user fees is included in Tables 8.2 through 8.6 on the following pages.

Table 8.1. Applicant's/LGUs Financial Condition		
KILLIAN CREEK WWTP EXPANSION		
Plant Expansion of Existing SBR WWTP		
Utility Bill as Percent of Median Household Income		
Use the pulldown menu to select the type of rate structure used for water and sewer. If using a rate structure other than uniform, then there is no need to complete the base charge (charge and volume) or volumetric charge.		
	Sewer Rate Structure	**Water Rate Structure**
Rate Structure:	Uniform	Uniform
Base Charge:	$22.00	$20.00
Thousands of Gallons in Base Charge:	2.5	2.5
Volumetric Charge per 1,000 gallons:	$5.19	$4.82
Monthly Bill for 5,000 gallons:	$34.98	$32.05
Combined Monthly Water and Sewer Bill for 5,000 gallons:	**$67.03**	
Median Houshold Income:	$49,283	
Monthly Median Household Income for LGU:	$4,107	
Bill as % of Median Household Income:	0.85%	0.78%
Overall Bill as % of Median Household Income:	**1.63%**	
Additional Information if needed (see Subchater 8.1 of Part B of the guidance).		

Table 8.2. Funding Distribution					
KILLIAN CREEK WWTP EXPANSION					
LINCOLN COUNTY					
Plant Expansion of Existing SBR WWTP					
Enter data into the gray areas. Where applicable, use the pulldown menus as shown by the arrows.					
	Funding Source[a]	**Amount**	**Funding Type**	**Specified Interest Rate from LOIF[b] (if applicable)**	**Repayment Period (if applicable)**
Main Division Funding:	CWSRF	$14,000,000	Loan	1.930%	20
Funding 1:	Local Funds	$12,304,200	Cash		
Funding 2:					
Funding 3:					
Funding 4:					
Funding 5:					
Closing/Administrative Fee(s):		$280,000	If Other, list:		
Total Funded Amount (minus applicable closing/administrative fee[s]):		**$26,304,200**			
Total Project Cost (with closing/administrative fee[s]):		**$26,584,200**			
[a]For SRP grants, grant administrative fee is 1.5% of Total grant award.					
For SRP and SRF loans, loan administrative fee is 2.0% of Total loan award.					
[b]LOIF is Letter of Intent to Fund issued by the Division.					

Table 8.3. Year 1 Interest and Repayment					
KILLIAN CREEK WWTP EXPANSION					
LINCOLN COUNTY					
Plant Expansion of Existing SBR WWTP					
	Funding Source	**Total Funding Amount**	**Year 1 Principal Payment**	**Year 1 Interest Payment**	**Year 1 Total Payment (Principal + Interest)**
Main DWI Funding :	CWSRF	$14,000,000	$700,000	$270,200	$970,200
Funding 1:	Local Funds	$12,304,200			
Funding 2:		$0			
Funding 3:		$0			
Funding 4:					
Funding 5:					
		Total Payment @ Specified Interest Rate(s)[a]:			**$970,200**
[a]The interest rates are shown on Table 8.2.					

Table 8.4. User Fee Increase Due to Project

KILLIAN CREEK WWTP EXPANSION

LINCOLN COUNTY

Plant Expansion of Existing SBR WWTP

Select Customer Type for Financing Project[c]	Average Water Usage Per Month (gallons)	Number of Connections	Total Monthly Water Usage by Customer Type (gallons)	Total Monthly Water Usage for Customer Base (gallons):	36,003,174
☑ Residential	4,722	5,021	23,710,887	# of 5,000 Gallon Units to Finance Project:	7,201
☑ Non-Residential	27,748	443	12,292,288	Year 1 O&M Expenses Due to Project:	$1,386,657

	Funding Source	Year 1 Annual Repayment	Year 1 Annual O&M Costs	Total Year 1 Annual Costs @ Specified Interest Rate	Year 1 Monthly Costs @ Specified Interest Rate	Monthly Cost/ 5,000 Gallons Due to Project @ Specified Interest Rate (All Users)	Monthly Cost/5,000 Gallons Due to Project @ Specified Interest Rate (Residential Users Only)
DWI Main Funding Source:	CWSRF	$970,200	$1,386,657	$2,356,857	$196,405	$27.28	$41.42
Funding Source 1:	Local Funds						
Funding Source 2:							
Funding Source 3:							
Funding Source 4:							
Funding Source 5:							
Total Year 1 Annual Cost @ Specified Interest Rate:				**$2,356,857**			
Total Year 1 Monthly Cost @ Specified Interest Rate:					**$196,405**		
Total Monthly Cost to Treat 5,000 Gallons @ Specified Interest Rate:						**$27.28**	
Total Monthly Cost to Treat 5,000 Gallons @ Specified Interest Rate (Residential Users Only):							**$41.42**

The County intends to finance the project utilizing a combination of capacity development fees, revenue bonds and user fees. The current evaluation of Capacity Development Fees is documented in the Raftelis Financial Consultants, Inc. evaluation dated March 12, 2018 included in Section 8.1.

9.0 PUBLIC PARTICIPATION

9.1 PROJECTS ABOVE THE MINOR CONSTRUCTION ACTIVITY THRESHOLDS/EPA CRITERIA

The proposed project construction will require a FONSI as the final environmental document and will increase in the WWTP capacity greater than 25%. Accordingly, this project requires a "high level of public involvement" to compete the process. Upon receipt of a loan/grant package from the NC Division of Infrastructure, the County will proceed with a public meeting for the proposed project utilizing the following three (3) steps:

Advertisement of Public Hearing

A minimum two-week notification of the public meeting will be provided by an advertisement in a local newspaper whose coverage encompasses the project area. A sample notice is included in Appendix K. The advertisement contains the following information:

- The time and location of the public meeting.
- When and where a copy of the ER/EID can be reviewed.
- A brief description of the proposed project.
- How much funding is required and the source(s) of funding.

Upon advertisement, a copy of the ER/EID will be made available for review by the public at the Lincoln County Department of Public Works at least one week prior to the public meeting.

Public Hearing

The public meeting will be held at the Lincoln County Citizen Center on the 3rd Floor in the Board of Commissioners Room, 115 West Main Street, Lincolnton, NC 28092 as part of a scheduled County Meeting. The following information will be presented at the public meeting using a slide presentation in addition to verbal communication:

- An identification of the need and purpose of the project (e.g., the problem).
- A discussion of alternatives, including the selected alternative.
- An identification of the funding utilized, and the amount of funding sought.
- The impact of the project on the monthly sewer bill for a typical residential user of 5,000 gallons per month

Report on the Public Meeting

The following information from the public hearing will be included in Appendix K upon completion of the Public Meeting.

- A copy of the affidavit of publication
- A copy of the advertisement
- A copy of the presentation
- Minutes of the meeting

9.2 ENVIRONMENTAL IMPACT STATEMENTS

In rare cases, the PER/EID will result in the need for an EIS and require a Record of Decision (ROD) as the final environment document. At this time, an EIS and ROD are not anticipated.

9.3 GENERAL RECOMMENDATIONS

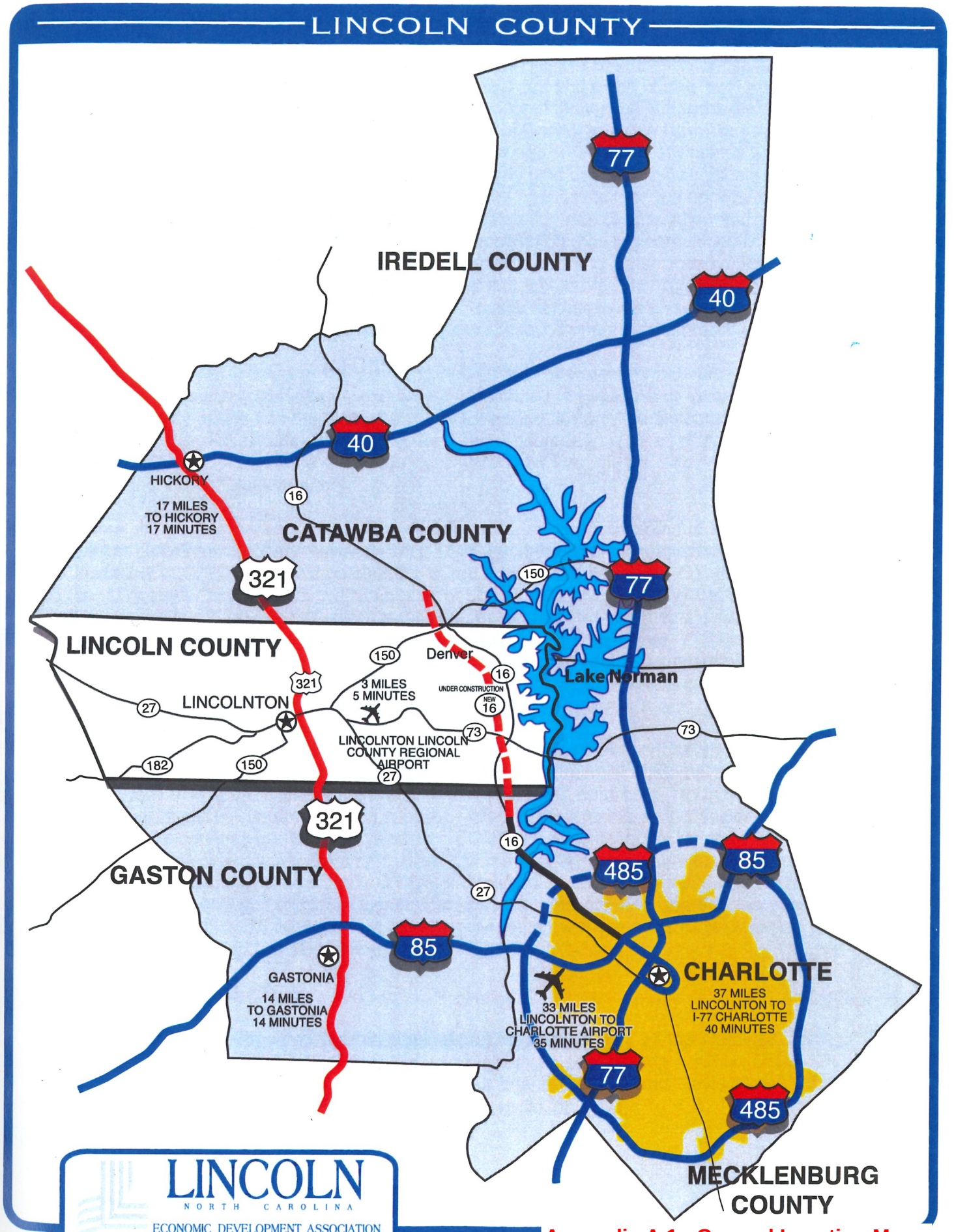
The general recommendations of this Engineering Report are that Lincoln County pursue North Carolina Division of Infrastructure CWSRF funding for the expansion of the Killian Creek WWTP to meet the future wastewater treatment needs of eastern Lincoln County.

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Appendix A – Project Maps

A.1 General Location Map
A.2 Lincoln County Township Map

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LINCOLN
NORTH CAROLINA
ECONOMIC DEVELOPMENT ASSOCIATION

Appendix A.1 - General Location Map

LINCOLN COUNTY, NC

APPENDIX A.2
LINCOLN COUNTY TOWNSHIPS & EXISTING WWTP FACILITIES

NORTH BROOKE

LINCOLNTON

HOWARDS CREEK

IRONTON

CATAWBA SPRINGS

INDIAN CREEK

CAT SQUARE RD

REEPSVILLE RD

HOWARDS CREEK

STARTOWN

W. HWY 27

HWY 274

HIGHWAY 182

LEONARD CREEK

SHOAL RD

HWY 150

E. MAIN ST.

US 321

NEW HWY 321

BUSINESS

HWY 150

LEEPERS CREEK

HWY 73

HOYLE CREEK

E. HWY 27

CHURCH RD

BETH HAVEN

ANDERSON CREEK

KILLIAN CREEK

FORNEY CREEK

HIGHWAY 16

PLANK RD

LEGEND

- WWTP
- STREAMS
- MAIN ROAD
- LINCOLNTON CITY LIMITS
- TOWNSHIP
- CITY OF LINCOLNTON SERVICE AREA
- ELCWSD EXISTING SERVICE AREA

0 2 4 MILES

CITY OF LINCOLTON
6 MGD WWTP

APPROXIMATE CITY OF LINCOLNTON SERVICE AREA

Killian Creek 3.35 MGD WWTP

Middle Forney WWTP Closed

APPROXIMATE [illegible] SERVICE AREA

No Longer Exists

Appendix B – NPDES Permit Information

B.1 Killian Creek WWTP NPDES Permit (Part 1)
B.2 NPDES Permit Speculative Limits

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North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

February 6, 2015

Mr. Don Chamblee, Public Works Director
County of Lincoln
115 West Main Street, 2nd Floor Citizens Center
Lincolnton, North Carolina 28092

Subject: Final NPDES permit
Permit NC0088722
Lincoln County WWTP
Lincoln County
Class 3 Facility

Dear Mr. Chamblee:

Division personnel have reviewed and approved your application for renewal of the subject permit. Accordingly, we are forwarding the attached NPDES permit. This permit is issued pursuant to the requirements of North Carolina General Statute 143-215.1 and the Memorandum of Agreement between North Carolina and the U.S. Environmental Protection Agency dated October 15, 2007 (or as subsequently amended).

The final permit contains the following changes from your previous permit:

- In response to your comments on the draft permit the description of the wastewater treatment system was modified to include reaeration as one of the components.
- The permit includes an intermediate flow tier for 2.5 MGD. The flow trigger to go to the next tier will be when the calendar year average flow exceeds 90% of permitted flow. Special Condition A. (6) includes the requirements to notify the Division when the flow trigger is met.
- Monitoring for total residual chlorine was eliminated from the permit since UV is used as the disinfection method.
- Quarterly monitoring for total zinc was added to the effluent monitoring requirements for all flow phases. Total zinc was detected during the effluent pollutant scan at concentrations greater than the water quality action level.

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492
Internet: www.ncwaterquality.org

An Equal Opportunity \ Affirmative Action Employer

APPENDIX B.1
Current NPDES Permit Part 1

- The requirement to perform effluent pollutant scans was modified from annual to three times during your permit cycle. See Special Condition A.(5). This condition also includes requirements for toxicity testing with alternate species.
- A special condition was added to the draft permit to address the Environmental Protection Agency's (EPA's) pending requirement for you to provide electronically-submitted Discharge Monitoring Reports (eDMRs). The Division intends to fully implement the eDMR program as soon as practicable. See Condition A.(7.) in permit. For information on eDMR, registering for eDMR and obtaining an eDMR user account, please visit the following web page:
  http://portal.ncdenr.org/web/wq/admin/bog/ipu/edmr.
  For information on EPA's proposed NPDES Electronic Reporting Rule, please visit the following web site:
  http://www2.epa.gov/compliance/proposed-npdes-electronic-reporting-rule.

Please be aware that future initiatives in water quality permitting will include the development of statewide nutrient criteria for lakes and reservoirs by 2023. Nutrient limits are likely to be included in NPDES permits at that time or upon permit expansions above current permitted flows.

If any parts, measurement frequencies or sampling requirements contained in this permit are unacceptable to you, you have the right to an adjudicatory hearing upon written request within thirty (30) days following receipt of this letter. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings (6714 Mail Service Center, Raleigh, North Carolina 27699-6714). Unless such demand is made, this decision shall be final and binding.

Please note that this permit is not transferable except after notice to the Division. The Division may require modification or revocation and reissuance of the permit. This permit does not affect the legal requirements to obtain other permits which may be required by the Division of Water Resources or any other Federal, State, or Local governmental permits that may be required.

If you have any questions concerning this permit, please contact Teresa Rodriguez at telephone number (919) 807-6387 or at email Teresa.rodriguez@ncdenr.gov.

Sincerely,

S. Jay Zimmerman, Acting Director
Division of Water Resources, NCDENR

cc: NPDES Files
Central Files
EPA Region 4 (e-copy)
Mooresville Regional Office / Surface Water Protection Section (e-copy)
Aquatic Toxicology Unit, Susan Meadows (e-copy)

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

PERMIT

TO DISCHARGE WASTEWATER UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provision of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

Lincoln County

is hereby authorized to discharge wastewater from a facility located at

Killian Creek WWTP
7085 Old Plank Rd
Stanley
Lincoln County

to receiving waters designated as a Killian Creek in the Catawba River Basin in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, and IV hereof.

This permit shall become effective March 1, 2015.

This permit and authorization to discharge shall expire at midnight on February 29, 2020.

Signed this day February 6, 2015.

S. Jay Zimmerman, Acting Director
Division of Water Resources
By Authority of the Environmental Management Commission

SUPPLEMENT TO PERMIT COVER SHEET

All previous NPDES Permits issued to this facility, whether for operation or discharge are hereby revoked. As of this permit issuance, any previously issued permit bearing this number is no longer effective. Therefore, the exclusive authority to operate and discharge from this facility arises under the permit conditions, requirements, terms, and provisions included herein.

Lincoln County is hereby authorized to:

1. Continue to operate an existing 1.68 MGD wastewater treatment facility consisting of the following components:
    - Bar screen and grit collection
    - Dual Sequencing Batch Reactors
    - Post Equalization Basin
    - Effluent Tertiary Disk Filters
    - Ultraviolet Disinfection
    - Aerobic Digestion
    - Sludge Holding Tank
    - Sludge Dewatering
    - Reaeration

    The facility is located at 7085 Old Plank Road, Stanley, Lincoln County.

2. After obtaining an Authorization to Construct permit and submitting an acceptable Engineer Certification to the Division construct and operate a 3.35 MGD wastewater treatment system, and

3. Discharge from said treatment works at the location specified on the attached map into Killian Creek which is classified C waters in the Catawba River Basin

PART I

A. (1) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [1.68 MGD]

[15A NCAC 02B .0400 et seq., 02B .0500 et seq.]

During the period beginning upon the effective date of the permit and lasting until expansion to 3.35 MGD and the average flow for a calendar year exceeding **1.5** MGD[4] (90% of flow limit) or expiration, the Permittee is authorized to discharge from outfall 001. Such discharges shall be limited and monitored by the Permittee as specified below:

PARAMETER	LIMITS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow	1.68 MGD			Continuous	Recording	Effluent
BOD, 5 day, 20°C[1]	30.0 mg/L	45.0 mg/L		3/Week	Composite	Effluent
Total Suspended Solids[1]	30.0 mg/L	45.0 mg/L		3/Week	Composite	Effluent
pH	≥ 6.0 and ≤ 9.0 standard units			3/Week	Grab	Effluent
NH_3-N (April 1 – October 31)	1.7 mg/L	5.1 mg/L		3/Week	Composite	Effluent
NH_3-N (November 1 – March 31)	5.5 mg/L	16.5 mg/L		3/Week	Composite	Effluent
Total Nitrogen, mg/l				Monthly	Composite	Effluent
Total Phosphorus, mg/l				Monthly	Composite	Effluent
Temperature, °C				Daily	Grab	Effluent
Fecal Coliform	200/100 mL	400/100 mL		3/Week	Grab	Effluent
Total Zinc, µg/l				Quarterly	Composite	Effluent
Whole Effluent Toxicity[2]				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote 3	Footnote 3	Effluent

Notes:

1. The monthly average BOD_5 and Total Suspended Solids concentrations shall not exceed 15% of the respective influent value (85% removal).
2. Chronic Toxicity (*Ceriodaphnia*) P/F @ 52%; January, April, July, and October [see A. (4)].
3. The permittee shall perform three Effluent Pollutant Scans during the term of this permit [see A. (5)].
4. See Condition A.(6) for notification requirements.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. (2) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [2.5 MGD] [15A NCAC 02B .0400 et seq., 02B .0500 et seq.]

During the period beginning upon expansion to 3.35 MGD and the average flow for a calendar year exceeding 1.5 MGD and lasting until the average flow for a calendar year exceeds 2.25 MGD[4] (90% of flow limit) or expiration, the Permittee is authorized to discharge from outfall 001. Such discharges shall be limited and monitored by the Permittee as specified below:

PARAMETER	LIMITS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow	2.5 MGD			Continuous	Recording	Effluent
BOD, 5 day, 20°C[1]	30.0 mg/L	45.0 mg/L		3/Week	Composite	Effluent
Total Suspended Solids[1]	30.0 mg/L	45.0 mg/L		3/Week	Composite	Effluent
pH	≥ 6.0 and ≤ 9.0 standard units			3/Week	Grab	Effluent
NH_3-N(April 1 – October 31)	1.5 mg/L	4.5 mg/L		3/Week	Composite	Effluent
NH_3-N (November 1 – March 31)	4.3 mg/L	12.9 mg/L		3/Week	Composite	Effluent
Total Nitrogen, mg/l				Monthly	Composite	Effluent
Total Phosphorus, mg/l				Monthly	Composite	Effluent
Temperature, °C				Daily	Grab	Effluent
Fecal Coliform	200/100 mL	400/100 mL		3/Week	Grab	Effluent
Total Zinc, µg/l				Quarterly	Composite	Effluent
Whole Effluent Toxicity[2]				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote 3	Footnote 3	Effluent

Notes:

1. The monthly average BOD_5 and Total Suspended Solids concentrations shall not exceed 15% of the respective influent value (85% removal).
2. Chronic Toxicity (*Ceriodaphnia*) P/F @ 62 %; January, April, July, and October [see A. (4)].
3. The permittee shall perform three Effluent Pollutant Scans during the term of this permit [see A. (5)].
4. See Condition A.(6) for notification requirements.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. (3) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [3.35 MGD] [15A NCAC 02B .0400 et seq., 02B .0500 et seq.]

During the period beginning upon the average flow for a calendar year exceeding **2.25 MGD** and lasting until expiration, the Permittee is authorized to discharge from outfall 001. Such discharges shall be limited and monitored by the Permittee as specified below:

PARAMETER	LIMITS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow	3.35 MGD			Continuous	Recording	Effluent
BOD, 5 day, 20°C[1]	30.0 mg/L	45.0 mg/L		Daily	Composite	Effluent
Total Suspended Solids[1]	30.0 mg/L	45.0 mg/L		Daily	Composite	Effluent
pH	≥ 6.0 and ≤ 9.0 standard units			Daily	Grab	Effluent
NH_3-N (April 1 – October 31)	1.3 mg/L	3.9 mg/L		Daily	Composite	Effluent
NH_3-N (November 1 – March 31)	3.5 mg/L	10.5 mg/L		Daily	Composite	Effluent
Total Nitrogen, mg/l				Monthly	Composite	Effluent
Total Phosphorus, mg/l				Monthly	Composite	Effluent
Temperature, °C				Daily	Grab	Effluent
Fecal Coliform	200/100 mL	400/100 mL		Daily	Grab	Effluent
Total Zinc, µg/l				Quarterly	Composite	Effluent
Whole Effluent Toxicity[2]				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote 3	Footnote 3	Effluent

Notes:

1. The monthly average BOD_5 and Total Suspended Solids concentrations shall not exceed 15% of the respective influent value (85% removal).
2. Chronic Toxicity (*Ceriodaphnia*) P/F @ 68%; January, April, July, and October [see A. (4)].
3. The permittee shall perform three Effluent Pollutant Scans during the term of this permit [see A. (5)].

There shall be no discharge of floating solids or visible foam in other than trace amounts.

A. (4) CHRONIC TOXICITY PERMIT LIMIT (QUARTERLY) [15A NCAC 02B .0200 et seq.]
The permittee shall conduct quarterly chronic toxicity tests using test procedures outlined in the "North Carolina *Ceriodaphnia* Chronic Effluent Bioassay Procedure," Revised December 2010, or subsequent versions.

The effluent concentration defined as treatment two in the procedure document is 52% (1.68 MGD)/ 62% (2.5 MGD) / 68% (3.35 MGD). The testing shall be performed as a *Ceriodaphnia dubia* 7-day pass/fail test. The tests will be performed during the months of **January, April, July and October**. These months signify the first month of each three month toxicity testing quarter assigned to the facility. Effluent sampling for this testing must be obtained during representative effluent discharge and shall be performed at the NPDES permitted final effluent discharge below all treatment processes.

All toxicity testing results required as part of this permit condition will be entered on the Effluent Discharge Monitoring Form (MR-1) for the month in which it was performed, using the parameter code **TGP3B**. Additionally, DWR Form AT-1 (original) is to be sent to the following address:

Attention: North Carolina Division of Water Resources
Water Sciences Section/Aquatic Toxicology Branch
1621 Mail Service Center
Raleigh, North Carolina 27699-1621

Completed Aquatic Toxicity Test Forms shall be filed with the Water Sciences Section no later than 30 days after the end of the reporting period for which the report is made.

Test data shall be complete and accurate and include all supporting chemical/physical measurements performed in association with the toxicity tests, as well as all dose/response data. Total residual chlorine of the effluent toxicity sample must be measured and reported if chlorine is employed for disinfection of the waste stream.

Should there be no discharge of flow from the facility during a month in which toxicity monitoring is required, the permittee will complete the information located at the top of the aquatic toxicity (AT) test form indicating the facility name, permit number, pipe number, county, and the month/year of the report with the notation of "No Flow" in the comment area of the form. The report shall be submitted to the Water Sciences Section at the address cited above.

Should the permittee fail to monitor during a month in which toxicity monitoring is required, then monthly monitoring will begin immediately. Upon submission of a valid test, this monthly test requirement will revert to quarterly in the months specified above.

Should any test data from this monitoring requirement or tests performed by the North Carolina Division of Water Resources indicate potential impacts to the receiving stream, this permit may be re-opened and modified to include alternate monitoring requirements or limits.

NOTE: Failure to achieve test conditions as specified in the cited document, such as minimum control organism survival, minimum control organism reproduction, and appropriate environmental controls, shall constitute an **invalid test** and will require immediate follow-up testing to be completed no later than the last day of the month following the month of the initial monitoring.

A. (5) EFFLUENT POLLUTANT SCAN [G.S. 143-215.1(b)]

The Permittee shall perform a total of three (3) Effluent Pollutant Scans for all parameters listed below. One scan must be performed in each of the following years: 2016, 2017, and 2018. Analytical methods shall be in accordance with 40 CFR Part 136 and shall be sufficiently sensitive to determine whether parameters are present in concentrations greater than applicable standards and criteria. Samples should be collected with one quarterly toxicity test each year, and must represent seasonal variation [i.e., do not sample in the same quarter every year]. Unless otherwise indicated, metals shall be analyzed as "total recoverable."

Ammonia (as N)
Chlorine (total residual, TRC)
Dissolved oxygen
Nitrate/Nitrite
Kjeldahl nitrogen
Oil and grease
Phosphorus
Total dissolved solids
Hardness
Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury (EPA Method 1631E)
Nickel
Selenium
Silver
Thallium
Zinc
Cyanide
Total phenolic compounds

Volatile organic compounds:

Acrolein
Acrylonitrile
Benzene
Bromoform
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroethane
2-chloroethylvinyl ether
Chloroform
Dichlorobromomethane
1,1-dichloroethane
1,2-dichloroethane
Trans-1,2-dichloroethylene
1,1-dichloroethylene
1,2-dichloropropane
1,3-dichloropropylene
Ethylbenzene
Methyl bromide
Methyl chloride
Methylene chloride
1,1,2,2-tetrachloroethane
Tetrachloroethylene
Toluene
1,1,1-trichloroethane
1,1,2-trichloroethane
Trichloroethylene
Vinyl chloride

Acid-extractable compounds:

P-chloro-m-cresol
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
4,6-dinitro-o-cresol
2,4-dinitrophenol
2-nitrophenol
4-nitrophenol
Pentachlorophenol
Phenol
2,4,6-trichlorophenol

Base-neutral compounds:

Acenaphthene
Acenaphthylene
Anthracene
Benzidine
Benzo(a)anthracene
Benzo(a)pyrene
3,4 benzofluoranthene
Benzo(ghi)perylene
Benzo(k)fluoranthene
Bis (2-chloroethoxy) methane
Bis (2-chloroethyl) ether
Bis (2-chloroisopropyl) ether
Bis (2-ethylhexyl) phthalate
4-bromophenyl phenyl ether
Butyl benzyl phthalate
2-chloronaphthalene
4-chlorophenyl phenyl ether
Chrysene
Di-n-butyl phthalate
Di-n-octyl phthalate
Dibenzo(a,h)anthracene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3-dichlorobenzidine
Diethyl phthalate
Dimethyl phthalate
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclo-pentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodi-n-propylamine
N-nitrosodimethylamine
N-nitrosodiphenylamine
Phenanthrene
Pyrene
1,2,4-trichlorobenzene

Reporting. Test results shall be reported on DWR Form-A MR-PPA1 (or in a form approved by the Director) by December 31st of each designated sampling year. The report shall be submitted to the following address: **NC DENR / DWR / Central Files, 1617 Mail Service Center, Raleigh, North Carolina 27699-1617.**

Additional Toxicity Testing Requirements for Municipal Permit Renewal. Please note that Municipal facilities that are subject to the Effluent Pollutant Scan requirements listed above are also subject to additional toxicity testing requirements specified in Federal Regulation 40 CFR 122.21(j)(5). The US EPA requires four (4) toxicity tests for a test organism other than the test species currently required in this permit. The multiple species tests should be conducted either quarterly for a 12-month period prior to submittal of the permit renewal application, or four tests performed at least annually in the four and one half year period prior to the application. These tests shall be performed for acute or chronic toxicity, whichever is specified in this permit. The multiple species toxicity test results shall be filed with the Aquatic Toxicology Branch at the following address:

North Carolina Division of Water Resources
Water Sciences Section/Aquatic Toxicology Branch
1621 Mail Service Center
Raleigh, North Carolina 27699-1621

Contact the Division's Aquatic Toxicology Branch at 919-743-8401 for guidance on conducting the additional toxicity tests and reporting requirements. Results should also be summarized in Part E (Toxicity Testing Data) of EPA Municipal Application Form 2A, when submitting the permit renewal application to the NPDES Permitting Unit.

A. (6) NOTIFICATION OF INCREASE IN FLOW [G.S. 143-215.1(a)]

The permitte shall inform the Division when the flow average for the calendar year reaches the designated flow triggers in Special Conditions A.(1) or A.(2). A letter shall be submitted to the Mooresville Regional Office and the NPDES permitting group at the following addresses:

Water Quality Regional Operations Supervisor
610 East Center Avenue, Suite 301
Mooresville, NC 28115

Compliance and Expedited NPDES Permitting Unit
Attn. Charles Weaver
1617 Mail Service Center
Raleigh, NC 27699

A. (7) ELECTRONIC REPORTING OF DISCHARGE MONITORING REPORTS [G.S. 143-215.1(b)]

Proposed federal regulations require electronic submittal of all discharge monitoring reports (DMRs) and specify that, if a state does not establish a system to receive such submittals, then permittees must submit DMRs electronically to the Environmental Protection Agency (EPA). The Division anticipates that these regulations will be adopted and is beginning implementation in late 2013.

NOTE: This special condition supplements or supersedes the following sections within Part II of this permit (*Standard Conditions for NPDES Permits*):

- Section B. (11.) Signatory Requirements
- Section D. (2.) Reporting
- Section D. (6.) Records Retention
- Section E. (5.) Monitoring Reports

1. Reporting [Supersedes Section D. (2.) and Section E. (5.) (a)]

Beginning no later than 270 days from the effective date of this permit, the permittee shall begin reporting discharge monitoring data electronically using the NC DWR's Electronic Discharge Monitoring Report (eDMR) internet application.

Monitoring results obtained during the previous month(s) shall be summarized for each month and submitted electronically using eDMR. The eDMR system allows permitted facilities to enter monitoring data and submit DMRs electronically using the internet. Until such time that the state's eDMR application is compliant with EPA's Cross-Media Electronic Reporting Regulation (CROMERR), permittees will be required to submit all discharge monitoring data to the state electronically using eDMR and will be required to complete the eDMR submission by printing, signing, and submitting one signed original and a copy of the computer printed eDMR to the following address:

NC DENR / DWR / Information Processing Unit
ATTENTION: Central Files / eDMR
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

If a permittee is unable to use the eDMR system due to a demonstrated hardship or due to the facility being physically located in an area where less than 10 percent of the households have broadband access, then a temporary waiver from the NPDES electronic reporting requirements may be granted and discharge monitoring data may be submitted on paper DMR forms (MR 1, 1.1, 2, 3) or alternative forms approved by the Director. Duplicate signed copies shall be submitted to the mailing address above.

Requests for temporary waivers from the NPDES electronic reporting requirements must be submitted in writing to the Division for written approval at least sixty (60) days prior to the date the facility would be required under this permit to begin using eDMR. Temporary waivers shall be valid for twelve (12) months and shall thereupon expire. At such time, DMRs shall be submitted electronically to the Division unless the permittee re-applies for and is granted a new temporary waiver by the Division.

Information on eDMR and application for a temporary waiver from the NPDES electronic reporting requirements is found on the following web page:

http://portal.ncdenr.org/web/wq/admin/bog/ipu/edmr

Regardless of the submission method, the first DMR is due on the last day of the month following the issuance of the permit or in the case of a new facility, on the last day of the month following the commencement of discharge.

2. **Signatory Requirements [Supplements Section B. (11.) (b) and supersedes Section B. (11.) (d)]**

All eDMRs submitted to the permit issuing authority shall be signed by a person described in Part II, Section B. (11.)(a) or by a duly authorized representative of that person as described in Part II, Section B. (11.)(b). A person, and not a position, must be delegated signatory authority for eDMR reporting purposes.

For eDMR submissions, the person signing and submitting the DMR must obtain an eDMR user account and login credentials to access the eDMR system. For more information on North Carolina's eDMR system, registering for eDMR and obtaining an eDMR user account, please visit the following web page:

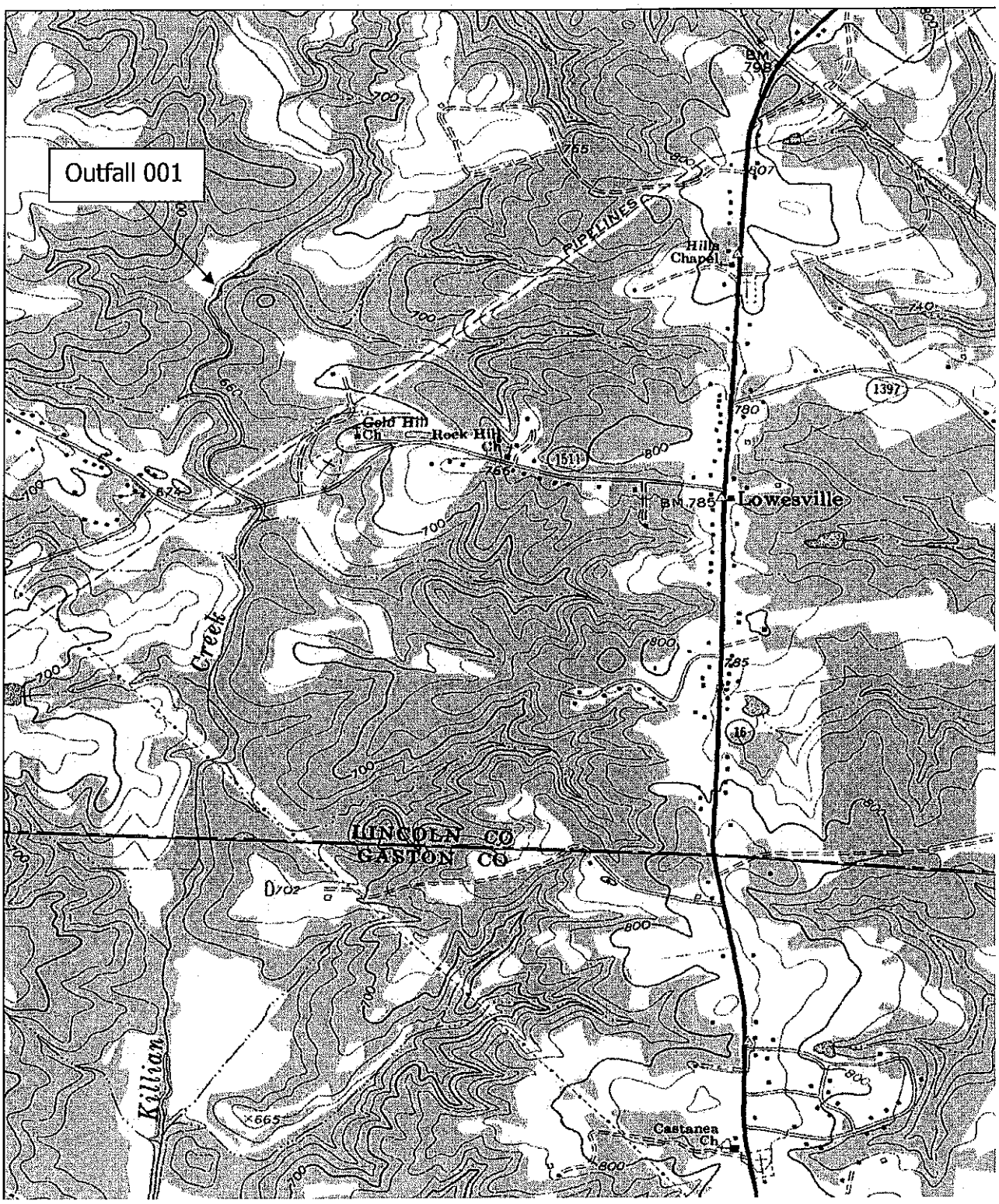
http://portal.ncdenr.org/web/wq/admin/bog/ipu/edmr

Certification. Any person submitting an electronic DMR using the state's eDMR system shall make the following certification [40 CFR 122.22]. NO OTHER STATEMENTS OF CERTIFICATION WILL BE ACCEPTED:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

3. **Records Retention [Supplements Section D. (6.)]**

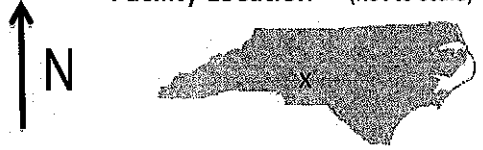
The permittee shall retain records of all Discharge Monitoring Reports, including eDMR submissions. These records or copies shall be maintained for a period of at least 3 years from the date of the report. This period may be extended by request of the Director at any time [40 CFR 122.41].



Lincoln County WWTP – NC0088722

Receiving Stream: Killian Creek
Stream Class: C
Drainage Basin: Catawba River Basin
Sub-Basin: 03-08-33
State Grid/USGS Quad: Lincolnton/F14NE

Facility Location (not to scale)



Latitude 35° 25′ 24″ Longitude 81° 01′ 50″

Water Resources
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

S. JAY ZIMMERMAN
Director

July 26, 2017

Mr. Don Chamblee, Public Works Director
Lincoln County
115 West Main St.
2nd Floor Citizens Center
Lincolnton, North Carolina 28092

Subject: Speculative Effluent Limits
Killian Creek WWTP
Permit No. NC0088722
Lincoln County
Catawba River Basin

Dear Mr. Chamblee:

This letter provides speculative effluent limits for 4.9 MGD and 6.6 MGD at the Killian Creek WWTP. The Division received the speculative limits request in a letter dated February 20, 2017. Please recognize that speculative limits may change based on future water quality initiatives, and it is highly recommended that the applicant verify the speculative limits with the Division's NPDES Unit prior to any engineering design work.

Receiving Stream. Killian Creek is located within the Catawba River Basin. Killian Creek has a stream classification of C. Waters with C classification have a best usage for aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation and agriculture. The USGS provided flow statistics for Killian Creek on June 2, 2017. For the discharge location the summer 7Q10 flow is 3.1 cfs, winter 7Q10 flow is 7.5 cfs, and an annual 30Q2 is 10.8 cfs. Please note these values are slightly different than previously used in the permit. The previous permit listed the drainage area as 36 mi^2. This area corresponds to the area at the Killian Creek USGS station near Mariposa. The drainage area at the point of discharge was verified as 46.8 mi^2.

Killian Creek is not currently listed as an impaired waterbody on the draft 2016 North Carolina 303(d) Impaired Waters List.

Based upon a review of information available from the North Carolina Natural Heritage Program Online Map Viewer, there are not any Federally Listed threatened or endangered aquatic species identified within a 5 mile radius of the proposed discharge location.

Speculative Effluent Limits. Based on Division review of receiving stream conditions, speculative limits for the proposed expansion to 4.9 and 6.6 MGD are presented in Table 1. A complete evaluation of these limits and monitoring requirements for metals and other toxicants, as well as potential instream monitoring requirements, will be addressed upon

APPENDIX B.2
Speculative Effluent Limits

receipt of a formal NPDES permit application. Some features of the speculative limit development include the following:

- BOD/NH3 Limits. A level B model was developed to evaluate limits for BOD and ammonia. The model predicted that effluent concentrations of 5 mg/l BOD and 1 mg/l ammonia will not cause exceedances in the dissolved oxygen instream standard for both proposed flow scenarios.
- Total Nitrogen/Total Phosphorus. The Division developed a Nutrient Management Strategy for Lake Wylie in 1995 due to eutrophic conditions in the lake. The Lake Wylie Nutrient Management Area encompasses Lake Wylie and its tributaries including the Catawba River and its tributaries below Mountain Island Dam. Killian Creek is a tributary to the Catawba River within the Lake Wylie Management Area. The strategy for expansions of existing discharges presented in the 1995 Catawba River Basin Plan recommends the use of advanced nutrient removal technology. For expanding facilities with permitted flows greater than 1 MGD the strategy recommends monthly average limits of 1 mg/l Total Phosphorus (TP) and 6 mg/l Total Nitrogen (TN) (TN applies April to October only).

TABLE 1. Speculative Limits for the Killian Creek WWTP (Proposed Expansion to 4.9 MGD and 6.6 MGD)

Effluent Characteristic	Effluent Limitations		
	Monthly Average	Weekly Average	Daily Maximum
Flow	4.9 MGD / 6.6 MGD		
BOD5	5 mg/L	7.5 mg/L	
NH3 as N	1 mg/L	3 mg/L	
Dissolved Oxygen (minimum)			5.0 mg/L
TSS	30 mg/L	45 mg/L	
TRC			28 ug/l
Fecal coliform (geometric mean)	200/100 ml	400/100 ml	
Total Nitrogen	6 mg/l (April - October)		
Total Phosphorus	1 mg/l		
Chronic Toxicity Pass/Fail (Quarterly test)	71 % / 77%		

Engineering Alternatives Analysis (EAA). Please note that the Division cannot guarantee that an NPDES permit for a new or expanding discharge will be issued with these speculative limits. Final decisions can only be made after the Division receives and evaluates a formal permit application for the new/expanded discharge. In accordance with North Carolina Administrative Code 15A NCAC 2H.0105(c), the most environmentally sound alternative

should be selected from all reasonably cost effective options. Therefore, as a component of all NPDES permit applications for new or expanding flow, a detailed engineering alternatives analysis (EAA) must be prepared. The EAA must justify requested flows and provide an analysis of potential wastewater treatment alternatives. A copy of the Division guidance for preparing EAA documents is attached.

State Environmental Policy Act (SEPA) EA/EIS Requirements. A SEPA EA/EIS document may be required for projects that: 1) involve $10 Million or more of state funds; or 2) will significantly and permanently impact 10 or more acres of public lands. Please check with the DWR SEPA coordinator (David Wainwright, 919-807-6442) as to whether your project requires SEPA review. For projects that are subject to SEPA, the EAA requirements discussed above will need to be folded into the SEPA document. Additionally, if subject to SEPA, the NPDES Unit will not accept an NPDES permit application for a new/expanding discharge until the Division has approved the SEPA document and sent a Finding of No Significant Impact (FONSI) to the State Clearinghouse for review and comment.

Should you have any questions about these speculative limits or NPDES permitting requirements, please feel free to contact Teresa Rodriguez at (919) 807-6387 or Julie Grzyb at (919) 807-6390.

Respectfully,

Julie A. Grzyb

Julie Grzyb
Supervisor, NPDES Complex Permitting Unit

Attachment: EAA Guidance Document

Hardcopy:
Central Files
NPDES Permit File

Electronic Copy:

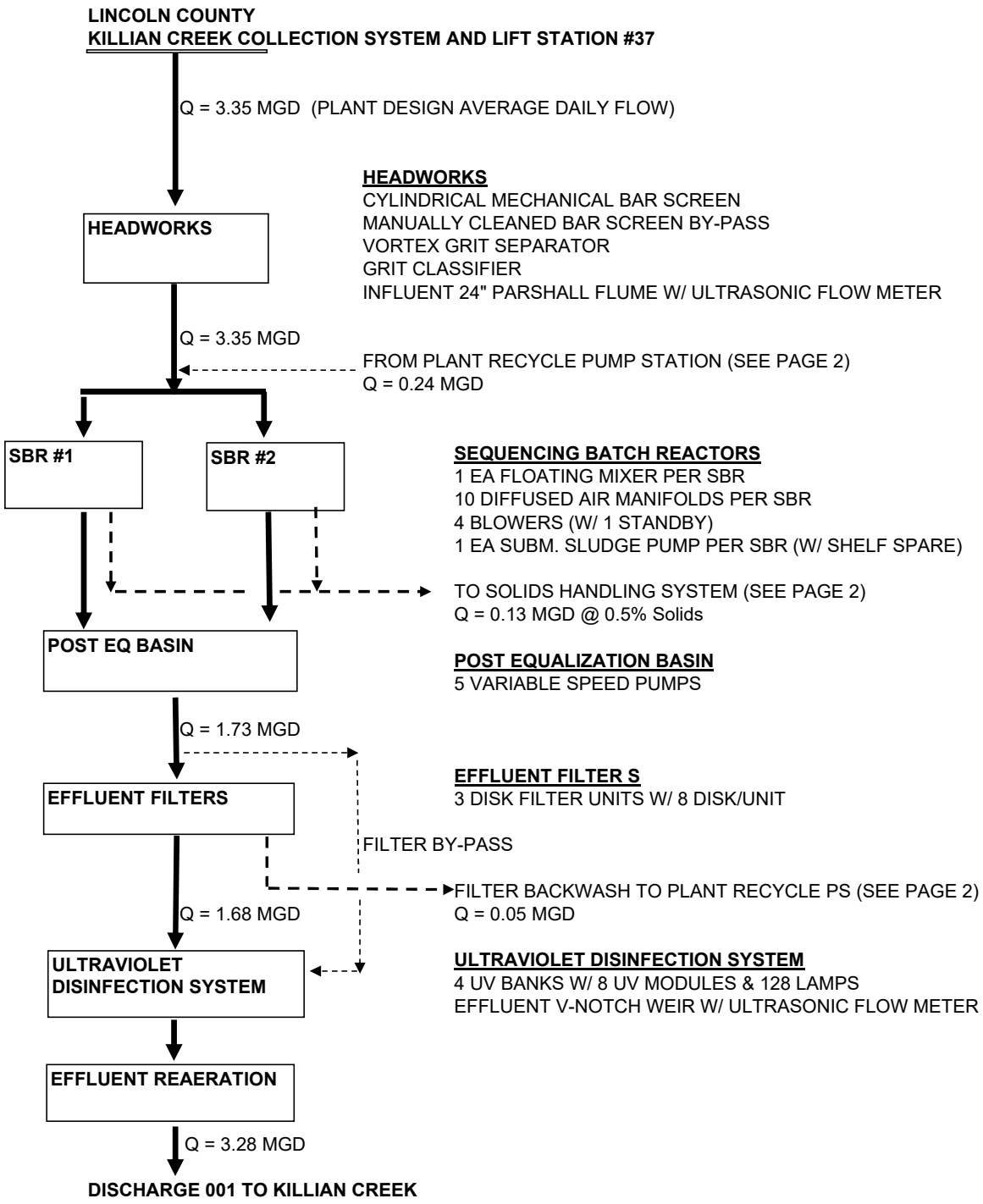
DWR/Mooresville Regional Office/Water Quality Permitting
DWR/Basinwide Planning, Ian McMillan
DWR/NPDES Server>Specs

Appendix C - Description of Existing Treatment System

C.1 Block Flow Diagram – Liquid Train
C.2 Block Flow Diagram – Solids Train
C.3 Summary of Existing WWTP Design Parameters
C.4 Photos of Existing WWTP

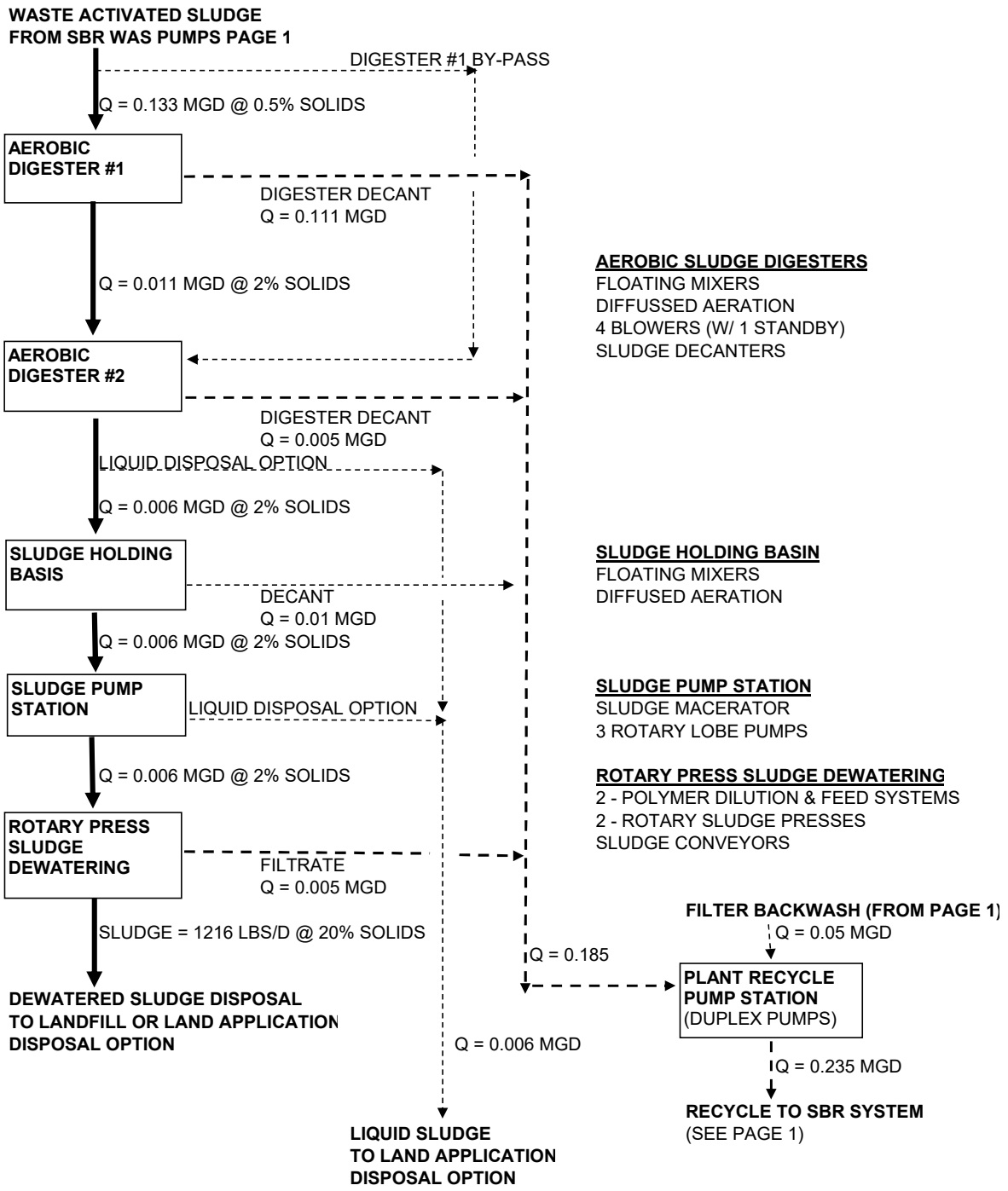
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LIQUID TRAIN PROCESS FLOW DIAGRAM @ Q = 3.35 MGD
KILLIAN CREEK WWTP



APPENDIX C.1
Block Flow Diagram - Liquid Train

SOLIDS HANDLING PROCESS FLOW DIAGRAM @ Q = 3.35 MGD **PAGE 2 OF 2**
KILLIAN CREEK WWTP



APPENDIX C.2
Block Flow Diagram - Solids Train

SUMMARY OF DESIGN PARAMETERS FOR KILLIAN CREEK WWTP – 3.3 MGD

A. Cylindrical Bar Screen

No. of Units	1
Influent Flow Average	4.2 mgd (2917 gpm)
Maximum Hydraulic Capacity	8.4 mgd (5833 gpm)
Maximum Upstream Liquid Level	29.5 inches
Maximum Clean Screen Headloss	16 inches
Screen Opening	¼ inch
Final Screening	Comply with Paint Filter Test (EPA Publication SW-486 Method 9095)

B. Manually Cleaned Bar Screen

No. of Units	1
Channel Width	3 foot
Screen Openings	1-inch
Velocity @ Design Q (4.2 mgd)	2.5 fps

C. Vortex Grit Removal System

No. of Units	1
Influent Flow	4.2 mgd (2917 gpm)
Maximum Hydraulic Capacity	8.4 mgd (5833 gpm)
Grit Removal Efficiency	95% of grit > 50 mesh in size w/ Sp. Gravity 2.65 95% of grit > 70 mesh in size w/ Sp. Gravity 2.65 65% of grit > 100 mesh in size w/ Sp. Gravity 2.65
Method of grit removal	Air lift pump w/ pre-fluidization

D. Influent Parshall Flume

Size Throat Opening	24 inches
Head @ 4.2 mgd Design Q	0.87 feet
Head @ 8.4 mgd Max. Q	1.37 feet

E. Sequencing Batch Reactor (SBR)

The SBR basin volumes are designed for a future Phase II flow. The SBR basin operational levels will be adjusted to accommodate the initial operation at the lower design Phase I flow. Upgrade of the SBR system for the Phase II flow will require only the addition of one new blower and five (5) new diffused aeration assemblies per basin.

Average Daily Flow (ADF)	3.51 mgd (3.35 mgd Influent + 1.6 mgd Plant Recycle)
Maximum Daily Flow (MDF)	6.7 mgd
Influent BOD (5 Day)	239 mg/l (w/ plant recycle)
Influent TSS	2 mg/l (w/ plant recycle)
SBR Basins Dimensions	2 ea @ 105’ x 105’ x 22’ maximum water depth
SBR Basin Volume (per each)	1,814,000 gallons
Waste Activated Sludge	0.834 lbs WAS/lb. BOD5 applied
Waste Activated Sludge Pump(s)	1 per SBR basin w/ one shelf spare 400 gpm @ 1’ to 23.2’ TDH
Pounds O2/LB BOD5	1.25
Pounds O2/LB TKN	4.6

APPENDIX C.3
Summary of Existing WWTP Design Parameters

SBR Process Design Variables:

Number of Cycles Per Day	5 per day/basin
Cycle Duration	4.8 hours / cycle
Food/Mass (F/M) Ratio	0.081 lbs BOD5/lb. MLSS-day
MLSS Concentration	4500 mg/l @ minimum water level
Hydraulic Retention Time	0.88 days @ average water depth
Solids Retention Time	14.1 days
Estimated Net Sludge Yield	0.83 lbs WAS/lb BOD5 applied
Decant Flow Rate	12,407 gpm at maximum daily flow
Decant Duration	54 minutes (10 times per day total 2 basins)
Oxygen Required – BOD5 & TKN	13,189 lbs O2/day
SBR Aeration Time /Day	2.07 hrs/cycle x 5 cycles/day x 2 Basins = 20.7 hrs/day
Total Air Required for BOD5 & TKN	3290 SCFM
Proposed Blowers	4 ea @ 1100 SCFM (3 ea. duty and 1 ea standby)

F. Post Equalization Basin

Post Equalization Basin Dimensions	25' x 212.5' x 15' (11.5' maximum water depth)
Volume	457,000 gallons at maximum water depth
Post Equalization Pumps	3 pumps with variable speed drives 512 gpm to 1450 gpm per pump

G. **Effluent Cloth Media Disk Filters**

The effluent filter system is designed for the Phase I initial average daily flow of 1.68 mgd with two filter units and space for the addition of a third unit in Phase II. The filter units are designed to provide a filtered effluent containing no greater than 5 mg/l suspended solids on a monthly average to minimize maintenance and maximize performance of the downstream ultraviolet disinfection system.

Number of Disk Filter Units	3 Filters Units with 8 disks per unit with 53.8 sf/disk
Filter Area	430.4 square feet/filter unit (1291.2 square feet total)
Design Filter Rate @ ADF	1.8 gpm/sf (3.35 mgd & 3 filter units)
Design Filter Rate @ PDF	4.5 gpm/sf (8.4 mgd & 3 filter units)
Filter Rate @ ADF & Two Units	2.7 gpm/sf (3.35 mgd & 2 filter units)
Filter Rate @ Peak Flow & Two Units	6.8 gpm/sf (8.4 mgd & 2 filter units)
Solids Loading @ 20 mg/l Influent	0.67 lbs/sf/day (1 filter units), 0.33 lbs/sf/day (2 filter unit)

H. Ultraviolet Disinfection System

The ultraviolet disinfection system is designed for an initial Phase I installation of one channel with two ultraviolet banks with each bank capable of providing disinfection at the peak daily flow of 4.2 mgd. When the plant is expanded during Phase II, a second channel with two additional ultraviolet banks will be installed with each of the two bank channels capable of disinfection of the peak daily flow of 8.4 mgd.

Influent Suspended Solids to Filter	< 30 mg/l
Particle Size Distribution	< 30 micron
Ultraviolet Transmittance @ 253.7 nm	65%
Water Temperature	35 to 85 degrees F
Effluent Fecal Count	< 200/100 m. (30 day geometric mean)
Lamp Cleaning	Automatic timer based wiping system
Monitoring System	UV intensity sensor
Low Flow	Recirculation pump to provide continuous flow for minimum UV power level.

UV System (2 Channels & 4 Banks)

Number of UV Banks	4 (2 duty and 2 standby)
Number of UV Lamps	128 (total)
UV Modules per Bank	4
UV Lamps per Modules	8
Peak Hourly Flow	8.4 mgd

I. Effluent V-Notch Weir

Weir Size	90 degree V-Notch
Head @ 1.68 mgd	1.02 feet
Head @ 3.35 mgd	1.12 feet
Head @ 4.2 mgd	1.46 feet
Head @ @8.4 mgd	1.93 feet

J. Aerobic Sludge Digesters

The aerobic digesters, diffuser system and mixers are sized for the Phase II design plant loadings. The aeration blowers are sized for the Phase II design plant loading with speed reduced to match the aeration requirements for the Phase I plant loading. When the plant is expanded for Phase II, the blower speeds may be increased to provide the required aeration capacity by changing the motor sheaves.

Sludge Yield	0.834 lbs WAS/lb. BOD5 applied
VSS/TSS Ratio	73 %
Oxygen Requirement	2.0 lbs O2/lb. VSS destroyed
Solids Concentration after Decant	2.5%

Rotary Drum Sludge Thickener

Feed Rate	400 gpm (blended waste activated sludge
Feed Solids	0.5 to 2% solids (by weight)
Final Thickened Sludge	5 to 7% solids
Design Capture Efficiency	98%
Polymer Usage	5 – 7 lbs (100% active per dry ton of sludge

Aerobic Digester #1

Digester #1 Dimensions	65’ x 45’ x 22’ deep
Digester #1 Volume	488,700 gallons
VSS Reduction Digester #1	41%
Average Solids Retention Time Digester #1	26 Days
Average Solids Concentration after Decant	2.5%
Mixer	25 Hp = 51.1 Hp/MG
Sludge Transfer Pump	540 gpm @ 35’ TDH
	Design Flow at 3.35 mgd)
VSS Destroyed	1746 lbs/day
Oxygen Required	3493 lbs O2/day
Aeration Required	1507 scfm
Proposed Blowers	1 duty + 1 Standby
Blower Size *	1507scfm/ea *

* Digester #1 Blowers are sized have sheaves to reduce motor speed to meet aeration requirements at lower horsepower.

Aerobic Digester #2

Digester #2 Dimensions	65’ x 58.5’ x 22’ deep
Digester #2 Volume	640,800 gallons
VSS Reduction Digester #2	50%
Average Solids Retention Time Digester #2	50 days
Mixer	40 Hp = 62.4 Hp/MG
Sludge Transfer Pump	540 gpm @ 35’ TDH
	Design Flow @ 3.35 mgd)
VSS Destroyed	1257 lbs/day
Oxygen Required	2513 lbs O2/day
Aeration Required	1085 scfm
Proposed Blowers	2 duty **
Blower Size **	544 scfm/ea *

** The standby blower for Digester #1 serves as a backup for both Digester #1 and #2 Blowers.

K. Sludge Holding Tank

Holding Tank Dimensions	25’ x 65’ x 22’ deep
Volume	267,400 gallons
Mixing	2 ea. @ 7.5 Hp (56 Hp/MG)
Sludge Transfer Pump to Sludge Truck	540 gpm @ 35’ TDH
Sludge Transfer Pump to Dewatering	2 ea. Variable Speed Pumps @ 120 gpm & 50 psi
Storage (Phase I)	41.2 days (6,486 gpd from Dig. #2 @ 2.5% solids)
Storage (Phase II)	20.6 days (12,936 gpd from Dig. #2 @ 2.5% solids) 33.1 days (8,085 gpd if decant to 4% solids)

L. Sludge Dewatering System

The sludge dewatering system is designed to provide the plant with an alternative to liquid biosolids land application. The proposed rotary filter press will allow land application of dewatered solids or landfill disposal during periods when land application is not feasible or cost effective. One rotary filter press is to be installed with the Phase I construction with provisions included within the design for the future installation of a second rotary filter press as the plant capacity expands and the dewatering capacity is justified.

Rotary Press Sludge Feed Pumps	Rotary Lobe Pumps (1 duty & 1 standby) Variable Speed Drives Maximum pump rate 120 gpm Differential pressure = 50 psi
Rotary Filter Press	2 – 6 channel press
Solids Capacity	85 – 100 dry lbs/hr per channel
Sludge Feed Solids Concentration	1.5 to 2.5% solids
Sludge Feed	40 to 80 gpm
Polymer Required	10 – 20 lbs/dry ton solids
Solids Capture	95%
Solids Conveyors	Rotary screw with hollow flight

APPENDIX C.4 – PHOTO LOG

EXISTING HEADWORKS

1. Overall of existing headworks area
2. Influent flow splitter with provision for future headworks expansion.
3. Influent mechanical rotary bar screen
4. Influent vortex grit collector
5. Vortex grit collector fluidizer and air lift pump blowers
6. Influent flow meter and reduced pressure backflow preventer

EXISTING SBR /POST EQUALIZATION SYSTEM

7. SBR influent sluice gates and actuators
8. SBR floating mixer with decanter in background
9. SBR decanter
10. SBR post equalization basin
11. SBR instrument rack – level, dissolved oxygen and pH monitors
12. SBR post equalization submersible transfer pumps

EXISTING SBR / DIGESTER BLOWER SYSTEM

13. SBR /Digester blower building air intakes
14. SBR blowers
15. Digester blowers
16. SBR air valve actuator controlling air flow to SBR basin

EXISTING EFFLUETN FILTER AND ULTRAFILTRATION AREA

17. Effluent filter and UV building
18. Effluent disk filters
19. Effluent disk filters and UV area
20. UV disinfection control panels
21. Effluent automatic sampler
22. Final Effluent Reaeration

Existing Aerobic Digester Area

23. Overview of Aerobic Digester #1, #2 and Sludge Holding Tank
24. Aerobic Digester #2 floating mixer
25. Sludge Holding Tank floating mixers
26. Aerobic Digester #1

APPENDIX C.4
Photos of Existing WWTP

Existing Sludge Thickener System

27. Sludge thickener pump station
28. Rotary drum thickener building
29. Rotary drum thickener flocculation tank
30. Thickened sludge receiving hopper and transfer pump

Existing Digested Sludge Pump Station and Caustic Feed System

31. Digested Sludge Pump Building
32. Sludge macerator
33. Rotary lobe sludge pumps
34. Caustic recirculation pump & digester caustic metering pumps
35. SBR and digester caustic metering pumps
36. Liquid lime storage tank

Existing Sludge Dewatering System and Truck Loading Station

37. Sludge flocculator system
38. Sludge dewatering polymer feed system
39. Rotary filter press sludge dewatering system
40. Sludge inclined and distribution conveyor system
41. Liquid sludge truck loading station
42. Liquid sludge truck loading station

Existing Lab -Administration and Maintenance Building

43. Lab / Administration Building
44. Lab Area
45. Lab Area
46. SBR Control Panel and SCADA Panel
47. Maintenance Building



Appendix C.4 Killian Creek Existing WWTP



1.



2.



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Appendix C.4 Existing Headworks Area



7.



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12.

Appendix C.4 Existing SBR / Post Equalization System



13.



14.



15.



16.

Appendix C.4 Existing Blower Area



17.



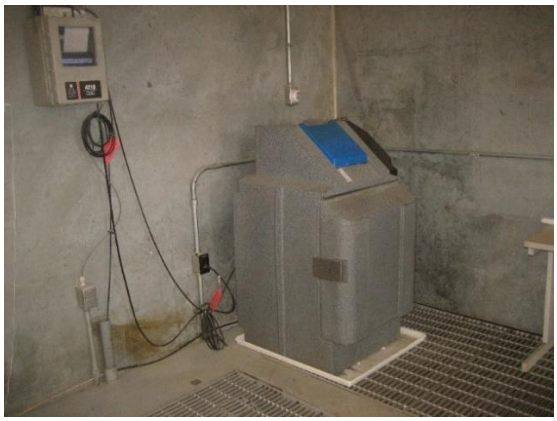
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Appendix C.4 Existing Effluent Filter and Ultraviolet Disinfection Area



23.



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26.

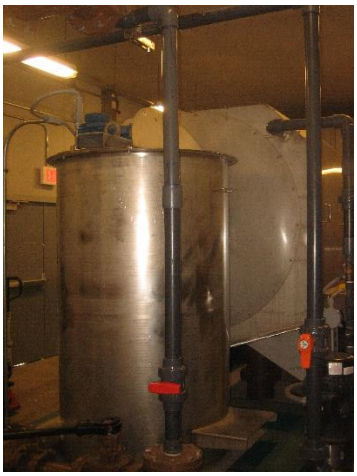
Appendix C.4 Existing Aerobic Digester Area



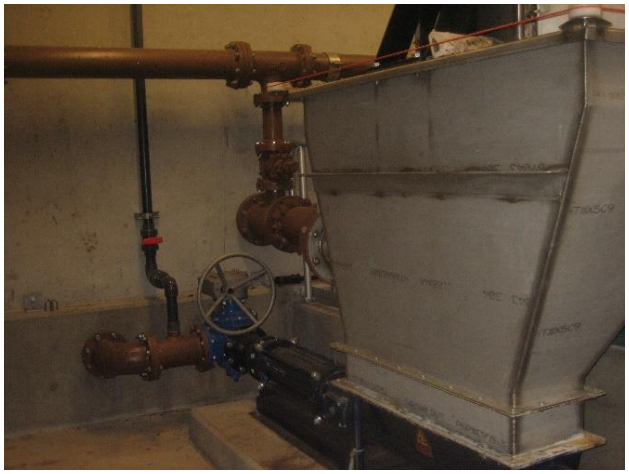
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30.

Appendix C.4 Existing Sludge Thickener System



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Appendix C.4 Existing Digested Sludge Pump Station and Caustic Feed System



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Appendix C.4 Existing Sludge Dewatering and Truck Loading Station



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Appendix D – Population Information

D.1 Metrolina Viz Model – Lincoln County Co Map

D.2 Metrolina Viz Model Population Projections

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LINCOLN COUNTY METROLINA COMMUNITY VIZ MODEL *
POPULATION PROJECTIONS
* MODEL WAS DEVELOPED BY KIMBERLY HORN FOR THE CHARLOTTE REGIONAL TRANSPORTATION 2045 METROPOLITAN TRANSPORTATION PLAN

APPENDIX D.1
Metrolina Viz Model Map

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METROLINA COMMUNITY VIZ MODEL FOR CHARLOTTE REGIONAL TRANSPORTATION PLAN
POPULATION PROJECTIONS FOR LINCOLN COUNTY

FID	ID	TAZ	Township	TAZ_1	POP_2015	POP_2025	POP_2035	POP_2045
0	1344	6070	Ironton	6070	1728	2237	3172	3861
1	1343	6067	Ironton	6067	1027	1472	1534	2518
2	1587	6063	Ironton	6063	479	482	482	482
3	433	6030	Howards Creek	6030	411	427	427	430
4	434	6027	Howards Creek	6027	362	362	367	394
5	435	6053	Howards Creek	6053	619	619	619	619
6	436	6054	Howards Creek	6054	1043	1046	1148	1156
7	437	6026	Howards Creek	6026	897	897	900	951
8	438	6055	Howards Creek	6055	543	615	634	993
9	448	6056	Howards Creek	6056	296	297	297	297
10	449	6050	Howards Creek	6050	525	525	525	525
11	450	6049	Howards Creek	6049	413	413	413	413
12	439	6058	Lincolnton	6058	1214	1254	1273	1273
13	447	6057	Lincolnton	6057	1651	1651	1651	1672
14	440	6024	Lincolnton	6024	982	1043	1300	1332
15	441	6025	Lincolnton	6025	889	996	1251	1302
16	442	6029	Howards Creek	6029	500	529	534	606
17	444	6031	Howards Creek	6031	288	288	288	326
18	446	6032	Howards Creek	6032	387	390	390	390
19	922	6046	North Brook	6046	449	449	449	449
20	919	6043	North Brook	6043	413	413	413	416
21	731	6042	North Brook	6042	224	224	224	224
22	471	6051	Howards Creek	6051	548	548	548	548
23	472	6052	Howards Creek	6052	282	282	287	295
24	494	6033	Howards Creek	6033	606	611	638	651
25	508	6004	Lincolnton	6004	344	344	349	354
26	512	6114	Lincolnton	6114	435	435	482	482
27	513	6117	Lincolnton	6117	474	474	474	474
28	516	6009	Lincolnton	6009	260	260	260	260
29	767	6037	North Brook	6037	563	563	563	563
30	768	6038	North Brook	6038	374	374	374	374
31	769	6035	North Brook	6035	476	476	476	516
32	770	6036	North Brook	6036	145	145	145	145
33	772	6039	North Brook	6039	556	556	556	559
34	773	6034	North Brook	6034	900	900	903	903
35	915	6040	North Brook	6040	265	265	265	265
36	916	6041	North Brook	6041	334	334	334	334
37	917	6044	North Brook	6044	528	528	528	579
38	920	6045	North Brook	6045	548	548	548	548
39	921	6047	North Brook	6047	561	585	585	585
40	923	6048	Howards Creek	6048	528	533	533	533
41	927	6028	Howards Creek	6028	783	783	783	783
42	1304	6022	Lincolnton	6022	798	873	889	905
43	1305	6023	Lincolnton	6023	920	1059	1078	1354
44	1306	6020	Lincolnton	6020	1312	1569	1850	2024
45	1307	6021	Ironton	6021	713	933	938	976
46	1308	6122	Ironton	6122	622	622	625	625
47	1311	6073	Ironton	6073	1001	1315	1363	1478
48	1312	6018	Lincolnton / Ironton	6018	859	867	988	1001
49	1313	6016	Ironton	6016	1047	1232	1366	1508
50	1314	6066	Ironton	6066	838	1004	1583	1797
51	1320	6077	Ironton	6077	336	336	336	336

APPENDIX D.2
OSBM Population Projections

52	1321	6074	Ironton	6074	379	379	379	446
53	1322	6076	Ironton	6076	533	533	533	1042
54	1323	6078	Ironton	6078	789	790	929	1846
55	1324	6075	Ironton	6075	1229	1264	1267	2631
56	1325	6079	Ironton	6079	1177	1177	1507	2552
57	1329	6123	Ironton / Catawba Springs	6123	342	355	368	580
58	1333	6069	Ironton	6069	818	976	1391	1761
59	1337	6082	Catawba Springs	6082	559	712	977	1098
60	1339	6080	Catawba Springs	6080	540	551	768	816
61	1340	6081	Catawba Springs	6081	467	1099	1790	1803
62	1341	6083	Catawba Springs	6083	1078	1748	2384	2799
63	1342	6072	Catawba Springs	6072	1281	2104	4307	4556
64	1585	6062	Lincolnton / Ironton	6062	1292	1410	1576	1608
65	1582	6059	Lincolnton	6059	406	406	406	406
66	1346	6091	Catawba Springs	6091	1616	2321	2321	2511
67	1347	6090	Catawba Springs	6090	1021	1814	3080	3118
68	1348	6071	Catawba Springs	6071	494	1210	1904	2595
69	1352	6068	Ironton	6068	686	686	1045	3012
70	1353	6088	Catawba Springs	6088	1567	3173	3957	4284
71	1354	6124	Catawba Springs	6124	477	1353	1495	1495
72	1355	6089	Catawba Springs	6089	2210	3756	4606	5969
73	1360	6092	Catawba Springs	6092	1073	2587	2627	2627
74	1361	6093	Catawba Springs	6093	3239	4136	4659	4844
75	1392	6085	Catawba Springs	6085	897	1243	1473	1569
76	1395	6084	Catawba Springs	6084	1671	2721	3067	3300
77	1415	6086	Catawba Springs	6086	247	250	250	253
78	1417	6087	Catawba Springs	6087	1127	1144	1720	1749
79	1418	6096	Catawba Springs	6096	1939	2137	2150	2246
80	1581	6060	Lincolnton	6060	945	1106	1353	1554
81	1583	6010	Lincolnton	6010	1626	1701	1718	1733
82	1584	6061	Lincolnton / Ironton	6061	785	1447	1624	1876
83	1586	6064	Ironton	6064	922	922	930	938
84	1588	6015	Ironton	6015	1637	2436	2779	3042
85	1589	6065	Ironton	6065	1472	1590	1641	2389
86	1590	6013	Lincolnton / Ironton	6013	1616	1691	1745	1812
87	1591	6014	Ironton	6014	780	968	1035	1040
88	1592	6011	Lincolnton	6011	153	153	156	164
89	1593	6017	Lincolnton	6017	537	558	561	561
90	1594	6008	Lincolnton	6008	517	517	560	560
91	1595	6007	Lincolnton	6007	655	658	658	658
92	1596	6019	Lincolnton	6019	884	933	979	1006
93	1597	6118	Lincolnton	6118	272	272	272	272
94	1598	6006	Lincolnton	6006	153	154	154	165
95	1599	6119	Lincolnton	6119	199	199	199	199
96	1600	6120	Lincolnton	6120	400	400	400	400
97	1601	6005	Lincolnton	6005	175	175	175	183
98	1602	6002	Lincolnton	6002	84	84	84	84
99	1603	6001	Lincolnton	6001	638	643	643	645
100	1604	6121	Lincolnton	6121	232	232	234	234
101	1605	6112	Lincolnton	6112	324	324	324	324
102	1606	6012	Lincolnton	6012	679	688	688	691
103	1607	6116	Lincolnton	6116	176	176	176	176
104	1608	6113	Lincolnton	6113	304	304	304	304
105	1609	6115	Lincolnton	6115	110	110	110	110
106	1610	6003	Lincolnton	6003	0	0	0	0
107	2216	6095	Catawba Springs	6095	1431	1431	1629	1629
108	2271	6094	Catawba Springs	6094	1510	1564	1711	1711

PROJECTED LINCOLN COUNTY POPULATION :					81666	99454	114716	130360				
YEAR :					2015	2025	2035	2045				
Annual Pop Projectiojn:												
2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
81666	83445	85224	87002	88781	90560	92339	94118	95896	97675	99454	100980	
	1779	1779	1779	1779	1779	1779	1779	1779	1779	1779	1526	
42999										58763		
52.65%										59.09%		
2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	
102506	104033	105559	107085	108611	110137	111664	113190	114716	116280	117845	119409	
1526	1526	1526	1526	1526	1526	1526	1526	1526	1564	1564	1564	
								72078		74418		
								62.83%		63.15%		
2039	2040	2041	2042	2043	2044	2045						
120974	122538	124102	125667	127231	128796	130360						
1564	1564	1564	1564	1564	1564	1564						

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Appendix E – Existing Sewer System Information

E.1 Lincoln County Collection System
E.2 Infiltration Calculations
E.3 Inflow Calculations
E.4 Lincoln County Master Pump Station List

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MASTER MAP OF LINCOLN COUNTY SEWER SYSTEM

APPENDIX E.1
Lincoln County Sewer Collection System

Maiden
Lincoln
Catawba
Iredell
Ironton
Lincolnton City
Lincolnton ETJ
Catawba Springs
Killian Creek WWTP
Mecklenburg
Gaston

DISCHARGE TO CITY

N
W E
S

0 2,000 4,000 8,000 12,000 16,000 Feet

1 inch equals 2,000 feet

Legend

- Critical Mains

Sewer Structures

- Treatment Plant
- Lift Station
- Discharge Point

Gravity Sewer Mains

- County Owned
- Private or Other Owner

Pressurized Sewer Mains

- County Owned Sewer Force Main
- County Owned Low Pressure Sewer
- Private Sewer Force Main
- Private and Other Low Pressure Sewer

Road Centerlines

- Freeway
- Highway
- Ramp
- Major Arterial
- Local
- Private Roads

- Lakes or Ponds
- Streams or Rivers

Building Footprints

- Residential
- Assembly
- Business
- Education
- Industrial
- Institutional
- Mercantile
- Recreation
- Storage

Municipal Boundaries

- City of Lincolnton
- County Boundary Line
- Parcels

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Date: 5/4/2018
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APPENDIX E.2 - INFILTRATION CALCULATIONS

This worksheet will calculate the infiltration into your collection system. Enter data into the gray areas. The numbers in bold will be the numbers that must be reported on **Table WW-4** of Part B of the application.

	Month	Year	ADF[a] (gpd)
Month 1	**Jan**	**2016**	**984,000**
Month 2	**Feb**	**2016**	**1,004,000**
Month 3	**March**	**2016**	**944,000**
3-Month Average Flow (gpd):			**977,333**

Expected Flow:

Flow from Water billing records for same 3-month period:

	Month	Year	Flow (gpd)
Month 1	Jan	2016	**937,656**
Month 2	Feb	2016	**940,908**
Month 3	March	2016	**898,184**
Expected Flow from Water Billing (gpd):			**925,583**
Consumptive Loss (gpd):			**92,558**
			833,024

$$Infiltration = \left[\frac{\left[\frac{\sum_{i=1}^{3} ADF[WWTP]_i}{3}\right] - \left(\left[\frac{\sum_{i=1}^{3}[DWU[AVG]_i}{3}\right] - CL\right)}{L_{gs}}\right]$$

Infil= Infiltration (gpd/im)
ADF[WWTP]= Average Daily Flow from the WWTP (gpd)
i= Months 1 through 3
CL= Consumptive Loss=10%
DWU[AVG]= Average Daily Water Use from Water Billing Records (gpd)
L_{gs}= Total inch-miles of gravity sewer (im)

Total Inch-miles of pipe (im): **634** Per GIS Data

Infiltration (gpd/im): **228** NCDENR excessive Infiltration if greater than 3000 gpd/inch diameter mile

Excessive Infiltration: **No**

[a]ADF = Average Daily Flow

APPENDIX E.2
Infiltration Calculations

APPENDIX E-3 INFLOW CALCULATION

This worksheet will calculate the inflow into your collection system. Enter data into the gray areas. The numbers in bold will be the numbers that must be reported on **Table WW-5** of Part B of the application.

Rainfall Amounts:

	Date	Rainfall (inches)	ADF (gpd)
Day 1	**10/3/2016**	**0.00**	**961,000**
Day 2	**10/4/2016**	**0.00**	**909,000**
Day 3	**10/5/2016**	**0.00**	**929,000**
Day 4	**10/6/2016**	**0.00**	**1,072,000**
Day 5	**10/7/2016**	**0.00**	**1,064,000**
Rain Event:	**10/8/2016**	**1.50**	**1,251,000**
Total Flow including Industrial (gpd):			**6,186,000**

Inflow = Amount of flow into a system following a rain event greater than 1 inch which is preceded by 5 days of dry weather (gpd/capita).

q_{Rain} = Instantaneous non-industrial peak flow occuring on the day of the 1-inch or greater rain event.

ADF(Day)= ADF for the 5 days preceding the rainfall event within the past 3 years.

i= Days 1 to 5

PF_{Ind} = Peak Flow from Industry (gpd)

P_{SA} = Population in the Service Area

Average Daily Flow (gpd):	987,000
Peak Flow from Industry (gpd):	**15,045** *
Total non-industrial flow (gpd):	**971,955**
Service Area Population (from Table WW-3):	**13,151**
Inflow (gpd/capita):	**21**
Excessive Inflow?	**No**

NCDENR excessive if greater than 295 gpd/capita

Note - Rain Event Flow is daily average opposed to instanteous.

*Averate Industrial Flow based on average water consumption by industry.

APPENDIX E.3
Inflow Calculation

Lincoln County Sewer Pump Station Dimensions

Station	Address	Parcel ID #	NCDENR #	Outside	Inside	Depth	Invert 1	Invert 2	Stop Float	Lead Float
LS01	6371 Industrial Park Drive	71174	WQ0010918	112	81	150	64	n/a	120	112
LS02	6884 Campground Road	71309	WQ0010918	112	86	213	128	n/a	190	162
LS03	8513 Blades Trail	71290	WQ0010918M	112	88	175	103	n/a	144	130
LS04	7755 Blades Trail	71683	WQ0010918	112	89	110	50	n/a	83	71
LS05	3777 Lake Shore Road South	71475	WQ0010918	112	88	208	134	n/a	154	105
LS06	2424 Lake Shore Road South	71404	WQ0010918	112	89	154	77	n/a	116	105
LS07	8204 Pine Lake Road	71289	WQ0010918	113	96	150	48	n/a	114	105
LS08	9024 Unity Church Road	71291	WQ0010918	113	95	282	205	n/a	249	235
LS09	1923 Cameron Hgts Circle	59567	WQ0010918	112	95	124	48	n/a	91	82
LS10	8218 Hagers Ferry Road	71686	WQ0010918	112	100	192	140	n/a	165	151
LS11	3339 Hwy 16 N	71176	WQ0010918	112	88	175	103	n/a	158	136
LS12	2460 Hwy 16 N	71682	WQ0011095	113	98	115	43	n/a	91	71
LS13	7314 Old Plank Road	72559	WQ0013995	111	96	180	107	n/a	144	134
LS14	4415 Sedge Brook Drive	75186	WQ0015184	85	73	196	77	86	170	160
LS15	7533 S Little Egypt Road	51984	WQ0032852	113	97	332	204	n/a	300	224
LS16	2392 Smith Harbor Drive	76020	WQ0016377	112	97	187	97	n/a	149	128
LS17	6471 Hwy 73	2891	WQ0000868	83	73	96	48	n/a	80	68
LS18	2336 Hovis Road	2022	WQ0019291	82	71	324	219	n/a	272	260
LS19	7428 Mountain Ridge Drive	80175	WQ0020982	111	99	177	102	39	132	118
LS20	251 Club Drive	82090	WQ0020424	112	97	233	130	160	183	165
LS21	1799 St James Church Road	79978	WQ0022083	83	72	151	80	n/a	120	101
LS22	2737 Lee Lawing Road	76121	WQ0021907	85	70	243	151	n/a	212	186
LS23	275 Hwy 16 N	34517	WQ0022370	86	74	275	161	n/a	205	192
LS24	1000 Brookdale Drive	90639	WQ0023238	86	74	127	54	n/a	112	98
LS25	4011 Wind Flower Cove	84426	WQ0028829	110	96	196	128	n/a	158	151
LS26	7200 Kenyon Drive	86511	WQ0029377	117	96	272	98	153	212	179
LS27	7910 Fairfield Forest Road	86028	WQ0029123	86	72	264	148	n/a	216	180
LS28	4477 Burton Lane	85020	WQ0011095	112	96	231	66	n/a	194	177
LS29	4180 Little Fork Cove Road	85674	WQ0035337	87	72	138	42	n/a	119	81
LS30	543 Lincoln County Pk	86288	WQ0033637	112	93	192	108	n/a	159	148
LS31	1503 Amity Church Road	25031	WQ0030392	86	72	201	131	131	164	162
LS32	4137 Hwy 73	2039	WQ0030392	72	59	165	65	n/a	142	126
LS33	3035 Finger Mill Road	86087	WQ0031769	142	120	278	144	n/a	248	216
LS34	3970 King Wilkinson Road	24577	WQ0030392	72	60	181	60	n/a	160	137
LS35	7981 Blades Trail	88709	WQ0031692	85	73	175	69	67	108	93
LS36	8822 Sweet Cherry Lane	89195	WQ0031697	86	72	285	173	n/a	265	240

Dimensions are in inches.
TDH is in feet.

APPENDIX E.4
MASTER PUMP STATION LIST

Lincoln County Sewer Pump Station Dimensions

LS37	6781 Old Plank Road	89465	WQ0032852	n/a	n/a	498	414	n/a	438	408
LS38	4265 E Hwy 27	52578	WQ0035636	117	96	140	77	n/a	125	113
LS39	1043 Airlie Parkway	90328	WQ0035325	117	96	229	150	n/a	205	181

Dimensions are in inches.
TDH is in feet.

Lincoln County Sewer Pump Station Dimensions

Lag Float	High Level	Pumps	HP	Make	Model	Impeller	GPM	TDH	Alarm	Access	Type	Reliability
106	93	2	30	Myers	4VH100M4-43	11-1/2"	80	148	A,V,T	R	L,F	Yes
147	135	2	10	Myers	4VH100M4-43	7-3/4"	80	56	A,V,T	R	L,F	Yes
117	109	2	25	Fairbanks	4"-5433MV	T4C1A	129	119	A,V,T	R	L,F	Yes
68	64	2	30	Myers	4VC300M4-43	10-3/4"	210	117	A,V,T	R	L,F	Yes
143	134	2	30	Myers	4VC300M4-43	11-1/4"	105	105	A,V,T	R	L,F	Yes
94	84	2	5	Myers	4V50M4-43	7"	62	28	A,V,T	R	L,F	Yes
80	68	2	25	Myers	4VC250M4-43	10-12/4"	180	105	A,V,T	R	L,F	Yes
228	213	2	40	Myers	4VC400M4-43	11-3/8"	180	142	A,V,T	R	L,F	Yes
72	65	2	20	Myers	4RH200M2-43	6"	180	80	A,V,T	R	L,F	Yes
143	136	2	20	Myers	4RH200M2-43	10"	275	80	A,V,T	R	L,F	Yes
130	126	2	30	Myers	4VC300M4-43	11"	289	130	A,V,T	R	L,F	Yes
64	56	2	40	Fairbanks	6"-5433MV	T6C1C	1100	90	A,V,T	R	L,F	Yes
121	114	2	50	Fairbanks	4"-DJ5435MV	T4E1E	250	260	A,V,T	R	L,F	Yes
142	125	2	20	Hydromatic	S4Q	11"	140	126.9	A,V,T	R	L,F	Yes
218	204	2	125	Chicago	CP6153	Y-4739	1750	168	A,V,T	R	L,F	Yes
109	95	2	10	Fairbanks	3-D5433MTK	T3C1HB	175	93	A,V,T	R	L,F	Yes
65	48	2	5	Hydromatic	SPGF-500	Grinder	55	55	A,V,T	R	L,F	Yes
251	248	4	20,23	Flygt	F-3152,CP3152.181	Grinder,187mm	82	192	A,V,T	R	L,F	Yes
107	97	2	30	Fairbanks	4"-5433MV	T4C1KH	200	131	A,V,T	R	L,F	Yes
144	134	2	30	Fairbanks	4"-5435MV		180	162	A,V,T	R	L,F	Yes
96	87	2	7.5	Myers	WG75HH-43-25		60	92	A,V,T	R	L,F	Yes
168	160	4	18	Flygt	NP3153.180	239mm	186	94	A,V,T	R	L,F	Yes
170	165	2	5	Fairbanks	D5432MV	T4B1A	167	38	A,V,T	R	L,F	Yes
89	81	2	7.5	Fairbanks	4"-5432MVK	T4B1AF	85	69	A,V,T	R	L,F	Yes
148	142	2	20	Myers			100	110	A,V,T	R	L,F	Yes
166	150	2	75	Fairbanks	D5435MV	13.875"	750	192	A,V,T	R	L,F	Yes
164	152	2	15	Fairbanks	4"-5433MV	T4C1NA	140	102	A,V,T	R	L,F	Yes
165	155	2	40	Fairbanks	4"-5433MV	T4C1A	403	110	A,V,T	R	L,F	Yes
66	50	2	11	Flygt	MP3127.170	159mm	118	84	A,V,T	R	L,F	Yes
139	128	2	10	Fairbanks	D5432MV	T4B1A	150	80	A,V,T	R	L,F	Yes
156	144	2	20	Hydromatic	S4Q2000M6-4	10.875"	175	122	A,V,T	R	L,F	Yes
113	100	2	7.5	Hydromatic	HPGB750M6-2	6-3/4"	88	146	A,V,T	R	L,F	Yes
207	180	2	70	ABS	AFP 1001 ME520	10.8"	440	186	A,V,T	R	L,F	Yes
127	120	2	5	Hydromatic	HPGFH500M6-4	10.125"	88	75	A,V,T	R	L,F	Yes
82	75	2	50	Fairbanks	D5433MV	T4C1KH	305	150	A,V,T	R	L,F	Yes
157	140	2	30	Myers	4VE300M4-43	12"	220	137	A,V,T	R	L,F	Yes

Dimensions are in inches.
TDH is in feet.

Lincoln County Sewer Pump Station Dimensions

396	378	2	150	Chicago	CP8185	16.625"	2900	95	A,V,T	R	L,F	Yes
101	89	2	7.5				88	132	A,V,T	R	L,F	Yes
169	133	2	7.4	WILO	FA10.33	200mm	148	56.6	A,V,T	R	L,F	Yes

Dimensions are in inches.
TDH is in feet.

Lincoln County Sewer Pump Station Dimensions

Source	Signage	Generator	Power	Account #	Meter #	Phone #
P	Yes	Yes	Duke	695450	502480	704-483-8308
P	Yes	Yes	Duke	2646357	967464	704-483-8302
P	Yes	Yes	Duke	2646362	5600	704-483-8303
P	Yes	Yes	Duke	2646361	351483	704-483-8304
P	Yes	Yes	Duke	2646359	967374	704-483-8305
P	Yes	Yes	Duke	2474176	739633	704-483-8306
P	Yes	Yes	Energy	2150738	95902850	704-483-8307
P	Yes	Yes	Energy	2150737	92654100	704-483-8129
P	Yes	Yes	Energy	2150739	92654091	704-483-8309
P	Yes	Yes	Duke	2646363	5537	704-483-7369
P	Yes	Yes	Duke	2646358	5522	704-483-8311
P	Yes	Yes	Duke	2646364	5543	704-483-8310
P	Yes	Yes	Duke	2847220	147228	704-827-6300
P	Yes	Yes	Duke	3669692	502366	704-827-2740
P	Yes	Yes	Duke	3367733	416908	704-822-9667
P	Yes	Yes	Energy	2150740	95973407	704-489-8898
P	Yes	Yes	Duke	1583403	211720	704-489-8842
P	Yes	Yes	Rutherford	27534004	49318778	704-735-1879
P	Yes	Yes	Energy	2150741	82506355	704-820-0411
P	Yes	Yes	Duke	1740098298	505348	704-820-0402
P	Yes	Yes	Duke	School	25426527	704-483-6993
P	Yes	Yes	Rutherford	385506002	28347580	704-736-8421
P	Yes	Yes	Duke	1290665549	23508951	704-489-0778
P	Yes	Yes	Energy	2318151	84836657	704-827-6976
P	Yes	Yes	Energy	2342069	84836657	704-483-0830
P	Yes	Yes	Duke	1573548070	5550001	704-489-1773
P	Yes	Yes	Duke	1785506465	5550006	704-483-3319
P	Yes	Yes	Energy	2358812	58320882	704-483-9077
P	Yes	Yes	Energy	2372678	82506005	704-483-2851
P	Yes	Yes	Rutherford	27534006		828-428-3663
P	Yes	Yes	Rutherford	27534008		704-732-3490
P	Yes	Yes	Rutherford	27534009		704-748-6743
P	Yes	Yes	Rutherford	27534011		704-428-2848
P	Yes	Yes	Rutherford	27534010	2433822	704-732-2075
P	Yes	Yes	Duke	1586425438	52811922	704-489-5919
P	Yes	Yes	Energy	2413670	99264935	704-483-3455

Dimensions are in inches.
TDH is in feet.

Lincoln County Sewer Pump Station Dimensions

P	Yes	Yes	Duke	1356461752		Radio
P	Yes	Yes	Duke	1091459001	807890	704-736-0498
P	Yes	Yes	Duke	1980495675		704-483-8112

Dimensions are in inches.
TDH is in feet.

From: Jens Lund
Sent: Tuesday, May 23, 2017 9:05 AM
To: Bob Froneberger <bfroneberger@wkdickson.com>
Subject: Lincoln County Killian Creek WWTP Gravity Sewer IDM

Bob,

Below is a table summarizing the inch-diameter-miles (IDM) for gravity sewer draining to Killian Creek.

Diameter (in)	Length (ft)	Length (mi)	IDM
8	286,539	54.2	433.6
12	7,961	1.5	18.1
15	18,636	3.5	52.9
18	4,952	0.9	16.9
24	16,807	3.2	76.4
30	2,814	0.5	16.0
36	2,884	0.5	19.7
Total	**340,592**	**64.4**	**633.5**

I noticed that on the GIS, there is some gravity sewer that is parallel or overlapping the pressure mains in some areas. I am not familiar with low pressure systems to know if this makes sense. I can review with you whenever you get a chance.

Thank you

R. Jensen Lund, EI
Civil Designer

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Appendix F - Killian Creek DMR Data

F.1 DMR – 2017

F.2 DMR Flow Data Graphs – 2014 - 2017

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NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** Thomas Franklin Drum **ORC CERT NUMBER:** 995668

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 01-2017 (January 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0830	1	B		0.844								
2			0530	8	B		1.199	17							
3	0833	24	0700	9	Y		1.208	17	6.9	3.8	< 0.5	< 2.5	102		
4	0833	24	0700	9	Y		1.064	17	6.9	2.9	< 0.5	< 2.5	5		
5	0835	24	0700	9	Y		1.028	16	7.1	3.4	< 0.5	< 2.5	44		
6			0700	12	Y		0.949	17							
7			0815	1	N		0.846								
8			0815	1	N		0.874								
9			0700	10	Y		0.88	15							
10	0838	24	0700	9	Y		0.877	14	7	< 2	< 0.5	< 2.5	182	6.5	2.5
11	0838	24	0700	9	Y		1.016	14	6.9	2.3	< 0.5	< 2.5	114		
12	0838	24	0700	9	Y		0.956	15	6.9	2.6	0.5	< 2.5	116		
13			0700	9	Y		0.97	16							
14			0500	4	N		0.902								
15			0730	1	N		0.847								
16			0800	1.5	Y		0.881	16							
17	0832	24	0700	13	Y		1	16	7	3.9	0.6	< 2.5	46		
18	0832	24	0700	13	Y		1.002	16	6.8	3.9	0.6	< 2.5	17		
19	0834	24	0700	13	Y		0.945	16	7.1	3.7	0.5	3.2	126		
20			0700	13	Y		0.948	16							
21			0815	1	N		1.074								
22			0805	1	N		1.053								
23			0300	10	Y		1.542	16							
24	0828	24	0700	9	Y		0.978	16	6.9	4.3	0.8	< 2.5	10		
25	0838	24	0400	12.25	Y		1.042	16	6.9	4	< 0.5	6.2	33		
26	0840	24	0700	9	Y		0.917	16	7	4.6	< 0.5	< 2.5	8		
27			0700	9	Y		0.889	16							
28			0900	1	N		0.836								
29			0900	1	N		0.867								
30			0700	9	Y		0.892	16							
31	0837	24	0700	9	Y		0.907	15	6.8	4.1	0.7	< 2.5	< 2		
						Monthly Average Limit:	1.68			30	5.5	30	200		
						Monthly Average:	0.975258	15.863636		3.346154	0.284615	0.723077	29.709494	6.5	2.5
						Daily Maximum:	1.542	17	7.1	4.6	0.8	6.2	182	6.5	2.5
						Daily Minimum:	0.836	14	6.8	0	0	0	0	6.5	2.5

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

APPENDIX F.1
NPDES 2017 DMR's

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** Thomas Franklin Drum **ORC CERT NUMBER:** 995668

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 01-2017 (January 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	TGP3B	01092	00300	81010	81011
							Quarterly	Quarterly			
							Composite	Composite	Grab	Calculated	Calculated
							CERI7DPF	ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		pass/fail	ug/l	mg/l	percent	percent
1			0830	1	B						
2			0530	8	B						
3	0833	24	0700	9	Y				8.6		
4	0833	24	0700	9	Y				8.7		
5	0835	24	0700	9	Y				9.2		
6			0700	12	Y						
7			0815	1	N						
8			0815	1	N						
9			0700	10	Y						
10	0838	24	0700	9	Y		P	73.6	9.8		
11	0838	24	0700	9	Y				9.6		
12	0838	24	0700	9	Y				9.3		
13			0700	9	Y						
14			0500	4	N						
15			0730	1	N						
16			0800	1.5	Y						
17	0832	24	0700	13	Y				8.9		
18	0832	24	0700	13	Y				8.6		
19	0834	24	0700	13	Y				9.2		
20			0700	13	Y						
21			0815	1	N						
22			0805	1	N						
23			0300	10	Y						
24	0828	24	0700	9	Y				9.2		
25	0838	24	0400	12.25	Y				9.5		
26	0840	24	0700	9	Y				8.5		
27			0700	9	Y						
28			0900	1	N						
29			0900	1	N						
30			0700	9	Y						
31	0837	24	0700	9	Y				8.4	99	100
						Monthly Average Limit:					
						Monthly Average:		73.6	9.038462	99	100
						Daily Maximum:		73.6	9.8	99	100
						Daily Minimum:		73.6	8.4	99	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** Thomas Franklin Drum **ORC CERT NUMBER:** 995668

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 01-2017 (January 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 02/23/2017

02/22/2017

ORC/Certifier Signature: Thomas Franklin Drum E-Mail:tdrum@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

02/23/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: No.558, Pace 12

PERSON(s) COLLECTING SAMPLES: Tim

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 02-2017 (February 2017) **VERSION:** 2.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1	0837	24	0700	11.75	Y		0.998	15	6.9	2.8	< 0.5	< 2.5	20		
2	0840	24	0700	9	Y		0.882	15	6.9	3.6	0.8	< 2.5	9		
3			0700	9	Y		0.878	15							
4			0900	1	B		0.85								
5			0840	1	B		0.869								
6			0700	9	Y		0.863	15							
7	0832	24	0700	9	B		0.859	15	6.8	6.6	0.9	4.2	182		
8	0852	24	0700	12	Y		0.977	16	6.8	4.5	1.1	< 2.5	5		
9	0853	24	0700	9	Y		0.966	16	6.7	3.5	0.8	< 2.5	< 2	3.4	3.2
10			0700	9	B		0.831	16							
11			0830	1	N		0.826								
12			0845	1	N		0.869								
13			0700	9	Y		0.996	16							
14	0825	24	0700	9	Y		0.892	15	7	7.7	< 0.5	< 2.5	< 2		
15	0827	24	0700	12	Y		0.997	16	6.8	4.5	< 0.5	< 2.5	< 2		
16	0835	24	0700	9	Y		0.925	15	7.1	4.6	< 0.5	< 2.5	< 2		
17			0800	8	Y		0.937	15							
18			0800	1	N		0.812								
19			0830	1	N		0.848								
20			0700	12	Y		0.972	16							
21	0827	24	0700	10.5	B		0.9	16	7	7.9	< 0.5	< 2.5	< 2		
22	0829	24	0700	9	Y		0.923	16	6.8	3.8	< 0.5	< 2.5	< 2		
23	0833	24	0700	9	Y		0.919	17	6.9	4	< 0.5	< 2.5	< 2		
24			0700	9	B		0.847	16							
25			0730	1	N		0.819								
26			0830	1	N		0.824								
27			0700	9	Y		0.959	16							
28	0827	24	0700	13	Y		0.969	16	6.8	10.9	< 0.5	< 2.5	< 2		
						Monthly Average Limit:	1.68			30	5.5	30	200		
						Monthly Average:	0.90025	15.65		5.366667	0.3	0.35	2.719732	3.4	3.2
						Daily Maximum:	0.998	17	7.1	10.9	1.1	4.2	182	3.4	3.2
						Daily Minimum:	0.812	15	6.7	2.8	0	0	0	3.4	3.2

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 02-2017 (February 2017) **VERSION:** 2.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Grab	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1	0837	24	0700	11.75	Y			8.7		
2	0840	24	0700	9	Y			9.3		
3			0700	9	Y					
4			0900	1	B					
5			0840	1	B					
6			0700	9	Y					
7	0832	24	0700	9	B			9		
8	0852	24	0700	12	Y			9		
9	0853	24	0700	9	Y			9.1		
10			0700	9	B					
11			0830	1	N					
12			0845	1	N					
13			0700	9	Y					
14	0825	24	0700	9	Y			9.6		
15	0827	24	0700	12	Y			9.3		
16	0835	24	0700	9	Y			9.3		
17			0800	8	Y					
18			0800	1	N					
19			0830	1	N					
20			0700	12	Y					
21	0827	24	0700	10.5	B			8.7		
22	0829	24	0700	9	Y			7.6		
23	0833	24	0700	9	Y			8.3		
24			0700	9	B					
25			0730	1	N					
26			0830	1	N					
27			0700	9	Y					
28	0827	24	0700	13	Y			8.5	98	100
						Monthly Average Limit:				
						Monthly Average:		8.866667	98	100
						Daily Maximum:		9.6	98	100
						Daily Minimum:		7.6	98	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 02-2017 (February 2017) **VERSION:** 2.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 03/27/2017

03/27/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

03/27/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: No. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Tim, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 02-2017 (February 2017) **VERSION:** 2.0 **STATUS:** Processed

Report Comments:

first week and last week are split weeks from other months

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 02-2017 (February 2017) **VERSION:** 2.0 **STATUS:** Processed

Outfall 001 - Effluent Comments:

QC on Total Nitrogen: NO2 Plus NO3 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 03-2017 (March 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1	0836	24	0700	13	Y		1.068	17	7	4.4	< 0.5	< 2.5	< 2		
2	0838	24	0700	9	Y		1.051	16	7	4.2	< 0.5	< 2.5	9		
3			0700	9	Y		0.895	16							
4			0900	1	N		0.845								
5			0830	1	N		0.867								
6			0700	13	Y		1.027	16							
7	0822	24	0700	13	Y		1.013	16	7.2	9.2	< 0.5	< 2.5	77		
8	0830	24	0700	13	B		1.031	16	7.1	4.2	< 0.5	< 2.5	104		
9	0834	24	0700	9	B		0.909	16	7.2	2.7	< 0.5	< 2.5	79		
10			0700	9	B		0.853	16							
11			0800	1	B		0.815								
12			0830	1	B		0.868								
13			0700	9	B		0.947	15							
14	0835	24	0700	12	B		0.989	15	7.1	8	< 0.5	< 2.5	86		
15	0839	24	0700	11	B		0.94	14	7.2	2.6	< 0.5	< 2.5	56		
16	0844	24	0700	9	B		0.936	14	7.2	2.5	< 0.5	< 2.5	71	4.7	3.7
17			0700	9	B		0.948	14							
18			0730	1	N		0.904								
19			0800	1	N		0.891								
20			0700	9.5	B		0.975	15							
21	0824	24	0700	12	B		1.244	16	7.2	6.7	< 0.5	2.6	112		
22	0829	24	0700	9	B		1.178	17	7.2	3.2	0.6	< 2.5	200		
23	0832	24	0700	9	B		0.955	16	7.2	2.7	< 0.5	< 2.5	41		
24			0700	9	B		0.915	16							
25			0730	1	N		0.872								
26			0730	1	N		0.874								
27			0700	9	B		1.018	16							
28	0825	24	0700	9	B		0.956	17	7.2	6.6	< 0.5	< 2.5	9		
29	0834	24	0700	9.5	B		0.968	17	7.1	< 2	0.9	< 2.5	10		
30	0837	24	0700	9	B		0.905	18	7.1	2.3	< 0.5	< 2.5	13		
31			0700	9	B		1.017	17							
						Monthly Average Limit:	1.68			30	5.5	30	200		
						Monthly Average:	0.957226	15.913043		4.235714	0.107143	0.185714	33.334725	4.7	3.7
						Daily Maximum:	1.244	18	7.2	9.2	0.9	2.6	200	4.7	3.7
						Daily Minimum:	0.815	14	7	0	0	0	0	4.7	3.7

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 03-2017 (March 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Grab	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1	0836	24	0700	13	Y			8.12		
2	0838	24	0700	9	Y			7.51		
3			0700	9	Y					
4			0900	1	N					
5			0830	1	N					
6			0700	13	Y					
7	0822	24	0700	13	Y			9.5		
8	0830	24	0700	13	B			9.2		
9	0834	24	0700	9	B			9.6		
10			0700	9	B					
11			0800	1	B					
12			0830	1	B					
13			0700	9	B					
14	0835	24	0700	12	B			9.3		
15	0839	24	0700	11	B			9.9		
16	0844	24	0700	9	B			10.1		
17			0700	9	B					
18			0730	1	N					
19			0800	1	N					
20			0700	9.5	B					
21	0824	24	0700	12	B			9.2		
22	0829	24	0700	9	B			9.1		
23	0832	24	0700	9	B			9.4		
24			0700	9	B					
25			0730	1	N					
26			0730	1	N					
27			0700	9	B					
28	0825	24	0700	9	B			8.7		
29	0834	24	0700	9.5	B			8.8		
30	0837	24	0700	9	B			8.7	98	100
31			0700	9	B					
						Monthly Average Limit:				
						Monthly Average:		9.080714	98	100
						Daily Maximum:		10.1	98	100
						Daily Minimum:		7.51	98	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 03-2017 (March 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 04/17/2017

04/17/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

04/17/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: No. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Tim, Rusty, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 03-2017 (March 2017) **VERSION:** 1.0 **STATUS:** Processed

Outfall 001 - Effluent Comments:

Total Phosphorus Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

BOD on 3/28/17 RPD was greater than 30%. Result accepted based on QC samples.

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** Yes

eDMR PERIOD: 04-2017 (April 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0730	1	N		0.9								
2			0830	1	N		0.914								
3			0700	9	B		1.063	18							
4	0851	24	0700	9.5	B		1.076	18	7.1	2.5	< 0.5	< 2.5	5	1.5	3.1
5	0852	24	0700	8	B		1.033	18	7.2	2.3	< 0.5	< 2.5	14		
6	0849	24	0730	8.5	B		1.084	18	7.3	2.6	< 0.5	< 2.5	8		
7			0700	9	B		1.076	17							
8			0830	1	B		0.92								
9			0900	1	B		0.924								
10			0700	9	B		0.899	17							
11	0824	24	0700	9	B		1.018	18	7.1	5.3	0.5	< 2.5	57		
12	0832	24	0700	9	B		0.996	18	7.1	3.9	0.5	< 2.5	950		
13	0840	24	0700	9	B		1.024	18	7.1	5.1	0.9	2.5	140		
14			0810	1	B		0.989	18							
15			0830	1	B		0.879								
16			0920	1	B		0.862								
17			0700	9	B		0.986	18							
18	0828	24	0630	9.5	B		0.783	20	7.3	6.5	3.4	< 2.5	41		
19	0833	24	0700	9	B		0.801	20	7.2	6.4	3.1	< 2.5	21		
20	0838	24	0700	9.5	B		0.799	19	7.2	6.3	3.5	< 2.5	2		
21			0700	9	B		0.879	20							
22			0900	1	B		0.821								
23			0700	4	B		1.34								
24			0700	10	B		1.612	17							
25	0828	24	0700	9	B		1.264	19	7.1	6.8	< 0.5	< 2.5	13		
26	0829	24	0700	10	B		0.978	19	7.2	4.5	< 0.5	< 2.5	6		
27	0837	24	0700	9	B		0.988	19	7.2	5.6	< 0.5	< 2.5	5		
28			0700	9	B		1.019	19							
29			0800	1	N		0.907								
30			0900	2.5	N		0.966								
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.993333	18.4		4.816667	0.991667	0.208333	19.405181	1.5	3.1
						Daily Maximum:	1.612	20	7.3	6.8	3.5	2.5	950	1.5	3.1
						Daily Minimum:	0.783	17	7.1	2.3	0	0	2	1.5	3.1

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** Yes

eDMR PERIOD: 04-2017 (April 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	TGP3B	01092	00300	81010	81011	NC01
							Quarterly	Quarterly				
							Composite	Composite	Grab	Calculated	Calculated	Composite
							CERI7DPF	ZINC	DO	BOD5-%R	TSS-%R	ANN POL SCAN
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		pass/fail	ug/l	mg/l	percent	percent	yes=1 no=0
1			0730	1	N							
2			0830	1	N							
3			0700	9	B							
4	0851	24	0700	9.5	B		P	75.1	8.5			1
5	0852	24	0700	8	B				8.7			
6	0849	24	0730	8.5	B				8.7			
7			0700	9	B							
8			0830	1	B							
9			0900	1	B							
10			0700	9	B							
11	0824	24	0700	9	B				8.9			
12	0832	24	0700	9	B				8.5			
13	0840	24	0700	9	B				8.8			
14			0810	1	B							
15			0830	1	B							
16			0920	1	B							
17			0700	9	B							
18	0828	24	0630	9.5	B				8.3			
19	0833	24	0700	9	B				8.3			
20	0838	24	0700	9.5	B				8.5			
21			0700	9	B							
22			0900	1	B							
23			0700	4	B							
24			0700	10	B							
25	0828	24	0700	9	B				8.6			
26	0829	24	0700	10	B				8.5			
27	0837	24	0700	9	B				8.4	98	100	
28			0700	9	B							
29			0800	1	N							
30			0900	2.5	N							
						Monthly Average Limit:						
						Monthly Average:		75.1	8.558333	98	100	1
						Daily Maximum:		75.1	8.9	98	100	1
						Daily Minimum:		75.1	8.3	98	100	1

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** Yes

eDMR PERIOD: 04-2017 (April 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 704-748-23 **SUBMISSION DATE:** 05/24/2017

05/24/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

05/24/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: NO. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Rusty, Tim, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 05-2017 (May 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0700	9	B		0.948	21							
2	0829	24	0700	9	B		0.901	20	7.3	10.9	< 0.5	2.5	17		
3	0839	24	0700	9	B		1.036	20	7.2	5.6	< 0.5	< 2.5	7		
4	0847	24	0700	9	B		0.998	20	7.2	6.5	< 0.5	3	86		
5			0700	9	B		1.123	21							
6			0800	1	N		0.9								
7			0830	1	N		0.014								
8			0700	9.5	B		1.022	20							
9	0831	24	0700	9	B		0.903	20	7.2	10.1	< 0.5	4.8	124		
10	0836	24	0700	9.5	B		1.024	20	7.2	5.2	0.5	< 2.5	32		
11	0840	24	0730	8.5	B		0.916	21	7.2	5.3	0.5	< 2.5	13	3.2	3.2
12			0700	9	B		1.018	20							
13			0830	1	B		0.909	20							
14			0830	1	B		0.879	20							
15			0700	9	B		0.969	21							
16	0825	24	0700	9	Y		0.932	21	7.3	9.2	< 0.5	< 2.5	52		
17	0834	24	0700	9	Y		1.051	21	7.3	4.3	< 0.5	< 2.5	28		
18	0840	24	0700	9	Y		0.903	22	7.2	4.6	< 0.5	< 2.5	86		
19			0700	9	B		0.992	22							
20			0730	1	N		0.874								
21			0830	1	N		1.278								
22			0000	11	Y		1.116	21							
23	0819	24	0700	9	Y		1.144	22	7.4	9.3	< 0.5	< 2.5	15		
24	0823	24	0700	9	Y		1.238	22	7.3	3.1	< 0.5	< 2.5	25		
25	0843	24	0700	9	Y		1.095	22	7.3	2.9	< 0.5	< 2.5	29		
26			0700	9	Y		0.984	22							
27			0800	1	N		0.923								
28			0830	1	N		0.967								
29			0700	2	N		1.045	22							
30	0817	24	0700	9.5	Y		1.124	23	7.4	7.1	< 0.5	< 2.5	47		
31	0822	24	0700	9	Y		1.013	23	7.3	2.6	< 0.5	< 2.5	18		
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.975452	21.08		6.192857	0.071429	0.735714	30.519179	3.2	3.2
						Daily Maximum:	1.278	23	7.4	10.9	0.5	4.8	124	3.2	3.2
						Daily Minimum:	0.014	20	7.2	2.6	0	0	7	3.2	3.2

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 05-2017 (May 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Grab	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1			0700	9	B					
2	0829	24	0700	9	B			8.3		
3	0839	24	0700	9	B			8.5		
4	0847	24	0700	9	B			8.1		
5			0700	9	B					
6			0800	1	N					
7			0830	1	N					
8			0700	9.5	B					
9	0831	24	0700	9	B			8.2		
10	0836	24	0700	9.5	B			8.2		
11	0840	24	0730	8.5	B			8.1		
12			0700	9	B					
13			0830	1	B					
14			0830	1	B					
15			0700	9	B					
16	0825	24	0700	9	Y			8.3		
17	0834	24	0700	9	Y			8.1		
18	0840	24	0700	9	Y			8		
19			0700	9	B					
20			0730	1	N					
21			0830	1	N					
22			0000	11	Y					
23	0819	24	0700	9	Y			8		
24	0823	24	0700	9	Y			7.9		
25	0843	24	0700	9	Y			7.9		
26			0700	9	Y					
27			0800	1	N					
28			0830	1	N					
29			0700	2	N					
30	0817	24	0700	9.5	Y			8		
31	0822	24	0700	9	Y			7.9	98	100
						Monthly Average Limit:				
						Monthly Average:		8.107143	98	100
						Daily Maximum:		8.5	98	100
						Daily Minimum:		7.9	98	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 05-2017 (May 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 06/21/2017

06/20/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

06/21/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian creek, Pace Analytical

CERTIFIED LAB #: No. 558, pace 12

PERSON(s) COLLECTING SAMPLES: Tim Rusty Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 06-2017 (June 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1	0836	24	0700	9	Y		0.957	22	7.5	2.6	< 0.5	< 2.5	67		
2			0700	9	Y		1.075	22							
3			1008	1	Y		0.961								
4			0915	1	Y		0.995								
5			0700	9	Y		1.156	22							
6	0822	24	0700	9	Y		0.98	23	7.3	7	< 0.5	< 2.5	94		
7	0834	24	0700	9.5	Y		1.075	22	7.3	2.2	< 0.5	< 2.5	69	2.8	3.6
8	0841	24	0700	12.5	Y		0.94	23	7.4	2.3	< 0.5	< 2.5	88		
9			0700	17	Y		0.571	23							
10			0000	24	Y		1.32								
11			0000	14	B		0.952								
12			0700	9	Y		1.059	24							
13	0827	24	0700	9	Y		0.963	24	7.1	9.4	0.6	6.8	197		
14	0835	24	0700	9	Y		0.824	24	7.1	4.3	0.5	4.2	64		
15	0900	24	0700	9	Y		0.838	24	7.2	2.1	0.5	< 2.5	11		
16			0730	8.5	Y		0.889	24							
17			0800	1	B		0.886								
18			1000	1	B		0.839								
19			0700	9	Y		0.923	23							
20	0821	24	0700	9	Y		0.967	25	7.3	7.3	< 0.5	< 2.5	75		
21	0829	24	0700	10	Y		0.928	25	7.2	2.3	< 0.5	< 2.5	43		
22	0843	24	0300	13	Y		0.877	25	7.2	2.8	0.6	< 2.5	450		
23			0100	10	Y		0.954	24							
24			0230	3.5	N		0.938								
25			0830	1	N		0.87								
26			0700	9.5	Y		0.985	24							
27	0829	24	0700	9	Y		0.839	24	7.3	2.9	0.5	< 2.5	21		
28	0836	24	0700	9	Y		0.832	24	7.3	3.2	0.7	< 2.5	> 600		
29	0849	24	0700	9	Y		0.982	24	7.3	4.1	0.8	< 2.5	127		
30			0700	9	Y		0.918	24							
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.9431	23.590909		4.038462	0.323077	0.846154	85.121188	2.8	3.6
						Daily Maximum:	1.32	25	7.5	9.4	0.8	6.8	600	2.8	3.6
						Daily Minimum:	0.571	22	7.1	2.1	0	0	11	2.8	3.6

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 06-2017 (June 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Grab	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1	0836	24	0700	9	Y			8		
2			0700	9	Y					
3			1008	1	Y					
4			0915	1	Y					
5			0700	9	Y					
6	0822	24	0700	9	Y			7.8		
7	0834	24	0700	9.5	Y			7.8		
8	0841	24	0700	12.5	Y			8		
9			0700	17	Y					
10			0000	24	Y					
11			0000	14	B					
12			0700	9	Y					
13	0827	24	0700	9	Y			7.3		
14	0835	24	0700	9	Y			7.6		
15	0900	24	0700	9	Y			7.5		
16			0730	8.5	Y					
17			0800	1	B					
18			1000	1	B					
19			0700	9	Y					
20	0821	24	0700	9	Y			7.7		
21	0829	24	0700	10	Y			7.9		
22	0843	24	0300	13	Y			7.5		
23			0100	10	Y					
24			0230	3.5	N					
25			0830	1	N					
26			0700	9.5	Y					
27	0829	24	0700	9	Y			7.8		
28	0836	24	0700	9	Y			7.6		
29	0849	24	0700	9	Y			7.4	98	100
30			0700	9	Y					
						Monthly Average Limit:				
						Monthly Average:		7.684615	98	100
						Daily Maximum:		8	98	100
						Daily Minimum:		7.3	98	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 06-2017 (June 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 07/25/2017

07/24/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

07/25/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: No.558, pace 12

PERSON(s) COLLECTING SAMPLES: Rusty, Tim, Brian, Robert

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 06-2017 (June 2017) **VERSION:** 1.0 **STATUS:** Processed

Report Comments:

6/7/17 Total nitrogen matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample LCS recovery.

6/21/17 and 6/28/17 BOD GGA range less than 167.5 operator feels sample still accurate.

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 07-2017 (July 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0715	2	N		0.953								
2			0830	2	N		0.864								
3			0700	10	Y		1.235	24							
4	0817	24	0230	8.5	Y		0.918	25	7.2	4.3	0.9	< 2.5	15		
5	0829	24	0700	9	Y		1.004	25	7.3	3.8	0.5	< 2.5	12		
6	0840	24	0215	14.25	Y		0.846	25	7.3	3	< 0.5	< 2.5	10		
7			0700	9	Y		0.974	25							
8			0730	1	N		1.064								
9			0800	1	N		0.929								
10			0700	9	Y		1.008	25							
11	0816	24	0700	9	Y		0.898	26	7.3	6.5	0.9	< 2.5	57	2.5	2.8
12	0820	24	0100	10	Y		1.015	26	7.3	4.3	0.7	< 2.5	7		
13	0824	24	0700	9	B		0.879	26	7.3	7.3	0.7	< 2.5	> 600		
14			0800	8	B		1.026	26							
15			0800	1	N		0.866	26							
16			0800	1	N		0.888	26							
17			0700	9	Y		0.856	26							
18	0841	24	0700	9	Y		0.969	26	7.3	12.2	3.8	4.2	580		
19	0842	24	0600	10	Y		0.628	26	7.3	10.4	6.1	3.3	350		
20	0846	24	0700	9	Y		0.998	26	7.4	7.2	3.3	3.2	94		
21			0700	9	Y		0.983	26							
22			0750	1	B		0.876								
23			0730	1	B		0.923								
24			0700	9	Y		0.995	26							
25	0827	24	0700	10	Y		0.926	27	7.3	7.3	< 0.5	2.5	7		
26	0838	24	0700	9	Y		0.827	27	7.3	8	< 0.5	< 2.5	6		
27	0846	24	0700	9	Y		0.958	27	7.3	7.8	< 0.5	< 2.5	3		
28			0700	10	Y		0.987	27							
29			1100	1	B		0.809								
30			0930	1	B		0.85								
31			0700	9	Y		0.813	26							
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.927903	25.869565		6.841667	1.408333	1.1	31.716305	2.5	2.8
						Daily Maximum:	1.235	27	7.4	12.2	6.1	4.2	600	2.5	2.8
						Daily Minimum:	0.628	24	7.2	3	0	0	3	2.5	2.8

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 07-2017 (July 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	TGP3B	01092	00300	81010	81011
							Quarterly	Quarterly			
							Composite	Composite	Calculated	Calculated	Calculated
							CERI7DPF	ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		pass/fail	ug/l	mg/l	percent	percent
1			0715	2	N						
2			0830	2	N						
3			0700	10	Y						
4	0817	24	0230	8.5	Y				7.2		
5	0829	24	0700	9	Y				7.4		
6	0840	24	0215	14.25	Y				7.7		
7			0700	9	Y						
8			0730	1	N						
9			0800	1	N						
10			0700	9	Y						
11	0816	24	0700	9	Y		P	53	7.3		
12	0820	24	0100	10	Y				7.5		
13	0824	24	0700	9	B				7.4		
14			0800	8	B						
15			0800	1	N						
16			0800	1	N						
17			0700	9	Y						
18	0841	24	0700	9	Y				7		
19	0842	24	0600	10	Y				6.4		
20	0846	24	0700	9	Y				7.4		
21			0700	9	Y						
22			0750	1	B						
23			0730	1	B						
24			0700	9	Y						
25	0827	24	0700	10	Y				7.3		
26	0838	24	0700	9	Y				7.6		
27	0846	24	0700	9	Y				7.2		
28			0700	10	Y						
29			1100	1	B						
30			0930	1	B						
31			0700	9	Y					97	99
						Monthly Average Limit:					
						Monthly Average:		53	7.283333	97	99
						Daily Maximum:		53	7.7	97	99
						Daily Minimum:		53	6.4	97	99

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NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 07-2017 (July 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 08/23/2017

08/21/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

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If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

08/23/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek WWTP, Pace Analytical

CERTIFIED LAB #: NO. 558, PACE 12

PERSON(s) COLLECTING SAMPLES: Rusty brian Tim

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

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*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 07-2017 (July 2017) **VERSION:** 1.0 **STATUS:** Processed

Report Comments:

7/7/2017 BOD, the GGA was less than the allowed range.

7/11/17 Nitrogen RPD was outside control limits. And Matrix spike and matrix duplicate recovery not evaluated against control limits due to sample dilution.

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 08-2017 (August 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1	0826	24	0700	9	Y		0.822	26	7.4	17.6	< 0.5	< 2.5	32		
2	0831	24	0630	10	Y		1.052	26	7.3	7.9	< 0.5	< 2.5	30		
3	0844	24	0700	9	B		0.835	26	7.2	9	1.2	3.1	127		
4			0700	9	Y		0.883	26							
5			0715	1	N		0.851								
6			0800	1	N		0.875								
7			0700	9	B		0.962	26							
8	0820	24	0700	9	Y		0.85	26	7.3	13.7	< 0.5	3	121	2.8	3.9
9	0833	24	0030	9.5	Y		0.85	26	7.3	6.9	< 0.5	< 2.5	510		
10	0913	24	0700	9	Y		0.84	26	7.3	6.6	< 0.5	< 2.5	480		
11			0700	9	Y		1.054	26							
12			0730	1	N		1.022								
13			0730	1	N		0.996								
14			0700	10	Y		1.159	26							
15	0824	24	0700	9	Y		0.949	26	7.3	10.9	< 0.5	2.5	> 600		
16	0836	24	0700	9	Y		0.974	26	7.3	6.4	< 0.5	< 2.5	48		
17	0839	24	0700	9	Y		0.905	27	7.3	6.1	< 0.5	< 2.5	77		
18			0700	9	Y		0.784	27							
19			1130	1	B		0.826								
20			1000	1	B		0.802								
21			0700	9	Y		0.937	26							
22	0815	24	0700	9	B		0.942	27	7.3	13.2	< 0.5	2.5	97		
23	0816	24	0700	9	Y		0.919	26	7.3	6.4	< 0.5	< 2.5	84		
24	0825	24	0700	9	Y		0.897	27	7.3	5.6	< 0.5	< 2.5	40		
25			0700	9	Y		0.944	26							
26			0800	3	B		0.92								
27			0000	2.5	B		0.943								
28			0700	9	Y		0.889	26							
29	0820	24	0700	9	Y		0.949	25	7.4	11.7	< 0.5	2.8	23		
30	0825	24	0700	9	Y		1.014	25	7.4	4.9	< 0.5	< 2.5	27		
31	0826	24	0700	12	Y		0.944	26	7.3	3.5	< 0.5	< 2.5	18		
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.922226	26.086957		8.693333	0.08	0.926667	79.007564	2.8	3.9
						Daily Maximum:	1.159	27	7.4	17.6	1.2	3.1	600	2.8	3.9
						Daily Minimum:	0.784	25	7.2	3.5	0	0	18	2.8	3.9

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 08-2017 (August 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Grab	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1	0826	24	0700	9	Y			7.6		
2	0831	24	0630	10	Y			7.6		
3	0844	24	0700	9	B			7.5		
4			0700	9	Y					
5			0715	1	N					
6			0800	1	N					
7			0700	9	B					
8	0820	24	0700	9	Y			7.8		
9	0833	24	0030	9.5	Y			8		
10	0913	24	0700	9	Y			7.9		
11			0700	9	Y					
12			0730	1	N					
13			0730	1	N					
14			0700	10	Y					
15	0824	24	0700	9	Y			7.3		
16	0836	24	0700	9	Y			7.6		
17	0839	24	0700	9	Y			7.3		
18			0700	9	Y					
19			1130	1	B					
20			1000	1	B					
21			0700	9	Y					
22	0815	24	0700	9	B			8		
23	0816	24	0700	9	Y			7.4		
24	0825	24	0700	9	Y			7.5		
25			0700	9	Y					
26			0800	3	B					
27			0000	2.5	B					
28			0700	9	Y					
29	0820	24	0700	9	Y			7.8		
30	0825	24	0700	9	Y			7.6		
31	0826	24	0700	12	Y			7.6	97	100
						Monthly Average Limit:				
						Monthly Average:		7.633333	97	100
						Daily Maximum:		8	97	100
						Daily Minimum:		7.3	97	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 08-2017 (August 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 704-748-23 **SUBMISSION DATE:** 09/26/2017

09/25/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

09/26/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: NO. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Rusty, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 09-2017 (September 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0700	9	Y		1.207	26							
2			1100	1	B		0.93								
3			0830	1	B		0.895								
4			0730	2	B		0.927	25							
5	0823	24	0700	9	B		0.902	25	7.3	5.1	< 0.5	< 2.5	3		
6	0831	24	0700	11	Y		1.053	25	7.3	5.2	< 0.5	< 2.5	4		
7	0840	24	0700	9	Y		1.008	25	7.3	4.3	< 0.5	< 2.5	15	2.7	2.7
8			0730	8.5	Y		0.877	25							
9			0730	1	N		0.901								
10			0730	1	N		0.892								
11			0700	9	Y		1.115	23							
12	0818	24	0700	9	Y		1.255	23	7.2	5.9	< 0.5	< 2.5	186		
13	0830	24	0700	9	Y		0.934	23	7.3	4.2	< 0.5	< 2.5	48		
14	0841	24	0700	9	Y		1.036	24	7.2	4.3	< 0.5	< 2.5	49		
15			0700	9	Y		0.959	24							
16			0830	1	N		0.895								
17			0830	1	N		0.935								
18			0700	12.5	Y		0.9	24							
19	0827	24	0700	12.5	Y		0.905	25	7.2	7.6	< 0.5	3.2	63		
20	0830	24	0700	12	Y		0.991	25	7.2	5	< 0.5	< 2.5	52		
21	0850	24	0700	9	Y		0.882	25	7.2	4.8	< 0.5	< 2.5	73		
22			0700	9	Y		0.949	25							
23			0700	1	N		0.895								
24			0000	3	N		0.904								
25			0700	9	Y		0.915	25							
26	0823	24	0700	9	Y		0.835	25	7.2	9	< 0.5	2.7	90		
27	0830	24	0700	9	Y		1.086	25	7.2	7.3	< 0.5	2.6	223		
28	0838	24	0700	9	Y		0.854	25	7.1	7.8	0.8	2.9	200		
29			0800	10	Y		0.868	25							
30			0800	1	B		0.814	25							
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.950633	24.636364		5.875	0.066667	0.95	45.345992	2.7	2.7
						Daily Maximum:	1.255	26	7.3	9	0.8	3.2	223	2.7	2.7
						Daily Minimum:	0.814	23	7.1	4.2	0	0	3	2.7	2.7

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 09-2017 (September 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Grab	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1			0700	9	Y					
2			1100	1	B					
3			0830	1	B					
4			0730	2	B					
5	0823	24	0700	9	B			7.8		
6	0831	24	0700	11	Y			7.9		
7	0840	24	0700	9	Y			7.9		
8			0730	8.5	Y					
9			0730	1	N					
10			0730	1	N					
11			0700	9	Y					
12	0818	24	0700	9	Y			8		
13	0830	24	0700	9	Y			7.9		
14	0841	24	0700	9	Y			7.8		
15			0700	9	Y					
16			0830	1	N					
17			0830	1	N					
18			0700	12.5	Y					
19	0827	24	0700	12.5	Y			7.7		
20	0830	24	0700	12	Y			7.8		
21	0850	24	0700	9	Y			7.8		
22			0700	9	Y					
23			0700	1	N					
24			0000	3	N					
25			0700	9	Y					
26	0823	24	0700	9	Y			7.5		
27	0830	24	0700	9	Y			7.4		
28	0838	24	0700	9	Y			7.2		
29			0800	10	Y					
30			0800	1	B				98	100
						Monthly Average Limit:				
						Monthly Average:		7.725	98	100
						Daily Maximum:		8	98	100
						Daily Minimum:		7.2	98	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 09-2017 (September 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 10/26/2017

10/25/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

10/26/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: NO. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Rusty, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 09-2017 (September 2017) **VERSION:** 1.0 **STATUS:** Processed

Outfall 001 - Effluent Comments:

9/7/2017 GGA Was above allowed limit.

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 10-2017 (October 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0930	1	B		0.894								
2			0700	10	Y		0.928	23							
3	0821	24	0700	9	Y		0.858	23	7.1	10.2	< 0.5	3.3	61	2.3	4.1
4	0831	24	0700	9	Y		0.828	23	7.2	8.3	< 0.5	< 2.5	66		
5	0832	24	0700	9	B		0.899	23	7.2	9.3	< 0.5	< 2.5	52		
6			0700	9	B		1.051	23							
7			1000	1	B		0.879								
8			1000	1	B		0.927								
9			0700	9	Y		0.954	25							
10	0821	24	0700	9	Y		0.873	25	7.1	10.3	< 0.5	2.8	47		
11	0826	24	0700	9	Y		0.83	25	7.1	8.1	< 0.5	< 2.5	52		
12	0845	24	0700	10	Y		0.859	25	7.1	7.1	< 0.5	< 2.5	41		
13			0700	10	Y		1.015	25							
14			0800	1	N		0.88								
15			0800	1	N		0.852								
16			0700	13	Y		0.863	24							
17	0818	24	0700	9	B		0.838	23	7	4.7	< 0.5	< 2.5	68		
18	0831	24	0700	9	B		0.937	22	7.1	4.7	< 0.5	< 2.5	51		
19	0859	24	0700	10	Y		0.995	22	7.1	4.1	< 0.5	< 2.5	64		
20			0700	9	B		0.843	22							
21			0800	2	N		0.855								
22			0800	1	N		0.907								
23			0700	9	B		1.252	23							
24	0833	24	0700	10	B		0.865	22	7.1	4.6	< 0.5	< 2.5	470		
25	0901	24	0700	9	Y		0.898	22	7.1	4.4	< 0.5	< 2.5	320		
26	0914	24	0700	9	Y		0.952	22	7.1	4	< 0.5	< 2.5	71		
27			0700	10	Y		0.907	22							
28			1200	3	B		0.841								
29			0100	4	B		0.876								
30			0730	8.5	Y		0.828	21							
31	0836	24	0700	9	Y		0.926	20	6.9	4.3	< 0.5	< 2.5	9		
						Monthly Average Limit:	1.68			30	1.7	30	200		
						Monthly Average:	0.906774	22.954545		6.469231	0	0.469231	65.96142	2.3	4.1
						Daily Maximum:	1.252	25	7.2	10.3	0	3.3	470	2.3	4.1
						Daily Minimum:	0.828	20	6.9	4	0	0	9	2.3	4.1

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 10-2017 (October 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	TGP3B	01092	00300	81010	81011
							Quarterly	Quarterly			
							Composite	Composite	Grab	Calculated	Calculated
							CERI7DPF	ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		pass/fail	ug/l	mg/l	percent	percent
1			0930	1	B						
2			0700	10	Y						
3	0821	24	0700	9	Y		PASS	109	7.7		
4	0831	24	0700	9	Y				8.1		
5	0832	24	0700	9	B				7.9		
6			0700	9	B						
7			1000	1	B						
8			1000	1	B						
9			0700	9	Y						
10	0821	24	0700	9	Y				7.5		
11	0826	24	0700	9	Y				7.5		
12	0845	24	0700	10	Y				7.3		
13			0700	10	Y						
14			0800	1	N						
15			0800	1	N						
16			0700	13	Y						
17	0818	24	0700	9	B				8.2		
18	0831	24	0700	9	B				8.2		
19	0859	24	0700	10	Y				8.1		
20			0700	9	B						
21			0800	2	N						
22			0800	1	N						
23			0700	9	B						
24	0833	24	0700	10	B				8.3		
25	0901	24	0700	9	Y				8.2		
26	0914	24	0700	9	Y				8.2		
27			0700	10	Y						
28			1200	3	B						
29			0100	4	B						
30			0730	8.5	Y						
31	0836	24	0700	9	Y				8.9	97	100
						Monthly Average Limit:					
						Monthly Average:		109	8.007692	97	100
						Daily Maximum:		109	8.9	97	100
						Daily Minimum:		109	7.3	97	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 10-2017 (October 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 11/09/2017

11/08/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

11/09/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: NO. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Rusty, Robert, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 11-2017 (November 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1	0840	24	0700	9	Y		1.062	21	7.2	2.8	< 0.5	< 2.5	10		
2	0842	24	0700	9	Y		0.992	21	7.1	5.4	0.5	3.3	212		
3			0700	9	Y		0.845	21							
4			0800	1	N		0.883	21							
5			0800	1	N		0.853	21							
6			0700	9	Y		0.98	22							
7	0813	24	0700	9	Y		0.976	22	7.2	5.5	< 0.5	< 2.5	5		
8	0818	24	0700	9	Y		0.926	21	7.2	5.1	< 0.5	< 2.5	4	2	4.4
9	0830	24	0700	9	Y		0.959	21	7.2	5.7	< 0.5	< 2.5	21		
10			0700	1.5	N		0.823	20							
11			0730	1	N		0.822								
12			0400	9	N		1.002								
13			0700	9	Y		0.933	20							
14	0813	24	0700	9	Y		0.855	19	7	10	< 0.5	< 2.5	12		
15	0820	24	0700	9	Y		0.869	19	7.1	5.7	< 0.5	< 2.5	4		
16	0825	24	0700	9	Y		0.923	19	7.1	7.3	< 0.5	< 2.5	10		
17			0700	9	Y		0.942	19							
18			2100	1	N		0.91								
19			1100	1	N		0.851								
20			0700	9	B		0.978	18							
21	0811	24	0700	9	Y		0.924	18	7.2	2.8	< 0.5	< 2.5	92		
22	0816	24	0700	9	B		0.981	19	7.2	3.4	< 0.5	< 2.5	42		
23	0818	24	0700	5	B		0.814	18	7.2	3	< 0.5	< 2.5	72		
24			0700	2	N		0.828	18							
25			0800	1	N		0.825								
26			0600	5	N		0.968								
27			0700	9	Y		0.909	17							
28	0810	24	0700	9	Y		0.95	17	7.1	4.3	< 0.5	< 2.5	67		
29	0830	24	0700	9	Y		0.969	18	7.1	3.2	< 0.5	< 2.5	48		
30	0833	24	0700	9	Y		1.003	18	7.1	2.7	< 0.5	< 2.5	22		
						Monthly Average Limit:	1.68			30	5.5	30	200		
						Monthly Average:	0.9185	19.5		4.778571	0.035714	0.235714	22.47921	2	4.4
						Daily Maximum:	1.062	22	7.2	10	0.5	3.3	212	2	4.4
						Daily Minimum:	0.814	17	7	2.7	0	0	4	2	4.4

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 11-2017 (November 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	00300	81010	81011
							Quarterly			
							Composite	Calculated	Calculated	Calculated
							ZINC	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	mg/l	percent	percent
1	0840	24	0700	9	Y			8.8		
2	0842	24	0700	9	Y			8.2		
3			0700	9	Y					
4			0800	1	N					
5			0800	1	N					
6			0700	9	Y					
7	0813	24	0700	9	Y			8.2		
8	0818	24	0700	9	Y			8.7		
9	0830	24	0700	9	Y			8.9		
10			0700	1.5	N					
11			0730	1	N					
12			0400	9	N					
13			0700	9	Y					
14	0813	24	0700	9	Y			8.9		
15	0820	24	0700	9	Y			9		
16	0825	24	0700	9	Y			9.2		
17			0700	9	Y					
18			2100	1	N					
19			1100	1	N					
20			0700	9	B					
21	0811	24	0700	9	Y			9.1		
22	0816	24	0700	9	B			8.8		
23	0818	24	0700	5	B			8.9		
24			0700	2	N					
25			0800	1	N					
26			0600	5	N					
27			0700	9	Y					
28	0810	24	0700	9	Y			9.6		
29	0830	24	0700	9	Y			9		
30	0833	24	0700	9	Y			9.2	98	100
						Monthly Average Limit:				
						Monthly Average:		8.892857	98	100
						Daily Maximum:		9.6	98	100
						Daily Minimum:		8.2	98	100

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 11-2017 (November 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 12/21/2017

12/21/2017

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

The permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.
If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

12/21/2017

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Pace Analytical

CERTIFIED LAB #: NO. 558, Pace 12

PERSON(s) COLLECTING SAMPLES: Rusty, Robert

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

FOOTNOTES

Use only units of measurement designated in the reporting facility's NPDES permit for reporting data.

* No Flow/Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data to be entered for all of the parameters on the DMR for entire monitoring period.

** ORC on Site?: ORC must visit facility and document visitation of facility as required per 15A NCAC 8G .0204.

*** Signature of Permittee: If signed by other than the permittee, then delegation of the signatory authority must be on file with the state per 15A NCAC 2B .0506(b)(2)(D).

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 11-2017 (November 2017) **VERSION:** 1.0 **STATUS:** Processed

Outfall 001 - Effluent Comments:

11/30/17 fecal coliform dulp. has a difference of 6, not allowed to have a difference >5

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 12-2017 (December 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	50050	00010	00400	CO310	CO610	CO530	31616	CO600	CO665
							Continuous	Daily --	3 X week	3 X week	3 X week	3 X week	3 X week	Monthly	Monthly
							Recorder	Grab	Grab	Composite	Composite	Composite	Grab	Composite	Composite
							FLOW	TEMP-C	pH	BOD - Conc	NH3-N - Conc	TSS - Conc	FCOLI BR	TOTAL N -	TOTAL P - Conc
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		mgd	deg c	su	mg/l	mg/l	mg/l	#/100ml	mg/l	mg/l
1			0700	9	Y		0.865	18							
2			0800	1	N		0.841								
3			0830	1	N		0.918								
4			0700	9	Y		1.113	18							
5	0816	24	0700	10	Y		0.877	18	7.2	< 2	< 0.5	< 2.5	22		
6	0820	24	0700	9.5	Y		0.917	18	7.2	4	< 0.5	< 2.5	31		
7	0847	24	0730	8.5	Y		0.905	18	7	3.2	< 0.5	< 2.5	2		
8			0730	8.5	Y		0.963	18							
9			1000	1	B		0.923								
10			1400	1	B		0.924								
11			0700	9	Y		0.966	16							
12	0822	24	0700	9	Y		0.977	16	7.1	3.5	< 0.5	< 2.5	7		
13	0828	24	0700	9	Y		0.95	16	7.2	2.8	< 0.5	< 2.5	51		
14	0848	24	0700	9	Y		0.968	15	7	2.2	< 0.5	< 2.5	33		
15			0700	9	Y		0.995	16							
16			1230	1	N		0.869								
17			0800	3	N		0.882								
18			0700	9	Y		0.948	16							
19	0824	24	0700	9	Y		1.009	16	7	3.9	< 0.5	< 2.5	6		
20	0841	24	0700	9	Y		1.036	16	7	2.7	< 0.5	< 2.5	3		
21	0847	24	0700	11	Y		0.893	17	7	3	< 0.5	< 2.5	8		
22			0700	9	Y		0.972	17							
23			0800	1	N		0.913								
24			0700	9.5	N		0.992								
25			0700	2	N		0.795	16							
26	0816	24	0700	9	N		1.006	16	7.1	5.1	< 0.5	< 2.5	< 2		
27	0821	24	0700	4	N		0.878	16	7.1	< 2	< 0.5	< 2.5	< 2		
28	0831	24	0700	9	Y		0.948	15	7.1	3.1	< 0.5	< 2.5	< 2	3	4.9
29			0700	9	Y		0.92	15							
30			0800	1	N		0.848								
31			0800	1	N		0.835								
						Monthly Average Limit:	1.68			30	5.5	30	200		
						Monthly Average:	0.930516	16.52381		2.791667	0	0	6.030638	3	4.9
						Daily Maximum:	1.113	18	7.2	5.1	0	0	51	3	4.9
						Daily Minimum:	0.795	15	7	0	0	0	0	3	4.9

**** No Reporting Reason: ENFRUSE = No Flow-Reuse/Recycle; ENVWTHR = No Visitation – Adverse Weather; NOFLOW = No Flow; HOLIDAY = No Visitation – Holiday

NPDES PERMIT NO.: NC0088722 **PERMIT VERSION:** 3.0 **PERMIT STATUS:** Active

FACILITY NAME: Killian Creek WWTP **CLASS:** WW-3 **COUNTY:** Lincoln

OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 12-2017 (December 2017) **VERSION:** 1.0 **STATUS:** Processed

SAMPLING LOCATION: EFFLUENT DISCHARGE NO.: 001 NO DISCHARGE*: NO (Continue)

Date	Composite Sample Time	Total Composite Time	Operator Arrival Time	Operator Time On Site	ORC On Site?**	No Reporting Reason****	01092	NC01	00300	81010	81011
							Quarterly	Annually			
							Composite	Grab	Calculated	Calculated	Calculated
							ZINC	ANN POL SCAN	DO	BOD5-%R	TSS-%R
	2400 clock	Hrs	2400 clock	Hrs	Y/B/N		ug/l	yes=1 no=0	mg/l	percent	percent
1			0700	9	Y						
2			0800	1	N						
3			0830	1	N						
4			0700	9	Y						
5	0816	24	0700	10	Y				8.8		
6	0820	24	0700	9.5	Y				8.8		
7	0847	24	0730	8.5	Y				8.7		
8			0730	8.5	Y						
9			1000	1	B						
10			1400	1	B						
11			0700	9	Y						
12	0822	24	0700	9	Y				9.6		
13	0828	24	0700	9	Y				8.8		
14	0848	24	0700	9	Y				9.7		
15			0700	9	Y						
16			1230	1	N						
17			0800	3	N						
18			0700	9	Y						
19	0824	24	0700	9	Y				9		
20	0841	24	0700	9	Y				8.7		
21	0847	24	0700	11	Y				9.1		
22			0700	9	Y						
23			0800	1	N						
24			0700	9.5	N						
25			0700	2	N						
26	0816	24	0700	9	N				8.7		
27	0821	24	0700	4	N				9.1		
28	0831	24	0700	9	Y				10.3	99	100
29			0700	9	Y						
30			0800	1	N						
31			0800	1	N						
						Monthly Average Limit:					
						Monthly Average:			9.108333	99	100
						Daily Maximum:			10.3	99	100
						Daily Minimum:			8.7	99	100

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OWNER NAME: Lincoln County **ORC:** James Timothy Simmons **ORC CERT NUMBER:** 1001451

GRADE: WW-4 **ORC HAS CHANGED:** No

eDMR PERIOD: 12-2017 (December 2017) **VERSION:** 1.0 **STATUS:** Processed

COMPLIANCE STATUS: Compliant **CONTACT PHONE #:** 7047482314 **SUBMISSION DATE:** 01/24/2018

01/22/2018

ORC/Certifier Signature: James Timothy Simmons E-Mail:tsimmons@lincolncounty.org Phone #:7047482314 Date

By this signature, I certify that this report is accurate and complete to the best of my knowledge.

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If the facility is noncompliant, please attach a list of corrective actions being taken and a time-table for improvements to be made as required by part II.E.6 of the NPDES permit.

01/24/2018

Permittee/Submitter Signature:*** Donald Chamblee E-Mail:dchamblee@lincolncounty.org Phone #:704-736-8497 Date

Permittee Address: 7085 Old Plank Rd Stanley NC 28164 Permit Expiration Date: 02/29/2020

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

CERTIFIED LABORATORIES

LAB NAME: Killian Creek, Meritech INC

CERTIFIED LAB #: No.558, Meritech 165

PERSON(s) COLLECTING SAMPLES: Rusty, Brian

PARAMETER CODES

Parameter Code assistance may be obtained by calling the NPDES Unit (919) 807-6300 or by visiting http://portal.ncdenr.org/web/wq/swp/ps/npdes/forms.

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NPDES PERMIT NO.: NC0088722

PERMIT VERSION: 3.0

PERMIT STATUS: Active

FACILITY NAME: Killian Creek WWTP

CLASS: WW-3

COUNTY: Lincoln

OWNER NAME: Lincoln County

ORC: James Timothy Simmons

ORC CERT NUMBER: 1001451

GRADE: WW-4

ORC HAS CHANGED: No

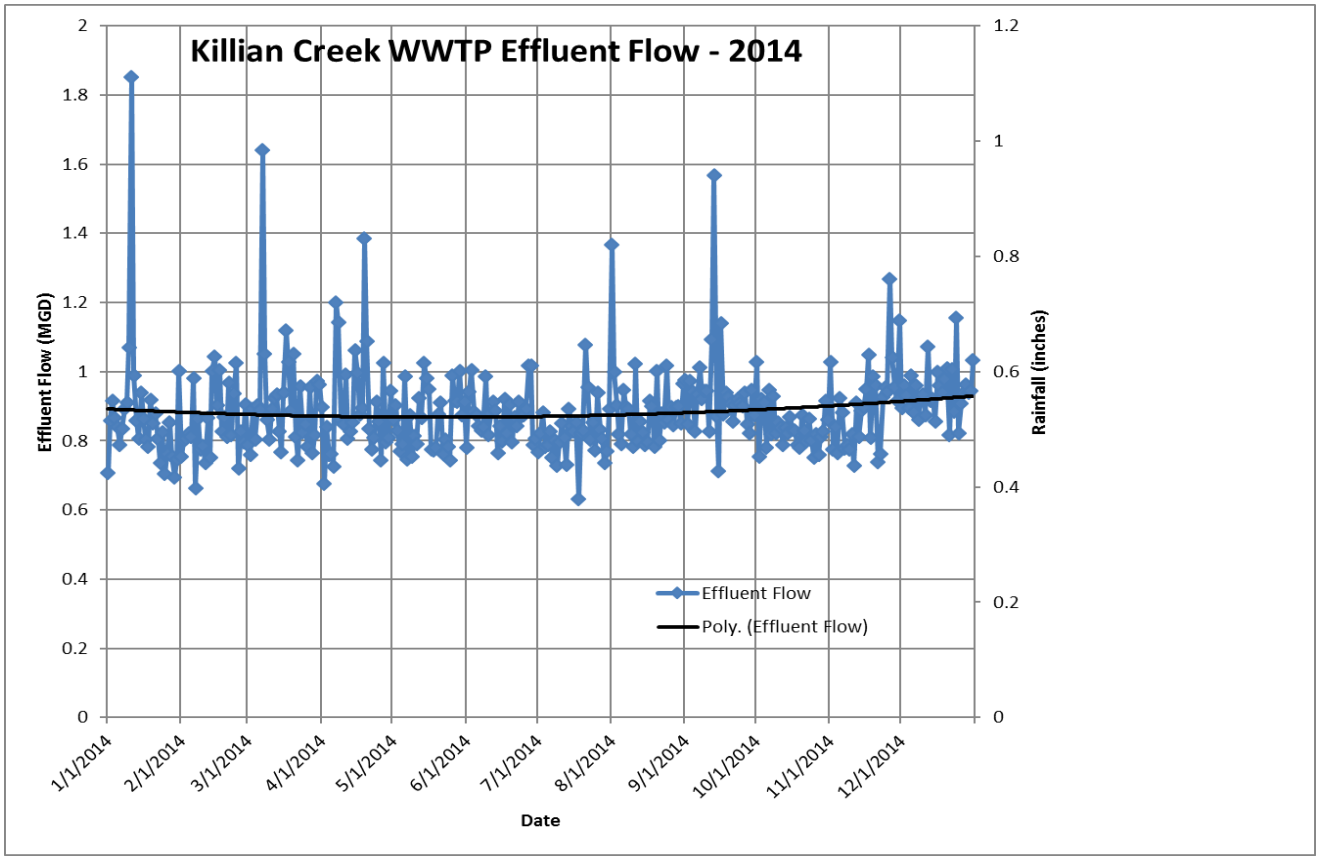
eDMR PERIOD: 12-2017 (December 2017)

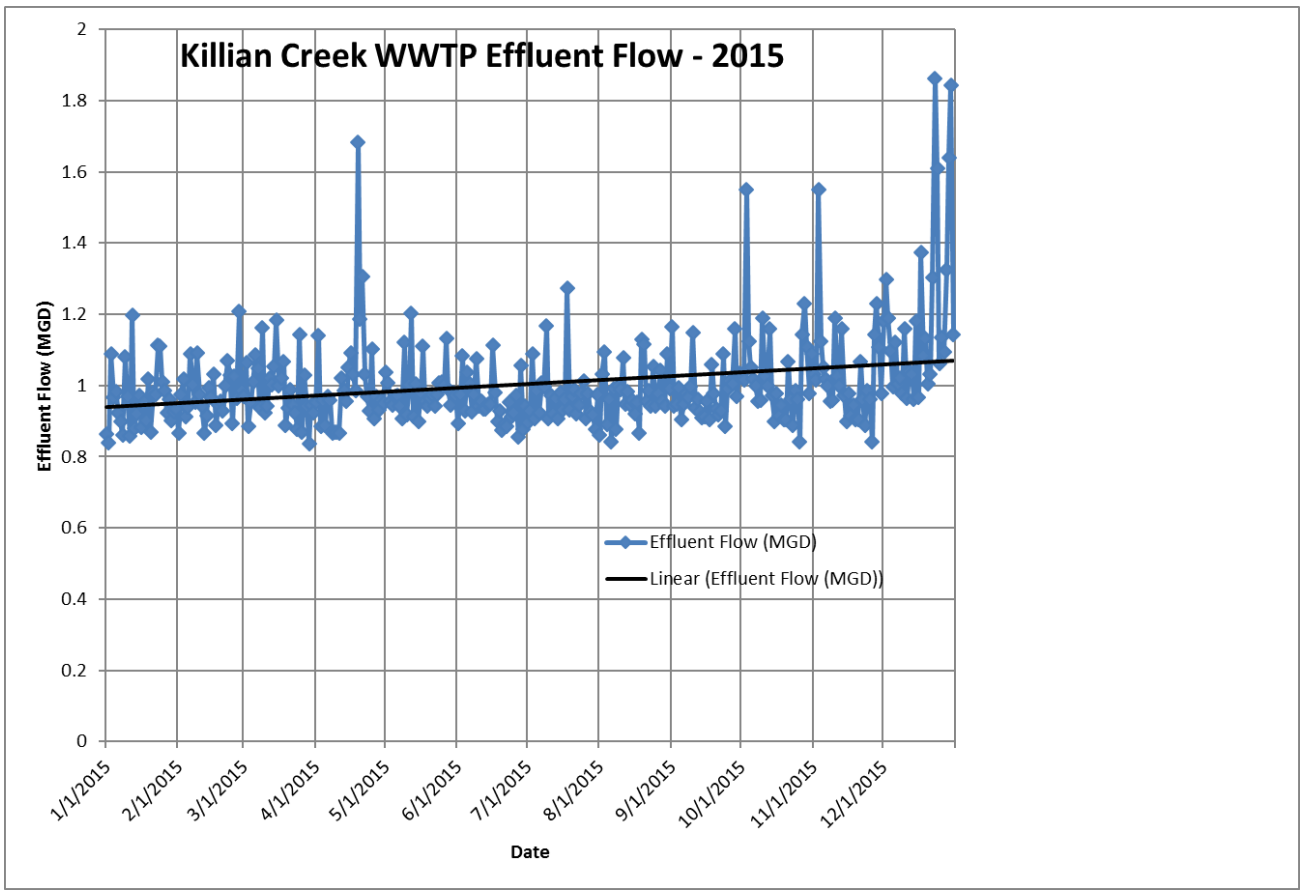
VERSION: 1.0

STATUS: Processed

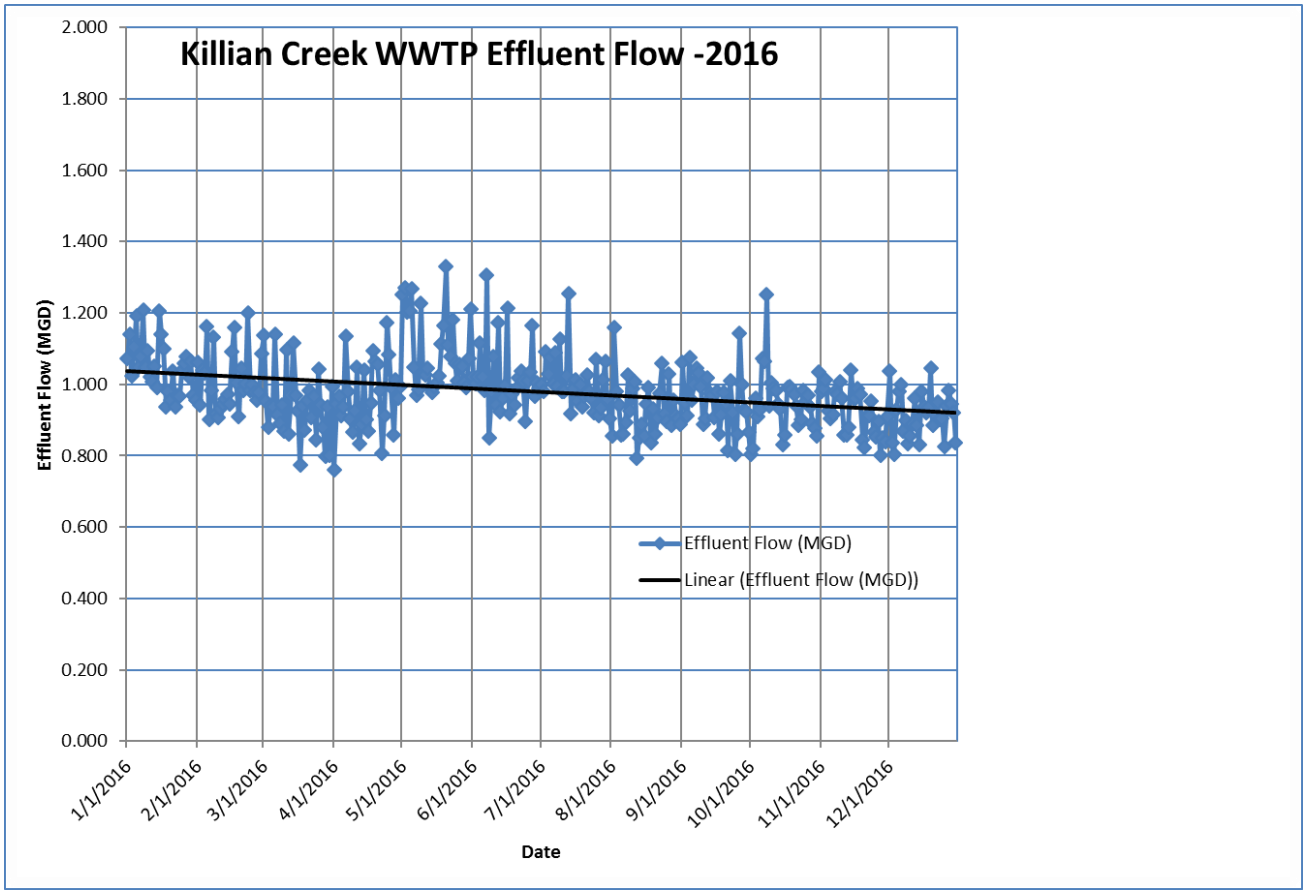
Outfall 001 - Effluent Comments:

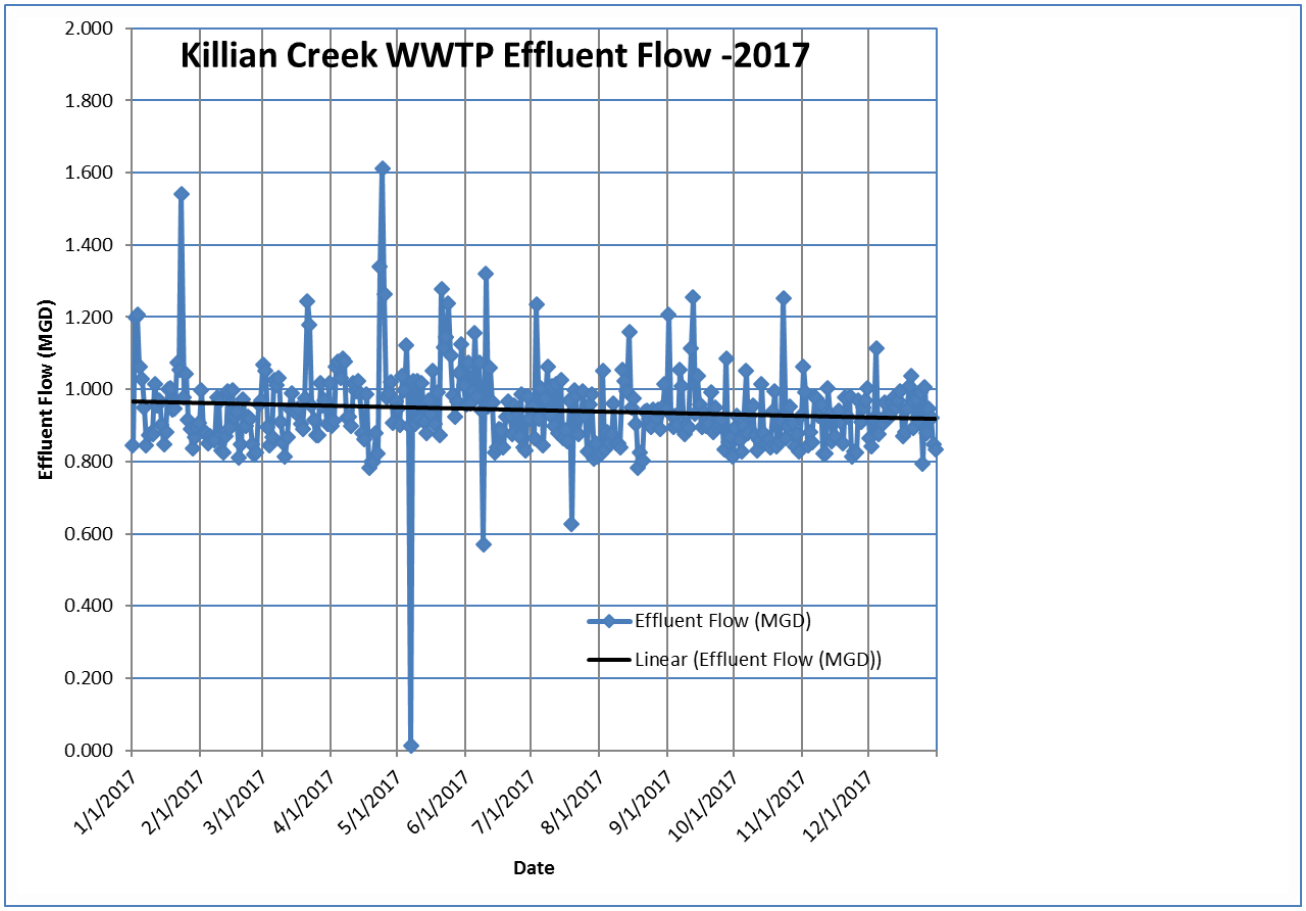
12/5/2017 BOD had a RPD greater than 30%





APPENDIX F.2
DMR FLOW GRAPHS - 2014 - 2017


Killian Creek WWTP Effluent Flow -2016
Effluent Flow (MGD)
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
1/1/2016
2/1/2016
3/1/2016
4/1/2016
5/1/2016
6/1/2016
7/1/2016
8/1/2016
9/1/2016
10/1/2016
11/1/2016
12/1/2016
Date
Effluent Flow (MGD)
Linear (Effluent Flow (MGD))


Killian Creek WWTP Effluent Flow -2017
Effluent Flow (MGD)
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
1/1/2017
2/1/2017
3/1/2017
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
Date
Effluent Flow (MGD)
Linear (Effluent Flow (MGD))

Appendix G – Land Application Calculations

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Land Application Evaluation Calculations
Killian Creek WWTP
Lincoln County
WKD Project No. 20170294.00.CL

WATER BALANCE:

Lw(p) = ET - Pr + Pw

Where:

Lw(p)	Wastewater hydraulic loading based upon percolation rate
ET	Evaportranspiration (Average for Charlotte, NC - Average for 2000 to 2004 NOAA National Data Center, Ashville, NC
Pr	Precipitation (30 yr average - per State Climate Office of North Carolina, 6/1/05)
Net ET	ET - Pr
Pw	Percolation (based upon soil profile with moderate permeability @ 1.75 inch/wk)

Month	ET inches	Pr inches	Net ET inches	Pw inches	Lw(p) inches	
Jan	0.22	3.71	-3.49	7.58	4.09	
Feb	0.46	3.84	-3.38	7.58	4.20	
Mar	1.28	4.43	-3.15	7.58	4.43	
Apr	2.30	2.68	-0.38	7.58	7.20	
May	3.77	3.82	-0.05	7.58	7.53	
Jun	4.83	3.39	1.44	7.58	9.02	
Jul	5.70	3.92	1.78	7.58	9.36	
Aug	4.62	3.73	0.89	7.58	8.47	
Sep	3.74	3.50	0.24	7.58	7.82	
Oct	2.02	3.36	-1.34	7.58	6.24	
Nov	1.05	3.23	-2.18	7.58	5.40	
Dec	0.30	3.48	-3.18	7.58	4.40	
Total Annual:	30.29	43.09	-12.80	91.00	78.20	inches/yr

NITROGEN LOADING:

$$Lw(n) = \frac{Cp\,(Pr-ET) + U\,(10)}{(1-f)(Cn) - (Cp)}$$

Where:

Lw(n) =	Allowable annual hyraulic loading rate based upon nitrogen limits, cm/yr			
Cp =	Nitrogen concentration in percolating water, mg/l (assumed) =		1	mg/l
Cn =	Nitrogen in applied wastewater per 2016 monitoring data, mg/l =		6.2	mg/l
Pr =	Precipitation rate, cm/yr =	109.45 cm/yr	43.09	in/yr
ET =	Evaprotranspiration Rate, cm/yr =	76.94	30.29	in/yr
U =	Nitrogen uptake by crop =	220 Kg/ha-yr	(Southern Pine)	
f =	fraction of applied nitrogen removed by denit./volatilization =		20%	

$$Lw(n) = \frac{2212.80}{3.96} = 558.7878788 \text{ cm/yr} = 219.99 \text{ inches/yr}$$

4.2 inches/wk

Conclusion: Hydraulic loading based upon percolation rate controls @ 78.20 inches/yr
1.50 inches/wk

Land Application Evaluation Calculations
Killian Creek WWTP
Lincoln County
WKD Project No. 20170294.00.CL

Minimum Design Standards Required by North Carolina DENR:

Maximum Hydraulic Application Rate:	78.20	inches/year
	1.50	inches/week
Maximum Nitrogen Application Rate:	219.99	inches/year
	4.23	inches/week
Minimum Storage:	30	days residual holding
(Reference: Administrative Code T15A:02H.0219(j)(9))		
Pond Depth	15	ft
Side Slope - Horizontal : Vertical	3	:1
Pond Freeboard	3	ft
Design Flow:	6.6	mgd
	6,600,000	gpd

Minimum Required Application Site:

Nitrogen Application Area = Weekly Flow / Max. Application Rate = 17,519,132 sf = 402.2 acres
[gpd x 7 days/wk x 1 cf/7.48 gal. x wk/Application rate inches x 12 inches/ft]

Hydraulic Application Area = Weekly Flow / Max. Application Rate = 49,285,392 sf = 1131.4 acres
[gpd x 7 days/wk x 1 cf/7.48 gal. x wk/Application rate inches x 12 inches/ft]

Application Area if square =	7,020	ft square	
Total Site with minimum 400 ft buffer zone =	7,820	ft square	
Total Min. Site Area (Assuming all available for irrigation)	61,157,961	sf =	1404.0 acres

Minimum Required Storage Volume:

Storage = 30 days x ADF =	198,000,000	gallons	
	26,470,588	cf	
Mid-Depth Pond Area Required @ Design Deep =	1,764,706	sf	
Mid-Depth Dimensions Assuming Square Pond Design =	1,328	ft square	
Top Dim. w/ Side Slope plus Freeboard, Surface Area=	1391	ft square =	44.4 acres
Buffer zone around storage pond- each side=	40	ft min	
Pond Area required with buffer zone =	1431	ft square =	47.0 acres

Effluent Pump Station to Spray Irrigation Storage Pond

Design Flow:	6.6	mgd =	4,583	gpm
Peak Flow @ 2.5 PF	16.5	mgd =	11,458	gpm
Assume 6 pumps w/ 5 on-line and 1 Standby @			2,292	gpm/ea
Wet Well @ 16' L x 12' W x 12' D :				
Conc Base @ 20' x 16' x 2' =			23.7	cy
Walls =			24.9	cy
Cover = 16' x 12' x 1' =			7.1	cy
			55.7	cy
Sprinkler Heads w/ 112' dia. throw =			9847	sf
Srinkler Heads Req'd assuming 25% overlap (i.e Say 7400 sf/ea)			6660	Sprinklers

EVAPORTRANSPIRATION DATA
NOAA National Data Center, Ashville, NC

Year / Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total
2000	0.19	0.57	1.49	1.96	3.96	4.41	4.51	3.58	3.59	1.6	0.72	0.04	26.62
2001	0.22	0.66	0.89	2.42	3.6	5.45	4.84	3.88	3.39	1.8	1.17	0.7	29.02
2002	0.37	0.49	1.22	2.77	3.18	3.72	3.91	4.68	4.18	2.3	0.73	0.24	27.79
2003	0.12	0.33	1.36	2.02	3.64	5	5.97	5.81	3.74	2.04	1.41	0.23	31.67
2004	0.2	0.24	1.43	2.32	4.49	5.56	6.11	5.15	3.79	2.36	1.2	0.3	33.15
Monthly Ave.	0.22	0.458	1.278	2.298	3.774	4.828	5.068	4.62	3.738	2.02	1.046	0.302	29.65

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Appendix H – Expansion of Existing SBR/Aerobic Digester WWTP

H.1 Proposed SBR Expansion Site Plan
H.2 Proposed SBR Expansion Basis of Design
H.3 Summary of existing SBR Process Performance
H.4 Block Flow Diagram – Liquid Handling
H.5 Block Flow Diagram – Solids Handling

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FILE PATH: I:\Projects\WKD_20170089.00_Killian Creek WWTP Phase 3 Upgrades\CAD\Figure 4.1 Orig_ARCBIM_1.1.1\2017-8-30 7:31 AM

GRID NORTH
NCSPCS NAD 83/95 HARN
BASIS OF BEARING:

PLANT NORTH

PLAN
SCALE: 1"=30'
SCALE IN FEET
15 0 15 30 45

TO KILLIAN CREEK

PLANT REAERATION STRUCTURE

NEW SLUDGE DEWATERING BUILDING NO.2

EXISTING SLUDGE DEWATERING BUILDING NO.1

FILTER BUILDING

UV. BUILDING

PLANT PUMP STATION

EAST EMERGENCY GENERATOR

NEW EMERGENCY GENERATOR

SLUDGE PUMP BLDG.

ALUM STORAGE

POST EQUALIZATION BASIN

SLUDGE HOLDING BASIN NO.2

AEROBIC DIGESTER NO.4

SBR NO. 4

SBR NO. 3

AEROBIC DIGESTER NO.3

EQ RETURN PUMPS

BLOWER BUILDING

NEW ROTARY DRUM BUILDING

SLUDGE PUMP BLDG.

SLUDGE HOLDING BASIN

POST EQUALIZATION BASIN

RDT PS

AEROBIC DIGESTER NO.2

AEROBIC DIGESTER NO.1

SBR NO. 2

SBR NO. 1

OFFICE /LAB BUILDING

BLOWER BUILDING

EXISTING ROTARY DRUM THICKENER BUILDING

INFLUENT FLOW SPLITTER

HEADWORKS STRUCTURE

MAINTENANCE BUILDING

APPENDIX H.1
Proposed SBR Expansion Plan

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

WK DICKSON
community infrastructure consultants

616 COLONNADE DRIVE
CHARLOTTE, NC 28205
(t)(704) 334-5348
(f)(704) 334-0078

WWW.WKDICKSON.COM

NC LICENSE NO.F-0374

PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:
PROCESS EXPANSION
FOR THE
KILLIAN CREEK WASTEWATER TREATMENT PLANT

DRAWING TITLE:
FIGURE 4.1
PROPOSED KILLIAN CREEK WWTP SBR PROCESS EXPANSION

PROJ. MGR.:	CRF
DESIGN BY:	CRF
DRAWN BY:	CH/AR
PROJ. DATE:	AUG. 2017
DRAWING NUMBER:	

WKD PROJ. NO.:
20170089.00.CL

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APPENDIX H.2
SUMMARY OF DESIGN PARAMETERS FOR KILLIAN CREEK WWTP EXPANSION TO 6.6 MGD BY EXPANSION OF THE EXISTING SEQUENCING BATCH REACTOR (SBR) SYSTEM

A. Cylindrical Bar Screen

No. of Units	2
Influent Flow Average	4.2 mgd (2917 gpm) – 8.4 mgd Total
Maximum Hydraulic Capacity	8.4 mgd (5833 gpm) – 16.8 mgd Total
Maximum Upstream Liquid Level	29.5 inches
Maximum Clean Screen Headloss	16 inches
Screen Opening	¼ inch
Final Screening	Comply with Paint Filter Test (EPA Publication SW-486 Method 9095)

B. Manually Cleaned Bar Screen

No. of Units	2
Channel Width	3 feet
Screen Openings	1-inch
Velocity @ Design Q (4.2 mgd)	2.5 fps

C. Vortex Grit Removal System

No. of Units	2
Influent Flow	4.2 mgd (2917 gpm) – 8.4 mgd Total
Maximum Hydraulic Capacity	8.4 mgd (5833 gpm) – 16.8 mgd Total
Grit Removal Efficiency	95% of grit > 50 mesh in size w/ Sp. Gravity 2.65 95% of grit > 70 mesh in size w/ Sp. Gravity 2.65 65% of grit > 100 mesh in size w/ Sp. Gravity 2.65
Method of grit removal	Air lift pump w/ pre-fluidization

D. Influent Parshall Flume

No. of Units	2 with flow totalization by SCADA
Size Throat Opening	24 inches Each
Head @ 4.2 mgd Design Q	0.87 feet Per Flume
Head @ 8.4 mgd Max. Q	1.37 feet Per Flume

E. Influent Flow Splitter Basin — Split flow between 4 SBR Basins

F. Sequencing Batch Reactor (SBR)

The SBR basin volumes are designed for a future 6.6 mgd flow. The SBR basin operational levels will be adjusted to accommodate the initial operation at the lower 5.0 mgd design flow. Upgrade of the SBR system for the future 6.6 mgd flow will require only the addition of one new blower and new diffused aeration assemblies in each basin.

Average Daily Flow (ADF)	6.6 mgd (including plant recycle
Maximum Daily Flow (MDF)	15.5 mgd
Influent BOD (5 Day)	282 mg/L (w/ plant recycle)
Influent TSS	272 mg/L (w/ plant recycle)
Influent TKN	52 mg/L (w/ plant recycle)
SBR Basins Dimensions	4 ea @ 105’ x 105’ x 22’ maximum water depth
SBR Basin Volume (per each)	1,814,000 gallons per SBR Basin

APPENDIX h.2
Proposed SBR
Expansion Plan

Waste Activated Sludge	0.84 lbs WAS/lb. BOD5 applied
Waste Activated Sludge Pump(s)	1 per SBR basin w/ one shelf spare 600 gpm @ 1' to 23.2' TDH
Pounds O2/LB BOD5	1.29
Pounds O2/LB TKN	4.6
Denitrification Oxygen Recovered	2.86 lbs/lbs TKN

SBR Process Design Variables:

Number of Cycles Per Day	4 per day/basin
Cycle Duration	6 hours / cycle
Food/Mass (F/M) Ratio	0.7 lbs BOD5/lb. MLSS-day
MLSS Concentration	3500 mg/l @ top water level
Hydraulic Retention Time	1.1 days @ average water depth
Solids Retention Time	16.9 days
Estimated Net Sludge Yield	0.84 lbs WAS/lb BOD5 applied
Decant Flow Rate	7237 gpm average decant flow
Decant Duration	57 minutes (4 Decants per day x 4 SBR basins)
Oxygen Required – BOD5 & TKN	25,911 lbs O2/day including O2 recovery from denitrification
SBR Aeration Time /Day	2.7 hrs/cycle x 4 cycles/day x 4 Basins = 43.2 hrs/day
Total Air Required for BOD5 & TKN	3693 SCFM / Basin
Proposed Blowers	6 each 100 Hp service with 2 each 100 Hp standby.

G. Post Equalization Basin

New Post Equal. Basin Dimensions	To be determined.
Exist Post Equal. Basin Dimensions	25' x 212.5' x 15' (11.5' maximum water depth)
Existing Post Equal Basin Volume	457,000 gallons at maximum water depth
Post Equalization Pumps	10 pumps with variable speed drives 512 gpm to 1450 gpm per pump

H. **Effluent Cloth Media Disk Filters**

The effluent filter system is designed to permit a peak flow of 16.8 mgd to be served with 4 filters on-line and 1 filter in standby.

Number of Disk Filter Units	5 Filters Units with 8 disks per unit with 53.8 sf/disk
Effective Filter Area	470.2 square feet/filter unit (2351 square feet total)
Design Filter Rate @ ADF	$\leq$ 1.73 gpm/sf
Design Filter Rate @ PDF	4.2 mgd/filter

I. Ultraviolet Disinfection System

The ultraviolet disinfection system is designed for 4.2 mgd per channel with one bank of UV lights in service and the second bank in standby.

Influent Suspended Solids to Filter	< 30 mg/l
Particle Size Distribution	< 30 micron
Ultraviolet Transmittance @ 253.7 nm	65%
Water Temperature	56 to 76 degrees F
Effluent Fecal Count	< 200/100 m. (30-day geometric mean)
Lamp Cleaning	Automatic with timer controlled wiping system
Monitoring System	UV intensity sensor

Low Flow	Recirculation pump to provide continuous flow for minimum UV power level.

UV System (4 Channels & 8 Banks)

Number of UV Banks	8 (4 duty and 4 standby)
Number of UV Lamps	240 (total)
UV Modules per Bank	3
UV Lamps per Modules	10
Peak Hourly Flow	16.8 mgd

J. Effluent Weir

Weir Size	90° V notch to Q max = < 8 mgd (H=1.9') 4' Rectangular for Q max = > 8 to 15.5 mgd (H = 1.3)

K. Aerobic Sludge Digesters

The aerobic digester system design concept is for Digester 1 and 2 to serve as a WAS receiving basins/digesters for transfer of the WAS to the rotary drum thickeners and forwarding to Digesters #2 an #4 operating in parallel. Based upon the projected volatile solids reduction as a function of temperature x sludge age published in the *WEF, Wastewater Residuals Stabilization, Manual of Practice, No. FD-9,* Water Environment Federation, 1995, a solids residence time (SRT) of 60 days is necessary to achieve suitable sludge for land application at 15° C or an SRT of 40 days to achieve a 40% reduction of VSS at 20° C. The proposed digester system with a combination of Digesters No. 2 and 4 will provide a volume sufficient to provide an SRT of 60 days to achieve a VSS reduction > 38% required for land application.

Sludge Yield	0.84 lbs WAS/lb. BOD5 applied
VSS/TSS Ratio	73 %
Oxygen Requirement	2.0 lbs O2/lb. VSS destroyed
Solids Concentration after Decant	2.5%

Rotary Drum Sludge Thickener

No. of Units	2 (1 Existing and 1 new)
Design Feed Rate	400 gpm
Design Feed Sludge	0.5 to 1% Solids (by weight)
Final Solids	2 to 5% Solids (by weight)
Solids Capture	98%
Typical Polymer Usage	5-7 lbs (100% Active) per Ton of sludge (dry wt.)

Aerobic Digester #1 & 3 (Proposed as WAS Receiving Basin)

Digester #1 & 3 Dimensions	65' x 45' x 22' deep per each
Digester #1 & 3 Volume	488,700 gallons per each
VSS Reduction Digester #1	12.2%
Average Solids Retention Time Digester #1 & 3	5.4 Days
Sludge Transfer Pump	540 gpm @ 35' TDH
Aeration Required	640 SCFM / digester
Proposed Blowers	1 duty + 1 Standby per digester
Blower Size	~ 50 Hp/ blower

Aerobic Digester #2 & #4

Digester #2 & 4Dimensions	65’ x 58.5’ x 22’ deep / each
Digester #2 Volume	640,800 gallons / each
VSS Reduction Digester #2 and #4	36.3 %
Average Solids Retention Time Digester #2 & #4	22.5 days
Mixer	40 Hp = 62.4 Hp/MG
Sludge Transfer Pump	540 gpm @ 35’ TDH

Aerobic Digester #3 & 4

Digester #2 Dimensions	65’x 65’ x 22’ deep
Digester #2 Volume	698,500 gallons
VSS Reduction Digester #2	> 38%
Average Solids Retention Time Digester #2 & 4	> 60 days
Mixer	40 Hp = 57.3 Hp/MG
Sludge Transfer Pump	540 gpm @ 35’

L. Sludge Holding Tank

Holding Tank Dimensions	25’ x 65’ x 22’ / each x 2
Volume	267,400 gallons/each = 534,800 gallons total
Mixing	2 ea. @ 7.5 Hp (56 Hp/MG) per tank
Sludge Transfer Pump to Sludge Truck	540 gpm @ 35’ TDH per tank
Sludge Transfer Pump to Dewatering	2 ea. Variable Speed Pumps @ 120 gpm & 50 psi with 1 spare
Storage	10.3 days @ 2.5% solids)

M. Sludge Dewatering System

The sludge dewatering system is designed to provide the plant with an alternative to liquid biosolids land application. The proposed rotary filter press will allow land application of dewatered solids or landfill disposal during periods when land application is not feasible or cost effective.

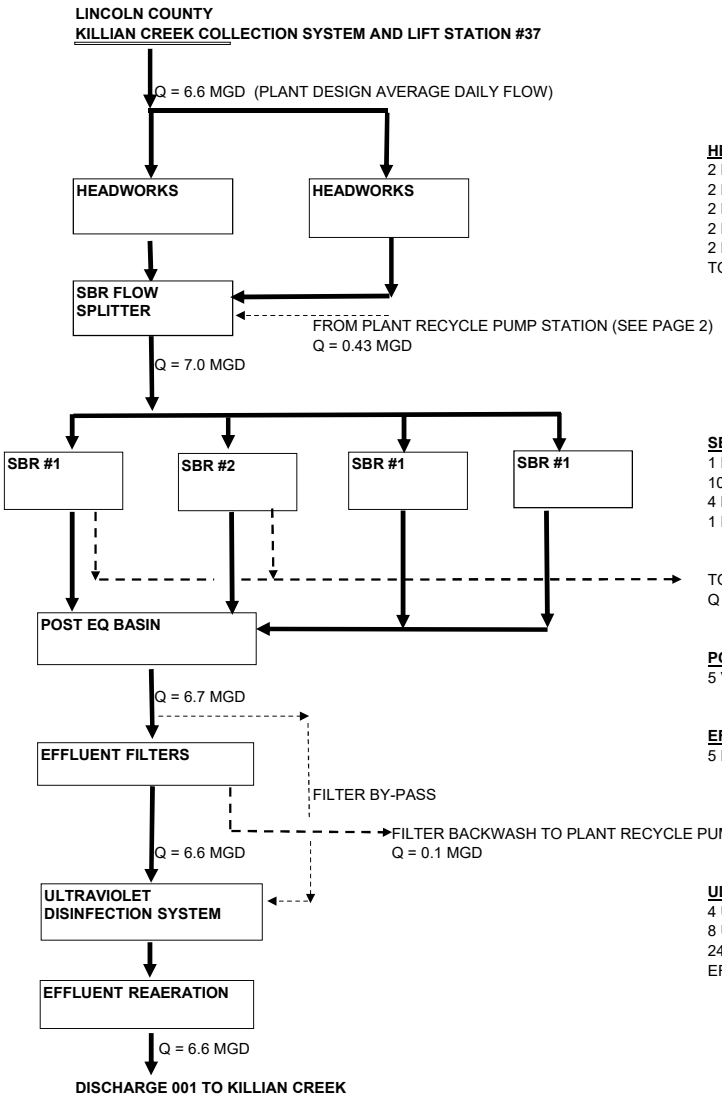
Rotary Press Sludge Feed Pumps	Rotary Lobe Pumps (3 duty & 1 standby) Variable Speed Drives Maximum pump rate 120 gpm Differential pressure = 50 psi
Rotary Filter Press	6 channel per press
Solids Capacity	85 – 100 dry lbs/hr per channel
Sludge Feed Solids Concentration	1.5 to 2.5% solids
Sludge Feed	40 to 80 gpm
Polymer Required	10 – 20 lbs/dry ton solids
Solids Capture	95%
Solids Conveyors	Rotary screw with hollow flight

Table H.1 – Summary of Existing SBR Process Performance 2015 to 2017 *				
Parameter	Units	2015	2016	2017
Average Flow	MGD	1.004	0.979	0.945
Ave. Effluent BOD_5	mg/L	4.9	4.1	5.4
Effluent BOD_5 > 5.0 mg/L	Days	60	39	69
Effluent BOD_5 > 5.0 mg/l	Months	6	3	6
Effluent BOD_5 > 7.5 mg/L	Days	24	12	30
Effluent BOD_5 > 7.5 mg/L	Weeks	8	2	11
Ave Effluent NH_3-N	mg/L	0.6	0.5	0.7
NH_3-N > 1.0 mg/L	Days	14	1	8
NH_3-N > 3.0 mg/L	Days	1	0	6
NH_3-N > 1.0 mg/L	Months	1	0	2
NH_3-N > 3.0 mg/L	Weeks	0	0	2
Ave Effluent TSS	mg/L	3.6	3.3	2.6
TSS > 30 mg/L	Days	0	0	0
TSS > 45 mg/L	Days	0	0	0
Ave Effluent N	mg/L	6	6.2	3.1
Total N > 6.0 mg/L	Months	6	4	1
Ave Effluent P	mg/L	2.8	3.6	3.5
Total P > 1.0 mg/L	Months	12	12	12

*Data obtained from Killian Creek DMR's 2015 to 2017

APPENDIX H.3
Summary of SBR Process Performance - 2015-2017

LIQUID TRAIN PROCESS FLOW DIAGRAM @ Q = 6.6 MGD
KILLIAN CREEK WWTP



HEADWORKS
2 Ea. CYLINDRICAL MECHANICAL BAR SCREEN
2 Ea. MANUALLY CLEANED BAR SCREEN BY-PASS
2 Ea. VORTEX GRIT SEPARATOR
2 Ea. GRIT CLASSIFIER
2 Ea. INFLUENT 24" PARSHALL FLUME W/ ULTRASONIC FLOW METER
TOTAL FLOW IN SCADA

SEQUENCING BATCH REACTORS
1 EA FLOATING MIXER PER SBR
10 DIFFUSED AIR MANIFOLDS PER SBR
4 BLOWERS (W/ 1 STANDBY)
1 EA SUBMERSIBLE SLUDGE PUMP PER SBR (W/ SHELF SPARE)

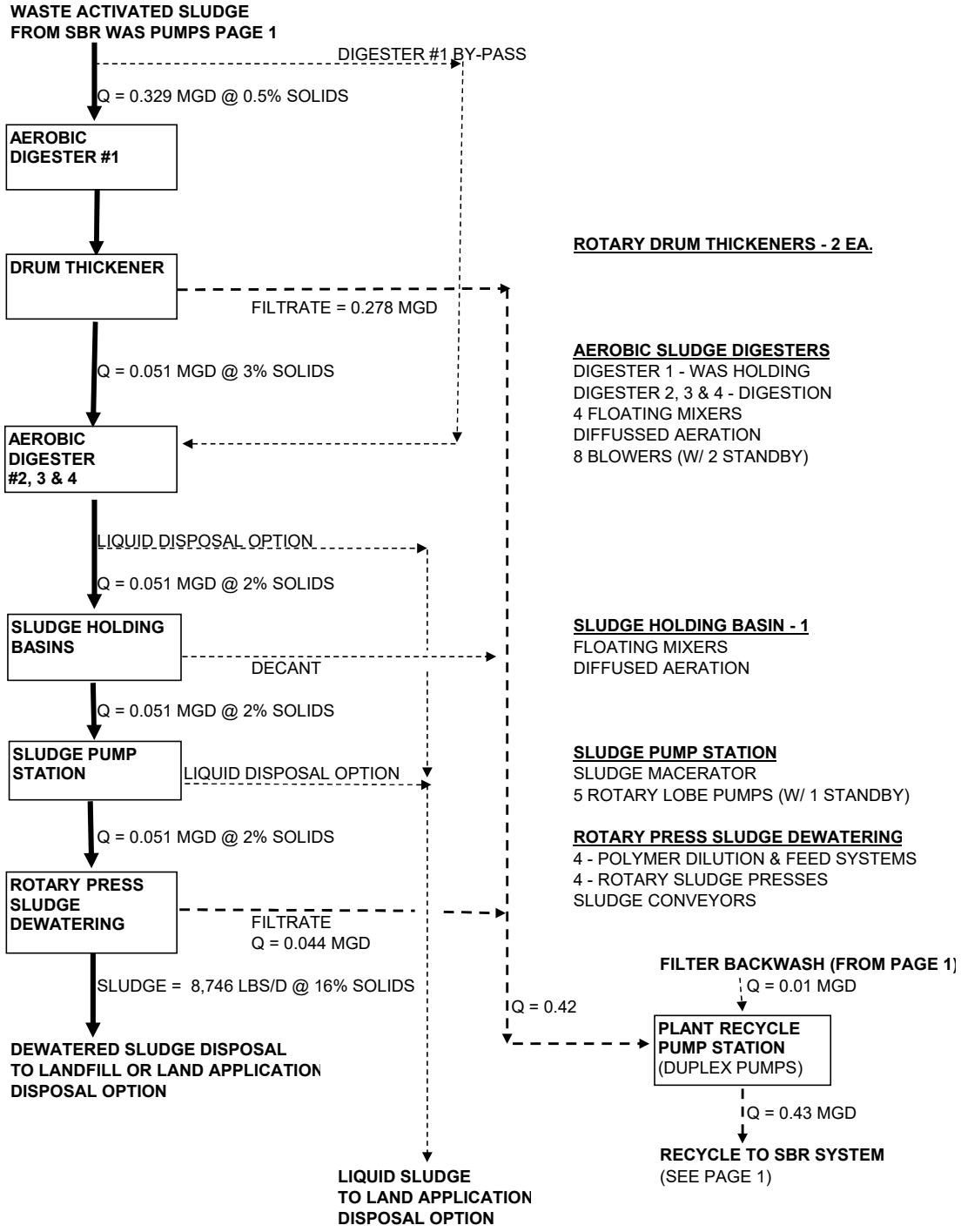
POST EQUALIZATION BASIN
5 VARIABLE SPEED PUMPS

EFFLUENT FILTERS
5 DISK FILTER UNITS W/ 8 DISK/UNIT

ULTRAVIOLET DISINFECTION SYSTEM
4 UV CHANNELS W/ 2 UV BANKS/EA
8 UV BANKS W/ 3 UV MODULES/BANK & 10 LAMPS/MODULES
240 LAMPS TOTAL
EFFLUENT V-NOTCH WEIR W/ ULTRASONIC FLOW METER

APPENDIX H.4
Process Flow Diagram
Liquid Handling System

SOLIDS HANDLING PROCESS FLOW DIAGRAM @ Q = 6.6 MGD
KILLIAN CREEK WWTP



APPENDIX H.5
Block Flow Diagram -
Solids Handling System

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Appendix I - Expansion Using An Independent MBR Process

I.1 Proposed Site Plan
I.2 Summary of MBR Process Proposed Basis of Design

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PLANT NORTH

GRID NORTH
NCSPCS NAD 83/95 HARN
BASIS OF BEARING:

PLAN

SCALE: 1"=30'
SCALE IN FEET
15 0 15 30 45

TO KILLIAN CREEK

PLANT REAERATION STRUCTURE

NEW SLUDGE DEWATERING BUILDING NO.2

EXISTING SLUDGE DEWATERING BUILDING NO.1

UV. BUILDING

MBR PERMEATE & RAS PUMP BUILDING

MBR | MBR | MBR | MBR | RAS

MBR PRE-AERATION

MBR PRE-AERATION

MBR ANOXIC ZONE

MBR ANOXIC ZONE

BLOWER BUILDING

NEW ROTARY DRUM BUILDING

SLUDGE PUMP BLDG.

SLUDGE PUMP BLDG. EXPANSION

SLUDGE HOLDING BASIN

POST EQUALIZATION BASIN

RDT PS

AEROBIC DIGESTER NO.2

AEROBIC DIGESTER NO. 3

INFLUENT PEAK FLOW EQUALIZATION BASIN

AEROBIC DIGESTER NO.1

AEROBIC DIGESTER NO. 4

EQ. RETURN PUMPS

OFFICE /LAB BUILDING

BLOWER BUILDING

EXISTING ROTARY DRUM THICKENER BUILDING

MBR FINE SCREENS

INFLUENT FLOW SPLITTER

HEADWORKS STRUCTURE

MAINTENANCE BUILDING

APPENDIX I.1
Independent MBR Process Site Plan

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

WK DICKSON
community infrastructure consultants

616 COLONNADE DRIVE
CHARLOTTE, NC 28205
(t)(704) 334-5348
(f)(704) 334-0078

WWW.WKDICKSON.COM

NC LICENSE NO.F-0374

PROFESSIONAL SEAL

REVISION RECORD

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:
PROCESS EXPANSION
FOR THE
KILLIAN CREEK WASTEWATER TREATMENT PLANT

DRAWING TITLE:
FIGURE 4.2
PROPOSED KILLIAN CREEK WWTP MBR PROCESS EXPANSION

PROJ. MGR.:	CRF
DESIGN BY:	CRF
DRAWN BY:	CH/AR
PROJ. DATE:	AUG. 2017
DRAWING NUMBER:	

WKD PROJ. NO.:
20170089.00.CL

P:\E PATH\...\Projects\KILLIAN\20170089\00\...Killian Creek WWTP Phase 3.1\Upgrade\CADD\Figure 4.2.dwg, Proposed Killian Creek WWTP Phase 3.1\Upgrade\CADD\Figure 4.2.dwg, ARDIBEE, 8/10/2017 1:39:07 PM

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APPENDIX I.2
SUMMARY OF PRELIMINARY DESIGN PARAMETERS FOR KILLIAN CREEK WWTP
PROPOSED UPGRADE TO 6.6 MGD CAPACITY WITH INDEPENDENT MBR PROCESS

A. Cylindrical Bar Screen

No. of Units	2 (1 Existing and 1 New)
Influent Flow Average	6.6 mgd (4,583 gpm)
Maximum Hydraulic Capacity	8.4 mgd (5833 gpm) Total
Maximum Upstream Liquid Level	29.5 inches
Maximum Clean Screen Headloss	16 inches
Screen Opening	¼ inch
Final Screening	Comply with Paint Filter Test (EPA Publication SW-486 Method 9095)

B. Manually Cleaned Bar Screen

No. of Units	2 (1 Existing and 1 New)
Channel Width	3 foot
Screen Openings	1-inch
Velocity @ Design Q (4.2 mgd)	2.5 fps

C. Vortex Grit Removal System

No. of Units	2 (1 Existing and 1 New)
Max Influent Flow	4.2 mgd (2917 gpm) Per Each
Maximum Hydraulic Capacity	8.4 mgd (5833 gpm) Total
Grit Removal Efficiency	95% of grit > 50 mesh in size w/ Sp. Gravity 2.65 95% of grit > 70 mesh in size w/ Sp. Gravity 2.65 65% of grit > 100 mesh in size w/ Sp. Gravity 2.65
Method of grit removal	Air lift pump w/ pre-fluidization

D. Influent Parshall Flume

No. of Units	2 (1 Existing and 1 New linked by SCADA for Total Flow)
Size Throat Opening	24 inches
Head @ 4.2 mgd Design Q	0.87 feet
Head @ 8.4 mgd Max. Q	1.37 feet

E. MBR Influent Fine Screening System

No. of Units	2 (1 Duty and 1 Standby)
Type	Rotary Drum internally feed
Screen Openings	2 mm
Design Average Daily Flow	8.25 mgd per screen
Peak Daily Flow	12.5 mgd per screen

APPENDIX I.2
Summary of MBR Process
Proposed Basis of Design

Screening Compactor	1 ea. shaftless screw type w/ 2 hopper inlets
Compactor Design Capacity	52.5 cf/hr
Compactor Dry Solids Out	20% solids

F. Membrane Bio-Reactor (MBR) @ 6.6 MGD

Average Daily Flow (ADF)	6.6 mgd
Maximum Daily Flow (MDF)	13.2 mgd
Influent BOD (5 Day)	282 mg/l
Influent TSS	268 mg/l
MBR Anoxic Basin Dimensions	2 ea @ 60'x 31'x 20' SWD (550,000 gal)
Anoxic Mixers	4 ea with 2 mixers per Anoxic Zone
MBR Pre-Aeration Basin Dimensions	2 ea @ 60' x 87' x 20' SWD (1,557,681 gal)
MBR Pre-Aeration Zone Blowers	3 ea (2 Duty & 1 Standby)
Membrane Surface Area (Based on Kubota)	6,458 SF (Subject to change with alternate Mfg)
No. of MBR Tanks	4 Tanks
Number of Submerged Membrane Units	96 Units (24 units per tank based on Kubota)
Design MLSS @ MBR	12,000 mg/L
Pounds O2/LB BOD5	1.25 lbs O2/lbs BOD5 applied
Pounds O2/LB TKN	4.6 lbs O2 / lbs TKN
Calculated AOR	25,358 lbs O_2/day
AOR Supplied in MBR Basins	10,036 lbs O_2/day
AOR Supplied in Pre-Aeration Basins	15,322 lbs O_2/day
Anoxic Zone Mixers	4 ea @ 8.3 Hp
Pre-Aeration Blowers	3 ea @ 1902 scfn & 125 Hp (2 duty & 1 Standby)
MBR Basin Blowers	5 ea @ 1,819 scfm & 125 Hp (4 Duty & 1 Standby)
Permeate Pumps	6 ea @ 2,585 gpm & 50 Hp (4 Duty & 2 Standby)
Feed Forward Pumps	4 ea @ 6,107 gpm & 90 Hp (3 Duty & 1 standby)
RAS Basin	1 ea @ 60' x 20' x 15' SWD
Waste Activated Sludge (WAS) Pumps	2 ea @ 305 gpm @ 5 Hp
Waste Activated Sludge Yield	0.73 lbs WAS/lb. BOD5 applied

G. Ultraviolet Disinfection System

The existing ultraviolet disinfection system has two (2) channels with two ultraviolet banks per each channel. Each bank can provide disinfection of a peak daily flow of 4.2 mgd. The proposed UV system upgrade from 3.35 mgd ADF to 6.6 mgd ADF will add a two (2) new UV channel with two additional ultraviolet banks per channel. The peak flow of 16.8 mgd can be disinfected with 3 channels operating with one bank per channel.

Influent Suspended Solids to Filter	< 30 mg/l
Particle Size Distribution	< 30 micron
Ultraviolet Transmittance @ 253.7 nm	65%
Water Temperature	35 to 85 degrees F

UV Channels	4 (2 existing and 2 new)
Hydraulic Capacity / Channel	4.2 mgd
Effluent Fecal Count	< 200/100 m. (30-day geometric mean)
Lamp Cleaning	Automatic timer based wiping system
Monitoring System	UV intensity sensor
Low Flow	Recirculation pump to provide continuous flow for minimum UV power level.

Design @ 6.6 mgd ADF (4 Channels & 8 Banks)

Number of UV Banks	8 (4 duty and 4 standby)
Number of UV Lamps	240 (total)
UV Modules per Bank	3
UV Lamps per Modules	10
Peak Hourly Flow	16.8 mgd

H. Effluent Weir

Weir Size	90° V notch to Q max = < 8 mgd (H=1.9') 4' Rectangular for Q max = > 8 to 15.5 mgd (H = 1.3)

I. Aerobic Sludge Digesters

Sludge Yield	0.73 lbs WAS/lb. BOD5 applied
VSS/TSS Ratio	73 %
Oxygen Requirement	2.0 lbs O2/lb. VSS destroyed
Solids Concentration after RDT	2.5%
Design Volatile Solids Reduction	38% (minimum)

Rotary Drum Sludge Thickener

Number	2 Each
Design Feed Rate	400 gpm
Design Feed Sludge	0.5 to 2% Solids (by weight)
Final Solids	5 to 7% Solids (by weight)
Solids Capture	98%
Typical Polymer Usage	5-7 lbs (100% Active) per Ton of sludge (dry wt)

Aerobic Digester #1 (Holding Tank for Rotary Drum Thickener)

Digester #1 Dimensions	65' x 45' x 22' deep
Digester #1 Volume	488,700 gallons
VSS Reduction Digester #1	10%
Average Hydraulic Detention Time	2 Days
Mixer	25 Hp = 51.1 Hp/MG
Sludge Transfer Pump	540 gpm @ 35' TDH
VSS Destroyed	381 lbs/day
Oxygen Required	782 lbs O2/day

Aeration Required	329 scfm
Proposed Blowers	1 Duty + 1 Standby
Blower Size *	544 scfm/ea (Former Digester #2)

Aerobic Digester #2 (Existing)

Digester #2 Dimensions	65′ x 58.5′ x 22′ deep
Digester #2 Volume	640,800 gallons
Mixer	40 Hp = 62.4 Hp/MG
Sludge Transfer Pump	540 gpm @ 35′ TDH

Aerobic Digester #3 (Former SBR #2)

Digester #3 Dimensions	105′ x 105′ x 22′ deep
Digester #3 Volume	1,814,000 gallons
Mixer	40 Hp = 57.5 Hp/MG
Sludge Transfer Pump	540 gpm @ 35′ TDH

Combined Digesters #2 & 3

Digester Total Volume	2,454,800 gallons
VSS Reduction Digester #2, 3 & 4	38.3%
Solids Retention Time Digesters #2 & 3	47 days
VSS Destroyed	2770 lbs/day – Based on 38.3% VSS Destruction
Oxygen Required	5540 lbs O2/day
Aeration Required	1721 scfm Total
Proposed Blowers	3 Duty + 1 Standby
Blower Size *	1377 scfm Total
Existing Blowers	2 ea 1100 scfm (former SBR #2) & 2 ea 1507 scfm (former Digester #1)

J. Sludge Holding Tank (Existing)

Holding Tank Dimensions	25′ x 65′ x 22′ deep
Volume	267,400 gallons
Mixing	2 ea. @ 7.5 Hp (56 Hp/MG)
Sludge Transfer Pump to Sludge Truck	540 gpm @ 35′ TDH
Sludge Transfer Pump to Dewatering	3 ea. Variable Speed Pumps @ 120 gpm & 50 psi

K. Sludge Dewatering System

The sludge dewatering system is designed to provide the plant with an alternative to liquid biosolids land application. The existing two (2) rotary filter presses plus future expansion will continue to allow land application of dewatered solids or landfill disposal during periods when land application is not feasible or cost effective. It is proposed to install two (2) new rotary filter presses (or equivalent dewatering system) expansion for the ultimate 6.6 mgd plant expansion.

Existing Dewatering System

Rotary Press Sludge Feed Pumps	Rotary Lobe Pumps (2 duty & 1 standby) Variable Speed Drives Maximum pump rate 120 gpm Differential pressure = 50 psi
Rotary Filter Press	2 Presses – 6 channel Fournier Rotary Drum Press
Solids Capacity	85 – 100 dry lbs/hr per channel
Sludge Feed Solids Concentration	1.5 to 2.5% solids
Sludge Feed	40 to 80 gpm
Polymer Required	10 – 20 lbs/dry ton solids
Solids Capture	95%
Solids Conveyors	Rotary screw with hollow flight

Proposed Dewatering System Expansion

Dewatering System Feed Pumps	Rotary Lobe Pumps (2 duty with existing standby) Variable Speed Drives Maximum pump rate 120 gpm Differential pressure = 50 psi
Rotary Filter Press	2 New rotary drum press or alternative dewatering system and related polymer feed systems
Solids Conveyors	Rotary screw or equal belt conveyor

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Appendix J – Financial Information

J.1 Current Lincoln County Water & Sewer User Fees
J.2 Lincoln County Comprehensive Annual Financial Report
J.3 Raftelis Financial Report

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SCHEDULE OF FEES AND CHARGES FOR WATER AND SEWER SERVICES
Effective: July 01, 2017

TABLE 1 - WATER TAP FEES AND METER FEES

Meter Size:	***Tap Fee:***	***Meter Fee*:**
¾-inch	$960.00	$265.00
1-inch	$1,190.00	$355.00
2-inch	$2,840.00	$1,550.00
¾ - inch Irrigation tap on Service Line	$480.00	$265.00
¾ - inch Irrigation tap on Water Main	$960.00	$265.00
1 -inch Irrigation tap on Water Main	$1,190.00	$355.00

TABLE 2 - CAPACITY DEVELOPMENT FEES FOR ALL WATER CONNECTIONS

Class of Service:	***Capacity Development Fee:***
Single Family Residential	$2,800.00
Interruptible Agricultural	$2,800.00
Airport Hangars	$1,400.00
All Other	Calculated Rate

The Calculated Rate Formula is as follows:
$9.71 X average daily use X 1.2 = Capacity Development Fee, or $2,800, whichever is greater. No Industrial Capacity Development Fee shall exceed $50,000. (See Notes below)

Class of Service:	***Capacity Development Fee:***
Single Family Residential Irrigation	$950.00
All Other Irrigation	Calculated Rate on the irrigation meter usage, or $950.00, whichever is greater.

NOTES:

1. The initial Capacity Development Fee(s) will be based on an estimated amount of usage. This estimate shall be provided by the customer where possible. Where the customer cannot provide a reasonable estimate, the Staff shall provide the estimate based on similar applications or based on industry established standards. **Capacity Development Fees must be fully paid before the Certificate of Occupancy for the property being served will be issued by the Planning and Inspections Department.**

2. After 12 billing cycles, the actual average daily use shall be calculated from metered readings and an adjustment made to the Capacity Development Fee(s). The customer will be billed the difference or issued a refund as appropriate. Any additional amount owed the County must be paid within thirty (30) days of the billing date.

3. Major additions to the operations or change of tenants in a multi-unit building resulting in significant increases in the water usage will result in a re-calculation of the Capacity Development Fee

4. The minimum Capacity Development Fee shall be $2,800.00 and $950.00 for an Irrigation Capacity Development Fee.

5. For multi-family dwellings, a Capacity Development Fee shall be paid for each unit regardless of the number of water taps or meters installed.

6. Applicants with multiple dwelling units, multiple unit businesses, or multiple buildings on an individual tract of land may apply for one Water Tap to serve all units. However, applicant shall pay Capacity Development Fees shown in Table 2, in addition to any applicable Tap Fees included in Table 1. All lines connecting more than one building to a single Water Tap will require a permit issued by the North Carolina Department of Environment and Natural Resources.

APPENDIX J.1

TABLE 3- MONTHLY VOLUMETRIC CHARGES FOR WATER

Residential In-County Rates	
Minimum billing (0-2,500 gallons)	$20.00
Each additional l,000 gallons up to 12,000 gallons	$ 4.72
Each additional 1,000 gallons over 12,000 gallons without drought restrictions	$ 5.72
Each additional 1,000 gallons over 12,000 gallons under voluntary restrictions	$ 7.15
Each additional 1,000 gallons over 12,000 gallons under mandatory restrictions	$11.44
Bulk Water Rate per 1,000 gallons	$ 8.00
Commercial In-County Rates	
Minimum billing (0-2,500 gallons)	$20.00
Each Additional 1,000 Gallons	$ 5.72
Interruptible Agricultural Rate per l,000 gallons	$ 4.00
Bulk Water Rate per 1,000 gallons	$ 8.00
Industrial In-County Rates	
Minimum billing (0-2,500 gallons)	$20.00
Each additional 1,000 gallons	$ 4.72
Residential Out-of-County Rates	
Minimum billing (0-2,500 gallons)	$40.00
Each additional 1,000 gallons up to 12,000 gallons	$ 4.72
Each additional 1,000 gallons over 12,000 gallons without drought restrictions	$ 5.72
Each additional 1,000 gallons over 12,000 gallons under voluntary restrictions	$ 7.15
Each additional 1,000 gallons over 12,000 gallons under mandatory restrictions	$11.44
Bulk Water Rate per 1,000 gallons	$ 8.00
Commercial Out-of-County Rates	
Minimum billing (0-2,500 gallons)	$40.00
Each additional 1,000 gallons	$ 5.72
Bulk Water Rate per 1,000 gallons	$ 8.00
Industrial Out-of-County Rates	
Minimum billing (0-2,500 gallons)	$40.00
Each additional l,000 gallons	$ 4.72

TABLE 4- SEWER TAP FEES

1-1/2-inch Low Pressure Sewer Tap	$1,100.00
2-inch Low Pressure Sewer Tap	$1,650.00
4-inch Gravity Sewer Tap	$1,875.00
6-inch Gravity Sewer Tap	$3,000.00

TABLE 5 - CAPACITY DEVELOPMENT FEES FOR ALL SEWER CONNECTIONS

Single Family Residential	$3,000.00
Airport Hangar	$1,500.00
All Other Connections	Calculated Rate

The Calculated Rate Formula is as follows:
$13.20 X average daily use X 1.4 = Capacity Development Fee, or $3,000, whichever is greater. No Industrial Capacity Development Fee shall exceed $50,000. (See Notes below)

NOTES:

1. The initial Capacity Development Fee will be based on an estimated amount of usage. This estimate shall be provided by the customer where possible. Where the customer cannot provide a reasonable estimate, the Staff shall provide the estimate based on similar applications or based on industry established standards.

Capacity Development Fees must be fully paid before the Certificate of Occupancy for the property being served will be issued by the Planning and Inspections Department.

2. After 12 billing cycles, the actual average daily use shall be calculated from metered readings and an adjustment made to the Capacity Development Fee. The customer will be billed the difference or issued a refund as appropriate. Any additional amount owed the County must be paid within thirty (30) days of the billing date.

3. Major additions to the operations or change of tenants in a multi-unit building resulting in significant increases in the sewer flow will result in a re-calculation of the Capacity Development Fee.

4. The minimum Capacity Development Fee shall be no less than $3,000.00.

5. For multi-family dwellings, a Capacity Development Fee shall be paid for each unit regardless of the number of sewer taps or meters installed.

6. Applicants with multiple dwelling units, multiple unit businesses, or multiple buildings on an individual tract of land may apply for one Sewer Tap to serve all units. However, applicant shall pay Capacity Development Fees shown in Table 5, in addition to any applicable Tap Fees included in Table 4. All lines connecting more than one building to a single Sewer Tap will require a permit issued by the North Carolina Department of Environment and Natural Resources.

TABLE 6- MONTHLY VOLUMETRIC CHARGES FOR SEWER

Residential In-County Rates	
Minimum billing (0-2,500 gallons)	$22.00
Each additional l,000 gallons up to 12,000 gallons	$ 5.19
Each additional 1,000 gallons over 12,000 gallons without drought restrictions	$ 6.29
Each additional 1,000 gallons over 12,000 gallons under voluntary restrictions	$ 7.86
Each additional 1,000 gallons over 12,000 gallons under mandatory restrictions	$12.58
Commercial In-County Rates	
Minimum billing (0-2,500 gallons)	$22.00
Each additional 1,000 gallons	$ 5.92
Industrial In-County Rates	
Minimum billing (0-2,500 gallons)	$22.00
Each additional 1,000 gallons	$ 5.92

TABLE 7- MISCELLANEOUS FEES AND CHARGES

Renter Deposit	$75.00
Same Day Service Connection	$50.00
Default Fee	$50.00
After Hours Fee (lock list only)	$150.00
Return Check Fee	$25.00
Late Payment Penalty ($5.00 or 5% whichever higher)	$5.00/5%
Broken Lock Fee	$25.00
Broken Meter Box Ears Fee	$25.00
Tampering Fine	
First Offense	$100.00
Second Offense	$250.00
Third and Subsequent Offenses	$500.00
Meter Replacement Fee if no malfunction	$265.00
Meter Test Fee if no error found	$75.00
Account Inactive Fee	$25.00
Civil Penalty (for irrigation violations during mandatory drought restrictions)	
First Offense	$50.00
Second Offense	$250.00
Third and Subsequent Offenses	$500.00

LINCOLN COUNTY
NORTH CAROLINA

COMPREHENSIVE ANNUAL
FINANCIAL REPORT

FOR THE FISCAL YEAR ENDED JUNE 30, 2017

Prepared By
Finance Department

APPENDIX J.2

LINCOLN COUNTY

NORTH CAROLINA

BOARD OF COMMISSIONERS

BILL BEAM, CHAIR

MARTIN OAKES, VICE-CHAIRMAN

ANITA MCCALL

CARROL D. MITCHEM

RICHARD W. PERMENTER

KELLY ATKINS, COUNTY MANAGER

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LINCOLN COUNTY, NORTH CAROLINA

COMPREHENSIVE ANNUAL FINANCIAL REPORT
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COUNTY OF LINCOLN, NORTH CAROLINA

115 WEST MAIN STREET, 3RD FLOOR CITIZENS CENTER, LINCOLNTON, NORTH CAROLINA 28092

FINANCE DEPARTMENT
(704) 736-8865
FAX (704) 735-0273

December 11, 2017

Chairman Bill Beam,
Board of County Commissioners,
And the Citizens of Lincoln
County, North Carolina

The Comprehensive Annual Financial Report (CAFR) for Lincoln County, North Carolina, for the fiscal year ended June 30, 2017, is hereby submitted. The report consists of management's representations concerning the finances of Lincoln County. Consequently, management assumes full responsibility for the completeness and reliability of all of the information presented in this report. To provide a reasonable basis for making these representations, management of Lincoln County has established a comprehensive internal control framework that is designed to protect the government's assets from loss, theft or misuse and to compile reliable information for the preparation of Lincoln County's financial statements in conformity with Generally Accepted Accounting Principles (GAAP). The cost of internal controls should not outweigh their benefits. Lincoln County's internal controls have been designed to provide reasonable, rather than absolute assurance that the financial statements will be free from material misstatement. To the best of our knowledge and belief, this financial report is complete and reliable in all material respects.

Lincoln County's financial statements have been audited by Martin Starnes & Associates CPAs, P.A. The goal of the independent audit was to provide reasonable assurance that the financial statements of Lincoln County for the fiscal year ended June 30, 2017, are free from material misstatement. The independent audit involved examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; assessing the accounting principles used and significant estimates made by management; and evaluating the overall financial statement presentation. The independent auditors concluded, based upon the audit, that there was a reasonable basis for rendering an unmodified opinion that Lincoln County's financial statements for the fiscal year ended June 30, 2016, are fairly presented in conformity with GAAP. The independent auditors report is presented as the first component of the financial section of this report.

The Comprehensive Annual Financial Report (CAFR) has been prepared in accordance with Governmental Accounting Standards Board (GASB) Statement No. 34, *Basic Financial Statements – Management's Discussion and Analysis – For State and Local Governments.* Additionally, the financial statements have been prepared in compliance with applicable requirements of the General Statutes of North Carolina and are consistent with the standards and guidelines recognized for governmental accounting and financial reporting contained in both *Audits of State and Local Governmental Units,* an audit guide prepared by the Committee of Governmental Accounting of the American Institute of Certified Public Accountants (AICPA), and *Government Auditing Standards* , issued by the Comptroller General of the United States. Among other resources used in the preparation of the financial statements, the Finance Department Staff has given particular attention to *Governmental Accounting,*

Auditing, and Financial Reporting (GAAFR) issued by the Government Finance Officers Association of the United States and Canada (GFOA), and Governmental Accounting Standards Board (GASB) pronouncements.

The Single Audit Act of 1984 established requirements for state and local governments that receive federal assistance. The audit requirements have also been adopted by the State of North Carolina for state grants. Information related to this single audit, including the schedule of federal and state financial awards, schedule of findings and questioned costs, auditor's report on internal control and compliance with laws and regulations, and other schedules and exhibits necessary to satisfy the requirements of the single audit, are included in the single audit section.

Generally Accepted Accounting Principles require that management provide a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of Management's Discussion and Analysis (MD&A). This Letter of Transmittal is designed to complement the MD&A and should be read in conjunction with it. Lincoln County's MD&A is presented immediately following the report of our independent auditors.

Financial Reporting Entity

The CAFR includes all funds and account groups of the County, including all activities considered to be part of (controlled by or dependent on) the County. Control by, or dependence on, the County was determined in accordance with the criteria established by the Governmental Accounting Standards Board (GASB) and included in the GASB's guidance in defining the governmental reporting entity.

The financial reporting entity includes all funds and account groups of Lincoln County, as well as its component units. Component units are legally separate entities for which Lincoln County is financially accountable.

The East Lincoln County Water and Sewer District Fund is a component unit of Lincoln County and is presented as a proprietary fund. Proprietary funds are used to account for a government's continuing business-type organizations and activities. Most of the generally accepted accounting principles of proprietary funds are those applicable to similar private businesses. Effective July 1, 2007 the assets of the East Lincoln County Water and Sewer District were transferred to the Lincoln County Water and Sewer Fund to allow the sewer system to serve a larger area in a rapidly growing portion of the County. The Sewer District will remain in existence but not levy a tax because all debt service of the District has been paid.

State Statutes require the adoption of an annual balanced budget for all funds, except the agency fiduciary funds and those authorized by project ordinance. Expenditures may not legally exceed appropriations at the departmental level for the general fund, the departmental level for the special revenue funds and enterprise funds and at the object level for the capital project funds. The annual budget serves as the basis for the County's financial planning and control. Budgets are developed on a departmental basis by expenditure function within a fund. The budgets display all of the County's financial operations including funding for various agencies outside the County's organizational structure. The County Manager submits the annual balanced budget to the Board of Commissioners before June each year. A public hearing on the budget is held in the middle of June with an expected budget adoption by June 30. In accordance with North Carolina statutes, the governing board shall adopt a budget not earlier than ten days after the budget is presented to the Board and no later than July 1.

During the fiscal year, the County Manager is authorized to transfer budgeted amounts within objects of a department and up to $50,000 between departments of the same fund; however, any revisions that alter the total budget of any fund must be approved by the Board of Commissioners.

Profile of the Government

The County is located in the western portion of the North Carolina Piedmont Plateau, approximately 165 miles west of Raleigh, the State Capital, and 30 miles northwest of Charlotte, the state's largest city. The County was formed in 1779 and has a total land area of approximately 308 square miles. The City of Lincolnton, with an estimated 2014 population of approximately 10,732 is the center of an urban area of 15,000, the County seat, and the only incorporated municipality in the County. The County's population as of July 1, 2016, according to the State Demographer, was 82,033.

There is growing suburban development and extensive construction in the eastern portion of the County along and near Lake Norman, the state's largest man-made lake by surface area, with approximately 520 miles of shoreline. This area is within 30 minutes of uptown Charlotte and has experienced significant residential and commercial growth in recent years.

Economic Diversity

A combination of diversified industries, agricultural production, and major distribution centers contributes to the economy of the County. The main agricultural pursuits are poultry production, dairy farming, apple production and field crops and vegetable production, with a new and growing focus on blackberries. The major industrial employers are in metal and electronics manufacturing, specialty textiles, home products, food processing and motorsports.

The Lincolnton and Lincoln County Micropolitan Area was ranked 4th nationally by *Site Selection* magazine in 2010 for its ability to secure new and expanded industrial projects. Since 2004, the Lincoln County Micropolitan Area had been ranked in the top 25 every year except for one.

Fiscal year 2017 again saw large increases in residential construction permitting on the eastern end of the County. Trilogy Corporation continues to construct a large residential development, and many other permits have been taken for new construction in that part of the County. There were also several other permits issued for residential developments, with over 300 and 500 homes to be built, respectively.

Capital Improvement Program

With the 2008 – 2009 budget adoption, the Board of Commissioners approved the first formal Capital Improvement Program (CIP) for the County covering many years of capital needs. One of the capital needs being addressed is office space for court and County administrative functions. A committee considered options which consisted of purchasing and renovating existing facilities or the construction of a new facility. As a means to immediately address some of the office space needs, in 2006 the Board of Commissioners entered into a lease for a former bank building in downtown Lincolnton, which included an option to purchase the building if the County chooses. The County exercised that option in Fiscal Year 2013. County offices previously located in the Courthouse have relocated to this building providing much needed space and freeing up space in the Courthouse for court functions.

At the same September 2006 meeting the Board of Commissioners also approved an agreement that allowed Lincoln Health System to enter into an agreement for Carolinas Healthcare System to apply for a certificate of need to construct a new hospital in Lincolnton. The certificate of need was received in 2008, and construction began soon after. This hospital was completed and occupied on July 10, 2010. On September 1, 2010 the former facility reverted back to Lincoln County, which plans to use the facility for county office space. In 2015, the Board of Commissioners approved an architect to perform a detailed space study of all county departments and how their needs can best be addressed in light of the hospital facility becoming available. The space study was completed and the project moved to the next phase, the schematic design of the facility, which had the architect to determine a more accurate estimate of the renovation costs. Currently parts of the old building have been demolished, and construction has commenced on the Health Department portion of the facility. After this facility is renovated and existing county offices are moved in, the offices currently occupied by county departments will also be renovated for court and related functions needed by the County in the downtown area.

The Lincoln County Board of Education at their September 2003 joint meeting with the Board of Commissioners presented a ten-year capital facility plan. This plan projected school enrollment versus capital needs over the next ten years. The list of capital needs included renovations to existing facilities along with the construction of various new schools throughout the County. In keeping with this plan, the Board of Commissioners in the fall of 2007 approved an additional school bond referendum in the amount of $44.6 million that was presented for voter approval on May 6, 2008. This referendum was approved by the voters. It has provided funds for renovation and expansion of existing buildings, expansion of the bus garage, a new technology arts building, and a new elementary school. These bonds, which were originally proposed to be issued over three fiscal years, are being spread over a longer period due to a decline in the economy and a slight decline in school enrollment. The first issuance of $13 million, along with an additional $2 million of authorized but unissued 2004 bonds was issued in October, 2008. The second installment of this financing, $8.5 million, was issued in February, 2010. The third installment, in the amount of $9.6 million, was issued in February, 2011. The final amount of unissued bonds remaining, $13.5 million, has been deemed to be unnecessary. By selling these bonds over an eight year period, we can meet the cash flow needs of the schools on these projects and spread our debt over a longer period. The 2003 and part of the 2006 bonds were refunded in November, 2013. This will result in a slightly lower debt service burden for the remaining life of the bonds. The remaining 2006 bonds were refunded in Fiscal Year 2015.

Lincoln County completed construction of a new wastewater treatment plant in October 2010. The new treatment facility has an initial capacity of 1.67 MGD and is currently under design to expand to 6.6 MGD. This project, estimated at $25 million, will be funded from Revenue Bonds. It is to be repaid from sewer fees and capacity development fees from current and future customers.

Long Term Planning

As one of the principal goals of the Planning and Inspections Department, Long Range Planning includes several projects which provide guidance for the future development throughout Lincoln County. The staff continues to work on many long term projects simultaneously with advisement from the Board of Commissioners, Planning Board and the citizens. Permitting activity has significantly increased in Lincoln County over the past two years.

Staff and the planning board are examining existing zoning districts and how they correlate with the Lincoln County Land Use Plan and other small area plans. Considering the fact that zoning in Lincoln County has been in existence for nearly twenty years, it is prudent to examine how the County has changed. For example, there are water and sewer lines and future expansions that need to be considered when examining current and future density patterns. While it is likely that there will not be numerous zoning changes, it is important to recognize those areas that might need to be adjusted accordingly.

Education

Funding for education remains a large expenditure category in our budget with a total of $17,818,484 expended from the General Fund. In addition, $2,679,091 was paid for capital project expenditures.

Other Postemployment Benefits

The County provides certain other post-employment benefits (OPEB) as part of the total compensation offered to attract and retain the services of qualified employees.

The County offers post-retirement health care benefits to all full-time County employees who retire with at least 20 years of service from the Local Government Retirement System. Effective September 1, 2005, the service requirement was increased to 25 years for new hires after that date. After the employee reaches age 65 or until they are eligible to receive Medicare Benefits, whichever occurs first, the coverage will be terminated and the County will provide a Medicare supplement. The County pays the same rate for insurance coverage for both retired employees post-retirement health care and for current employees with the balance paid by the employees or retirees. The County will fund this benefit on a pay-as-you-go basis for the upcoming year.

In June 2004, the Governmental Accounting Standards Board (GASB) issued Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pension.* GASSB Statement No. 45 generally required that state and local governmental employers account for other post-employment benefits (OPEB) on an accrual basis similar to the manner that they currently account for pensions. GASB Statement No. 45 also requires disclosure of information on the plan in which an employer participates, the funding policy followed, and the actuarial valuation process and assumptions. The County is considered a "Phase 2" government under GASB Statement No. 45 and implemented the required changes in fiscal year 2008 – 2009.

Awards and Acknowledgements

Certificate of Achievement for Excellence in Financial Reporting

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to Lincoln County for its comprehensive annual financial report for the fiscal year ended June 30, 2016. This was the twentieth consecutive year that the government has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive

annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

Acknowledgements

We appreciate the assistance and dedication of the Finance Department staff throughout the year, especially during the preparation of the CAFR. We would like to thank all members of the Department who contributed to its preparation and the County's independent certified public accountants, Martin Starnes & Associates, CPAs, for their assistance. The cooperation of each County department is appreciated as we work together in conducting the County's financial operations. We also express our appreciation to the members of the Board of County Commissioners for their continued support, guidance, and advice in planning and conducting the financial activities of the County in a responsible and progressive manner.

Respectfully submitted,

Kelly G. Atkins
County Manager

Deanna L. Rios
Finance Director

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Lincoln County

North Carolina

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2016

Christopher P. Morrill

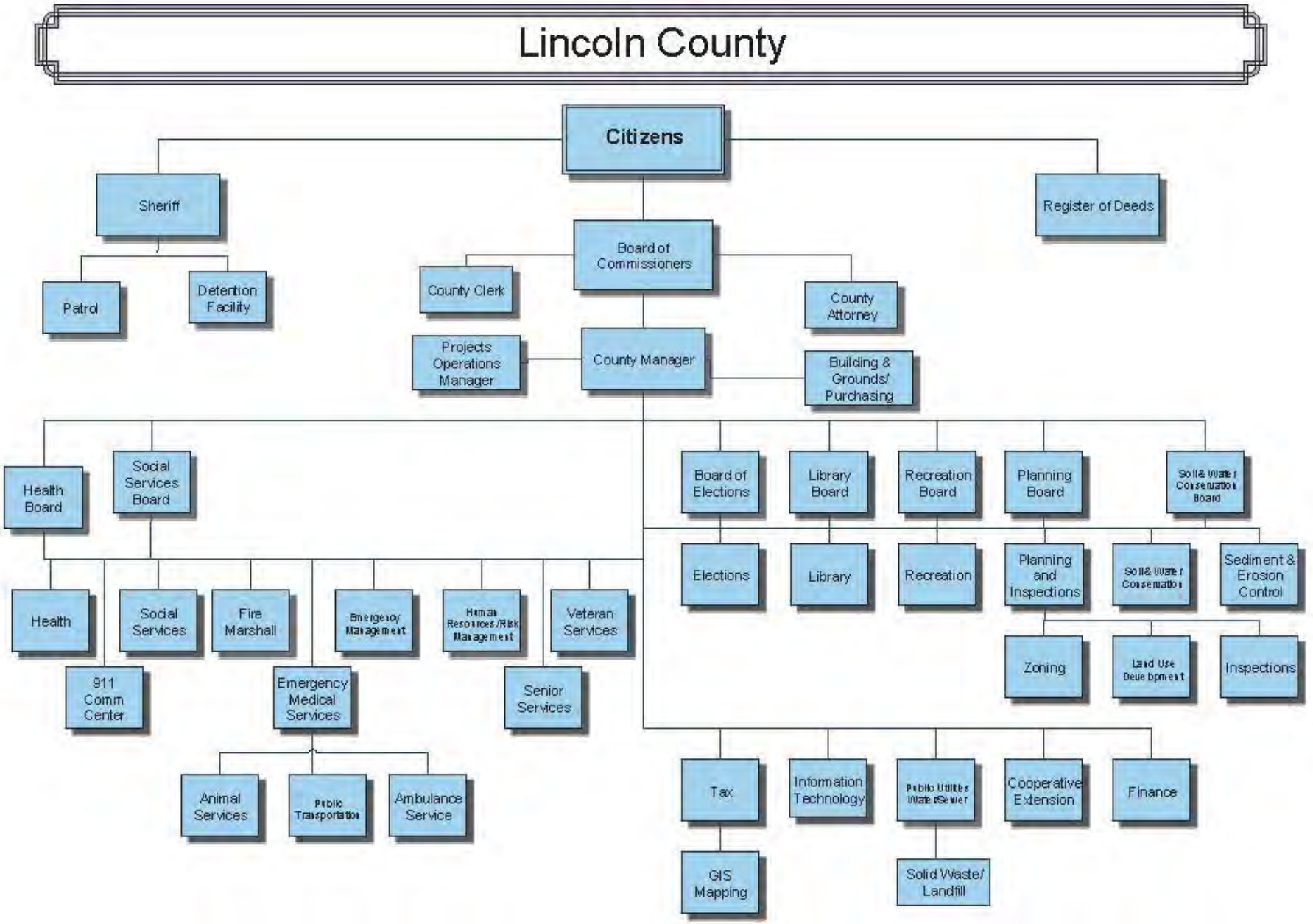
Executive Director/CEO

LINCOLN COUNTY, NORTH CAROLINA

Principal Officials

June 30, 2017

Board of County Commissioners	**Bill Beam, Chairman**	
	Martin Oakes, Vice-Chairman	
	Anita McCall	
	Carrol D. Mitchem	
	Richard W. Permenter	
County Officials	**Kelly Atkins**	**County Manager**
	Wesley Deaton	**County Attorney**
	Danny Hester	**Register of Deeds**
	David Carpenter	**Sheriff**
	Hannah Beaver	**Animal Services**
	John Henry	**Buildings and Grounds**
	Tom Dyson	**Cooperative Extension**
	Bradley Putnam	**Elections**
	Bill Summers	**Emergency Management**
	Ron Rombs	**Emergency Medical Services**
	Deanna Rios	**Finance Director**
	Margaret Dollar	**Health**
	Jennifer Sackett	**Library**
	Dante' Patterson	**Information Technology**
	Andrew Bryant	**Planning and Inspections**
	Don Chamblee	**Public Works**
	John Davis	**Recreation**
	Kathryn Saine	**Senior Services**
	Susan McCracken	**Social Services**
	Rick McSwain	**Soil Conservation**
	Susan Sain	**Tax Administrator**
	Ron Rombs	**Transportation**
	Alex Patton	**Veterans Service**


Lincoln County
Citizens
Sheriff
Register of Deeds
Board of Commissioners
Patrol
Detention Facility
County Clerk
County Attorney
Projects Operations Manager
County Manager
Building & Grounds/ Purchasing
Health Board
Social Services Board
Board of Elections
Library Board
Recreation Board
Planning Board
Soil& Water Conservation Board
Health
Social Services
Fire Marshall
Emergency Management
Human Resources /Risk Management
Veteran Services
Elections
Library
Recreation
Planning and Inspections
Soil& Water Conservation
Sediment & Erosion Control
911 Comm Center
Emergency Medical Services
Senior Services
Zoning
Land Use Development
Inspections
Animal Services
Public Transportation
Ambulance Service
Tax
Information Technology
Public Utilities Water/Sewer
Cooperative Extension
Finance
GIS Mapping
Solid Waste/ Landfill

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MARTIN ♦ STARNES
& ASSOCIATES, CPAs, P.A.
"A Professional Association of Certified Public Accountants and Management Consultants"

Independent Auditor's Report

To the Board of Commissioners
Lincoln County
Lincolnton, North Carolina

Report on the Financial Statements

We have audited the accompanying financial statements of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of Lincoln County, North Carolina, as of and for the year ended June 30, 2017, and the related notes to the financial statements, which collectively comprise the County's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We did not audit the financial statements of the Lincoln County ABC Board, which represents 99.2 percent, 99.1 percent, and 99.4 percent, respectively, of the assets, net position, and revenues of the aggregate discretely presented component units. Those statements were audited by another auditor whose report has been furnished to us; and our opinion, insofar as it relates to the amounts included for the Lincoln County ABC Board, is based solely on the report of the other auditors. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. The financial statements of the Lincoln County ABC Board were not audited in accordance with *Government Auditing Standards.*

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's

internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, based on our audit and the report of the other auditors, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of Lincoln County, North Carolina, as of June 30, 2017, and the respective changes in financial position and, where applicable, cash flows thereof, and the respective budgetary comparison for the General Fund for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Other Post-Employment Benefits' Schedules of Funding Progress and Employer Contributions, the Local Government Employee's Retirement System Proportionate Share of Net Pension Liability (Asset) and Schedule of County's Contributions, the Register of Deeds' Supplemental Pension Fund Schedule of the County's Proportionate Share of the Net Pension Liability (Asset) and Schedule of County's Contributions, and the Law Enforcement Officers' Special Separation Allowance Schedules of Changes in Total Pension Liability and Total Pension Liability as a Percentage of Covered Payroll be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economical, or historical context. We and the other auditors have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information, because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Lincoln County's basic financial statements. The introductory information, combining and individual fund financial statements, budget and actual schedules, supplemental ad valorem tax schedules, and statistical section as well as the accompanying Schedule of Expenditures of Federal and State Awards as required by *Title 2 U.S. Code of Federal Regulations (CFR) Part 200, Uniform Administrative Requirement, Cost Principles, and Audit Requirements for Federal Awards*, and the State Single Audit Implementation Act, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The combining and individual fund financial statements, budget and actual schedules, supplemental ad valorem tax schedules, and the Schedule of Expenditures of Federal and State Awards are the responsibility of management and were derived from, and relate directly to, the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements, or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America by us and the other auditors. In our opinion, based on our audit, the procedures performed above, and the report of the other auditors, the combining and individual fund financial statements, budget and actual schedules, supplemental ad valorem tax schedules, and the Schedule of Expenditures of Federal and State Awards are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory information and statistical section have not been subjected to the auditing procedures applied in the audit of the basic financial statements and; accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated December 11, 2017 on our consideration of Lincoln County's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Lincoln County's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Lincoln County's internal control over financial reporting and compliance.

Martin Starnes & Associates, CPAs, P.A.

Martin Starnes & Associates, CPAs, P.A.
Hickory, North Carolina
December 11, 2017

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Management's Discussion and Analysis

As management of Lincoln County, we offer readers of Lincoln County's financial statements this narrative overview and analysis of the financial activities of Lincoln County for the fiscal year ended June 30, 2017. We encourage readers to read the information presented here in conjunction with additional information that we have furnished in the County's financial statements, which follow this narrative.

Financial Highlights

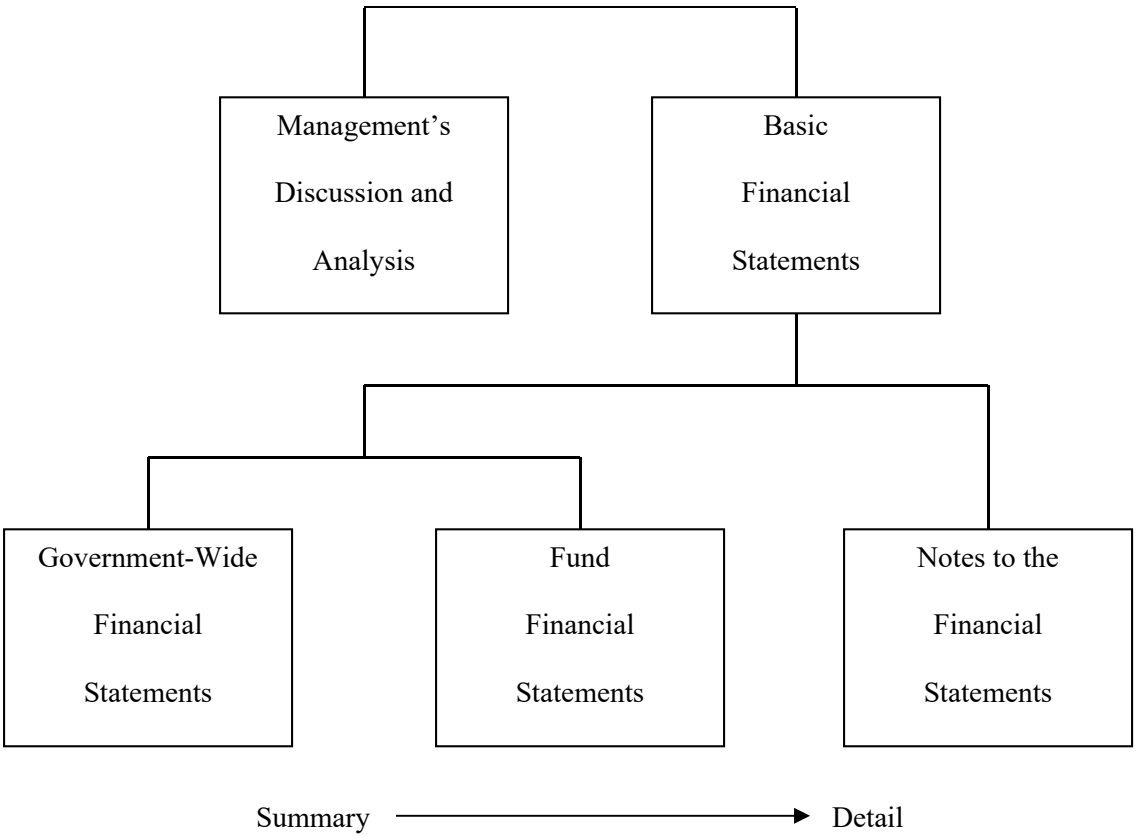
- The assets and deferred outflows of resources of Lincoln County exceeded its liabilities and deferred inflows of resources at the close of the fiscal year by $72,112,898 (*net position*).
- Current year expansion of the water treatment plant and current year construction of the new Health Department facility were the primary factors contributing to the increase in the government's total net position of $14,105,163.
- At of the close of the current fiscal year, Lincoln County's governmental funds reported combined ending fund balances of $36,702,609, an increase of $3,174,352, in comparison with the prior year amount. This increase was primarily due to the increase in sales tax revenue in Fiscal Year 2017. Approximately 36.13% of this total amount, or $13,261,178, is restricted or non-spendable.
- At the end of the current fiscal year, unassigned fund balance for the General Fund was $24,512,423, or 27.02%, of total General Fund expenditures for the fiscal year.
- Lincoln County's total debt increased by $10,545,374, or 7.53%, during the current fiscal year. The key factor in this increase were the increase in net pension liability and the restatement of total pension liability (LEOSSA).
- The assets of the East Lincoln County Water and Sewer District were transferred to the Lincoln County Water and Sewer Fund on July 1, 2007 in order to better serve a rapidly growing area of the County. The East Lincoln County Water and Sewer District will remain in but there will be no tax levy assessed since all debt was paid off in Fiscal Year 2017.
- Standard & Poor's increased Lincoln County's bond rating from AA- to AA+ in September 2014. Lincoln County has maintained bond ratings of Aa3 from Moody's Investors Service and AA rating from Fitch Ratings as a result of our last ratings in January 2011. Fitch reaffirmed our rating in September 2013.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to Lincoln County's basic financial statements. The County's basic financial statements consist of three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements (see Figure 1). The basic financial statements present two different views of the County through the use of government-wide statements and fund financial statements. In addition to the basic financial statements, this report contains other supplemental information that will enhance the reader's understanding of the financial condition of Lincoln County.

Required Components of Annual Financial Report

Figure 1



Basic Financial Statements

The first two statements (Exhibits A and B) in the basic financial statements are the **Government-Wide Financial Statements**. They provide both short and long-term information about the County's financial status.

The next statements (Exhibits C through J) are the **Fund Financial Statements**. These statements focus on the activities of the individual parts of the County's government. These statements provide more detail than the government-wide statements. There are four parts to the fund financial statements: 1) the governmental funds statements, 2) the budgetary comparison statements, 3) the proprietary fund statements, and 4) the fiduciary fund statements.

The next section of the basic financial statements is the **Notes to the Financial Statements**. The notes explain in detail some of the data contained in those statements. After the notes, **Supplemental Information** is provided to show details about the County's individual funds. Budgetary information required by the General Statutes also can be found in this part of the statements.

Government-Wide Financial Statements

The government-wide financial statements are designed to provide the reader with a broad overview of the County's finances, similar in format to a financial statement of a private-sector business. The government-wide statements provide short and long-term information about the County's financial status as a whole.

The two government-wide statements report the County's net position and how they have changed. Net position is the difference between the County's total assets and total liabilities and deferred inflows of resources. Measuring net position is one way to gauge the County's financial condition.

The government-wide statements are divided into three categories: 1) governmental activities, 2) business-type activities, and 3) component units. The governmental activities include most of the County's basic services, such as public safety, parks and recreation, and general administration. Property taxes and State and Federal grant funds finance most of these activities. The business-type activities are those that the County charges customers to provide. These include the water and sewer and solid waste services offered by Lincoln County. The final category is the component units. Although legally separate from the County, the ABC Board is important to the County because the County is financially accountable for the Board by appointing its members and because the Board is required to distribute its profits to the County. Lincoln Community Friends, a 501(c)(3) corporation, was founded to obtain grants for Lincoln County. Lincoln Community Friends is made up of a nine-member Board, all of whom are appointed by the County Commissioners.

The government-wide financial statements are on Exhibits A and B of this report.

Fund Financial Statements

The fund financial statements provide a more detailed look at the County's most significant activities. A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. Lincoln County, like all other governmental entities in North Carolina, uses fund accounting to ensure and reflect compliance (or non-compliance) with finance-related legal requirements, such as the General Statutes or the County's budget ordinance. All of the funds of Lincoln County can be divided into three categories: governmental funds, proprietary funds, and fiduciary funds.

Governmental Funds. Governmental funds are used to account for those functions reported as governmental activities in the government-wide financial statements. Most of the County's basic services are accounted for in governmental funds. These funds focus on how assets can readily be converted into cash flow in and out, and what monies are left at year-end that will be available for spending in the next year. Governmental funds are reported using an accounting method called *modified accrual accounting.* This method also has a current financial resources focus. As a result, the governmental fund financial statements give the reader a detailed short-term view that helps him or her determine if there are more or less financial resources available to finance the County's programs. The relationship between governmental activities (reported in the Statement of Net Position and the Statement of Activities) and governmental funds is described in a reconciliation that is a part of the fund financial statements.

Lincoln County adopts an annual budget for its General Fund, as required by the General Statutes. The budget is a legally adopted document that incorporates input from the citizens of the County, the management of the County, and the decisions of the Board about which services to provide and how to pay for them. It also authorizes the County to obtain funds from identified sources to finance these current period activities. The budgetary statement provided for the General Fund demonstrates how well the County complied with the budget ordinance and whether or not the County succeeded in providing the services as planned when the budget was adopted. The budgetary comparison statement uses the budgetary basis of accounting and is presented using the same format, language, and classifications as the legal budget document. The statement shows four columns: 1) the original budget as adopted by the Board; 2) the final budget as amended by the Board; 3) the actual resources, charges to appropriations, and ending balances in the General Fund; and 4) the difference or variance between the final budget and the actual resources and charges. To account for the difference between the budgetary basis of accounting and the modified accrual basis, a reconciliation showing the differences in the reported activities is shown at the end of the budgetary statement.

Proprietary Funds. Lincoln County has one kind of proprietary fund. *Enterprise funds* are used to report the same functions presented as business-type activities in the government-wide financial statements. Lincoln County uses enterprise funds to account for its water and sewer activity and for its solid waste collection and disposal. These funds are the same as those separate activities shown in the business-type activities in the Statement of Net Position and the Statement of Activities.

Fiduciary Funds. Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Lincoln County has five fiduciary funds, which are agency funds.

Notes to the Financial Statements. The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements start after Exhibit J of this report.

Other Information. In addition to the basic financial statements and accompanying notes, this report includes certain required supplementary information concerning Lincoln County's progress in funding its obligation to provide pension benefits and other post-employment benefits to its employees. Required supplementary information starts after the Notes to the Financial Statements.

Interdependence with Other Entities. The County depends on financial resources flowing from, or associated with, both the federal government and the State of North Carolina. Because of this dependency, the County is subject to changes in specific flows of intergovernmental revenues based on modifications to federal and State laws and federal and State appropriations. It is also subject to changes in investment earnings and asset values associated with U.S. Treasury Securities because of actions by foreign governments and other holders of publicly held U.S. Treasury Securities.

Lincoln County's Net Position

Figure 2

	Governmental Activities		Business-Type Activities		Total	
	2017	2016	2017	2016	2017	2016
Assets:						
Current and other assets	$ 46,577,086	$ 42,064,112	$ 24,361,227	$ 17,573,767	$ 70,938,313	$ 59,637,879
Capital assets	67,148,038	63,293,806	81,757,926	79,039,852	148,905,964	142,333,658
Total assets	113,725,124	105,357,918	106,119,153	96,613,619	219,844,277	201,971,537
Deferred outflows of resources	8,466,459	2,694,549	1,133,055	262,816	9,599,514	2,957,365
Liabilities:						
Long-term liabilities outstanding	112,499,509	111,455,274	36,080,024	28,681,873	148,579,533	140,137,147
Other liabilities	6,721,972	3,654,777	1,280,633	741,403	8,002,605	4,396,180
Total liabilities	119,221,481	115,110,051	37,360,657	29,423,276	156,582,138	144,533,327
Deferred inflows of resources	689,122	1,224,060	59,633	149,459	748,755	1,373,519
Net Position:						
Net investment in capital assets	58,995,204	55,659,430	61,048,458	61,317,027	120,043,662	116,976,457
Restricted	12,339,420	8,895,232	-	-	12,339,420	8,895,232
Unrestricted	(69,053,644)	(72,836,306)	8,783,460	5,986,673	(60,270,184)	(66,849,633)
Total net position	$ 2,280,980	$ (8,281,644)	$ 69,831,918	$ 67,303,700	$ 72,112,898	$ 59,022,056

As noted earlier, net position may serve, over time, as one useful indicator of a government's financial condition. The assets and deferred outflows of resources of Lincoln County exceeded liabilities and deferred inflows of resources by $72,112,898 as of June 30, 2017. The County's net position increased by $14,105,163 for the fiscal year ended June 30, 2017. One of the largest portions, $120,043,662, reflects the County's net investment in capital assets (e.g., land, buildings, machinery, and equipment). Lincoln County uses these capital assets to provide services to citizens; consequently, these assets are not available for future spending. Although Lincoln County's net investment in its capital assets is reported net of the outstanding related debt, the resources needed to repay that debt must be provided by other sources, since the capital assets cannot be used to liquidate these liabilities.

Several particular aspects of the County's financial operations influenced the total unrestricted governmental net position:

- Continued diligence in the collection of property taxes by maintaining a collection percentage of 98.5%
- Long-term liabilities decreased with a corresponding increase in capital assets. This is due to the fact that in North Carolina counties issue debt for school construction, but school systems report the assets. The Lincoln County Board of Education has buildings and improvements valued at over $306 million.
- Essentially flat ad valorem tax revenue, an increase in sales tax revenue due to a general increase in retail sales in County
- Continued low cost of debt due to the County's high bond rating

Lincoln County's Changes in Net Position

Figure 3

	Governmental Activities		Business-Type Activities		Total	
	2017	2016	2017	2016	2017	2016
Revenues:						
Program revenues:						
Charges for services	$ 9,303,997	$ 9,092,148	$ 18,104,438	$ 14,838,377	$ 27,408,435	$ 23,930,525
Operating grants and contributions	13,272,252	15,870,781	-	-	13,272,252	15,870,781
Capital grants and contributions	898,477	1,409,490	10,000	2,962,527	908,477	4,372,017
General revenues:						
Property taxes	60,610,716	59,381,739	23,339	875,860	60,634,055	60,257,599
Other taxes	20,521,162	17,056,409	-	-	20,521,162	17,056,409
Other	472,714	478,634	67,004	71,362	539,718	549,996
Total revenues	105,079,318	103,289,201	18,204,781	18,748,126	123,284,099	122,037,327
Expenses:						
General government	19,017,062	19,892,679	-	-	19,017,062	19,892,679
Public safety	29,972,508	27,812,079	-	-	29,972,508	27,812,079
Economic and physical development	1,850,463	1,569,081	-	-	1,850,463	1,569,081
Human services	17,149,240	17,080,572	-	-	17,149,240	17,080,572
Transportation	217,002	321,507	-	-	-	321,507
Cultural and recreational	2,133,169	1,498,480	-	-	2,133,169	1,498,480
Education	20,222,666	18,193,559	-	-	20,222,666	18,193,559
Interest on long-term debt	2,940,263	3,035,798	-	-	2,940,263	3,035,798
Solid waste	-	-	6,038,674	4,406,194	6,038,674	4,406,194
Water and sewer	-	-	9,637,889	8,649,467	9,637,889	8,649,467
Total expenses	93,502,373	89,403,755	15,676,563	13,055,661	109,178,936	102,459,416
Change in net position	11,576,945	13,885,446	2,528,218	5,692,465	14,105,163	19,577,911
Net Position						
Beginning of year - July 1	(8,281,644)	(22,167,090)	67,303,700	61,611,235	59,022,056	39,444,145
Prior period adjustment	(1,014,321)	-	-	-	(1,014,321)	-
Beginning net position, restated	(9,295,965)	(22,167,090)	67,303,700	61,611,235	58,007,735	39,444,145
End of year - June 30	$ 2,280,980	$ (8,281,644)	$ 69,831,918	$ 67,303,700	$ 72,112,898	$ 59,022,056

Governmental Activities. Governmental activities increased the County's net position by $11,576,945. The key elements of this increase in 2017 were increased revenues from sales taxes and restricted intergovernmental revenues. There were decreases in expenditures in general government, transportation, and debt service.

Business-Type Activities. Business-type activities increased Lincoln County's net position by $2,528,218. The business-type activities increase was primarily related to increases in availability fees and charges for services.

Financial Analysis of the County's Funds

As noted earlier, Lincoln County uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements.

Governmental Funds. The focus of Lincoln County's governmental funds is to provide information on near-term inflows, outflows, and balances of usable resources. Such information is useful in assessing Lincoln County's financing requirements. Specifically, unreserved fund balance can be a useful measure of a government's net resources available for spending at the end of the fiscal year.

The General Fund is the chief operating fund of Lincoln County. At the end of the current fiscal year, available fund balance of the General Fund was $29,247,403, while total fund balance reached $34,570,359. As a measure of the General Fund's liquidity, it may be useful to compare both available fund balance and total fund balance to total fund expenditures. Available fund balance represents 32.24% of total General Fund expenditures, while total fund balance represents 38.11% of that same amount. This slight percentage increase is the result of increased revenues, primarily increase in sales taxes.

The General Capital Projects Fund is used to account for financial resources to be used for the acquisition and construction of major capital facilities (other than those financed by proprietary funds and trust funds). At the end of the current fiscal year, total fund balance of the General Capital Projects Fund was $578,791, an increase of $1,804,396. The increase is attributed to revenues and other financing sources exceeding expenditures and other financing uses.

At June 30, 2017, the governmental funds of Lincoln County reported a combined fund balance of $36,702,609, a 9.47% increase from last year. A decrease in the School Capital Projects Fund was offset by increases in the General Capital Projects Fund, Capital Reserve Fund, and General Fund.

General Fund Budgetary Highlights. During the fiscal year, the County revised the budget projections on several occasions. Generally, budget amendments fall into one of three categories: 1) amendments made to adjust the estimates that are used to prepare the original budget ordinance once exact information is available; 2) amendments made to recognize new funding amounts from external sources, such as Federal and State grants; and 3) increases in appropriations that become necessary to maintain services. Total amendments to the General Fund increased revenues and expenses by $4,108,092. The largest part of this increase, $1,950,415, was to increase capital outlay expenditures for Building Maintenance and Public Schools. The other increases were to account for grants and to carryover encumbered funds from the previous year in various departments.

Proprietary Funds. Lincoln County's proprietary funds provide the same type of information found in the government-wide statements, but in more detail. Unrestricted net position of the Solid Waste Fund at the end of the fiscal year amounted to ($4,130,745), the Water and Sewer Fund equaled $12,743,241, and those for the East Lincoln County Water and Sewer District equaled $170,964. The total change in net position for the three funds was ($1,378,977), $3,023,788, and $883,407, respectively. The increase in the Water and Sewer Fund is primarily due to increases in charges for services. Other factors concerning the finances of these funds have already been addressed in the discussion of Lincoln County's business-type activities. Please refer to the Notes to Accounting Policies for a discussion of landfill closure/post-closure liabilities.

Capital Asset and Debt Administration

Capital Assets. Lincoln County's capital assets for its governmental and business-type activities as of June 30, 2017 totals $148,905,964 (net of accumulated depreciation). These assets include buildings, land, water and sewer line and treatment facilities, machinery and equipment, park facilities, and vehicles.

Major capital asset transactions during the year include:

- Construction of new Health Department building is nearing completion
- Construction of new water distribution lines
- Construction of sewer collection lines
- Improvements to buildings

Lincoln County's Capital Assets
(net of depreciation)

Figure 4

	Governmental Activities		Business-Type Activities		Total	
	2017	2016	2017	2016	2017	2016
Land	$ 6,878,034	$ 6,846,974	$ 1,469,075	$ 1,459,075	$ 8,347,109	$ 8,306,049
Buildings and structures	32,076,790	31,921,739	32,362,534	30,802,452	64,439,324	62,724,191
Other improvements	9,724,459	7,540,475	6,287,667	4,254,177	16,012,126	11,794,652
Machinery and equipment	3,480,806	3,637,811	3,027,350	2,497,734	6,508,156	6,135,545
Infrastructure	-	-	35,826,568	36,851,978	35,826,568	36,851,978
Vehicles and other equipment	3,859,950	3,524,996	-	-	3,859,950	3,524,996
Construction in progress	11,127,999	9,821,811	2,784,732	3,174,436	13,912,731	12,996,247
Total	$ 67,148,038	$ 63,293,806	$ 81,757,926	$ 79,039,852	$ 148,905,964	$ 142,333,658

Additional information on the County's capital assets can be found in Note 5 of the Basic Financial Statements.

Long-Term Debt. As of June 30, 2017, Lincoln County had total bonded debt outstanding of $61,235,000, all of which is debt backed by the full faith and credit of the County.

Lincoln County's Outstanding Debt
General Obligation Bonds

Figure 5

	Governmental Activities		Business-Type Activities		Total	
	2017	2016	2017	2016	2017	2016
General obligation bonds	$ 61,235,000	$ 68,160,000	$ -	$ 575,000	$ 61,235,000	$ 68,735,000

Lincoln County's total bonded debt decreased by $7,500,000, or 10.91%, during the past fiscal year, primarily due to paying off debt.

As mentioned in the financial highlights section of this document, Lincoln County, through rating confirmations, maintained an Aa3 bond rating from Moody's Investor Service and earned an AA+ rating from Standard and Poor's Corporation, and a AA rating from Fitch Ratings. These bond ratings are a clear indication of the sound financial condition of Lincoln County. This achievement is a primary factor in keeping interest costs low on the County's outstanding debt.

The State of North Carolina limits the amount of general obligation debt that a unit of government can issue up to 8% of the total assessed value of taxable property located within that government's boundaries. The legal debt margin for Lincoln County is approximately $615,800,000. The County had $13,500,000 in school bonds, authorized but un-issued, at June 30, 2017.

Additional information regarding Lincoln County's long-term debt can be found in Note 6 of this report.

Economic Factors and Next Year's Budgets and Rates

The following key economic indicators reflect the growth and prosperity of the County.

- The County unemployment rate for 2016-2017 averaged approximately 3.7%, slightly lower than the State average of 4.1%.
- The Lincoln County Industrial Park now has over 3.5 million square feet representing over $250 million in investments.
- In March 2010, Site Selection Magazine ranked the Lincolnton and Lincoln County Micropolitan Area 4th nationally for its ability to secure new and expanded corporate facility projects.
- The County's proximity to Charlotte and major transportation corridors continue to make it attractive for development.
- The County has a relative low tax rate of 61.1 cents, which is less than the State average of 65.54 cents.
- Lincoln County had the first LEED Certified (Silver) distribution center in North Carolina, built during 2009.

Budget Highlights for the Fiscal Year Ending June 30, 2018

Governmental Activities. The County adopted a General Fund budget in the amount of $98,739,155 for the fiscal year ended June 30, 2018, an increase of $3,104,941, or 3.24%, from the fiscal year 2017 budget. The majority of the budget increases were in Public Safety expenses and School funding. The property tax levy remained at $.611 per $100 valuation.

Business-Type Activities. The water and sewer rates in the County continue to remain stable with growth and customer base adequate to cover expenses, and tap and capacity fees have increased due to the increase in construction. The water system recently completed construction of additional distribution lines. This construction has allowed for the continued expansion of residential and commercial growth in the eastern part of the County along with providing adequate water service for our industrial park in the northern part of the County. Rates for landfill tipping fees have increased slightly, and availability fees have also increased to $99 per year to allow the accumulation of funds for future landfill cells and the closure of existing landfill cells.

Requests for Information

This report is designed to provide an overview of the County's finances for those with an interest in this area. Questions concerning any of the information found in this report or requests for additional information should be directed to the Finance Director, Lincoln County, 115 West Main Street, Lincolnton, North Carolina 28092.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF NET POSITION
JUNE 30, 2017

	Governmental Activities	Business-Type Activities	Total Primary Government	Component Units: Lincoln County ABC Board	Component Units: Lincoln Community Friends
Assets:					
Cash and cash equivalents	$ 36,108,971	$ 20,816,628	$ 56,925,599	$ 82,719	$ 12,911
Taxes receivable (net)	1,643,403	119,673	1,763,076	-	-
Accounts receivable (net)	2,628,163	1,568,490	4,196,653	-	-
Due from other governments	3,288,836	246,844	3,535,680	-	-
Inventories	-	-	-	366,126	-
Prepaid items	600,513	1,690	602,203	-	-
Cash and cash equivalents, restricted	2,139,703	1,607,902	3,747,605	-	-
Net pension asset	167,497	-	167,497	-	-
Capital assets, non-depreciable	18,006,033	4,253,807	22,259,840	308,381	-
Capital assets, depreciable, net	49,142,005	77,504,119	126,646,124	922,888	-
Total assets	113,725,124	106,119,153	219,844,277	1,680,114	12,911
Deferred Outflows of Resources:					
Contributions to pension plan in current fiscal year	1,911,460	278,442	2,189,902	-	-
Pension deferrals	5,764,423	854,613	6,619,036	27,426	-
Deferred charges, net	790,576	-	790,576	-	-
Total deferred outflows of resources	8,466,459	1,133,055	9,599,514	27,426	-
Liabilities:					
Accounts payable and other accrued liabilities	4,614,654	1,174,283	5,788,937	190,891	-
Prepaid fees	4,330	-	4,330	-	-
Liabilities to be paid from restricted assets:					
Customer deposits	-	106,350	106,350	-	-
Long-term liabilities:					
Net pension liability (LGERS)	8,847,731	1,322,076	10,169,807	18,889	-
Total pension liability (LEOSSA)	2,102,988	-	2,102,988	-	-
Due in less than one year	9,680,853	1,879,151	11,560,004	-	-
Due in more than one year	93,970,925	32,878,797	126,849,722	-	-
Total liabilities	119,221,481	37,360,657	156,582,138	209,780	-
Deferred Inflows of Resources:					
Pension deferrals	458,794	59,633	518,427	662	-
Prepaid taxes	230,328	-	230,328	-	-
Total deferred inflows of resources	689,122	59,633	748,755	662	-
Net Position:					
Net investment in capital assets	58,995,204	61,048,458	120,043,662	1,231,269	-
Restricted for Stabilization by State statute	10,695,174	-	10,695,174	-	-
Restricted for Register of Deeds	46,429	-	46,429	-	-
Restricted for Register of Deeds' pension plan	206,373	-	206,373	-	-
Restricted for education	1,241,118	-	1,241,118	-	-
Restricted for public safety	150,326	-	150,326	-	-
Restricted for working capital	-	-	-	100,992	-
Unrestricted	(69,053,644)	8,783,460	(60,270,184)	164,837	12,911
Total net position	$ 2,280,980	$ 69,831,918	$ 72,112,898	$ 1,497,098	$ 12,911

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED JUNE 30, 2017

		Program Revenues		
	Expenses	Charges for Services	Operating Grants and Contributions	Capital Grants and Contributions
Functions/Programs:				
Primary Government:				
Governmental Activities:				
General government	$ 19,017,062	$ 2,007,317	$ 1,031,959	$ 27,957
Public safety	29,972,508	5,824,386	940,929	-
Economic and physical development	1,850,463	-	30,330	-
Human services	17,149,240	1,381,443	11,146,419	-
Cultural and recreational	2,133,169	90,851	122,615	-
Transportation	217,002	-	-	-
Education	20,222,666	-	-	870,520
Debt service:				
Interest and fees	2,940,263	-	-	-
Total governmental activities	93,502,373	9,303,997	13,272,252	898,477
Business-Type Activities:				
Solid Waste	6,038,674	4,633,323	-	-
Water and Sewer	9,630,713	13,471,115	-	10,000
East Lincoln County Water and Sewer	7,176	-	-	-
Total business-type activities	15,676,563	18,104,438	-	10,000
Total primary government	$ 109,178,936	$ 27,408,435	$ 13,272,252	$ 908,477
Component Unit:				
Lincoln County ABC Board	$ 3,217,795	$ 3,406,841	$ -	$ -
Lincoln Community Friends	17,774	-	20,094	-
Total component unit	$ 3,235,569	$ 3,406,841	$ 20,094	$ -

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED JUNE 30, 2017

	Net (Expense) Revenue and Changes in Net Position				
	Primary Government			Component Units	
	Governmental Activities	Business-Type Activities	Total	Lincoln County ABC Board	Lincoln Community Friends
Functions/Programs:					
Primary Government:					
Governmental Activities:					
General government	$ (15,949,829)	$ -	$ (15,949,829)		
Public safety	(23,207,193)	-	(23,207,193)		
Economic and physical development	(1,820,133)	-	(1,820,133)		
Human services	(4,621,378)	-	(4,621,378)		
Cultural and recreational	(1,919,703)	-	(1,919,703)		
Transportation	(217,002)	-	(217,002)		
Education	(19,352,146)	-	(19,352,146)		
Debt service:					
Interest and fees	(2,940,263)	-	(2,940,263)		
Total governmental activities	(70,027,647)	-	(70,027,647)		
Business-Type Activities:					
Solid waste	-	(1,405,351)	(1,405,351)		
Water and sewer	-	3,850,402	3,850,402		
East Lincoln County water and sewer	-	(7,176)	(7,176)		
Total business-type activities	-	2,437,875	2,437,875		
Total primary government	(70,027,647)	2,437,875	(67,589,772)		
Component Unit:					
Lincoln County ABC Board				$ 189,046	$ -
Lincoln Community Friends				-	2,320
Total component unit				189,046	2,320
General Revenues:					
Ad valorem taxes	60,610,716	23,339	60,634,055	-	-
Local option sales tax	18,480,201	-	18,480,201	-	-
Utility franchise tax	223,349	-	223,349	-	-
Real estate transfer tax	1,380,914	-	1,380,914	-	-
Other taxes	436,698	-	436,698	-	-
Unrestricted intergovernmental	320,620	-	320,620	-	-
Investment earnings	152,094	67,004	219,098	812	-
Total general revenues	81,604,592	90,343	81,694,935	812	-
Change in net position	11,576,945	2,528,218	14,105,163	189,858	2,320
Net Position:					
Beginning of year - July 1	(8,281,644)	67,303,700	59,022,056	1,307,240	10,591
Restatement	(1,014,321)	-	(1,014,321)	-	-
Beginning net position, restated	(9,295,965)	67,303,700	58,007,735	1,307,240	10,591
End of year - June 30	$ 2,280,980	$ 69,831,918	$ 72,112,898	$ 1,497,098	$ 12,911

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

BALANCE SHEET
GOVERNMENTAL FUNDS
JUNE 30, 2017

	Major Funds		Nonmajor Funds	
	General Fund	General Capital Projects Fund	Other Governmental Funds	Total Governmental Funds
Assets:				
Cash and cash equivalents	$ 30,689,938	$ 348,570	$ 1,013,582	$ 32,052,090
Taxes receivable, net	1,370,868	-	272,535	1,643,403
Accounts receivable, net	2,166,053	809	459,700	2,626,562
Due from other governments	3,233,810	40,637	14,389	3,288,836
Prepaid items	229,546	-	-	229,546
Cash and cash equivalents, restricted	1,283,314	602,817	253,572	2,139,703
Total assets	$ 38,973,529	$ 992,833	$ 2,013,778	$ 41,980,140
Liabilities, Deferred Inflows of Resources, and Fund Balances:				
Liabilities:				
Accounts payable and other accrued liabilities	$ 2,488,528	$ 414,042	$ 187,784	$ 3,090,354
Prepaid fees	4,330	-	-	4,330
Total liabilities	2,492,858	414,042	187,784	3,094,684
Deferred Inflows of Resources:				
Unavailable taxes	1,370,868	-	272,535	1,643,403
Prepaid taxes	230,328	-	-	230,328
Unavailable revenue	309,116	-	-	309,116
Total deferred inflows of resources	1,910,312	-	272,535	2,182,847
Fund Balances:				
Non-spendable:				
Prepaid items	229,546	-	-	229,546
Restricted:				
Stabilization for State statute	5,093,410	4,810,048	791,716	10,695,174
Register of Deeds	46,429	-	-	46,429
Education	1,283,314	-	253,572	1,536,886
Public safety	-	602,817	150,326	753,143
Committed	-	-	421,667	421,667
Assigned	3,405,237	-	-	3,405,237
Unassigned	24,512,423	(4,834,074)	(63,822)	19,614,527
Total fund balances	34,570,359	578,791	1,553,459	36,702,609
Total liabilities, deferred inflows of resources, and fund balances	$ 38,973,529	$ 992,833	$ 2,013,778	

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

BALANCE SHEET
GOVERNMENTAL FUNDS
JUNE 30, 2017

	Nonmajor Funds: Other Governmental Funds	Total Governmental Funds
Amounts reported for governmental activities in the Statement of Net Position (Exhibit A) are different because:		
Capital assets, net of accumulated depreciation, used in governmental activities are not current financial resources and, therefore, are not reported in the funds.		67,148,038
Deferred charges related to advance refunding of long-term debt are not current financial resources and, therefore, are not reported in the funds.		
Deferred cost of refunding	$ 1,116,957	
Less accumulated amortization	(326,381)	790,576
Long-term liabilities and related accrued interest, unfunded pension obligations, compensated absences, and other post-employment benefits are not due and payable in the current period and, therefore, are not reported in the funds.		(103,651,778)
Total pension liability (LEOSSA)		(2,102,988)
Net pension asset - ROD		167,497
Net pension liability - LGERS		(8,847,731)
Contributions to the pension plan in the current fiscal year are deferred outflows of resources on the Statement of Net Position.		1,905,198
Benefit payments for LEOSSA are deferred outflows of resources on the Statement of Net Position.		39,971
Pension related deferrals		5,271,920
Deferred inflows in the governmental funds are used to offset accounts receivable not expected to be available within 90 days of year-end.		1,952,519
An Internal Service Fund is used by management to charge insurance costs to individual funds. The assets and liabilities of the Internal Service Fund are included in governmental activities in the Statement of Net Position.		2,905,149
Net position of governmental activities, per Exhibit A		$ 2,280,980

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES - GOVERNMENTAL FUNDS FOR THE YEAR ENDED JUNE 30, 2017

	General Fund	General Capital Projects Fund	Other Governmental Funds	Total Governmental Funds
Revenues:				
Ad valorem taxes	$ 53,404,086	$ -	$ 7,239,433	$ 60,643,519
Local option sales taxes	18,480,201	-	-	18,480,201
Other taxes and licenses	1,768,299	-	272,662	2,040,961
Unrestricted intergovernmental revenues	320,620	-	-	320,620
Restricted intergovernmental revenues	11,902,892	-	1,313,173	13,216,065
Permits and fees	2,785,238	-	-	2,785,238
Sales, service, and rents	5,743,361	-	-	5,743,361
Miscellaneous	893,374	27,957	-	921,331
Investment earnings	132,233	899	4,704	137,836
Total revenues	95,430,304	28,856	8,829,972	104,289,132
Expenditures:				
Current:				
General government	10,929,582	-	140	10,929,722
Public safety	24,644,343	-	7,760,083	32,404,426
Economic and physical development	1,807,485	-	-	1,807,485
Human services	18,644,959	-	-	18,644,959
Transportation	-	-	171,298	171,298
Cultural and recreational	2,104,571	-	79,090	2,183,661
Education	20,667,575	-	-	20,667,575
Capital outlay	-	4,272,465	215,529	4,487,994
Debt service:				
Principal repayments	8,846,700	-	-	8,846,700
Interest	3,059,430	-	-	3,059,430
Total expenditures	90,704,645	4,272,465	8,226,140	103,203,250
Revenues over (under) expenditures	4,725,659	(4,243,609)	603,832	1,085,882
Other Financing Sources (Uses):				
Long-term debt issued	41,470	2,047,000	-	2,088,470
Transfers (out)	(5,490,270)	(1,437,267)	(600,000)	(7,527,537)
Transfers in	2,037,267	5,438,272	51,998	7,527,537
Total other financing sources (uses)	(3,411,533)	6,048,005	(548,002)	2,088,470
Net change in fund balances	1,314,126	1,804,396	55,830	3,174,352
Fund Balances:				
Beginning of year - July 1	33,256,233	(1,225,605)	1,497,629	33,528,257
End of year - June 30	$ 34,570,359	$ 578,791	$ 1,553,459	$ 36,702,609

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

RECONCILIATION OF THE STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES - GOVERNMENTAL FUNDS TO THE STATEMENT OF ACTIVITIES FOR THE YEAR ENDED JUNE 30, 2017

Amounts reported for governmental activities in the Statement of Activities (Exhibit B) are different because:		
Net change in fund balances - total governmental funds (Exhibit D)	$	3,174,352
Capital outlays are reported as expenditures in the governmental funds statement. However, in the Statement of Activities, capital outlay is not an expense, rather it is an increase in capital assets.		7,004,539
Depreciation expense allocates the costs of capital assets over their useful lives. It is not reported as an expenditure in the governmental funds statement.		(3,148,617)
Capital assets disposed of during the year not recognized on the modified accrual basis.		(1,690)
Expenses related to compensated absences, pension, net pension obligation, and other post-employment benefits that do not require current financial resources are not reported as expenditures in the governmental funds statement.		(2,755,332)
Benefit payments and pension administration costs for LEOSSA are deferred outflows of resources on the Statement of Net Position.		39,971
Accrued interest and amortization of refunding costs and premiums and amortized expenses that do not require current financial resources are not reported as expenditures in the governmental funds statement.		119,167
Exhibit D reports revenues using a current financial resources basis, which generally means revenue is recognized when collected, or is expected to be collected, within 90 days of year-end. Exhibit B reports revenues when the earning process is complete, regardless of when it is collected. This measurement difference causes timing of revenue recognition differences for the following revenue types:		
Property taxes		(32,803)
Other fees for service		(21,606)
Principal repayments are reported as expenditures in the governmental funds statement. However, in the Statement of Activities, these transactions are not an expense, rather they are a decrease in liabilities.		8,846,700
The net revenue of certain activities of the Internal Service Fund is reported with governmental activities.		440,734
The issuance of long-term debt (e.g., bonds, leases) and the refunding of long-term debt provide current financial resources to governmental funds. The repayment of refunded long-term debt consumes the current financial resources of governmental funds. Neither transaction, however, is reported in the Statement of Activities.		(2,088,470)
Change in net position of governmental activities	$	11,576,945

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
STATEMENT OF REVENUES, EXPENDITURES, AND
CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017

	Budgeted Amounts			Variance with Final Budget
	Original	Final	Actual	Over/Under
Revenues:				
Ad valorem taxes	$ 51,510,000	$ 51,736,150	$ 53,404,086	$ 1,667,936
Local option sales taxes	15,584,990	15,648,827	18,480,201	2,831,374
Other taxes and licenses	1,156,327	1,356,327	1,768,299	411,972
Unrestricted intergovernmental revenues	305,000	305,000	320,620	15,620
Restricted intergovernmental revenues	12,797,616	12,895,414	11,902,892	(992,522)
Permits and fees	1,998,780	2,204,455	2,785,238	580,783
Sales, service, and rents	5,480,000	5,587,208	5,743,361	156,153
Miscellaneous	626,113	668,774	893,374	224,600
Investment earnings	75,000	75,000	132,233	57,233
Total revenues	89,533,826	90,477,155	95,430,304	4,953,149
Expenditures:				
Current:				
General government	10,587,418	12,143,639	10,929,582	1,214,057
Public safety	24,825,665	25,787,087	24,644,343	1,142,744
Economic and physical development	1,797,806	1,990,698	1,807,485	183,213
Human services	19,844,145	20,222,806	18,644,959	1,577,847
Cultural and recreational	2,252,240	2,279,136	2,104,571	174,565
Education	19,717,575	20,667,575	20,667,575	-
Debt service:				
Principal	9,000,270	9,000,270	8,846,700	153,570
Interest and fees	3,326,045	3,368,045	3,059,430	308,615
Total expenditures	91,351,164	95,459,256	90,704,645	4,754,611
Revenues over (under) expenditures	(1,817,338)	(4,982,101)	4,725,659	9,707,760
Other Financing Sources (Uses):				
Long-term debt issued	-	42,000	41,470	(530)
Transfers (out)	(4,283,050)	(5,490,270)	(5,490,270)	-
Transfers in	600,000	2,037,267	2,037,267	-
Fund balance appropriated	5,500,388	8,393,104	-	(8,393,104)
Total other financing sources (uses)	1,817,338	4,982,101	(3,411,533)	(8,393,634)
Net change in fund balance	$ -	$ -	1,314,126	$ 1,314,126
Fund Balance:				
Beginning of year - July 1			33,256,233	
End of year - June 30			$ 34,570,359	

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF NET POSITION
PROPRIETARY FUNDS
JUNE 30, 2017

	Business-Type Activities				Governmental Activities
	Solid Waste Fund	Water and Sewer Fund	East Lincoln County Water and Sewer District Fund	Total Enterprise Funds	Internal Service Funds
Assets:					
Current assets:					
Cash and cash equivalents	$ 7,084,237	$ 13,564,871	$ 167,520	$ 20,816,628	$ 4,056,881
Taxes receivable, net	116,245	-	3,428	119,673	-
Accounts receivable, net	187,483	1,380,991	16	1,568,490	1,601
Due from other governments	108,599	138,245	-	246,844	-
Prepaid items	490	1,200	-	1,690	370,967
Cash and cash equivalents, restricted	983,468	624,434	-	1,607,902	-
Total current assets	8,480,522	15,709,741	170,964	24,361,227	4,429,449
Capital assets:					
Non-depreciable capital assets	640,648	3,613,159	-	4,253,807	-
Depreciable capital assets, net	8,219,342	69,284,777	-	77,504,119	-
Total non-current assets	8,859,990	72,897,936	-	81,757,926	-
Total assets	17,340,512	88,607,677	170,964	106,119,153	4,429,449
Deferred Outflows of Resources:					
Contributions to pension plan in current fiscal year	128,512	149,930	-	278,442	-
Pension deferrals	394,437	460,176	-	854,613	-
Total deferred outflows of resources	522,949	610,106	-	1,133,055	-
Liabilities:					
Current liabilities:					
Accounts payable and other accrued liabilities	374,927	799,356	-	1,174,283	1,524,300
Current portion of compensated absences	25,000	31,000	-	56,000	-
Current portion of long-term debt	288,338	1,534,813	-	1,823,151	-
Liabilities to be paid from restricted assets:					
Customer deposits	-	106,350	-	106,350	-
Total current liabilities	688,265	2,471,519	-	3,159,784	1,524,300
Non-current liabilities:					
Net pension liability	610,189	711,887	-	1,322,076	-
Accrued landfill closure/post-closure care costs	9,842,088	-	-	9,842,088	-
Compensated absences	47,190	60,755	-	107,945	-
Other post-employment benefits	1,223,831	1,317,064	-	2,540,895	-
Long-term debt	3,536,480	16,851,389	-	20,387,869	-
Total non-current liabilities	15,259,778	18,941,095	-	34,200,873	-
Total liabilities	15,948,043	21,412,614	-	37,360,657	1,524,300
Deferred Inflows of Resources:					
Pension deferrals	27,523	32,110	-	59,633	-
Net Position:					
Net investment in capital assets	6,018,640	55,029,818	-	61,048,458	-
Unrestricted	(4,130,745)	12,743,241	170,964	8,783,460	2,905,149
Total net position	$ 1,887,895	$ 67,773,059	$ 170,964	$ 69,831,918	$ 2,905,149

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

**STATEMENT OF REVENUES, EXPENSES,
AND CHANGES IN FUND NET POSITION
PROPRIETARY FUNDS
FOR THE YEAR ENDED JUNE 30, 2017**

	Business-Type Activities				Governmental Activities
	Solid Waste Fund	Water and Sewer Fund	East Lincoln County Water and Sewer District Fund	Total Enterprise Funds	Internal Service Funds
Operating Revenues:					
Charges for services	$ 892,250	$ 13,013,052	$ -	$ 13,905,302	$ -
Water and sewer taps	-	442,755	-	442,755	-
Other operating revenues	-	15,000	-	15,000	8,071,962
Total operating revenues	892,250	13,470,807	-	14,363,057	8,071,962
Operating Expenses:					
Water treatment and distribution	-	4,416,406	-	4,416,406	-
Sewage collection	-	1,491,010	-	1,491,010	-
Pumping station	-	212,639	-	212,639	-
Landfill operations	3,480,640	-	-	3,480,640	-
Water and Sewer District	-	-	815	815	-
Landfill closure and post-closure costs	1,623,914	-	-	1,623,914	-
Other services	-	-	-	-	7,678,819
Depreciation	850,107	3,036,317	-	3,886,424	-
Total operating expenses	5,954,661	9,156,372	815	15,111,848	7,678,819
Operating income (loss)	(5,062,411)	4,314,435	(815)	(748,791)	393,143
Non-Operating Revenues (Expenses):					
Ad valorem taxes	-	-	23,339	23,339	-
Availability fee	3,503,903	-	-	3,503,903	-
Investment earnings	26,374	40,400	230	67,004	14,258
Loss on disposal of capital assets	-	(3,833)	-	(3,833)	-
White goods disposal tax	25,110	-	-	25,110	-
Tire disposal tax	108,980	-	-	108,980	-
Franchise fees	36,491	-	-	36,491	-
Solid waste disposal tax	59,046	-	-	59,046	-
NC electronics management fund distribution	6,038	-	-	6,038	-
Miscellaneous	1,505	308	-	1,813	33,333
Interest and fees	(84,013)	(470,508)	(6,361)	(560,882)	-
Total non-operating revenues (expenses)	3,683,434	(433,633)	17,208	3,267,009	47,591
Income (loss) before contributions	(1,378,977)	3,880,802	16,393	2,518,218	440,734
Capital contributions	-	10,000	-	10,000	-
Transfers in	-	-	867,014	867,014	-
Transfers out	-	(867,014)	-	(867,014)	-
Change in net position	(1,378,977)	3,023,788	883,407	2,528,218	440,734
Net Position:					
Beginning of year - July 1	3,266,872	64,749,271	(712,443)	67,303,700	2,464,415
End of year - June 30	$ 1,887,895	$ 67,773,059	$ 170,964	$ 69,831,918	$ 2,905,149

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
FOR THE YEAR ENDED JUNE 30, 2017

	Business-Type Activities				Governmental Activities
	Solid Waste Fund	Water and Sewer Fund	East Lincoln County Water and Sewer District Fund	Total Enterprise Funds	Internal Service Funds
Operating Activities:					
Cash received from customers	$ 857,754	$ 13,116,942	$ -	$ 13,974,696	$ -
Cash received from interfund services	-	-	-	-	8,071,481
Cash received from other operating revenues	3,741,073	15,308	27,719	3,784,100	33,333
Cash paid for goods and services	(1,281,298)	(4,389,122)	(4,812)	(5,675,232)	(7,752,485)
Cash paid on behalf of employees	(1,833,236)	(1,374,172)	-	(3,207,408)	-
Net cash provided (used) by operating activities	1,484,293	7,368,956	22,907	8,876,156	352,329
Non-Capital Financing Activities:					
Transfers in (out)	-	(867,014)	867,014	-	-
Loans (to) from other funds	(77,784)	(334,000)	-	(411,784)	-
Net cash provided (used) by non-capital financing activities	(77,784)	(1,201,014)	867,014	(411,784)	-
Capital and Related Financing Activities:					
Acquisition and construction of capital assets	(3,266,421)	(3,331,910)	-	(6,598,331)	-
Debt issued	3,301,670	3,467,860	-	6,769,530	-
Debt principal paid	(111,908)	(1,344,427)	(825,000)	(2,281,335)	-
Interest and fees paid	(84,013)	(302,413)	(6,361)	(392,787)	-
Net cash provided (used) by capital and related financing activities	(160,672)	(1,510,890)	(831,361)	(2,502,923)	-
Investing Activities:					
Interest on investments	26,374	40,400	230	67,004	14,258
Net increase (decrease) in cash and cash equivalents/investments	1,272,211	4,697,452	58,790	6,028,453	366,587
Cash and Cash Equivalents/Investments:					
Beginning of year - July 1	6,795,494	9,491,853	108,730	16,396,077	3,690,294
End of year - June 30	$ 8,067,705	$ 14,189,305	$ 167,520	$ 22,424,530	$ 4,056,881

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
FOR THE YEAR ENDED JUNE 30, 2017

	Business-Type Activities				Governmental Activities
	Solid Waste Fund	Water and Sewer Fund	East Lincoln County Water and Sewer District Fund	Total Enterprise Funds	Internal Service Funds
Reconciliation of Operating Income (Loss) to Net Cash Provided (Used) by Operating Activities:					
Operating income (loss)	$ (5,062,411)	$ 4,314,435	$ (815)	$ (748,791)	$ 393,143
Adjustments to Reconcile Operating Income (Loss) to Net Cash Provided (Used) by Operating Activities:					
Depreciation	850,107	3,036,317	-	3,886,424	-
Non-operating items	3,741,073	308	23,339	3,764,720	33,333
Change in Assets and Liabilities:					
(Increase) decrease in receivables	22,795	(338,865)	4,380	(311,690)	(481)
(Increase) decrease in due from other governments	(57,291)	15,262	-	(42,029)	-
(Increase) decrease in prepaids	2,109	4,387	-	6,496	-
(Increase) decrease in other assets	-	-	-	-	(88,802)
(Increase) decrease in deferred outflows - pension	(401,649)	(468,590)	-	(870,239)	-
Increase in net pension liability	480,026	560,030	-	1,040,056	-
Decrease in deferred inflows - pension	(41,458)	(48,368)	-	(89,826)	-
Increase (decrease) in accounts payable	215,730	192,622	(3,997)	404,355	15,136
Increase (decrease) in customer deposits	-	(33,220)	-	(33,220)	-
Increase (decrease) in landfill closure/ post-closure care cost	1,623,914	-	-	1,623,914	-
Increase (decrease) in other post-employment benefits	109,845	136,000	-	245,845	-
Increase (decrease) in compensated absences payable	1,503	(1,362)	-	141	-
Total adjustments	6,546,704	3,054,521	23,722	9,624,947	(40,814)
Net cash provided (used) by operating activities	$ 1,484,293	$ 7,368,956	$ 22,907	$ 8,876,156	$ 352,329
Non-Cash Investing, Capital, and Financing Activities:					
Contributed depreciable assets, net of accumulated depreciation	$ -	$ 10,000	$ -	$ 10,000	$ -

The accompanying notes are an integral part of the financial statements.

LINCOLN COUNTY, NORTH CAROLINA

STATEMENT OF FIDUCIARY NET POSITION
FIDUCIARY FUNDS
JUNE 30, 2017

	Agency Funds
Assets:	
Cash and cash equivalents	$ 403,108
Total assets	$ 403,108
Liabilities:	
Intergovernmental payable	$ 403,108
Total liabilities	$ 403,108

The accompanying notes are an integral part of the financial statements.

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Note 1. Summary of Significant Accounting Policies

The accounting policies of Lincoln County (the "County") and its component units conform to generally accepted accounting principles (GAAP) as applicable to governments. The following is a summary of the more significant accounting policies:

A. Reporting Entity

The County, which is governed by a five-member Board of Commissioners, is one of the 100 counties established in North Carolina under North Carolina General Statute 153 A-10. As required by generally accepted accounting principles, these financial statements present the County and its component units, legally separate entities for which the County is financially accountable. The following discretely presented component units are reported in separate columns in the County's government-wide financial statements in order to emphasize that it is legally separate from the County. The blended component unit, although it is a legally separate entity, is in substance, part of the County's operations.

Component Units

Blended Component Unit

The East Lincoln County Water and Sewer District Fund (the "District") exists to provide and maintain a sewer system for the County residents within each district. Under State law [G.S. 162A-89], the County's Board of Commissioners also serve as the governing board for the District. Therefore, the District is reported as an Enterprise Fund in the County's financial statements. The District does not issue separate financial statements.

Discretely Presented Component Units

Lincoln County ABC Board

The members of the governing body of the Lincoln County ABC Board (the "ABC Board") are appointed by the County. In addition, the ABC Board is required by State statute to distribute its surpluses to the General Fund of the County. The ABC Board, which has a June 30 year-end, is presented as if it were a proprietary fund. Complete financial statements for the ABC Board may be obtained from Huggins & Co., P.O. Box 680668, Charlotte, North Carolina 28216.

Lincoln Community Friends

Lincoln Community Friends, a 501(c)(3) corporation, was founded to obtain grants for Lincoln County. Lincoln Community Friends is made up of a nine-member Board, all of whom are appointed by the County Commissioners. The County can remove any commissioner of the entity with or without cause. Lincoln Community Friends does not issue separate financial statements.

Lincoln County Industrial Facility and Pollution Control Financing Authority

Lincoln County Industrial Facility and Pollution Control Financing Authority (the "Authority") exists to issue and service revenue bond debt of private businesses for economic development purposes. The Authority is governed by a seven-member Board, all of whom are appointed by the County Commissioners. The County can remove any commissioner of the Authority with or without cause. The Authority has no financial transactions or account balances; therefore, it is not presented in the basic financial statements. The Authority does not issue separate financial statements.

B. Basis of Presentation

Government-Wide Statements: The Statement of Net Position and the Statement of Activities display information about the primary government net position (the County) and its component units. These statements include the financial activities of the overall government, except for fiduciary activities. Eliminations have been made to minimize the double counting of internal activities. These statements distinguish between the *governmental* and *business-type activities* of the County. Governmental activities generally are financed through taxes, intergovernmental revenues, and other non-exchange transactions. Business-type activities are financed, in whole or in part, by fees charged to external parties.

The Statement of Activities presents a comparison between direct expenses and program revenues for the different business-type activities of the County and for each function of the County's governmental activities. Direct expenses are those that are specifically associated with a program or function and, therefore, are clearly identifiable to a particular function. Indirect expense allocations that have been made in the funds have been reversed for the Statement of Activities. Program revenues include (a) fees and charges paid by the recipients of goods or services offered by the programs and (b) grants and contributions that are restricted to meeting the operational or capital requirements of a particular program. Revenues that are not classified as program revenues, including all taxes, are presented as general revenues.

Fund Financial Statements: The fund financial statements provide information about the County's funds, including its fiduciary funds and blended component units. Separate statements for each fund category – *governmental, proprietary, and fiduciary* – are presented. The emphasis of fund financial statements is on major governmental and enterprise funds, each of which is displayed in a separate column. All remaining governmental and enterprise funds are aggregated and reported as nonmajor funds.

Proprietary fund operating revenues, such as charges for services, result from exchange transactions associated with the principal activity of the fund. Exchange transactions are those in which each party receives and gives up essentially equal values. Non-operating revenues, such as subsidies, result from non-exchange transactions. Other non-operating items, such as investment earnings, are ancillary activities.

The County reports the following major governmental funds:

General Fund. The General Fund is the general operating fund of the County. It is used to account for all financial resources of the general government, except those that are required to be accounted for in another fund. The primary revenue sources are ad valorem taxes, sales taxes, federal and State grants, and user fees. The primary expenditures are for public safety, economic and physical development, human services, cultural and recreational, transportation, education, and general governmental services. Debt service payments of general long-term debt are accounted for in the General Fund.

General Capital Projects Fund. The General Capital Projects Fund is used to account for financial resources to be used for the acquisition and construction of major capital facilities (other than those financed by proprietary funds and trust funds).

The County reports the following nonmajor governmental funds:

Special Revenue Funds. Special revenue funds are used to account for specific revenue sources (other than expendable trusts or major capital projects) that are legally restricted to expenditures for specified purposes. The County has the following special revenue funds: the Fire Districts Fund, the Law Enforcement Fund, the Federal Law Enforcement Fund, the Emergency Telephone Systems Fund, and the Special Grants Fund.

Capital Projects Funds. Capital projects funds are used to account for and report financial resources that are restricted, committed, or assigned to expenditures for capital outlays, including the acquisition or construction of capital facilities and other capital assets. The County has the following nonmajor capital projects funds: the School Capital Projects Fund and the Capital Reserve Fund. The Capital Reserve Fund is a legally adopted Capital Reserve Fund under North Carolina General Statutes. However, for statement presentation, in accordance with GASB Statement No. 54, the Capital Reserve Fund is presented as a Capital Projects Fund. The budgetary comparison for the Capital Reserve Fund has been included in the supplemental information.

The County reports all of its enterprise funds as major:

Enterprise Funds. Lincoln County has the following enterprise funds: the Solid Waste Fund, the Water and Sewer Fund, and the East Lincoln County Water and Sewer District Fund. In addition, the Water and Sewer Capital Projects Fund is consolidated with the Water and Sewer Fund for financial reporting purposes. The enterprise funds are used to account for those operations that (a) are financed and operated in a manner similar to private business enterprises, where the intent of the governing body is that the costs (expenses, including depreciation) of providing goods or services to the general public on a continuing basis, be financed or recovered primarily through user charges or (b) where the governing body has decided that the periodic determination of revenues earned, expenses incurred, and/or net income is appropriate for capital maintenance, public policy, management control, accountability, or other purposes.

The County reports the following fund types:

Internal Service Funds. Internal service funds account for operations that provide services to other departments or agencies of the government or to other governments on a cost-reimbursement basis. Lincoln County has two internal service funds: the Health Insurance Fund and the Workers' Compensation Fund.

Agency Funds. Agency funds are custodial in nature and do not involve the measurement of operating results. Agency funds are used to account for assets the County holds on behalf of others. The County maintains five agency funds: the Social Services Fund, which accounts for monies deposited with the Department of Social Services for the benefit of certain individuals; the Tax Collector Fund, which accounts for ad valorem property taxes that are billed and collected by the County for a municipality and fire districts within the County; the Register of Deeds SB202 Fund, which accounts for the $6.20 of each fee collected by the Register of Deeds for registering or filing a deed of trust or mortgage; the Inmate Trust Fund, which accounts for monies held on behalf of inmates in the County jail; and the Miscellaneous Fund, which accounts for monies deposited with various other organizations.

C. Measurement Focus, Basis of Accounting, and Financial Statement Presentation

In accordance with North Carolina General Statutes, all funds of the County are maintained during the year using the modified accrual basis of accounting.

The government-wide, proprietary, and fiduciary fund financial statements are reported using the *economic resources measurement focus* and the *accrual basis of accounting,* except for the agency funds which have no measurement focus. Revenues are recorded when earned, and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Non-exchange transactions, in which the County gives (or receives) value without directly receiving (or giving) equal value in exchange, include property taxes, grants, entitlements, and donations. On an accrual basis, property taxes are recognized as revenues in the year for which they are levied. Grants, entitlements, and donations are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

Amounts reported as program revenues include 1) charges to customers or applicants for goods, services, or privileges provided; 2) operating grants and contributions; and 3) capital grants and contributions, including special assessments. Internally dedicated resources are reported as general revenues rather than as program revenues. Likewise, general revenues include all taxes.

Proprietary funds distinguish operating revenues and expenses from non-operating items. Operating revenues and expenses generally result from providing services and producing and delivering goods in connection with a proprietary fund's principal ongoing operations. The principal operating revenues of the County's enterprise funds are charges to customers for sales and services. The County also recognizes as operating revenue the portion of tap fees intended to recover the cost of connecting a new customer to the water and sewer system. Operating expenses for enterprise funds include the cost of sales and services, administrative expenses, and depreciation on capital assets. All revenues and expenses not meeting this definition are reported as non-operating revenues and expenses.

Governmental Fund Financial Statements. Governmental funds are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Under this method, revenues are recognized when measurable and available.

Expenditures are recorded when the related fund liability is incurred, except for principal and interest on general long-term debt, claims and judgements, and compensated absences, which are recognized as expenditures to the extent they have matured. General capital asset acquisitions are reported as expenditures in governmental funds. Proceeds of general long-term debt and acquisitions under capital leases are reported as other financing sources.

The County considers all revenues available if they are collected within 90 days after year-end, except for property taxes. Ad valorem property taxes receivable is not accrued as revenue in the governmental funds statement because the amount is not susceptible to accrual. At June 30, taxes receivable for property other than motor vehicles are materially past due and are not considered to be an available resource to finance the operations of the current year. As of September 1, 2013, State law altered the procedures for the assessment and collection of property taxes on registered motor vehicles in North Carolina. Effective with this change in the law, the State of North Carolina is responsible for billing and collecting the property taxes on registered motor vehicles on behalf of all municipalities and special tax districts. Property taxes are due when vehicles are registered. The billed taxes are applicable to the fiscal year in which they are received. Uncollected taxes that were billed in periods prior to September 1, 2013, and for limited registration plates, are shown as a receivable in these financial statements and are offset by deferred inflows of resources.

Sales taxes and certain intergovernmental revenues, such as the utilities franchise tax, collected and held by the State at year-end on behalf of the County, are recognized as revenues. Other intergovernmental revenues and sales and services are not susceptible to accrual because, generally, they are not measurable until received in cash. All taxes, including those dedicated for specific purposes are reported as general revenues rather than program revenues. Expenditure-driven grants are recognized as revenue when the qualifying expenditures have been incurred and all other grant requirements have been satisfied. Under the terms of grant agreements, the County funds certain programs by a combination of specific cost-reimbursement grants, categorical block grants, and general revenues. Thus, when program expenses are incurred, there are both restricted and unrestricted net position available to finance the program. It is the County's policy to first apply cost-reimbursement grant resources to such programs, followed by categorical block grants, and then by general revenues.

D. Budgetary Data

The County's budgets are adopted as required by the North Carolina General Statutes. An annual budget ordinance is adopted for the General Fund, special revenue funds, Capital Reserve Fund, and enterprise funds. All unencumbered annual appropriations lapse at fiscal year-end. However, encumbered appropriations are re-appropriated in the ensuing year's budget. Project ordinances are adopted for the capital projects funds. All budgets are prepared using the modified accrual basis of accounting.

The lowest level that the budget is legally adopted is at the department level for the General Fund, special revenue funds, and enterprise funds and at the project level for the capital project funds. Expenditures may not legally exceed appropriations at the departmental level for the General Fund, special revenue funds, and enterprise funds and at the project level for the capital project funds. Amendments are required for any revisions that alter total expenditures of any fund or that change departmental appropriations. The governing board must approve all amendments. During the year, several amendments to the original budget were necessary. The County Manager may transfer up to $50,000 between departments of the same fund. Such transfers must be reported at the next regular meeting of the Board of County Commissioners.

A budget calendar is included in State law that prescribes the last day on which certain steps of the budget procedure are to be performed. The following schedule lists the tasks to be performed and the date by which each is required to be completed.

April 30 – Each department head will transmit to the Budget Officer the departmental budget requests and revenue estimates for the current year.

June 1 – The budget and budget message shall be submitted to the governing board. The public hearing on the budget should be scheduled at this time.

July 1 – The budget ordinance shall be adopted by the governing board.

Also, as required by State law, the County's Health Insurance Fund and the Workers' Compensation Insurance Fund, intra-governmental service funds, operate under a financial plan that was adopted by the governing board at the time the County's budget ordinance was approved. The financial plan was also entered into the minutes of the governing board. During the year, several changes to the original financial plan were necessary.

E. Assets, Liabilities, Deferred Inflows and Outflows, and Fund Equity

Deposits and Investments. All deposits of the County with banks and savings associations are made in Board-designated official depositories and are secured as required by North Carolina G.S. 159-31. The County may designate as an official depository, any bank or savings association whose principal office is located in North Carolina. Also, the County may establish time deposit accounts, such as NOW and Super NOW accounts, money market accounts, and certificates of deposit.

State law [G.S. 159-30(c)] authorizes the County to invest in obligations of the United States or obligations fully guaranteed both as to principal and interest by the United States; obligations of the State of North Carolina; bonds and notes of any North Carolina local government or public authority; obligations of certain non-guaranteed federal agencies; certain high quality issues of commercial paper and bankers' acceptances, and the North Carolina Capital Management Trust (NCCMT).

The County's investments are carried at fair value as determined by quoted market prices. The NC Capital Management Trust Government Portfolio, an SEC-registered 2a-7 external investment pool, is measured at amortized cost, which is the NCCMT's share price. The NCCMT Term Portfolio's securities are valued at fair value.

A central cash depository is maintained by the County to facilitate disbursement and investment and to maximize investment income. Therefore, all cash and investments are essentially demand deposits and are considered cash and cash equivalents.

Accounts Receivable and Payable. Activity between funds that are representative of lending/borrowing arrangements outstanding at the end of the fiscal year are referred to as either "due to/from other funds" (i.e., the current portion of interfund loans) or "advances to/from other funds" (i.e., the non-current portion of interfund loans). All other outstanding balances between funds are reported as "due to/from other funds". Any residual balances outstanding between the governmental activities and business-type activities are reported in the government-wide financial statements as "internal balances".

Advances between funds, as reported in the fund financial statements, are offset by a fund balance reserve account in applicable governmental funds to indicate that they are not available for appropriation and are not expendable available financial resources.

Ad Valorem Taxes Receivable. In accordance with North Carolina G.S. 105.347 and G.S. 159-13(a), the County levies ad valorem taxes on all real and personal property sited within the County. Other than taxes on motor vehicles, taxes are levied on July 1 of the fiscal year and are due and payable without penalty until January 6, when property taxes become enforceable as liens. These taxes are based on the assessed values as of January 1, 2016. As allowed by State law, the County has established a schedule of discounts that apply to taxes that are paid prior to the due date. In the County's General Fund, ad valorem tax revenues are reported net of such discounts.

Restricted Assets. Customer deposits held by the County before any services are supplied are restricted to the service for which the deposit was collected. The sinking fund balance for QZAB debt is restricted for the purpose of future debt retirement. The unexpended bond proceeds are classified as restricted assets, because their use is completely restricted to the purpose for which the bonds were originally issued.

Fund	Description	Amount
General Fund	QZAB Sinking Fund	$ 1,241,118
General Fund	Unexpended proceeds	42,196
General Capital Projects Fund	Unexpended proceeds	602,817
School Capital Projects Fund	Unexpended proceeds	253,572
Solid Waste Fund	Unexpended proceeds	983,468
Water and Sewer Fund	Unexpended proceeds	518,084
Water and Sewer Fund	Customer deposits	106,350
Total restricted cash		$ 3,747,605

Allowances for Doubtful Accounts. All receivables are shown net of an allowance for doubtful accounts. Estimation of the amount appropriate to each class of receivable is based on analysis of historical date and current conditions.

Prepaid Items. Certain payments to vendors reflect costs applicable to future accounting periods and are recorded as prepaid items in both government-wide and fund financial statements.

Capital Assets. Capital assets, which include property, plant, equipment, and infrastructure assets (e.g., roads, bridges, sidewalks, and similar items), are reported in the applicable governmental or business-type activities columns in the government-wide financial statements. The government defines capital assets as assets with an initial, individual cost of more than $5,000 and an estimated useful life in excess of one year. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets received prior to June 30, 2015 are recorded at their estimated fair value at the date of donation. Donated capital assets received after June 30, 2015 are recorded at acquisition value. All other purchased or constructed capital assets are reported at cost or estimated historical cost.

Major outlays for capital assets and improvements are capitalized as the projects are constructed. Interest incurred during the construction phase of capital assets of business-type activities is included as part of the capitalized value of the assets constructed.

Enterprise plant assets of the County are depreciated on a composite straight-line basis for the entire plant, regardless of the year of the acquisition, at a 2% annual rate. In the composite rate, gain or loss on dispositions is not calculated except in extraordinary circumstances. Landfill cells are depreciated based on the percent of capacity used each year.

Other capital assets are depreciated on a straight-line basis over the following estimated useful lives:

Asset	Years
Buildings	25-50 years
Infrastructure	30-50 years
Furniture and office equipment	5-20 years
Equipment	7-15 years
Vehicles	6 years
Computer software	5 years
Water and sewer lines	25-80 years

Deferred Outflows and Inflows of Resources

In addition to assets, the Statement of Net Position will sometimes report a separate section for deferred outflow of resources. This separate financial statement element, *Deferred Outflows of Resources*, represents a consumption of net position that applies to a future period and so will not be recognized as an expense or expenditure until then. The County has three items that meet this criteria – a charge on refunding, contributions made to the pension plan in the current fiscal year, and pension related deferrals.

In addition to liabilities, the Statement of Net Position can also report a separate section for deferred inflows of resources. This separate financial statement element, *Deferred Inflows of Resources*, represents an acquisition of net position that applies to a future period and so will not be recognized as revenue until then. The County has several items that meet the criteria for this category – prepaid taxes, property taxes receivable, health department receivables, ambulance receivables, and other pension related deferrals.

Long-Term Obligations. In the government-wide financial statements and proprietary fund types in the fund financial statements, long-term debt and other long-term obligations are reported as liabilities in the applicable governmental activities, business-type activities, or proprietary fund type Statement of Net Position. Bond premium and discounts are deferred and amortized over the life of the bonds using the straight-line method that approximates the effective interest method. Bonds payable are reported net of the applicable bond premiums or discount. Bond issuance costs, except for prepaid insurance costs, are expensed in the reporting period in which they are incurred. Prepaid insurance costs are expensed over the life of the debt.

In fund financial statements, governmental fund types recognize bond premiums and discounts, as well as bond issuance costs, during the current period. The face amount of debt issued is reported as other financing sources. Premiums received on debt issuances are reported as other financing sources, while discounts on debt issuances are reported as other financing uses. Issuance costs, whether or not withheld from the actual debt proceeds received, are reported as debt service expenditures.

The County's long-term debt for the water districts and solid waste is carried within the Enterprise Fund. The debt service requirements for the water districts' debt are being met by water revenues, but the taxing power of the County is pledged to make these payments if water revenues should ever be insufficient.

Compensated Absences. The vacation policy of the County provides for the accumulation of up to thirty (30) days earned vacation leave, with such leave being fully vested when earned. In the County's governmental proprietary funds, an expense and a liability for compensated absences and the salary-related payments are recorded as the leave is earned. The County has assumed a first-in, first-out method of using accumulated compensated time. The portion of that time that is estimated to be used in the next fiscal year has been designated as a current liability in the government-wide financial statements.

The County's sick leave policy provides for an unlimited accumulation of earned sick leave. Sick leave does not vest, but any unused sick leave accumulated at the time of retirement may be used in the determination of length of service for retirement benefit purposes. Since the County has no obligation for the accumulated sick leave until it is actually taken, no accrual for sick leave has been made.

Net Position/Fund Balances. Net position in government-wide and proprietary fund financial statements are classified as net investment in capital assets: restricted and unrestricted. Restricted net position represents constraints on resources that are either externally imposed by creditors, grantors, contributors, laws or regulations of other governments, or imposed by law through State statute.

In the governmental fund financial statements, fund balance is composed of five classifications designed to disclose the hierarchy of constraints placed on how fund balance can be spent.

The governmental fund types classify fund balances as follows:

Non-Spendable Fund Balance. This classification includes amounts that cannot be spent because they are either (a) not in spendable form or (b) legally or contractually required to be maintained intact.

Prepaid items – portion of fund balance that is not an available resource, because it represents prepaid amounts, which are not spendable resources. Non-spendable fund balance for prepaids was $229,546 at June 30, 2017.

Restricted Fund Balance. This classification includes amounts that are restricted to specific purposes externally imposed by creditors or imposed by law.

Restricted for Stabilization for State Statute – portion of fund balance that is restricted by State statute [G.S. 159-8(a)].

Restricted for Register of Deeds – portion of fund balance restricted by State statute for automation enhancement (software) improvements.

Restricted for Public Safety – portion of fund balance restricted by revenue source for public safety activities, such as sheriff, fire, EMS, and E-911.

Restricted for Education – portion of fund balance restricted by revenue source to be used to support public education.

Restricted fund balance at June 30, 2017 is as follows:

Purpose	General Fund	General Capital Projects Fund	Other Governmental Funds	Total
Restricted, All Other:				
Stabilization by State statute	$ 5,093,410	$ 4,810,048	$ 791,716	$ 10,695,174
Register of Deeds	46,429	-	-	46,429
Public safety	-	602,817	150,326	753,143
Education	1,283,314	-	253,572	1,536,886
Total	$ 6,423,153	$ 5,412,865	$ 1,195,614	$ 13,031,632

Restricted net position on Exhibit A varies from restricted fund balance on Exhibit C by the amount of unspent debt proceeds of $898,585 and Register of Deeds' Pension Plan of $206,373 for a net difference of $47,199.

Committed Fund Balance. This classification includes amounts that can be used only for the specific purposes determined by a formal action of the government's highest level of decision-making authority. The Board of Commissioners is the highest level of decision-making authority for the government that can, by adoption of an ordinance prior to the end of the fiscal year, commit fund balance. Once adopted, the limitation imposed by the ordinance remains in place until a similar action is taken (the adoption of another ordinance) to remove or revise the limitation.

Committed for Future Capital Projects – portion of fund balance budgeted by the Board to be used for future capital projects.

Committed fund balance at June 30, 2017 is as follows:

Purpose	Other Governmental Funds
Future capital projects	$ 421,667

Assigned Fund Balance. Portion of fund balance that the County intends to use for specific purposes. The County's governing body has the authority to assign fund balance. The County Manager and the Finance Director, as granted in the officially adopted budget ordinance, have been granted limited authority to assign fund balance.

Subsequent Year's Expenditures – portion of fund balance that is appropriated in the next year's budget that is not already classified in restricted or committed. The governing body approves the appropriation; however, the budget ordinance authorizes the Manager to make certain modifications utilizing a contingency line item without requiring Board approval.

Assigned fund balance at June 30, 2017 is as follows:

Purpose	General Fund
Subsequent year's expenditures	$ 3,405,237

Unassigned Fund Balance. Represents the portion of fund balance that has not been assigned to another fund or is not restricted, committed, or assigned to specific purposes within the General Fund. The General Fund is the only fund that reports a positive unassigned fund balance.

Lincoln County has a revenue spending policy that provides guidance for programs with multiple revenue sources. The Finance Director will use resources in the following order: debt proceeds, federal funds, State funds, local non-County funds, and/or County funds. For purposes of fund balance classification expenditures are to be spent from restricted fund balance first, followed in order by committed fund balance, assigned fund balance and, lastly, unassigned fund balance. The Finance Director has the authority to deviate from this policy if it is in the best interest of the County or when required by grant or other contractual agreements.

Lincoln County has also adopted a minimum fund balance policy for the General Fund, which instructs management to conduct the business of the County in such a manner that available fund balance is at least equal to or greater than 15% of expenditures.

In accordance with North Carolina G.S. 159-8(a), appropriated fund balance in any fund shall not exceed the sum of cash and investments minus the sum of liabilities, encumbrances, and deferred revenues arising from cash receipts, as those figures stand at the close of the fiscal year next preceding the budget year. Accordingly, fund balance available for appropriation is calculated net of this stabilization by State statute amount.

The following schedule provides management and citizens with information on the portion of General Fund balance that is available for appropriation:

Total fund balance - General Fund	$ 34,570,359
Less:	
Prepaids	(229,546)
Stabilization by State statute	(5,093,410)
Fund balance available for appropriation	$ 29,247,403

The outstanding encumbrances are amounts needed to pay any commitments related to purchase orders and contracts that remain unperformed at year-end.

	General Fund
Encumbrances	$ 2,663

	General Capital Projects Fund
Encumbrances	$ 4,768,602

	Emergency Telephone Systems Fund
Encumbrances	$ 317,627

Other Resources. The General Fund provides the basis of local resources for other governmental funds. These transactions are recorded as "Transfers–Out" in the General Fund and "Transfers–In" in the receiving fund.

Comparative Data/Reclassifications. Comparative total data for the prior year has been presented in selected sections of the accompanying financial statements in order to provide an understanding of the changes in the County's financial position and operations. Comparative totals have not been included on the statements where their inclusion would not provide enhanced understanding of the County's financial position and operations or would cause the statements to be unduly complex or difficult to understand.

Use of Estimates. The preparation of financial statements, in conformity with generally accepted accounting principles, requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Defined Benefit Pension Plans

The County participates in two cost-sharing, multiple-employer, defined benefit pension plans that are administered by the State: the Local Governmental Employees' Retirement System (LGERS) and the Register of Deeds' Supplemental Pension Plan (RODSPF) (collectively, the "State-administered defined benefit pension plans"). For purposes of measuring the net pension asset, deferred outflows of resources and deferred inflows of resources related to pensions and pension expense information about the fiduciary net positions of the State-administered defined benefit pension plans and additions to/deductions from the State-administered defined benefit pension plans' fiduciary net positions have been determined on the same basis as they are reported by the State-administered defined benefit pension plans. For this purpose, plan member contributions are recognized in the period in which the contributions are due. The County's employer contributions are recognized when due, and the County has a legal requirement to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of the State-administered defined benefit pension plans. Investments are reported at fair value.

Note 2. Stewardship, Compliance, and Accountability

A. Deficit Fund Balance or Net Position of Individual Funds

At year-end, the County reported deficit fund balance or net position in the following funds:

Workers' Compensation Fund	$ (351,176)

Corrective Action Plan. The deficit in the Workers' Compensation Fund will be eliminated with future transfers.

B. Non-Compliance with North Carolina General Statutes-Excess of Expenditures Over Appropriations

Excess of expenditures over appropriations are in violation of State law [G159-28(b)]. Violations as of June 30, 2017, are as follows:

General Fund:		
Governing Body	$	8,449
County Manager		509
Finance		24,048
Register of Deeds		53,406
District Court		6,721
Emergency Management		8,775
Emergency Management - Beatties Ford		637
Planning		497
Animal Control		3,667
Soil and Water Conservation		413
Maternal Health		17,286
Home Health Services		1,443
Child Service Coordination		691
Peer Counselor		2,427
Women, Infants, and Children		20,379
Day Care Grant		247
Nutrition		10,998
Environmental Health		9,439
Health Promotion		176
Bioterrorism		483
Contracted Services		19,035
Adolescent Parenting		78
Child Support Enforcement		14,318
Food and Nutrition - Fraud		2,497
Senior Services		23,357
Special Revenue Funds:		
Emergency Telephone System Fund:		
Other operating expenditures		69,923
Telephone		9,699
Law Enforcement Fund:		
Public Safety		1,413
Enterprise Funds:		
East Lincoln County Water and Sewer District Fund:		
Other operating costs		815

Management and the Board will more closely monitor the budget in these funds to ensure compliance in future years.

Note 3. Deposits and Investments

A. Deposits

All of the County's deposits are either insured or collateralized by using one of two methods. Under the Dedicated Method, all deposits exceeding the deferral depository insurance coverage are collateralized with securities held by the County's agent in the County's name. Under the Pooling Method, a collateral pool was created, and all uninsured deposits are collateralized with securities held by the State Treasurer's agent in the name of the State Treasurer. Since the State Treasurer is acting in a fiduciary capacity for the County, these deposits are considered to be held by the County's agent in the County's name. The amount of the pledged collateral is based on an approved averaging method for non-interest-bearing deposits and the actual current balance for interest-bearing deposits. Depositories using the Pooling Method report to the State Treasurer the adequacy of their pooled collateral covering uninsured deposits. The State Treasurer does not confirm this information with the County or the escrow agent. Because of the inability to measure the exact amount of collateral pledged for the County under the Pooling Method, the potential exists for undercollateralization, and this risk may increase in periods of high cash flows. However, the State Treasurer of North Carolina enforces strict standards of financial stability for each depository that collateralizes public deposits under the Pooling Method. The County has no formal policy regarding custodial credit risk for deposits but relies on the State Treasurer to enforce standards of minimum capitalization for all pooling method financial institutions and to monitor them for compliance. The County complies with the provisions of G.S. 159-31 when designating official depositories and verifying that deposits are properly secured.

At June 30, 2017, the carrying amount of the County's deposits with banks was $19,295,118. Balances with banks equaled $20,349,680. Of the bank balances, $1,000,000 was covered by federal depository insurance and $19,349,680 was covered by collateral held by authorized escrow agents in the name of the State Treasurer. The total amount of cash on hand and petty cash was $4,981.

B. Investments

At June 30, 2017, the County's investments consisted of the following:

Investment Type	Valuation Measurement Method	Fair Value	Less Than 6 Months	6-12 Months
NC Capital Management Trust - Government Portfolio	Amortized Cost	$ 23,839,190	N/A	N/A
NC Capital Management Trust - Term Portfolio*	Fair Value - Level 1	807,699	$ 807,699	$ -
US government agencies	Fair Value - Level 2	17,129,324	17,129,324	-
Total investments		$ 41,776,213	$ 17,937,023	$ -

*Because the NC Capital Management Trust Term Portfolio has a weighted average maturity of less than 90 days, it was presented as an investment with a maturity of less than 6 months.

All investments are measured using the market approach: using prices and other relevant information generated by market transactions involving identical or comparable assets or a group of assets.

Level of fair value hierarchy: Level 1: Debt securities valued using directly observable, quoted prices (unadjusted) in active markets for identical assets. Level 2: Debt securities are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices.

Interest Rate Risk. Lincoln County does not have a formal investment policy that limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates.

Credit Risk. The County has no policy regarding credit risk. The County's investment in the NC Capital Management Trust Government Portfolio carried a rating of AAAm by Standard & Poor's as of June 30, 2017. The County's investment in the NC Capital Management Trust Term Portfolio is unrated. The Term Portfolio is authorized to invest in obligations of the US government and agencies and in high grade money market instruments as permitted under North Carolina G.S. 159-30 as amended. The County's investments in US government agencies are rated AAA by Standard & Poor's and Aaa by Moody's Investors Service.

Note 4. Receivables

A. Detail

Receivables at the government-wide level at June 30, 2017 were as follows:

	Accounts	Taxes	Due from Other Governments	Total
Governmental Activities:				
General	$ 2,949,348	$ 2,112,243	$ 3,233,810	$ 8,295,401
Other governmental	462,110	273,218	55,026	790,354
Total receivables	3,411,458	2,385,461	3,288,836	9,085,755
Allowance for doubtful accounts	(783,295)	(742,058)	-	(1,525,353)
Total governmental activities	$ 2,628,163	$ 1,643,403	$ 3,288,836	$ 7,560,402
Business-Type Activities:				
Solid Waste	$ 187,483	$ 234,028	$ 108,599	$ 530,110
East Lincoln County Water and Sewer District Fund	16	12,455	-	12,471
Water and Sewer	1,524,097	-	138,245	1,662,342
Total receivables	1,711,596	246,483	246,844	2,204,923
Allowance for doubtful accounts	(143,106)	(126,810)	-	(269,916)
Total business-type activities	$ 1,568,490	$ 119,673	$ 246,844	$ 1,935,007

Due from other governments consisted of the following:

Local option sales tax	$ 3,338,860
Refundable sales tax	187,725
Other governmental agencies	9,095
Total due from other government agencies	$ 3,535,680

Deferred Outflows and Inflows of Resources

Deferred inflows of resources at year-end are comprised of the following:

	Deferred Inflows
Taxes receivable, net (General Fund and Special Revenue Fund)	$ 1,643,403
Prepaid taxes not yet earned	230,328
Ambulance receivables, net (General Fund)	239,315
Grant receivables, net (General Fund)	37,150
Health department receivables, net (General Fund)	32,651
Pension deferrals	518,427
Total	$ 2,701,274

Deferred outflows of resources at year-end are comprised of the following:

	Deferred Outflows
Deferred charges	$ 790,576
Contributions to pension plan in the current fiscal year (LGERS, ROD)	2,149,931
Benefit payments paid subsequent to the measurement date (LEOSSA)	39,971
Pension deferrals	6,619,036
Total	$ 9,599,514

B. Property Tax – Use-Value Assessment on Certain Lands

In accordance with the General Statutes, agriculture, horticulture, and forestland may be taxed by the County at the present use value as opposed to market value. When the property loses its eligibility for use-value taxation, the property tax is recomputed at market value for the current year and the three preceding fiscal years, along with the accrued interest from the original due date. This tax is immediately due and payable. The following are property taxes that could become due if present use-value eligibility is lost. The amounts have not been recorded in the financial statements.

Year Levied	Tax	Interest	Total
2014	$1,967,594	$ 467,305	$ 2,434,899
2015	1,886,106	278,201	2,164,307
2016	1,921,396	110,481	2,031,877
2017	1,963,169	-	1,963,169
Total	$7,738,265	$ 855,987	$ 8,594,252

Note 5. Capital Assets

Capital asset activity for the fiscal year ended June 30, 2017 was as follows:

	June 30, 2016	Additions	Retirements	Transfers	June 30, 2017
Governmental Activities:					
Non-Depreciable Assets:					
Land	$ 6,846,974	$ 31,060	$ -	$ -	$ 6,878,034
Construction in progress	9,821,811	4,272,464	(1,690)	(2,964,586)	11,127,999
Total non-depreciable assets	16,668,785	4,303,524	(1,690)	(2,964,586)	18,006,033
Depreciable Assets:					
Buildings	43,934,000	763,843	-	318,500	45,016,343
Other improvements	10,743,575	20,619	-	2,619,854	13,384,048
Equipment	11,092,790	545,405	-	26,232	11,664,427
Vehicles and other equipment	11,356,160	1,371,148	-	-	12,727,308
Total	77,126,525	2,701,015	-	2,964,586	82,792,126
Less Accumulated Depreciation:					
Buildings	(12,012,261)	(927,292)	-	-	(12,939,553)
Other improvements	(3,203,100)	(456,489)	-	-	(3,659,589)
Equipment	(7,454,979)	(728,642)	-	-	(8,183,621)
Vehicles and other equipment	(7,831,164)	(1,036,194)	-	-	(8,867,358)
Total accumulated depreciation	(30,501,504)	$ (3,148,617)	$ -	$ -	(33,650,121)
Capital assets, net	$ 63,293,806				$ 67,148,038

	June 30, 2016	Additions	Retirements	Transfers	June 30, 2017
Proprietary Capital Assets:					
Solid Waste Fund:					
Non-Depreciable Assets:					
Land	$ 640,648	$ -	$ -	$ -	$ 640,648
Depreciable Assets:					
Buildings and structures	590,143	-	-	-	590,143
Improvements	12,206,213	2,537,981	-	-	14,744,194
Machinery, equipment, and vehicles	8,008,312	728,440	-	-	8,736,752
Total	21,445,316	3,266,421	-	-	24,711,737
Less Accumulated Depreciation:					
Buildings and structures	(252,509)	(11,803)	-	-	(264,312)
Improvements	(8,592,476)	(463,093)	-	-	(9,055,569)
Machinery, equipment, and vehicles	(6,156,655)	(375,211)	-	-	(6,531,866)
Total accumulated depreciation	(15,001,640)	$ (850,107)	$ -	$ -	(15,851,747)
Solid Waste Fund capital assets, net	6,443,676				8,859,990

	June 30, 2016	Additions	Retirements	Transfers	June 30, 2017
Proprietary Capital Assets:					
Water and Sewer Fund:					
Non-Depreciable Assets:					
Land	818,427	$ 10,000	$ -	$ -	828,427
Construction in progress	3,174,436	2,647,329	(3,833)	(3,033,200)	2,784,732
Total non-depreciable assets	3,992,863	2,657,329	(3,833)	(3,033,200)	3,613,159
Depreciable Assets:					
Buildings and structures	38,604,443	-	-	2,957,602	41,562,045
Improvements	938,198	-	-	-	938,198
Water lines	40,074,099	350,000	-	12,000	40,436,099
Sewer lines	17,238,734	-	-	75,598	17,314,332
Machinery, equipment, and vehicles	4,087,060	334,581	-	(12,000)	4,409,641
Total	100,942,534	684,581	-	3,033,200	104,660,315
Less Accumulated Depreciation:					
Buildings and structures	(8,139,625)	(1,385,717)	-	-	(9,525,342)
Improvements	(297,758)	(41,398)	-	-	(339,156)
Water lines	(15,534,408)	(981,023)	-	-	(16,515,431)
Sewer lines	(4,926,447)	(481,985)	-	-	(5,408,432)
Machinery, equipment, and vehicles	(3,440,983)	(146,194)	-	-	(3,587,177)
Total accumulated depreciation	(32,339,221)	$ (3,036,317)	$ -	$ -	(35,375,538)
Water and Sewer Fund capital assets, net	72,596,176				72,897,936
Business type activities capital assets, net	$ 79,039,852				$ 81,757,926

Depreciation expense was charged to functions/programs as follows:

General government	$ 913,090
Public safety	1,427,619
Economic and physical development	112,108
Transportation	217,002
Human services	128,964
Cultural and recreational	349,834
Total	$ 3,148,617
Business-Type Activities:	
Solid waste	$ 850,107
Water and sewer	3,036,317
Total	$ 3,886,424

Effective July 1, 2007, all assets of the East Lincoln County Water and Sewer District Fund were transferred to the County's Water and Sewer Fund. The County will be responsible for all operations of what was formerly the East Lincoln County Water and Sewer District Fund. The East Lincoln County Water and Sewer District Fund will continue to exist for the purpose of levying taxes to service debt acquired prior to July 1, 2007.

Net Investment in Capital Assets

	Governmental Activities	Business-Type Activities
Capital assets, net	$ 67,148,038	$ 81,757,926
Long-term debt, gross	83,913,475	22,211,020
Debt for assets not owned by County (school debt)*	(75,115,628)	-
Capital debt, net	8,797,847	22,211,020
Unspent debt proceeds on non-school debt	645,013	1,501,552
Net investment in capital assets	$ 58,995,204	$ 61,048,458

*Includes premium related to school debt

Note 6. Liabilities

A. Payables

Payables at the government-wide level at June 30, 2017 were as follows:

	Vendors	Salaries and Benefits	Insurance Claims Incurred, But Not Reported	Accrued Interest	Total
Governmental Activities:					
General	$ 1,894,583	$ 593,945	$ -	$ -	$ 2,488,528
General Capital Project Fund	414,042	-	-	-	414,042
Other governmental	187,784	-	-	-	187,784
Internal Service Fund	154,989	-	1,369,311	-	1,524,300
Total governmental activities	$ 2,651,398	$ 593,945	$ 1,369,311	$ -	$ 4,614,654
Business-Type Activities:					
Solid waste	$ 276,082	$ 29,344	$ -	$ 69,501	$ 374,927
Water and sewer	596,370	34,891	-	168,095	799,356
Total business-type activities	$ 872,452	$ 64,235	$ -	$ 237,596	$ 1,174,283

Construction Commitments

The government has active construction projects as of June 30, 2017. At June 30, 2017, the government's commitments with contractors are as follows:

Project	Spent-to-Date	Remaining Commitment
County Services Design Center	$ 1,789,259	$ 4,443,253
West Lincoln Library	-	195,000
Optimist Club Convenience Site Project	-	235,817
PSAP Design	142,617	317,627
Water Treatment Plant Expansion	514,706	742,323
Lowesville Sewer Redirection	2,062,950	457,344
Wastewater Treatment Plant Expansion Design	49,400	140,600
Total	$ 4,558,932	$ 6,531,964

B. Long-Term Debt

General Obligation Indebtedness. All general obligation bonds serviced by the County's General Fund and the Water and Sewer Fund are collateralized by the full-faith credit and taxing power of the County. East Lincoln County Water and Sewer District Fund issued general obligation bonds to finance the acquisition and construction of a major sewer system. These bonds, which are recorded in the East Lincoln County Water and Sewer District Fund, are collateralized by the full-faith credit and taxing power of the District. Principal and interest requirements are appropriated when due.

The County's general obligation bonds at June 30, 2017 are comprised of the following individual issues:

Governmental Activities:

Governmental Funds:

$12,360,000 2012A Advance Refunding School serial bonds, due in annual installments ranging from $105,000 to $1,200,000 through June 1, 2023; interest rates from 2.00% to 3.00%; interest payments due June 1 and December 1	$	8,155,000
$17,895,000 2012B Advance Refunding School serial bonds, due in annual installments ranging from $100,000 to $3,195,000 through June 1, 2024; interest rates from 2.00% to 4.00% due June 1 and December 1		14,790,000
$9,795,000 2005 School Refunding bonds, due in annual installments of $205,000 to $1,395,000 through June 1, 2018; interest rates from 4.00% to 5.00%; interest payments due June 1 and December 1		235,000
$15,000,000 2008 Schools Building bonds, due in annual installments of $600,000 to $1,650,000 through June 1, 2027; interest rates from 4.25% to 6.25%; interest payments due June 1 and December 1 (partially refunded in 2009-2010)		600,000
$4,200,000 2008 Public Improvement bonds, due in annual installments of $200,000 to $350,000 through June 1, 2027; interest rates from 4.0% to 6.0%; interest payments due June 1 and December 1 (partially refunded in 2009-2010)		200,000
$18,140,000 2010A School & Public Facility Refunding bonds, due in annual installments of $130,000 to $2,085,000 through June 1, 2027; interest rates from 2.00% to 3.85%; interest payments due June 1 and December 1		12,865,000

General Obligation Indebtedness (continued)

$8,500,000 2010B School bonds, due in annual installments of $300,000 to $1,200,000 through June 1, 2029; interest rates from 2.00% to 4.00%; interest payments due June 1 and December 1	6,400,000
$17,405,000 2011A School Refunding bonds, due in annual installments of $55,000 to $3,240,000 through June 1, 2021; interest rates from 2.00% to 5.00%; interest payments due June 1 and December 1	10,415,000
$9,600,000 2011B School bonds, due in annual installments of $325,000 to $900,000 through June 1, 2029; interest rates from 3.00% to 4.75%; interest payments due June 1 and December 1	7,575,000
Total general obligation bonds	$ 61,235,000

Installment Purchase Agreements

As authorized by State law (G.S. 160A-20 and 153A-158.1), the County financed various property and equipment acquisitions by installment purchases. Installment purchase contracts at June 30, 2017, are comprised of the following individual agreements:

Governmental Activities:

General Fund:

$2,000,000 2005 Qualified Zone Academy installment purchase contract for school building improvements due September 15, 2021. The contract requires 15 annual sinking fund installments of $104,315 to be invested. If investment earnings do not result as projected, the County will pay the amount required for the total funds to equal $2,000,000 on September 15, 2021	$	2,000,000
$5,244,000 2015 School Refunding issued to refund the 2006 COPS; due in annual installments from $968,000 to $1,162,000 through June 1, 2020; interest at 1.38%; interest payments due December 1 and June 1		3,010,000
$7,845,000 2013 School Refunding installment contract issued to partially refund the 2006 COPS; due in annual installments from $93,000 to $1,078,000 through June 1, 2027; interest from 1.776% to 2.520%; interest payments due June 1 and December 1		7,399,000
$1,650,000 2008 State Revolving Loan issued for water source protection and passive park; due in annual installments of $82,500 through May 1, 2028; interest at 1.00%; interest payments due November 1 and May 1		907,500
$1,100,000 installment purchase contract for Arlie Business Park and water projects; due in semi-annual installments of $217,880; interest at 2.65%		586,158
$1,480,691 2013 Refunding installment contract issued to refund the 2003 COPS for jail, social services, library buildings, and school construction; due in annual installments from $158,613 to $426,329 through June 2018; interest at 1.64%; interest payments due June 1 and December 1		158,613
$6,115,000 installment financing contract, issued to fund various capital projects; due in semi-annual installments of $216,667, plus interest at 3.02%; through June 26, 2029		4,892,001
$8,858,000 Sewer, Solid Waste, and Building Refunding issued to refund various projects; due in annual installments from $280,000 to $646,000 through July 15, 2036; interest at 2.33%; interest payments due July 15 and January 15		2,088,470
Total governmental activities		21,041,742

Business-Type Activities:

Water and Sewer Fund:

$134,309 2013 Refunding installment contract issued to refund the 2003 COPS for water plant sludge de-watering project; due in annual installments from $14,387 to $38,671 through June 2018; interest at 1.64%; interest payments due June 1 and December 1	14,387
$387,438 Federal Revolving Loan issued for water system improvements; due in annual installments of $22,790 through May 1, 2022; interest at 2.66%; interest payments due November 1 and May 1	113,952
$520,430 Federal Revolving Loan issued for water system improvements; due in annual installments of $30,614 through May 1, 2022; interest at 2.66%; interest payments due November 1 and May 1	153,068
$2,295,067 Federal Revolving Loan issued for water system improvements; due in annual installments of $135,004 through May 1, 2024; interest at 2.66%; interest payments due November 1 and May 1	945,028
$17,500,000 Federal Revolving Loan issued for sewer system improvements; due in annual installments of $850,175 through May 1, 2030; interest at 2.48%; interest payments due November 1 and May 1	12,250,000
$2,706,000 installment purchase contract for water projects, due in semi-annual installment of $217,880 through January 17, 2022; interest at 2.65%	1,441,907
$8,858,000 Sewer, Solid Waste, and Building Refunding issued to refund various projects; due in annual installments from $280,000 to $646,000 through July 15, 2036; interest at 2.33%; interest payments due July 15 and January 15	3,467,860
Total Water and Sewer Fund	18,386,202

Solid Waste Fund:

$400,000 Contract for equipment, due in monthly installments of $7,593; interest at 1.86%, through November 23, 2019	215,149
$385,000 Contract for land and vehicles, due in semi-annual installments of $216,667; interest at 3.02%, through June 26, 2029	307,999
$8,858,000 Sewer, Solid Waste, and Building Refunding issued to refund various projects; due in annual installments from $280,000 to $646,000 through July 15, 2036; interest at 2.33%; interest payments due July 15 and January 15	3,301,670
Total Solid Waste Fund	3,824,818
Total business-type activities	22,211,020
Total installment purchase contracts	$ 43,252,762

Note Payable

$5,000,000 State Clean Water Loan. In August 1995, the East Lincoln County Water and Sewer District Fund entered into a loan agreement with the State of North Carolina Department of Environment, Health, and Natural Resources. The District was approved for a loan of $5,000,000 from the Clean Water Direct Bond Loan Program, which financed the cost of construction of wastewater sewers, pump stations, force mains, and a wastewater treatment facility. The loan calls for 20 annual installments of $250,000 due on May 1, with interest payments due May 1 and November 1. The loan is being carried in the East Lincoln County Water and Sewer District Fund. The loan was paid off on May 1, 2017.

Changes in Long-Term Debt. The following is a summary of changes in long-term debt for the year ended June 30, 2017:

	July 1, 2016	Additions	Retirements	June 30, 2017	Current Portion
Governmental Activities:					
General obligation bonds	$ 68,160,000	$ -	$ 6,925,000	$ 61,235,000	$ 6,835,000
Premium on long-term debt	1,883,087	-	246,354	1,636,733	246,354
Installment purchases	20,874,972	2,088,470	1,921,700	21,041,742	1,999,499
Net pension liability (LGERS)	1,887,361	6,960,370	-	8,847,731	-
Total pension liability (LEOSSA)	948,192	1,154,796	-	2,102,988	-
Other post-employment benefits	16,032,636	2,763,636	829,998	17,966,274	-
Compensated absences	1,669,026	962,162	859,159	1,772,029	600,000
Total	$ 111,455,274	$ 13,929,434	$ 10,782,211	$ 114,602,497	$ 9,680,853
Business-Type Activities:					
Solid Waste Fund:					
Installment purchases	$ 635,056	$ 3,301,670	$ 111,908	$ 3,824,818	$ 288,338
Net pension liability (LGERS)	130,163	480,026	-	610,189	-
Compensated absences	70,687	28,567	27,064	72,190	25,000
Other post-employment benefits	1,113,986	156,995	47,150	1,223,831	-
Accrued landfill closure/ post-closure care costs	8,218,174	1,623,914	-	9,842,088	-
Total	10,168,066	5,591,172	186,122	15,573,116	313,338
Water and Sewer Fund:					
Installment purchases	16,262,769	3,467,860	1,344,427	18,386,202	1,534,813
Net pension liability (LGERS)	151,857	560,030	-	711,887	-
Compensated absences	93,117	54,832	56,194	91,755	31,000
Other post-employment benefits	1,181,064	194,377	58,377	1,317,064	-
Total	17,688,807	4,277,099	1,458,998	20,506,908	1,565,813
East Lincoln Water and Sewer District Fund:					
General obligation bonds	575,000	-	575,000	-	-
State bond loan	250,000	-	250,000	-	-
Total	825,000	-	825,000	-	-
Total business-type activities	$ 28,681,873	$ 9,868,271	$ 2,470,120	$ 36,080,024	$ 1,879,151

Compensated absences, net pension obligation, and OPEB liabilities typically have been liquidated in the General Fund for governmental activities. Compensated absences are accounted for on an FIFO basis, assuming that employees are taking leave time as it is earned.

At June 30, 2017, Lincoln County had a legal debt margin of approximately $615,800,000.

Future Maturities for Long-Term Indebtedness. The following table summarizes the annual requirements to amortize all long-term debt outstanding (excluding compensated absences, law enforcement officers' unfunded retirement contribution, other post-employment benefits, and accrued landfill closure/post-closure care costs):

	General Obligation Bonds		Notes Payable		Installment Purchase Agreements		Total	
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
Governmental Activities:								
2018	$ 6,835,000	$ 2,239,317	$ -	$ -	$ 1,999,499	$ 470,023	$ 8,834,499	$ 2,709,340
2019	6,845,000	1,950,167	-	-	1,832,125	408,371	8,677,125	2,358,538
2020	6,790,000	1,703,317	-	-	1,804,528	372,915	8,594,528	2,076,232
2021	6,740,000	1,453,417	-	-	1,824,246	337,743	8,564,246	1,791,160
2022	6,740,000	1,237,392	-	-	3,808,053	291,051	10,548,053	1,528,443
2023-2027	24,110,000	3,121,517	-	-	8,169,086	806,715	32,279,086	3,928,232
2028-2032	3,175,000	185,751	-	-	1,237,580	94,338	4,412,580	280,089
2033-2037	-	-	-	-	366,625	21,630	366,625	21,630
Total	$ 61,235,000	$ 11,890,878	$ -	$ -	$ 21,041,742	$ 2,802,786	$ 82,276,742	$ 14,693,664
Business-Type Activities:								
2018	$ -	$ -	$ -	$ -	$ 1,823,151	$ 614,840	$ 1,823,151	$ 614,840
2019	-	-	-	-	1,883,427	492,823	1,883,427	492,823
2020	-	-	-	-	1,846,839	446,447	1,846,839	446,447
2021	-	-	-	-	1,825,146	400,937	1,825,146	400,937
2022	-	-	-	-	1,841,412	355,236	1,841,412	355,236
2023-2027	-	-	-	-	7,150,089	1,196,007	7,150,089	1,196,007
2028-2032	-	-	-	-	4,652,585	422,278	4,652,585	422,278
2033-2037	-	-	-	-	1,188,371	70,114	1,188,371	70,114
Total	$ -	$ -	$ -	$ -	$ 22,211,020	$ 3,998,682	$ 22,211,020	$ 3,998,682

Debt Related to Capital Activities

Of the total governmental activities debt listed, only $8,797,847 relates to assets to which the County holds title, while the remaining $75,115,628 is related to assets owned and utilized by the school system. Unspent restricted cash related to the school debt amounts to $253,572. Deferred charges of $790,576 are related to school debt.

Advance Refunding

On November 17, 2015, the County issued $5,244,000 in installment debt for the purpose of an advance refunding of the Series 2006 Certificates of Participation in the amount of $4,905,000. The proceeds were placed in an irrevocable trust to be used for all future debt service payments. As a result, the certificates of participation are considered to be defeased, and the liability has been removed from the governmental activities column of the Statement of Net Position. The reacquisition price exceeded the net carrying amount of the old debt by $236,066. This amount is being netted against the new debt and amortized over the life of the refunded debt. This advance refunding was undertaken to reduce total debt service payments over the next four years by $218,811 and resulted in an economic gain of $102,934.

Note 7. Pension Plan Obligations

A. Local Government Employees' Retirement System

Plan Description. The County and the ABC Board are participating employers in the State-wide Local Governmental Employees' Retirement system (LGERS), a cost-sharing, multiple-employer defined benefit pension plan administered by the State of North Carolina. LGERS membership is comprised of general employees and local law enforcement officers (LEOs) of participating local governmental entities. Article 3 of G.S. Chapter 128 assigns the authority to establish and amend benefit provisions to the North Carolina General Assembly. Management of the plan is vested in the LGERS Board of Trustees, which consists of 13 members – nine appointed by the Governor, one appointed by the State Senate, one appointed by the State House of Representatives, the State Treasurer, and the State Superintendent, who serve as ex-officio members. The LGERS is included in the Comprehensive Annual Financial Report (CAFR) for the State of North Carolina. The State's CAFR includes financial statements and required supplementary information for LGERS. That report may be obtained by writing to the Office of the State Controller, 1410 Mail Service Center, Raleigh, North Carolina 27699-1410, or by calling (919) 981-5454, or at www.osc.nc.gov.

Benefits Provided. LGERS provides retirement and survivor benefits. Retirement benefits are determined as 1.85% of the member's average final compensation times the member's years of creditable service. A member's average final compensation is calculated as the average of a member's four highest consecutive years of compensation. Plan members are eligible to retire with full retirement benefits at age 65 with five years of creditable service, at age 60 with 25 years of creditable service, or at any age with 30 years of creditable service. Plan members are eligible to retire with partial retirement benefits at age 50 with 20 years of creditable service, or at age 60 with five years of creditable service (age 55 for firefighters). Survivor benefits are available to eligible beneficiaries of members who die while in active service, or within 180 days of their last day of service, and who have either completed 20 years of creditable service regardless of age (15 years of creditable service for firefighters and rescue squad members who are killed in the line of duty), or have completed five years of service and have reached age 60. Eligible beneficiaries may elect to receive a monthly Survivor's Alternate Benefit for life or a return of the member's contributions. The plan does not provide for automatic post-retirement benefit increases. Increases are contingent upon actuarial gains of the plan.

LGERS plan members who are LEOs are eligible to retire with full retirement benefits at age 55 with five years of creditable service as an officer, or at any age with 30 years of creditable service. LEO plan members are eligible to retire with partial retirement benefits at age 50 with 15 years of creditable service as an officer. Survivor benefits are available to eligible beneficiaries of LEO members who die while in active service or within 180 days of their last day of service, and who also have either completed 20 years of creditable service regardless of age, or have completed 15 years of service as a LEO and have reached age 50, or have completed five years of creditable service as a LEO and have reached age 55, or have completed 15 years of creditable service as a LEO if killed in the line of duty. Eligible beneficiaries may elect to receive a monthly Survivor's Alternate Benefit for life or a return of the member's contributions.

Contributions. Contribution provisions are established by G.S. 128-30 and may be amended only by the North Carolina General Assembly. Lincoln County employees are required to contribute 6% of their compensation. Employer contributions are actuarially determined and set annually by the LGERS Board of Trustees. Lincoln County's contractually required contribution rate for the year ended June 30, 2017, was 8.00% of compensation for law enforcement officers and 7.25% for general employees and firefighters, actuarially determined as an amount that, when combined with employee contributions, is expected to finance the costs of benefits earned by employees during the year. Contributions to the pension plan from Lincoln County were $2,141,859 for the year ended June 30, 2017.

Refunds of Contributions – County employees who have terminated service as a contributing member of LGERS, may file an application for a refund of their contributions. By State law, refunds to members with at least five years of service include 4% interest. State law requires a 60-day waiting period after service termination before the refund may be paid. The acceptance of a refund payment cancels the individual's right to employer contributions or any other benefit provided by LGERS.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At June 30, 2017, the County reported a liability of $10,169,807 for its proportionate share of the net pension liability. The net pension liability was measured as of June 30, 2016. The total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of December 31, 2015. The total pension liability was then rolled forward to the measurement date of June 30, 2016 utilizing updated procedures incorporating the actuarial assumptions. The County's proportion of the net pension liability was based on a projection of the County's long-term share of future payroll covered by the pension plan, relative to the projected future payroll covered by the pension plan of all participating LGERS employers, actuarially determined. At June 30, 2016, the County's proportion was 0.47918%, which was a decrease of 0.00420% from its proportion measured as of June 30, 2015.

For the year ended June 30, 2017, the County recognized pension expense of $2,757,150. At June 30, 2017, the County reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 191,073	$ 356,361
Changes of assumptions	696,540	-
Net difference between projected and actual earnings on pension plan investments	5,622,622	-
Changes in proportion and differences between employer contributions and proportionate share of contributions	63,710	102,347
County contributions subsequent to the measurement date	2,141,859	-
Total	$ 8,715,804	$ 458,708

$2,141,859 reported as deferred outflows of resources related to pensions resulting from County contributions subsequent to the measurement date will be recognized as a decrease of the net pension liability in the year ended June 30, 2018. Other amounts reported as deferred outflows or inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ending June 30	Amount
2018	$ 938,174
2019	938,628
2020	2,642,192
2021	1,596,243
2022	-
Thereafter	-
Total	$ 6,115,237

Actuarial Assumptions. The total pension liability in the December 31, 2015 actuarial valuation was determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.0 percent
Salary increases	3.5 to 7.75 percent, including inflation and productivity factor
Investment rate of return	7.25 percent, net of pension plan investment expense, including inflation

The plan currently uses mortality tables that vary by age, gender, employee group (i.e. general, law enforcement officer), and health status (i.e. disabled and healthy). The current mortality rates are based on published tables and based on studies that cover significant portions of the U.S. population. The healthy mortality rates also contain a provision to reflect future mortality improvements.

The actuarial assumptions used in the December 31, 2015 valuation were based on the results of an actuarial experience study for the period January 1, 2010 through December 31, 2014.

Future ad hoc COLA amounts are not considered to be substantively automatic and are, therefore, not included in the measurement.

The projected long-term investment returns and inflation assumptions are developed through review of current and historical capital markets data, sell-side investment research, consultant whitepapers, and historical performance of investment strategies. Fixed income return projections reflect current yields across the U.S. Treasury yield curve and market expectations of forward yields projected and interpolated for multiple tenors and over multiple-year horizons. Global public equity return projections are established through analysis of the equity risk premium and the fixed income return projections. Other asset categories and strategies' return projections reflect the foregoing and historical data analysis. These projections are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation and best estimates of arithmetic real rates of return for each major asset class as of June 30, 2016 are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Fixed income	29.0%	1.4%
Global equity	42.0%	5.3%
Real estate	8.0%	4.3%
Alternatives	8.0%	8.9%
Credit	7.0%	6.0%
Inflation protection	6.0%	4.0%
Total	100%	

The information above is based on 30-year expectations developed with the consulting actuary for the 2016 asset, liability, and investment policy study for the North Carolina Retirement Systems, including LGERS. The long-term nominal rates of return underlying the real rates of return are arithmetic annualized figures. The real rates of return are calculated from nominal rates by multiplicatively subtracting a long-term inflation assumption of 3.00%. All rates of return and inflation are annualized.

Discount Rate. The discount rate used to measure the total pension liability was 7.25%. The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current contribution rate and that contributions from employers will be made at statutorily required rates, actuarially determined. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the County's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate. The following presents the County's proportionate share of the net pension liability calculated using the discount rate of 7.25%, as well as what the County's proportionate share of the net pension liability would be if it were calculated using a discount rate that is one-percentage point lower (6.25%) or one-percentage point higher (8.25%) than the current rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
County's proportionate share of the net pension liability (asset)	$ 24,137,691	$ 10,169,807	$ (1,497,212)

Pension Plan Fiduciary Net Position. Detailed information about the pension plan's fiduciary net position is available in the separately issued Comprehensive Annual Financial Report (CAFR) for the State of North Carolina.

B. Law Enforcement Officers' Special Separation Allowance

Description. Lincoln County administers a public employee retirement system (the "Separation Allowance"), a single-employer, defined-benefit pension plan that provides retirement benefits to the County's qualified sworn law enforcement officers under the age of 62 who have completed at least 30 years of creditable service or have attained 55 years of age and have completed five or more years of creditable service. The Separation Allowance is equal to 0.85% of the annual base rate of compensation multiplied by total creditable service. The retirement benefits are not subject to any increases in salary or retirement allowances that may be authorized by the General Assembly. North Carolina G.S. 143-12D assigns the authority to establish and amend benefit provisions to the North Carolina General Assembly.

The Separation Allowance covers all full-time law enforcement officers of the County. At December 31, 2016, the Separation Allowance's membership consisted of:

Retirees receiving benefits	8
Terminated plan members entitled to, but not yet receiving, benefits	-
Active plan members	108
Total	116

A separate report was not issued for the plan.

Summary of Significant Accounting Policies. The County has chosen to fund the Separation Allowance on a pay-as-you-go basis. Pension expenditures are made from the General Fund, which is maintained on the modified accrual basis of accounting. Benefits are recognized when due and payable in accordance with the terms of the plan.

The Separation Allowance has no assets accumulated in a trust that meets the criteria which are outlined in GASB Statement 73.

Actuarial Assumptions

The entry age actuarial cost method was used in the December 31, 2015 valuation. The total pension liability was determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	3.50 - 7.35%, including inflation and productivity factor
Discount rate	3.86%

The discount rate used to measure the TPL is the weekly average of the Bond Buyer General Obligation 20-year Municipal Bond Index determined at the end of each month.

***Deaths After Retirement (Healthy)*:** RP-2014 Healthy Annuitant rates projected to the valuation date using MP-2015, projected forward generationally form the valuation date using MP-2015. Rates are adjusted by 104% for males and 100% for females.

***Deaths Before Retirement*:** RP-2014 Employee base rates projected to the valuation date using MP-2015, projected forward generationally form the valuation date using MP-2015.

***Deaths After Retirement (Beneficiary)*:** RP-2014 Healthy Annuitant base rates projected to the valuation date using MP-2015, projected forward generationally form the valuation date using MP-2015. Rates are adjusted by 123% for males and females.

***Deaths After Retirement (Disabled)*:** RP-2014 Disabled Retiree base rates projected to the valuation date using MP-2015, projected forward generationally from the valuation date using MP-2015. Rates are adjusted by 103% for males and 99% for females.

Contribution Requirements and Contributions Made. The County is required by North Carolina G.S. 143-12D to provide these retirement benefits and has chosen to fund benefit payments on a pay-as-you-go basis through appropriations in the General Fund operating budget. There were no contributions made by employees. The County's obligation to contribute to this plan is established by statute and may be amended by the North Carolina General Assembly. Administration costs of the Separation Allowance are financed through investment earnings. The County paid $67,629 as benefits came due for the reporting period.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At June 30, 2017, the County reported a total pension liability of $2,102,988. The total pension liability was measured as of December 31, 2016 based on a December 31, 2015 actuarial valuation. The total pension liability was rolled forward to December 31, 2016 utilizing update procedures incorporating the actuarial assumptions. For the year ended June 30, 2017, the County recognized pension expense of $185,907.

	Deferred Outflows of Resources	Deferred Inflows of Resources
Changes of assumptions	$ -	$ 45,432
County benefit payments and plan administrative expense made subsequent to the measurement date	39,971	-
Total	$ 39,971	$ 45,432

$39,971, reported as deferred outflows of resources related to pensions resulting from benefit payments made and administrative expenses incurred subsequent to the measurement date, will be recognized as a decrease of the total pension liability in the year ending June 30, 2018. Other amounts reported as deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ending June 30	Amount
2018	$ 8,410
2019	8,410
2020	8,410
2021	8,410
2022	8,410
Thereafter	3,382
Total	$ 45,432

$39,971 paid as benefits came due subsequent to the measurement date are reported as deferred outflows of resources.

Sensitivity of the County's Total Pension Liability to Changes in the Discount Rate. The following presents the County's total pension liability calculated using the discount rate of 3.86 percent, as well as what the County's total pension liability would be if it were calculated using a discount rate that is one-percentage-point lower (2.86 percent) or one-percentage-point higher (4.86 percent) than the current rate:

	1% Decrease (2.86%)	Discount Rate (3.86%)	1% Increase (4.86%)
Total pension liability	$ 2,293,913	$ 2,102,988	$ 1,929,841

Schedule of Changes in Total Pension Liability
Law Enforcement Officers' Special Separation Allowance

	2017
Beginning balance	$ 2,030,142
Service cost	122,695
Interest on the total pension liability	71,269
Changes of assumptions or other inputs	(53,489)
Benefits payments	(67,629)
Ending balance of the total pension liability	$ 2,102,988

The plan currently uses mortality tables that vary by age and health status (i.e. disabled and healthy). The current mortality rates are based on published tables and based on studies that cover significant portions of the U.S. population. The healthy mortality rates also contain a provision to reflect future mortality improvements.

The actuarial assumptions used in the December 31, 2015 valuation were based on the results of an actuarial experience study for the period January 1, 2010 through December 31, 2014.

C. Supplemental Retirement Income Plan for Law Enforcement Officers

The County contributes to the Supplemental Retirement Income Plan (the "Plan"), a defined contribution pension plan administered by the Department of State Treasurer and Board of Trustees. The Plan provides retirement benefits to law enforcement officers employed by the County. North Carolina G.S. 135-5 assigns the authority to establish and amend benefit provisions to the North Carolina General Assembly. The Supplemental Retirement Income Plan for Law Enforcement Officers is included in the Comprehensive Annual Financial Report (CAFR) for the State of North Carolina. The State's CAFR includes the pension trust fund financial statements for the Internal Revenue Code Section 401(k) plan that includes the Supplemental Retirement Income Plan for Law Enforcement Officers. That report may be obtained by writing to the Office of the State Controller, 1410 Mail Service Center, Raleigh, North Carolina 27699-1410, or by calling (919) 981-5454.

North Carolina G.S. 143-12E requires the County to contribute each month an amount equal to 5% of each officer's salary, and all amounts contributed are vested immediately. Also, the law enforcement officers may make voluntary contributions to the plan. Contributions for the year ended June 30, 2017 were $281,743, which consisted of $233,105 from the County and $48,638 from the law enforcement officers. No amounts were forfeited.

D. Registers of Deeds' Supplemental Pension Fund

Plan Description. The County also contributes to the Registers of Deeds' Supplemental Pension Fund (RODSPF), a non-contributory, defined benefit plan administered by the North Carolina Department of State Treasurer. RODSPF provides supplemental pension benefits to any eligible county register of deeds who is retired under the Local Government Employees' Retirement System (LGERS) or an equivalent locally sponsored plan. Article 3 of G.S. Chapter 161 assigns the authority to establish and amend benefit provisions to the North Carolina General Assembly. Management of the plan is vested in the LGERS Board of Trustees, which consists of 13 members – nine appointed by the Governor, one appointed by the State Senate, one appointed by the State House of Representatives, the State Treasurer, and the State Superintendent, who serve as ex-officio members. The Registers of Deeds' Supplemental Pension Fund is included in the Comprehensive Annual Financial Report (CAFR) for the State of North Carolina. The State's CAFR includes financial statements and required supplementary information for the Registers of Deeds' Supplemental Pension Fund. That report may be obtained by writing to the Office of the State Controller, 1410 Mail Service Center, Raleigh, North Carolina 27699-1410, by calling (919) 981-5454, or at www.osc.nc.gov.

Benefits Provided. An individual's benefits for the year are calculated as a share of accumulated contributions available for benefits for that year, subject to certain statutory limits. An individual's eligibility is based on at least 10 years of service as a register of deeds with the individual's share increasing with years of service. Because of the statutory limits noted above, not all contributions available for benefits are distributed.

Contributions. Benefits and administrative expenses are funded by investment income and 1.5% of the receipts collected by each County Commission under Article 1 of Chapter 161 of the North Carolina General Statutes. The statutory contribution currently has no relationship to the actuary's required contribution. The actuarially determined contribution this year and for the foreseeable future is zero. Registers of Deeds do not contribute. Contribution provisions are established by General Statute 161-50 and may be amended only by the North Carolina General Assembly. Contributions to the pension plan from the County were $8,072 for the year ended June 30, 2017.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At June 30, 2017, the County reported an asset of $167,497 for its proportionate share of the net pension asset. The net pension asset was measured as of June 30, 2016. The total pension liability used to calculate the net pension asset was determined by an actuarial valuation as of December 31, 2015. The total pension liability was then rolled forward to the measurement date of June 30, 2016 utilizing update procedures incorporating the actuarial assumptions. The County's proportion of the net pension asset was based on the County's share of contributions to the pension plan, relative to contributions to the pension plan of all participating RODSPF employers. At June 30, 2016, the County's proportion was 0.89590%, which was an increase of 0.05407% from its proportion measured as of June 30, 2015. For the year ended June 30, 2017, the County recognized pension expense of $5,541. At June 30, 2017, the County reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 179	$ 2,168
Changes of assumptions	44,625	-
Net difference between projected and actual earnings on pension plan investments	287	-
Changes in proportion and differences between County contributions and proportionate share of contributions	-	12,119
County contributions subsequent to the measurement date	8,072	-
Total	$ 53,163	$ 14,287

$8,072, reported as deferred outflows of resources related to pensions resulting from County contributions subsequent to the measurement date, will be recognized as an increase of the net pension asset in the year ending June 30, 2018. Other amounts reported as deferred inflows and outflows of resources related to pensions will be recognized in pension expense as follows:

Year Ending June 30	Amount
2018	$ 11,590
2019	14,692
2020	6,397
2021	(1,875)
2022	-
Thereafter	-
Total	$ 30,804

Actuarial Assumptions. The total pension liability in the December 31, 2015 actuarial valuation was determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.0 percent
Salary increase	3.5 to 7.75 percent, including inflation and productivity factor
Investment rate of return	3.75 percent, net of pension plan investment expense, including inflation

The plan currently uses mortality tables that vary by age, gender, employee group (i.e. general, law enforcement officer), and health status (i.e. disabled and healthy). The current mortality rates are based on published tables and based on studies that cover significant portions of the U.S. population. The healthy mortality rates also contain a provision to reflect future mortality improvements.

The actuarial assumptions used in the December 31, 2015 valuation were based on the results of an actuarial experience study for the period January 1, 2010 through December 31, 2014.

Future ad hoc COLA amounts are not considered to be substantively automatic and are, therefore, not included in the measurement.

The projected long-term investment returns and inflation assumptions are developed through review of current and historical capital markets data, sell-side investment research, consultant whitepapers, and historical performance of investment strategies. Fixed income return projections reflect current yields across the U.S. Treasury yield curve and market expectations of forward yields projected and interpolated for multiple tenors and over multiple-year horizons. These projections are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The adopted asset allocation policy for the RODSPF is 100% in the fixed income asset class. The best estimate of arithmetic real rate of return for the fixed income asset class as of June 30, 2016 is 1.4%.

The information above is based on 30-year expectations developed with the consulting actuary for the 2016 asset, liability, and investment policy study for the North Carolina Retirement Systems, including LGERS. The long-term nominal rates of return underlying the real rates of return are arithmetic annualized figures. The real rates of return are calculated from nominal rates by multiplicatively subtracting a long-term inflation assumption of 3.05%. All rates of return and inflation are annualized.

Discount Rate. The discount rate used to measure the total pension liability was 3.75%. The projection of cash flows used to determine the discount rate assumed that contributions from employers will be made at statutorily required rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the County's Proportionate Share of the Net Pension Asset to Changes in the Discount Rate. The following presents the County's proportionate share of the net pension asset calculated using the discount rate of 3.75%, as well as what the County's proportionate share of the net pension asset would be if it were calculated using a discount rate that is one-percentage-point lower (2.75%) or one-percentage point higher (4.75%) than the current rate:

	1% Decrease (2.75%)	Current Discount Rate (3.75%)	1% Increase (4.75%)
County's proportionate share of the net pension liability (asset)	$ (135,057)	$ (167,497)	$ (194,751)

Pension Plan Fiduciary Net Position. Detailed information about the pension plan's fiduciary net position is available in the separately issued Comprehensive Annual Financial Report (CAFR) for the State of North Carolina.

Note 8. Death Benefit Plan

The County has elected to provide death benefits to employees through the Death Benefit Plan for members of the Local Governmental Employees' Retirement System (Death Benefit Plan), a multiple-employer, State-administered, cost-sharing plan funded on a one-year term cost basis. The beneficiaries of those employees who die in active service after one year of contributing membership in the System, or who die within 180 days after retirement or termination of service and have at least one year of contributing membership service in the system at the time of death are eligible for death benefits. Lump-sum death benefit payments to beneficiaries are equal to the employee's 12 highest months' salary in a row during the 24 months prior to the employee's death, but the benefit will be a minimum of $25,000 and will not exceed $50,000. Because all death benefit payments are made from the Death Benefit Plan and not by the County, the County does not determine the number of eligible participants. The County has no liability beyond the payment of monthly contributions. The contributions to the Death Benefit Plan cannot be separated between the post-employment benefit amount and the other benefit amount. Contributions are determined as a percentage of monthly payroll based upon rates established annually by the State. Separate rates are set for employees not engaged in law enforcement and for law enforcement officers. The County considers these contributions to be immaterial.

Note 9. Other Post-Employment Benefits (OPEB)

Plan Description. The County administers a single-employer, defined-benefit healthcare plan (the "HCB Plan"), which provides post-retirement healthcare, prescription drug, and dental benefits to retirees of the County, provided that they meet any of the retirement options available through the North Carolina Local Governmental Employees' Retirement System (LGERS), have at least 15 years of creditable service with the County, and were hired before July 1, 2013. The County pays the same cost of coverage for these benefits as current full-time employees pay. Also, retirees can purchase coverage for their dependents at the County's group rates.

Commencement of Service	Years of Creditable Service	County Contribution
Prior to September 1, 2005	20	County pays cost of coverage until sooner of 65th birthday or Medicare eligibility, then Medicare supplement until death
Prior to July 1, 2013	25	County pays cost of coverage until sooner of 65th birthday or Medicare eligibility, then Medicare supplement until death
Prior to July 1, 2013	15	Retiree may participate by paying full cost of coverage until the sooner of birthday or Medicare eligibility
On or after July 1, 2013	Not eligible	Not eligible

Currently, 130 retirees are eligible for post-retirement health benefits. For the fiscal year ended June 30, 2017, the County made payments for post-retirement health benefit premiums of $935,525. The County self-funds health and dental coverage for retirees, which is administered by a third-party administrator, along with coverage for employees. The Board of Commissioners may amend the benefit provisions. A separate report was not issued for the plan.

Plan Membership. At June 30, 2016, the Plan membership consisted of the following:

	General Employees	Law Enforcement Officers
Retirees and dependents receiving benefits	104	26
Terminated plan members entitled to, but not yet receiving, benefits	-	-
Active plan members	358	72
Total	462	98

Funding Policy. The County pays the full cost of coverage for the healthcare benefits paid to qualified retirees under a County resolution that can be amended by the County Board of Commissioners. In addition, the budget for these expenditures is approved, along with other healthcare expenditures as part of the annual budget process. In addition to coverage for employees, the County's members can elect to pay for spouse, dependent or family coverage. For Fiscal Year 2016-2017, the County chose to fund the plan benefits on a pay-as-you-go basis.

The current annual required contribution (ARC) rate is 19.48% of annual covered payroll. For the current year, the County contributed $935,525, or 5.36%, of annual covered payroll. There were no contributions by retirees. The County self-funds health and dental coverage for all retirees and employees. The County's obligation to contribute to the HCB Plan is established and may be amended by the County Commissioners.

Summary of Significant Accounting Policies. Post-employment expenditures are made from the General Fund, which is maintained on the modified accrual basis of accounting throughout the year and adjusted to full accrual where required for reporting purposes. No funds are set aside to pay benefits and administration costs. These expenditures are paid as they come due.

Annual OPEB Cost and Net OPEB Obligation. The County's annual OPEB cost (expense) is calculated based on the ARC, an amount actuarially determined in accordance with the parameters of Governmental Accounting Standards Board Statement No. 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed 30 years.

The following table shows the components of the County's annual OPEB cost for the year, the amount actually contributed to the plan, and changes in the County's net OPEB obligation for the healthcare benefits:

	Governmental Activities	Business-Type Activities	Total
Annual required contribution	$ 3,017,395	$ 383,637	$ 3,401,032
Interest on net OPEB obligation	650,412	82,695	733,107
Adjustments to annual required contribution	(904,171)	(114,960)	(1,019,131)
Annual OPEB cost (expense)	2,763,636	351,372	3,115,008
Contributions made	(829,998)	(105,527)	(935,525)
Increase (decrease) in net OPEB obligation	1,933,638	245,845	2,179,483
Net OPEB obligation:			
Beginning of year - July 1	16,032,636	2,295,050	18,327,686
End of year - June 30	$ 17,966,274	$ 2,540,895	$ 20,507,169

The County's annual OPEB cost, the percentage of OPEB cost contributed to the plan and the net OPEB obligation as of June 30, 2017 were as follows:

For Year Ended June 30	Annual OPEB Cost (AOC)	Percentage of AOC Contributed	Net OPEB Obligation
2015	$ 2,858,588	29.3%	$ 15,973,667
2016	3,135,627	24.9%	18,327,686
2017	3,115,008	30.0%	20,507,169

Funding Status and Funding Progress. As of June 30, 2016, the most recent actuarial valuation date, the plan was not funded. The actuarial accrued liability for benefits and, thus, the unfunded actuarial accrued liability (UAAL) was $40,176,371. The covered payroll (annual payroll of active employees covered by the plan) was $17,459,427, and the ratio of the UAAL to the covered payroll was 230.1%. Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and healthcare trends. Amounts determined regarding the funded status of the plan and the annual required contributions of the employer are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The Schedule of Funding Progress, presented as required supplementary information following the notes to the financial statements, presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing, over time, relative to the actuarial accrued liabilities for benefits.

Actuarial Methods and Assumptions. Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and the plan members at that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value assets, consistent with the long-term perspective of the calculations.

In the June 30, 2016 actuarial valuation, the projected unit credit actuarial cost method was used. The actuarial assumptions included a 4.00% investment rate of return (net of administrative expenses), which is the expected long-term investment returns on the employer's own investments calculated based on the funded level of the plan at the valuation date, an annual pre-Medicare medical trend increase of 7.75% to 5.00%, and an annual post-Medicare medical trend increase of 5.75% to 5.00%. Both rates included a 3.00% inflation assumption. The actuarial value of assets, if any, was determined using techniques that spread the effects of short-term volatility in the market value of investments over a five-year period. The UAAL is being amortized as a level dollar amount of projected payroll on a closed basis. The remaining amortization period at June 30, 2016 was 30 years.

Note 10. Closure and Post-Closure Care Costs – Landfill Facility

The County's new landfill consists of Phases I through VIII and an area used for construction and debris (C&D) materials. Cells have been constructed in Phase I, II, and III, accordingly, along with the C&D area. Federal and State laws and regulations require the County to place a final cover on its landfill facility when it stops accepting waste and to perform certain maintenance and monitoring functions at the site for 30 years after closure. Although closure and post-closure care costs will be paid only near or after the date that the landfill stops accepting waste, the County reports a portion of these closure and post-closure care costs as an operating expense in each period based on landfill capacity used as of each balance sheet date. The $9,842,088 reported as landfill closure and post-closure care liability at June 30, 2017, represents a cumulative amount reported to date based on the use of landfill capacity in the County's sanitary and C&D landfill sections. The sanitary landfill reported a cumulative amount of $8,464,502 to date based on the use of 72% of Phase I through III's estimated capacity. The C&D portion reported a cumulative amount of $1,377,586 to date based on the use of 83% of estimated capacity. The County will recognize the remaining estimated cost of closure and post-closure care of $3,625,757 as the remaining estimated capacity is filled. Of this amount, $3,349,179 is related to the remaining capacity in the sanitary landfill, and $276,578 is related to the C&D portion. The amounts are based on what it would cost to perform all closure and post-closure care in 2017. Actual costs may be higher due to inflation, changes in technology, or changes in regulations. The County expects to close Phases I through III in the year 2020 for the sanitary portion and that same year for the C&D portion.

The County has met the requirements of a local government financial test, which is one option under federal and State laws and regulations that help determine if a unit is financially able to meet closure and post-closure care requirements.

Note 11. Risk Management

The County is exposed to various risks of losses related to torts; theft of, damage to, and destruction of assets; errors and omissions; injuries to employees; and natural disasters. The County participates in two self-funded risk financing pools administered by the North Carolina Association of County Commissioners.

Through these pools, the County obtains property coverage equal to the replacement cost of owned property subject to total insured values, with sub-limits on coverage for specified perils; general, auto, professional, employment practices, and law enforcement liability coverage of $2 million per occurrence; auto physical damage for owned autos at actual cash value; crime coverage of $250,000 per occurrence; and workers' compensation coverage up to the statutory limits.

All property coverage and some liability coverage are subject to per occurrence deductibles, as selected by the County. The pools are audited annually by certified public accountants, and audited financial statements are available to the County upon request.

Both of the pools are reinsured through a multi-state public entity captive for single occurrence losses in excess of $500,000, up to a $2 million limit for liability coverage, and single occurrence losses in excess of $750,000 for workers' compensation.

Through the captive, the Liability and Property Pool is reinsured for $2,000,000 of annual aggregate losses in excess of $250,000 per occurrence for property, auto physical damage and crime coverage, with additional limits of $498 million purchased through a group of commercial carriers through the multi-state public entity captive.

In accordance with G.S. 159-29, the County's employees that have access to $100 or more of the County's funds at any given time are performance bonded through a commercial surety bond. The Finance Director and the Tax Collector are each individually bonded for $50,000 each. The Register of Deeds and the Sheriff are each individually bonded for $25,000 each. The remaining employees who have access to funds are bonded under a blanket bond for $250,000.

The County carries flood insurance through the NCACC. This coverage provides flood insurance with a $25,000 deductible per occurrence.

The County carries commercial coverage for all other risks of loss. There have been no significant reductions in insurance coverage from the previous year, and settled claims have not exceeded coverage in any of the past three fiscal years.

Liabilities of the Health Benefits Fund are reported when it is probable that a loss has occurred and the amount of the loss can be reasonably estimated. Liabilities include an amount for claims that have been incurred, but not reported (IBNR). The County's claims that are incurred, but not reported, are considered a current liability and are included in accounts payable of the Health Benefits Fund and the Workers' Compensation Fund (the internal service funds). The County has recognized provisions of $941,760 for claims incurred, but not reported, in the Health Benefits Fund and $427,551 for claims incurred, but not reported, in the Workers' Compensation Fund. These provisions are estimated based upon analysis of historical claims experience reviewed by the County's third-party administrator.

Changes in the balances of claims liabilities during the past two years are as follows:

	2017	2016
Unpaid claims, beginning	$ 1,401,770	$ 1,326,816
Incurred claims	6,253,168	150,285
Claim payments	(6,285,627)	(75,331)
Unpaid claims, ending	$ 1,369,311	$ 1,401,770

Note 12. Interfund Activity

The transfers to/from other funds at June 30, 2017 were for the purpose of funding capital projects and consist of the following:

From	To	Purpose	Amount
General Fund	General Capital Projects Fund	Annual transfer from General Fund to cover projects	$ 5,438,272
General Fund	Special Grants Fund	County match for grant projects	51,998
Capital Reserve Fund	General Fund	Transfer for school monies from the lottery	600,000
General Capital Projects Fund	General Fund	To close projects	1,437,267
Water and Sewer Capital Projects Fund	Water and Sewer Fund	To close project	1,247,770
Water and Sewer Fund	East Lincoln Water and Sewer Fund	To close project	867,014
Water and Sewer Fund	Water and Sewer Capital Projects Fund	Annual transfer to project fund	1,735,867
Total			$ 11,378,188

Note 13. Claims and Judgments

At June 30, 2017, the County was involved in several lawsuits involving damages and potential claims. The exact amount of any claim cannot be determined at this time. It is the opinion of the County Attorney and County management that none of these lawsuits would have any adverse financial impact upon the County or its financial position.

Note 14. Summary Disclosure of Significant Contingencies

The County has received proceeds from several federal and State grants. Periodic audits of these grants are required and certain costs may be questioned as not being appropriate expenditures under the grant agreements. Such audits could result in the refund of grant monies to the grantor agencies. Management believes that any required refunds will be immaterial. No provision has been made in the accompanying financial statements for the refund of grant monies.

Note 15. Related Organization

Carolinas Medical Center – Lincoln is a 101-bed general and acute care hospital that is owned and operated by the Charlotte-Mecklenburg Hospital Authority ("CMHA"). The Hospital's new facility opened on July 10, 2010 at 433 McAlister Road in Lincolnton. All financial reporting and major decisions other than day-to-day operations are made by CMHA. Lincoln County's government is not financially responsible for the Hospital and does not participate in its operation.

A 17-member Advisory Board serves as the Hospital's liaison with the community and acts as ambassadors for the Hospital within the community. Advisory Board members are nominated by the Board's Governance and Nominating Committee and are approved by the full Advisory Board.

The former Hospital facility reverted to Lincoln County on September 1, 2010 as per our agreement. All debt that was associated with this former facility has been retired. The County is looking at using this property for possible County space needs.

Note 16. Joint Ventures

The County, in conjunction with Gaston, Cleveland, Catawba, Burke, Surry, Yadkin, and Iredell counties, participates in Partners Behavioral Health Management ("Partners"). Partners manages a comprehensive array of services to children, adolescents, and adults with mental health, substance abuse, and developmental disabilities needs. Service delivered is offered by numerous providers throughout the multi-County area. Partners receives the majority of its financial support through federal and State sources, as well as direct payments by clients and insurers for services rendered.

The County has an ongoing financial responsibility to supplement these funds, and for the year ended June 30, 2017 provided $394,589 in support of Partners' services. This allocation includes $10,000 to a local halfway house. The County does not have an equity interest in Partners; therefore, no equity interest has been reflected in the financial statements at June 30, 2017. Complete financial statements for Partners may be obtained from Partners' administrative offices at 901 South New Hope Road, Gastonia, North Carolina 28054.

The County, in conjunction with the City of Lincolnton, participates in a general aviation airport. Each participating government appoints three members to the six-member Board. The Airport is a joint venture established to facilitate economic expansion within the County and to improve the quality of life for its citizens. The Airport has been in existence since 1986, but it is not yet self-sustaining. The County has an ongoing financial responsibility for the Airport, because it and the City are legally obligated under the intergovernmental agreement that created the Airport to honor any deficiencies in the event that proceeds from other default remedies are insufficient. The County contributed $60,000 to the Airport during the fiscal year ended June 30, 2017. The participating governments do not have any equity interest in the

joint venture, so no equity interest has been reflected in the financial statements at June 30, 2017. Complete financial statements for the Airport can be obtained from Lincoln County administrative offices at 115 West Main Street, Lincolnton, NC 28092.

Note 17. Jointly Governed Organization

The County, in conjunction with seven other counties and 50 municipalities, established the Centralina Council of Governments (the "Council"). The participating governments established the Council to coordinate various funding received from federal and State agencies. Each participating government appoints one member to the Council's governing board. The County paid membership dues of $19,248 to the Council during the fiscal year ended June 30, 2017.

The County's Board of Commissioners appoints two of the Gaston College trustees. The County provided funding of $170,000 for operations for the year ended June 30, 2017.

The County's Board of Commissioners appoints one of the Lake Norman Marine Commission Board of Directors. The County provided funding of $27,000 for the year ended June 30, 2017.

Note 18. Benefit Payments Issued By the State

The amounts below were paid directly to individual recipients by the State from federal and State monies. County personnel are involved with certain functions, primarily eligibility determinations, which cause benefit payments to be issued by the State. These amounts disclose this additional aid to County recipients, which do not appear in the financial statements, because they are not revenues and expenditures of the County.

	Federal	State
Children's Health Insurance Program - North Carolina Health Choice	$ 1,744,102	$ 7,963
Medical assistance program	59,556,864	31,236,731
Temporary Assistance to Needy Families	274,294	-
Chafee Foster Care Independence Program	39,142	-
SC/SA Domiciliary Care Payment	-	367,472
SFHF Maximization	-	23,254
SAA/SAD	-	19,125
Special Supplemental Food Program for Women, Infants, and Children (WIC)	1,010,628	-
IV-E foster care	142,934	33,205
F/C at Risk Maximum	-	12,945
Extended F/C Maximization Non Title IV-E	-	6,106
IV-E adoption subsidy and vendor	294,317	73,470
CWS Adoption Subsidy and vendor payments	-	298,887
State foster home	-	78,520
Total	$ 63,062,281	$ 32,157,678

Note 19. Subsequent Event

The County issued a $13,190,000 refunding of General Obligation Bonds on August 21, 2017. These funds will be used in the School Capital Projects Fund.

Note 20. Change in Accounting Principles/Restatement

The County implemented Governmental Accounting Standards Board (GASB) No. Statement 73, *Accounting and Financial Reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68,* in the fiscal year ended June 30, 2017. The implementation of the statement required the County to record beginning total pension liability and the effects on net position of benefit payments and administrative expenses paid by the County to the Law Enforcement Officers' Special Separation Allowance during the measurement period. As a result, net position for the governmental activities decreased $1,014,321.

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LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF TOTAL PENSION LIABILITY AS A PERCENTAGE OF COVERED PAYROLL
LAW ENFORCEMENT OFFICERS' SPECIAL SEPARATION ALLOWANCE
FOR THE YEAR ENDED JUNE 30, 2017

	2017
Total pension liability	$ 2,102,988
Covered payroll	4,574,742
Total pension liability as a percentage of covered payroll	45.97%

Notes to the Schedule:

Lincoln County has no assets accumulated in a trust that meets the criteria in paragraph 4 of GASB Statement 73 to pay related benefits.

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF THE CHANGES IN TOTAL PENSION LIABILITY
LAW ENFORCEMENT OFFICERS' SPECIAL SEPARATION ALLOWANCE
FOR THE YEAR ENDED JUNE 30, 2017

	2017
Beginning balance	$ 2,030,142
Service cost	122,695
Interest on the total pension liability	71,269
Changes of assumptions or other inputs	(53,489)
Benefit payments	(67,629)
Ending balance of the total pension liability	$ 2,102,988

LINCOLN COUNTY, NORTH CAROLINA

OTHER POST-EMPLOYMENT BENEFITS
REQUIRED SUPPLEMENTARY INFORMATION
FOR THE YEAR ENDED JUNE 30, 2017

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (A)	Actuarial Accrued Liability (AAL) - Projected Unit Credit (B)	Unfunded AAL (UAAL) (B-A)	Funded Ratio (A/B)	Covered Payroll (C)	UAAL as a % of Covered Payroll ((B-A)/C)
12/31/2005	$ -	$ 29,316,366	$ 29,316,366	0.00%	$ 16,823,952	174.3%
12/31/2008	-	25,534,872	25,534,872	0.00%	23,588,521	108.3%
12/31/2010	-	29,753,423	29,753,423	0.00%	23,710,490	125.5%
12/31/2012	-	29,492,800	29,492,800	0.00%	24,819,345	118.8%
12/31/2014	-	34,908,297	34,908,297	0.00%	21,324,933	163.7%
6/30/2016	-	40,176,371	40,176,371	0.00%	17,459,427	230.1%

Schedule of Employer Contributions

Year Ended	Annual Required Contribution	Percentage Contributed
2010	$ 2,842,132	12.49%
2011	2,898,226	16.40%
2012	2,898,226	33.70%
2013	2,998,367	25.11%
2014	2,983,975	24.56%
2015	3,090,431	27.14%
2016	3,401,032	27.14%
2017	3,401,032	27.51%

Notes to the Required Schedules:
The information presented above was determined as part of the actuarial valuation at the dates indicated. Additional information as of the latest valuation follows:

Valuation date	6/30/2016
Actuarial cost method	Projected unit credit
Amortization method	Level dollar amount, closed
Remaining amortization period	30 years
Amortization factor	17.9837
Asset valuation method	Market value of assets
Actuarial assumptions:	
Investment rate of return *	4.00%
Medical cost trend rate:	
Pre-Medicare trend rate	7.50% - 5.00%
Post-Medicare trend rate	5.75% - 5.00%
Year of ultimate trend rate	2022
*Includes inflation at	3.00%

LINCOLN COUNTY, NORTH CAROLINA

COUNTY'S PROPORTIONATE SHARE OF NET PENSION LIABILITY (ASSET)
REQUIRED SUPPLEMENTARY INFORMATION
LAST FOUR FISCAL YEARS*

Local Government Employees' Retirement System

	2017	2016	2015	2014
Proportion of the net pension liability (asset) (%)	0.47918%	0.48338%	0.47701%	0.46080%
Proportion of the net pension liability (asset) ($)	$ 10,169,807	$ 2,169,381	$ (2,813,149)	$ 5,554,409
Covered-employee payroll	$ 28,375,873	$ 26,371,714	$ 26,134,922	$ 23,251,657
Proportionate share of the net pension liability (asset) as a percentage of its covered-employee payroll	35.84%	8.23%	-10.76%	23.89%
Plan fiduciary net position as a percentage of the total pension liability**	91.47%	98.09%	102.64%	94.35%

* The amounts presented for each fiscal year were determined as of the prior fiscal year ending June 30.

** This will be the same percentage for all participant employers in the LGERS plan.

Pension schedules are intended to show information for ten years.
That additional information will be added as it becomes available.

LINCOLN COUNTY, NORTH CAROLINA

LINCOLN COUNTY'S CONTRIBUTIONS
REQUIRED SUPPLEMENTARY INFORMATION
LAST FOUR FISCAL YEARS

Local Government Employees' Retirement System

	2017	2016	2015	2014
Contractually required contribution	$ 2,141,859	$ 1,925,926	$ 1,892,547	$ 1,847,353
Contributions in relation to the contractually required contribution	2,141,859	1,925,926	1,892,547	1,847,353
Contribution deficiency (excess)	$ -	$ -	$ -	$ -
Covered-employee payroll	$ 28,920,587	$ 28,375,873	$ 26,371,714	$ 26,134,922
Contributions as a percentage of covered-employee payroll	7.41%	6.79%	7.18%	7.07%

Pension schedules are intended to show information for ten years.
That additional information will be added as it becomes available.

LINCOLN COUNTY, NORTH CAROLINA

COUNTY'S PROPORTIONATE SHARE OF NET PENSION LIABILITY (ASSET)
REQUIRED SUPPLEMENTARY INFORMATION
LAST FOUR FISCAL YEARS*

Register of Deeds' Supplemental Pension Fund

	2017	2016	2015	2014
Proportion of the net pension liability (asset) (%)	0.89590%	0.84183%	0.80800%	0.79900%
Proportion of the net pension liability (asset) ($)	$ (167,497)	$ (195,086)	$ (183,245)	$ 170,709
Covered-employee payroll	$ 74,522	$ 70,339	$ 68,058	$ 67,613
Proportionate share of the net pension liability (asset) as a percentage of its covered-employee payroll	-224.76%	-277.35%	-269.25%	252.48%
Plan fiduciary net position as a percentage of the total pension liability	160.17%	197.29%	193.88%	190.50%

* The amounts presented for each fiscal year were determined as of the prior fiscal year ending June 30.

Pension schedules are intended to show information for ten years. That additional information will be added as it becomes available.

LINCOLN COUNTY, NORTH CAROLINA

LINCOLN COUNTY'S CONTRIBUTIONS
REQUIRED SUPPLEMENTARY INFORMATION
LAST FOUR FISCAL YEARS

Register of Deeds' Supplemental Pension Fund

	2017	2016	2015	2014
Contractually required contribution	$ 8,072	$ 7,320	$ 6,736	$ 6,601
Contributions in relation to the contractually required contribution	8,072	7,320	6,736	6,601
Contribution deficiency (excess)	$ -	$ -	$ -	$ -
Covered-employee payroll	$ 73,453	$ 74,522	$ 70,339	$ 68,058
Contributions as a percentage of covered-employee payroll	10.99%	9.82%	9.58%	9.70%

Pension schedules are intended to show information for ten years.
That additional information will be added as it becomes available.

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Revenues:				
Ad Valorem Taxes	$ 51,736,150	$ 53,404,086	$ 1,667,936	$ 52,162,535
Local Option Sales Taxes:				
Article 39 one percent	6,103,740	7,223,841	1,120,101	6,580,882
Article 40 one-half of one percent	4,520,500	4,895,371	374,871	4,678,724
Article 42 one-half of one percent	3,450,750	3,934,652	483,902	3,599,353
Article 44 one-half of one percent	1,200,000	1,301,948	101,948	1,333
Medicaid hold harmless	373,837	1,124,389	750,552	599,706
Total	15,648,827	18,480,201	2,831,374	15,459,998
Other Taxes and Licenses:				
Real estate transfer tax	1,016,327	1,380,914	364,587	974,733
Local occupancy tax and car rental tax	110,000	164,036	54,036	148,452
Utility franchise tax	230,000	223,349	(6,651)	220,188
Total	1,356,327	1,768,299	411,972	1,343,373
Unrestricted Intergovernmental Revenues:				
Beer and wine tax	305,000	320,620	15,620	306,511
Restricted Intergovernmental Revenues:				
Federal and State grants	12,563,414	11,528,828	(1,034,586)	12,128,459
Court facilities fees	100,000	105,252	5,252	107,143
ABC revenue	232,000	268,812	36,812	262,526
Total	12,895,414	11,902,892	(992,522)	12,498,128
Permits and Fees:				
Inspection department	1,629,610	2,119,107	489,497	1,721,630
Sheriff department	135,065	157,267	22,202	188,500
Soil and water conservation	-	(50)	(50)	-
Fire marshal	37,500	21,625	(15,875)	16,535
Register of Deeds	402,280	487,289	85,009	441,819
Total	2,204,455	2,785,238	580,783	2,368,484
Sales and Services:				
Rents, concessions, and fees	1,147,954	1,283,857	135,903	1,287,106
Ambulance fees	3,223,160	3,223,049	(111)	3,371,435
Animal control	70,000	56,876	(13,124)	71,002
Collection fees - special tax districts and City of Lincolnton	288,100	289,992	1,892	328,681
Total	5,587,208	5,743,361	156,153	5,938,525

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Investment Earnings	75,000	132,233	57,233	147,178
Miscellaneous:				
Sale of property	75,000	140,460	65,460	72,276
Contributions	15,230	20,381	5,151	5,682
Indirect fees	440,000	455,808	15,808	411,784
Other	138,544	276,725	138,181	2,398,925
Total	668,774	893,374	224,600	2,888,667
Total revenues	90,477,155	95,430,304	4,953,149	93,113,399
Expenditures:				
General Government:				
Governing Body:				
Salaries and employee benefits	124,061	120,593	3,468	128,716
Other operating expenditures	109,450	121,367	(11,917)	151,908
Total	233,511	241,960	(8,449)	280,624
County Manager:				
Salaries and employee benefits	280,539	289,995	(9,456)	199,278
Other operating expenditures	35,759	26,812	8,947	22,985
Capital outlay	481	481	-	-
Total	316,779	317,288	(509)	222,263
Human Resources:				
Salaries and employee benefits	235,184	241,125	(5,941)	207,431
Other operating expenditures	54,568	48,489	6,079	48,095
Total	289,752	289,614	138	255,526
Finance:				
Salaries and employee benefits	600,146	619,046	(18,900)	559,676
Other operating expenditures	78,705	83,853	(5,148)	62,373
Total	678,851	702,899	(24,048)	622,049
Information Technology:				
Salaries and employee benefits	547,037	514,973	32,064	503,065
Other operating expenditures	299,383	275,643	23,740	267,719
Capital outlay	22,254	51,680	(29,426)	6,869
Total	868,674	842,296	26,378	777,653

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Safety and Training:				
Other operating expenditures	30,978	27,938	3,040	30,496
Elections:				
Salaries and employee benefits	383,675	331,545	52,130	349,442
Special compensation	9,800	9,300	500	7,860
Other operating expenditures	155,689	129,045	26,644	127,818
Capital outlay	30,000	-	30,000	196,620
Total	579,164	469,890	109,274	681,740
Taxes:				
Salaries and employee benefits	614,447	591,083	23,364	651,038
Other operating expenditures	530,182	455,084	75,098	434,663
Tax mapping	485,952	442,703	43,249	302,970
Tax revaluation	550,403	458,430	91,973	400,916
Total	2,180,984	1,947,300	233,684	1,789,587
Legal:				
Other operating expenditures	260,155	196,397	63,758	190,667
Register of Deeds:				
Salaries and employee benefits	457,472	449,845	7,627	435,249
Other operating expenditures	753,908	814,941	(61,033)	609,325
Total	1,211,380	1,264,786	(53,406)	1,044,574
Central Services:				
Salaries and employee benefits	909,000	857,258	51,742	707,769
Other operating expenditures	33,000	29,454	3,546	36,046
Total	942,000	886,712	55,288	743,815
Building Maintenance:				
Salaries and employee benefits	677,591	698,397	(20,806)	612,237
Other operating expenditures	1,407,175	1,091,443	315,732	836,374
Capital outlay	1,119,961	644,225	475,736	1,336,470
Total	3,204,727	2,434,065	770,662	2,785,081
Grounds Maintenance:				
Salaries and employee benefits	493,108	464,817	28,291	-
Other operating expenditures	170,807	180,456	(9,649)	-
Capital outlay	78,759	78,115	644	-
Total	742,674	723,388	19,286	-

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Public Buildings:				
Salaries and employee benefits	-	6	(6)	5,848
Other operating expenditures	49,468	48,383	1,085	403,610
Total	49,468	48,389	1,079	409,458
District Court:				
Other operating expenditures	36,900	43,621	(6,721)	32,376
Special Grants:				
Forestry program	75,732	64,339	11,393	74,275
Lake Norman Marine Commission	87,000	97,000	(10,000)	93,900
Lake Norman RPO	10,000	10,000	-	-
Regional Council of Government	51,023	50,539	484	19,139
West/East Lincoln Rescue Squads	56,385	55,591	794	52,235
Miscellaneous grants	30,000	25,918	4,082	28,035
Airport Authority	60,000	60,000	-	60,000
Arts Council	7,268	7,268	-	7,268
Cultural Development Center	57,270	57,270	-	30,216
Gaston Family Health Services	17,500	17,500	-	17,500
Centralina COG	30,464	12,614	17,850	15,021
Historical Association	35,000	35,000	-	33,000
Total	517,642	493,039	24,603	430,589
Total general government	12,143,639	10,929,582	1,214,057	10,296,498
Public Safety:				
Sheriff Department:				
Salaries and employee benefits	7,857,824	7,693,415	164,409	7,317,367
Other operating expenditures	1,405,155	1,276,314	128,841	1,179,497
Capital outlay	583,835	525,564	58,271	394,005
Total	9,846,814	9,495,293	351,521	8,890,869
Jail:				
Salaries and employee benefits	2,345,336	2,272,402	72,934	2,226,289
Other operating expenditures	1,025,701	1,074,825	(49,124)	961,609
Capital outlay	38,200	12,276	25,924	37,211
Total	3,409,237	3,359,503	49,734	3,225,109
Jail Commissary:				
Other operating expenditures	178,289	69,820	108,469	34,708

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Communications:				
Salaries and employee benefits	1,142,019	1,119,857	22,162	1,070,663
Other operating expenditures	239,845	228,325	11,520	244,246
Capital outlay	(30)	-	(30)	11,200
Total	1,381,834	1,348,182	33,652	1,326,109
Emergency Management:				
Salaries and employee benefits	109,123	103,169	5,954	95,026
Other operating expenditures	65,752	80,481	(14,729)	26,616
Total	174,875	183,650	(8,775)	121,642
Emergency Management - Beatties Ford:				
Other operating expenditures	46,884	47,521	(637)	52,499
Emergency Management - Special Operations:				
Other operating expenditures	22,000	18,940	3,060	16,094
Ambulance Services:				
Salaries and employee benefits	5,374,296	5,238,000	136,296	4,820,015
Other operating expenditures	1,058,760	1,089,743	(30,983)	1,047,135
Capital outlay	700,391	435,297	265,094	728,940
Total	7,133,447	6,763,040	370,407	6,596,090
Fire:				
Fire Marshal				
Salaries and employee benefits	223,720	179,978	43,742	217,182
Other operating expenditures	76,074	79,079	(3,005)	78,646
Capital outlay	45,654	45,285	369	34,359
Total	345,448	304,342	41,106	330,187
Assistance to Local Volunteer Fire Departments:				
Other operating expenditures	191,156	161,719	29,437	177,912
Planning:				
Salaries and employee benefits	415,912	404,404	11,508	600,430
Other operating expenditures	124,265	138,475	(14,210)	148,412
Capital outlay	2,205	-	2,205	43,377
Total	542,382	542,879	(497)	792,219

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Inspections:				
Salaries and employee benefits	982,514	928,734	53,780	594,586
Other operating expenditures	155,552	61,543	94,009	34,101
Capital outlay	318,813	304,381	14,432	137,686
Total	1,456,879	1,294,658	162,221	766,373
Medical Examiner:				
Contracted services	58,700	51,987	6,713	55,274
Animal Control:				
Salaries and employee benefits	614,009	600,299	13,710	577,772
Other operating expenditures	340,003	360,871	(20,868)	287,836
Capital outlay	45,130	41,639	3,491	-
Total	999,142	1,002,809	(3,667)	865,608
Total public safety	25,787,087	24,644,343	1,142,744	23,250,693
Economic and Physical Development:				
Cooperative Extension:				
Salaries and employee benefits	54,322	52,230	2,092	25,287
Other operating expenditures	294,258	191,937	102,321	172,646
Total	348,580	244,167	104,413	197,933
Economic Development Commission/Projects:				
Other operating expenditures	1,237,700	1,164,224	73,476	1,029,547
Soil and Water Conservation:				
Salaries and employee benefits	131,782	133,167	(1,385)	130,847
Other operating expenditures	17,405	16,433	972	15,290
Total	149,187	149,600	(413)	146,137
Natural Resources:				
Salaries and employee benefits	150,021	148,894	1,127	99,047
Other operating expenditures	12,740	11,755	985	6,907
Total	162,761	160,649	2,112	105,954
Community Development Block Grant:				
Contracted services - CDBG Grant	92,470	88,845	3,625	34,285
Total economic and physical development	1,990,698	1,807,485	183,213	1,513,856

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Human Services:				
Health:				
Administration:				
Salaries and employee benefits	880,515	869,844	10,671	888,693
Special compensation	1,040	640	400	880
Other operating expenditures	281,789	238,566	43,223	145,136
Total	1,163,344	1,109,050	54,294	1,034,709
Immunization:				
Salaries and employee benefits	63,698	64,132	(434)	61,928
Other operating expenditures	35,917	33,344	2,573	36,422
Total	99,615	97,476	2,139	98,350
Adult Health:				
Salaries and employee benefits	113,431	114,938	(1,507)	111,803
Other operating expenditures	4,745	1,777	2,968	3,235
Total	118,176	116,715	1,461	115,038
Duke Discretionary:				
Other operating expenditures	59,000	50,909	8,091	66,878
BCCP - Health:				
Salaries and employee benefits	9,690	5,354	4,336	4,274
Other operating expenditures	57,505	33,674	23,831	28,737
Total	67,195	39,028	28,167	33,011
Communicable Disease:				
Salaries and employee benefits	58,582	54,922	3,660	58,800
Other operating expenditures	11,406	8,654	2,752	8,593
Total	69,988	63,576	6,412	67,393
Lab:				
Salaries and employee benefits	108,571	92,162	16,409	100,067
Other operating expenditures	61,745	39,429	22,316	41,403
Total	170,316	131,591	38,725	141,470
Family Planning:				
Salaries and employee benefits	110,207	103,424	6,783	107,571
Other operating expenditures	39,225	32,856	6,369	27,387
Total	149,432	136,280	13,152	134,958

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Maternal Health:				
Salaries and employee benefits	126,941	147,322	(20,381)	144,216
Other operating expenditures	7,552	3,607	3,945	3,912
Capital outlay	1,800	2,650	(850)	513
Total	136,293	153,579	(17,286)	148,641
Child Health:				
Salaries and employee benefits	126,381	127,463	(1,082)	124,471
Other operating expenditures	5,365	2,235	3,130	1,905
Total	131,746	129,698	2,048	126,376
Home Health Services:				
Salaries and employee benefits	-	-	-	72,174
Contracted services	-	-	-	625
Other operating expenditures	-	1,443	(1,443)	56,599
Total	-	1,443	(1,443)	129,398
Maternal Health Clinic:				
Salaries and employee benefits	98,143	80,095	18,048	77,839
Other operating expenditures	10,038	2,336	7,702	4,696
Total	108,181	82,431	25,750	82,535
Child Service Coordination:				
Salaries and employee benefits	128,583	131,746	(3,163)	120,196
Other operating expenditures	7,316	4,844	2,472	4,808
Total	135,899	136,590	(691)	125,004
Peer Counselor:				
Salaries and employee benefits	8,431	10,858	(2,427)	10,614
Women, Infants, and Children:				
Salaries and employee benefits	217,620	238,505	(20,885)	219,744
Other operating expenditures	18,829	18,323	506	11,490
Total	236,449	256,828	(20,379)	231,234
Day Care Grant:				
Salaries and employee benefits	54,500	55,087	(587)	53,803
Other operating expenditures	5,190	4,850	340	5,016
Total	59,690	59,937	(247)	58,819

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Nutrition:				
Salaries and employee benefits	71,842	82,732	(10,890)	71,486
Other operating expenditures	779	887	(108)	80
Total	72,621	83,619	(10,998)	71,566
Environmental Health:				
Salaries and employee benefits	535,151	545,468	(10,317)	528,311
Other operating expenditures	67,485	65,973	1,512	62,271
Capital outlay	20,946	21,580	(634)	36,845
Total	623,582	633,021	(9,439)	627,427
School Health:				
Salaries and employee benefits	448,478	458,303	(9,825)	418,593
Other operating expenditures	41,568	25,667	15,901	23,824
Total	490,046	483,970	6,076	442,417
Health Promotion:				
Salaries and employee benefits	54,216	54,819	(603)	51,079
Other operating expenditures	5,675	5,248	427	5,397
Total	59,891	60,067	(176)	56,476
Bioterrorism:				
Salaries and employee benefits	62,897	63,665	(768)	62,048
Other operating expenditures	12,948	12,663	285	20,132
Total	75,845	76,328	(483)	82,180
Contracted Services:				
Salaries and employee benefits	494,838	528,532	(33,694)	469,920
Other operating expenditures	42,397	27,738	14,659	33,210
Total	537,235	556,270	(19,035)	503,130
Other Health Programs:				
Susan Komen	46,001	37,627	8,374	43,018
Total health	4,618,976	4,506,891	112,085	4,430,642
Mental Health:				
Other operating expenditures	394,589	394,589	-	384,589

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Social Services:				
Administration:				
Salaries and employee benefits	888,469	848,847	39,622	821,369
Special compensation	1,200	840	360	880
Other operating expenditures	619,205	472,285	146,920	682,876
Capital outlay	58,800	79,097	(20,297)	-
Total	1,567,674	1,401,069	166,605	1,505,125
Children's Services:				
Salaries and employee benefits	2,413,977	2,306,973	107,004	2,258,798
Foster care	985,275	766,920	218,355	855,770
Other operating expenditures	135,467	92,916	42,551	68,434
Total	3,534,719	3,166,809	367,910	3,183,002
Adolescent Parenting:				
Salaries and employee benefits	59,510	59,796	(286)	58,462
Other operating expenditures	3,378	3,170	208	2,881
Total	62,888	62,966	(78)	61,343
Adult Services:				
Salaries and employee benefits	699,735	674,779	24,956	664,006
Long-term care, SD	418,243	383,877	34,366	394,853
Other operating expenditures	38,014	35,295	2,719	28,894
Total	1,155,992	1,093,951	62,041	1,087,753
State In-Home Care:				
Special compensation	8,562	8,562	-	7,620
Office on Aging - HCCBG:				
Special contracted services	223,964	207,480	16,484	222,889
Child Support Enforcement:				
Salaries and employee benefits	509,297	521,705	(12,408)	459,449
Other operating expenditures	25,154	27,064	(1,910)	18,937
Total	534,451	548,769	(14,318)	478,386
CAP - Children:				
Special contracted services	995	-	995	-

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
CAP - Disabled Adults:				
Special contracted services	10,340	11,780	(1,440)	9,227
Other operating expenditures	130,000	117,292	12,708	126,369
Total	140,340	129,072	11,268	135,596
TANF Program:				
Salaries and employee benefits	373,952	359,983	13,969	347,564
Client travel reimbursement	800	150	650	160
Other operating expenditures	37,821	27,451	10,370	6,186
Total	412,573	387,584	24,989	353,910
Family Medicaid:				
Salaries and employee benefits	668,471	667,939	532	629,265
TANF emergency assistance	50,657	16,998	33,659	6,202
Total	719,128	684,937	34,191	635,467
Adult Medicaid:				
Salaries and employee benefits	788,330	711,952	76,378	701,725
Client transportation	450,000	97,117	352,883	571,855
Medicaid, SD	4,500	5,004	(504)	3,600
Other operating expenditures	4,323	3,316	1,007	3,738
Total	1,247,153	817,389	429,764	1,280,918
Food and Nutrition:				
Salaries and employee benefits	725,406	684,612	40,794	683,989
Other operating expenditures	575,770	507,658	68,112	520,568
Total	1,301,176	1,192,270	108,906	1,204,557
Food and Nutrition - Fraud:				
Special contracted services	49,303	52,060	(2,757)	48,251
Other operating expenditures	678	418	260	160
Total	49,981	52,478	(2,497)	48,411
DSS - SHIIP				
Other operating expenditures	3,182	3,024	158	4,982
Total social services	10,962,778	9,756,360	1,206,418	10,209,959

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Assistance Programs:				
SA Blind	3,714	3,714	-	3,711
Child Daycare	2,200,463	2,016,853	183,610	2,287,911
Gaston skills	65,471	-	65,471	-
Total	2,269,648	2,020,567	249,081	2,291,622
Veterans Service Office:				
Salaries and employee benefits	105,311	108,439	(3,128)	106,806
Other operating expenditures	26,285	18,998	7,287	14,072
Total	131,596	127,437	4,159	120,878
JCP Administration:				
Administration	10,847	6,302	4,545	9,051
JCP - Communities In Schools:				
Communities in schools	27,749	27,749	-	27,749
JCP - Savy Shepherd:				
Savy Shepherd	1,796	1,796	-	4,306
JCP Mediation:				
Mediation	17,550	16,088	1,462	17,550
JCP CIS - After School:				
Other operating expenditures	62,059	62,059	-	59,059
JCP FamiliFirst:				
Other operating expenditures	22,005	15,219	6,786	22,847
CIS/Restitution				
Other operating expenditures	35,918	35,918	-	35,918
Senior Services:				
Salaries and employee benefits	246,833	255,054	(8,221)	224,654
Other operating expenditures	283,331	298,250	(14,919)	276,221
Capital outlay	2,719	2,936	(217)	14,376
Total	532,883	556,240	(23,357)	515,251

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Transportation TLC:				
Salaries and employee benefits	806,652	787,159	19,493	705,932
Other operating expenditures	327,760	330,585	(2,825)	275,714
Capital outlay	-	-	-	51,035
Total	1,134,412	1,117,744	16,668	1,032,681
Total human services	20,222,806	18,644,959	1,577,847	19,162,102
Cultural and Recreational:				
Recreation:				
Salaries and employee benefits	546,515	477,442	69,073	555,924
Contracted services	25,000	6,977	18,023	2,403
Other operating expenditures	289,341	269,722	19,619	314,525
Total	860,856	754,141	106,715	872,852
Recreation - Building and Grounds:				
Salaries and employee benefits	-	-	-	299,658
Other operating expenditures	-	-	-	62,392
Capital outlay	-	-	-	103,597
Total	-	-	-	465,647
Library:				
Salaries and employee benefits	849,457	801,694	47,763	775,968
Other operating expenditures	520,865	525,607	(4,742)	436,192
Books and magazines	10,609	10,609	-	8,557
Capital outlay	34,869	11,361	23,508	-
Total	1,415,800	1,349,271	66,529	1,220,717
Historical Properties:				
Other operating expenditures	2,480	1,159	1,321	317
Total cultural and recreational	2,279,136	2,104,571	174,565	2,559,533
Education:				
Public schools - current expense	17,818,484	17,818,484	-	17,009,606
Public schools - capital outlay	2,679,091	2,679,091	-	1,729,091
Community college - current expense	170,000	170,000	-	170,000
Total education	20,667,575	20,667,575	-	18,908,697

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Final Budget	Actual	Variance Over/Under	Actual
Debt Service:				
Principal retirement	9,000,270	8,846,700	153,570	9,053,807
Interest and fees	3,368,045	3,059,430	308,615	3,213,983
Total debt service	12,368,315	11,906,130	462,185	12,267,790
Total expenditures	95,459,256	90,704,645	4,754,611	87,959,169
Revenues over (under) expenditures	(4,982,101)	4,725,659	9,707,760	5,154,230
Other Financing Sources (Uses):				
Long-term debt issued	42,000	41,470	(530)	5,244,000
Payment to refunding bond escrow agent	-	-	-	(5,141,066)
Transfers out	(5,490,270)	(5,490,270)	-	(385,918)
Transfers in	2,037,267	2,037,267	-	1,222,851
Fund balance appropriated	8,393,104	-	(8,393,104)	-
Total other financing sources (uses)	4,982,101	(3,411,533)	(8,393,634)	939,867
Net change in fund balance	$ -	1,314,126	$ 1,314,126	6,094,097
Fund Balance:				
Beginning of year - July 1		33,256,233		27,162,136
End of year - June 30		$ 34,570,359		$ 33,256,233

LINCOLN COUNTY, NORTH CAROLINA

MAJOR CAPITAL PROJECT FUND
GENERAL CAPITAL PROJECTS FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
FROM INCEPTION AND FOR THE YEAR ENDED JUNE 30, 2017

		Actual			
	Project Authorization	Prior Years	Current Year	Closed Projects	Total to Date
Revenues:					
Restricted intergovernmental					
Federal and State grants	$ 1,592,629	$ 937,155	$ -	$ 4,644	$ 932,511
Investment earnings	-	474	899	-	1,373
Contributions and donations	1,265,903	1,166,643	-	-	1,166,643
Miscellaneous	37,957	17,921	27,957	45,878	-
Total revenues	2,896,489	2,122,193	28,856	50,522	2,100,527
Expenditures:					
Capital outlay					
Land and buildings	212,942	-	-	-	-
Other improvements	93,447	26,391	-	26,231	160
Other equipment	4,663,828	1,549,507	81,376	1,690	1,629,193
Design	988,836	628,375	361,087	127,003	862,459
Construction	31,378,216	7,588,468	3,811,189	2,787,231	8,612,426
Miscellaneous	1,196,183	29,071	18,813	24,120	23,764
Total expenditures	38,533,452	9,821,812	4,272,465	2,966,275	11,128,002
Revenues over (under) expenditures	(35,636,963)	(7,699,619)	(4,243,609)	(2,915,753)	(9,027,475)
Other Financing Sources (Uses):					
Long-term debt issued	27,315,364	4,895,005	2,047,000	2,600,000	4,342,005
Transfer to General Fund	(1,469,930)	(9,472)	(1,437,267)	(858,296)	(588,443)
Transfer from General Fund	9,791,529	1,588,481	5,438,272	1,174,049	5,852,704
Total other financing sources (uses)	35,636,963	6,474,014	6,048,005	2,915,753	9,606,266
Net change in fund balance	$ -	$ (1,225,605)	1,804,396	$ -	$ 578,791
Fund Balance:					
Beginning of year - July 1			(1,225,605)		
End of year - June 30			$ 578,791		

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LINCOLN COUNTY, NORTH CAROLINA

COMBINING BALANCE SHEET
NONMAJOR GOVERNMENTAL FUNDS
JUNE 30, 2017

	Special Revenue Funds				
	Fire Districts Fund	Law Enforcement Fund	Federal Law Enforcement Fund	Emergency Telephone Systems Fund	Special Grants Fund
Assets:					
Cash and cash equivalents	$ 19,740	$ 54,186	$ 71,772	$ 432,282	$ 48,193
Taxes receivable, net	272,535	-	-	-	-
Accounts receivable, net	63,822	16	23	185,089	23,640
Due from other governments	-	3,007	516	8,915	1,951
Cash and cash equivalents, restricted	-	-	-	-	-
Total assets	$ 356,097	$ 57,209	$ 72,311	$ 626,286	$ 73,784
Liabilities, Deferred Inflows of Resources, and Fund Balances:					
Liabilities:					
Accounts payable and other accrued liabilities	$ 83,562	$ -	$ -	$ 90,287	$ 13,935
Deferred Inflows of Resources:					
Unavailable taxes	272,535	-	-	-	-
Fund Balances:					
Restricted:					
Stabilization for State statute	63,822	3,023	539	511,631	25,591
Restricted, all other	-	54,186	71,772	24,368	-
Committed	-	-	-	-	34,258
Assigned	-	-	-	-	-
Unassigned	(63,822)	-	-	-	-
Total fund balances	-	57,209	72,311	535,999	59,849
Total liabilities, deferred inflows of resources, and fund balances	$ 356,097	$ 57,209	$ 72,311	$ 626,286	$ 73,784

LINCOLN COUNTY, NORTH CAROLINA

COMBINING BALANCE SHEET
NONMAJOR GOVERNMENTAL FUNDS
JUNE 30, 2017

	Capital Project Funds		
	School Capital Projects Fund	Capital Reserve Fund	Total Nonmajor Governmental Funds
Assets:			
Cash and cash equivalents	$ -	$ 387,409	$ 1,013,582
Taxes receivable, net	-	-	272,535
Accounts receivable, net	-	187,110	459,700
Due from other governments	-	-	14,389
Cash and cash equivalents, restricted	253,572	-	253,572
Total assets	$ 253,572	$ 574,519	$ 2,013,778
Liabilities, Deferred Inflows of Resources, and Fund Balances:			
Liabilities:			
Accounts payable and other accrued liabilities	$ -	$ -	$ 187,784
Deferred Inflows of Resources:			
Unavailable taxes	-	-	272,535
Fund Balances:			
Restricted:			
Stabilization for State statute	-	187,110	791,716
Restricted, all other	253,572	-	403,898
Committed	-	387,409	421,667
Assigned	-	-	-
Unassigned	-	-	(63,822)
Total fund balances	253,572	574,519	1,553,459
Total liabilities, deferred inflows of resources, and fund balances	$ 253,572	$ 574,519	$ 2,013,778

LINCOLN COUNTY, NORTH CAROLINA

**COMBINING STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
NONMAJOR GOVERNMENTAL FUNDS
FOR THE YEAR ENDED JUNE 30, 2017**

	Special Revenue Funds				
	Fire Districts Fund	Law Enforcement Fund	Federal Law Enforcement Fund	Emergency Telephone Systems Fund	Special Grants Fund
Revenues:					
Ad valorem taxes	$ 7,239,433	$ -	$ -	$ -	$ -
Other taxes and licenses	-	-	-	272,662	-
Restricted intergovernmental revenue	-	26,298	2,628	179,463	234,264
Investment earnings	-	255	264	1,761	-
Total revenues	7,239,433	26,553	2,892	453,886	234,264
Expenditures:					
Current:					
General government	-	-	-	-	140
Public safety	7,239,433	46,711	7,394	466,545	-
Transportation	-	-	-	-	171,298
Culture and recreation	-	-	-	-	79,090
Capital outlay - schools	-	-	-	-	-
Total expenditures	7,239,433	46,711	7,394	466,545	250,528
Revenues over (under) expenditures	-	(20,158)	(4,502)	(12,659)	(16,264)
Other Financing Sources (Uses):					
Transfers in	-	-	-	-	51,998
Transfers out	-	-	-	-	-
Total other financing sources (uses)	-	-	-	-	51,998
Net change in fund balances	-	(20,158)	(4,502)	(12,659)	35,734
Fund Balances:					
Beginning of year - July 1	-	77,367	76,813	548,658	24,115
End of year - June 30	$ -	$ 57,209	$ 72,311	$ 535,999	$ 59,849

LINCOLN COUNTY, NORTH CAROLINA

**COMBINING STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
NONMAJOR GOVERNMENTAL FUNDS
FOR THE YEAR ENDED JUNE 30, 2017**

	Capital Project Funds		
	School Capital Projects Fund	Capital Reserve Fund	Total Nonmajor Governmental Funds
Revenues:			
Ad valorem taxes	$ -	$ -	$ 7,239,433
Other taxes and licenses	-	-	272,662
Restricted intergovernmental revenue	-	870,520	1,313,173
Investment earnings	1,560	864	4,704
Total revenues	1,560	871,384	8,829,972
Expenditures:			
Current:			
General government	-	-	140
Public safety	-	-	7,760,083
Transportation	-	-	171,298
Culture and recreation	-	-	79,090
Capital outlay - schools	215,529	-	215,529
Total expenditures	215,529	-	8,226,140
Revenues over (under) expenditures	(213,969)	871,384	603,832
Other Financing Sources (Uses):			
Transfers in	-	-	51,998
Transfers out	-	(600,000)	(600,000)
Total other financing sources (uses)	-	(600,000)	(548,002)
Net change in fund balances	(213,969)	271,384	55,830
Fund Balances:			
Beginning of year - July 1	467,541	303,135	1,497,629
End of year - June 30	$ 253,572	$ 574,519	$ 1,553,459

LINCOLN COUNTY, NORTH CAROLINA

SPECIAL REVENUE - FIRE DISTRICTS FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Ad valorem taxes	$ 7,310,010	$ 7,239,433	$ (70,577)	$ 6,940,996
Total revenues	7,310,010	7,239,433	(70,577)	6,940,996
Expenditures:				
Alexis Fire District	380,576	378,699	1,877	358,375
Boger City Fire District	686,904	672,810	14,094	665,511
Crouse Fire District	121,614	115,216	6,398	109,275
Denver Fire District	2,118,619	2,112,845	5,774	2,008,352
East Lincoln Fire District	1,939,801	1,928,152	11,649	1,825,636
Howard's Creek Fire District	306,881	304,962	1,919	293,657
North 321 Fire District	306,090	302,297	3,793	297,218
North Brook Fire District	359,525	350,191	9,334	334,982
Pumpkin Center Fire District	490,870	484,682	6,188	470,823
South Fork Fire District	351,170	346,597	4,573	340,329
Union Fire District	247,960	242,982	4,978	236,838
Total expenditures	7,310,010	7,239,433	70,577	6,940,996
Net change in fund balance	$ -	-	$ -	-
Fund Balance:				
Beginning of year - July 1		-		-
End of year - June 30		$ -		$ -

LINCOLN COUNTY, NORTH CAROLINA

SPECIAL REVENUE - LAW ENFORCEMENT FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Restricted intergovernmental	$ 15,000	$ 26,298	$ 11,298	$ 15,533
Investment earnings	25	255	230	301
Total revenues	15,025	26,553	11,528	15,834
Expenditures:				
Public safety	45,298	46,711	(1,413)	774
Total expenditures	45,298	46,711	(1,413)	774
Revenues over (under) expenditures	(30,273)	(20,158)	10,115	15,060
Other Financing Sources (Uses):				
Appropriated fund balance	30,273	-	(30,273)	-
Net change in fund balance	$ -	(20,158)	$ (20,158)	15,060
Fund Balance:				
Beginning of year - July 1		77,367		62,307
End of year - June 30		$ 57,209		$ 77,367

LINCOLN COUNTY, NORTH CAROLINA

SPECIAL REVENUE - FEDERAL LAW ENFORCEMENT FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Restricted intergovernmental revenue	$ 10,000	$ 2,628	$ (7,372)	$ 1,682
Investment earnings	50	264	214	326
Miscellaneous	-	-	-	1,711
Total revenues	10,050	2,892	(7,158)	3,719
Expenditures:				
Public safety	10,050	7,394	2,656	2,151
Total expenditures	10,050	7,394	2,656	2,151
Net change in fund balance	$ -	(4,502)	$ (4,502)	1,568
Fund Balance:				
Beginning of year - July 1		76,813		75,245
End of year - June 30		$ 72,311		$ 76,813

LINCOLN COUNTY, NORTH CAROLINA

SPECIAL REVENUE - EMERGENCY TELEPHONE SYSTEM FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Other Taxes and Licenses:				
911 system subscriber fees	$ 223,500	$ 272,662	$ 49,162	$ 253,038
Restricted Intergovernmental:				
Wireless 911 funds	2,000,000	179,463	(1,820,537)	-
Investment earnings	1,000	1,761	761	2,368
Total revenues	2,224,500	453,886	(1,770,614)	255,406
Expenditures:				
Public Safety:				
911 system subscriber fees				
Other operating expenditures	87,500	157,423	(69,923)	124,178
Telephone	80,000	89,699	(9,699)	88,035
Capital outlay	2,336,222	219,423	2,116,799	161,419
Total expenditures	2,503,722	466,545	2,037,177	373,632
Revenues over (under) expenditures	(279,222)	(12,659)	266,563	(118,226)
Other Financing Sources (Uses):				
Transfers in (out)	-	-	-	38,000
Fund balance appropriated	279,222	-	(279,222)	-
Total other financing sources (uses)	279,222	-	(279,222)	38,000
Net change in fund balance	$ -	(12,659)	$ (12,659)	(80,226)
Fund Balance:				
Beginning of year - July 1		548,658		628,884
End of year - June 30		$ 535,999		$ 548,658

LINCOLN COUNTY, NORTH CAROLINA

SPECIAL REVENUE - SPECIAL GRANTS FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Restricted intergovernmental revenue	$ 735,252	$ 234,264	$ (500,988)	$ 401,807
Expenditures:				
General government	27,476	140	27,336	23,074
Public safety	14,027	-	14,027	-
Transportation	629,541	171,298	458,243	321,507
Culture and recreation	146,456	79,090	67,366	63,361
Total expenditures	817,500	250,528	566,972	407,942
Revenues over (under) expenditures	(82,248)	(16,264)	65,984	(6,135)
Other Financing Sources (Uses):				
Transfers in (out)	82,248	51,998	(30,250)	30,250
Net change in fund balance	$ -	35,734	$ 35,734	24,115
Fund Balance:				
Beginning of year - July 1		24,115		-
End of year - June 30		$ 59,849		$ 24,115

LINCOLN COUNTY, NORTH CAROLINA

SCHOOL CAPITAL PROJECTS FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FROM INCEPTION AND FOR THE YEAR ENDED JUNE 30, 2017

		Actual			
	Project Authorization	Prior Years	Current Year	Closed Projects	Total to Date
Revenues:					
Investment earnings	$ 212,075	$ 398,704	$ 1,560	$ 146,692	$ 253,572
Total revenues	212,075	398,704	1,560	146,692	253,572
Expenditures:					
Education	37,634,195	37,408,819	215,529	37,624,348	-
Total expenditures	37,634,195	37,408,819	215,529	37,624,348	-
Revenues over (under) expenditures	(37,422,120)	(37,010,115)	(213,969)	(37,477,656)	253,572
Other Financing Sources (Uses):					
Long-term debt issued	39,777,839	39,848,504	-	39,848,504	-
Bond premium	-	76,694	-	76,694	-
Transfers out	(2,980,719)	(3,072,542)	-	(3,072,542)	-
Transfer from General Fund	625,000	625,000	-	625,000	-
Total other financing sources (uses)	37,422,120	37,477,656	-	37,477,656	-
Net change in fund balance	$ -	$ 467,541	(213,969)	$ -	$ 253,572
Fund Balance:					
Beginning of year - July 1			467,541		
End of year - June 30			$ 253,572		

LINCOLN COUNTY, NORTH CAROLINA

CAPITAL PROJECT - CAPITAL RESERVE FUND
SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES
IN FUND BALANCE - BUDGET AND ACTUAL
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Restricted Intergovernmental:				
Lottery proceeds	$ 800,000	$ 870,520	$ 70,520	$ 783,400
Investment earnings	1,000	864	(136)	2,552
Total revenues	801,000	871,384	70,384	785,952
Other Financing Sources (Uses):				
Transfers out	(801,000)	(600,000)	201,000	(1,222,851)
Net change in fund balance	$ -	271,384	$ 271,384	(436,899)
Fund Balance:				
Beginning of year - July 1		303,135		740,034
End of year - June 30		$ 574,519		$ 303,135

LINCOLN COUNTY, NORTH CAROLINA

ENTERPRISE FUND - SOLID WASTE FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
BUDGET AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Operating Revenues:				
Solid waste charges/tipping fees	$ 752,880	$ 892,250	$ 139,370	$ 743,230
Other	2,000	-	(2,000)	25,000
Total operating revenues	754,880	892,250	137,370	768,230
Non-Operating Revenues:				
Availability fees	3,378,375	3,503,903	125,528	3,013,211
White goods disposal tax	-	25,110	25,110	6,566
Tire disposal tax	49,700	108,980	59,280	108,112
Franchise fees	35,000	36,491	1,491	35,000
Solid waste disposal tax	56,000	59,046	3,046	55,661
Federal and State grants	-	-	-	15,000
NC electronics management fund distribution	6,000	6,038	38	-
Miscellaneous	-	1,505	1,505	141,605
Investment earnings	9,000	26,374	17,374	29,772
Total non-operating revenues	3,534,075	3,767,447	233,372	3,404,927
Total revenues	4,288,955	4,659,697	370,742	4,173,157
Expenditures:				
Landfill Operations:				
Salaries and employee benefits	1,911,564	1,871,658	39,906	1,833,564
Other operating costs	1,686,253	1,460,715	225,538	1,318,585
Capital outlay	4,114,151	3,266,421	847,730	528,898
Debt Service:				
Principal	242,631	111,908	130,723	110,320
Interest	84,013	84,013	-	17,489
Bond Issuance Cost	64,890	-	64,890	-
Total expenditures	8,103,502	6,794,715	1,308,787	3,808,856
Revenues over (under) expenditures	(3,814,547)	(2,135,018)	1,679,529	364,301

LINCOLN COUNTY, NORTH CAROLINA

ENTERPRISE FUND - SOLID WASTE FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
BUDGET AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Other Financing Sources (Uses):				
Long-term debt issued	3,301,000	3,301,670	670	-
Appropriated fund balance	513,547	-	(513,547)	-
Total other financing sources (uses)	3,814,547	3,301,670	(512,877)	-
Revenues and other financing sources over (under) expenditures and other financing uses	$ -	1,166,652	$ 1,166,652	364,301
Reconciling items:				
Debt principal		111,908		110,320
Long-term debt issued		(3,301,670)		-
Capital outlay added to capital assets		3,266,421		528,898
Depreciation		(850,107)		(870,738)
Decrease in net pension asset		-		(168,789)
Increase in deferred outflows of resources - pensions		401,649		82
Increase in net pension liability		(480,026)		(130,163)
Decrease in deferred inflows of resources - pensions		41,458		342,399
(Increase) decrease in compensated absences		(1,503)		794
(Increase) decrease in other post-employment benefits		(109,845)		(138,416)
(Increase) decrease in landfill closure and and post-closure costs		(1,623,914)		(271,725)
Total reconciling items		(2,545,629)		(597,338)
Change in net position		$ (1,378,977)		$ (233,037)

LINCOLN COUNTY, NORTH CAROLINA

ENTERPRISE FUND - WATER AND SEWER FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
BUDGET AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Revenues:				
Operating Revenues:				
Water and sewer charges/fees	$ 9,929,007	$ 13,013,052	$ 3,084,045	$ 10,447,941
Water and sewer taps	251,500	442,755	191,255	236,782
Other operating revenues	9,000	15,000	6,000	6,750
Total operating revenues	10,189,507	13,470,807	3,281,300	10,691,473
Non-Operating Revenues:				
Investment income	7,000	26,185	19,185	25,599
Miscellaneous revenue	-	308	308	3,519
Total non-operating revenues	7,000	26,493	19,493	29,118
Total revenues	10,196,507	13,497,300	3,300,793	10,720,591
Expenditures:				
Water System:				
Salaries and employee benefits	837,564	752,974	84,590	658,076
Other operating costs	1,921,093	1,813,154	107,939	1,471,495
Capital outlay	594,123	445,837	148,286	25,486
Total water system	3,352,780	3,011,965	340,815	2,155,057
Sewer System:				
Salaries and employee benefits	517,865	553,472	(35,607)	593,570
Other operating costs	1,121,722	788,616	333,106	609,266
Capital outlay	360,813	187,280	173,533	-
Total sewer system	2,000,400	1,529,368	471,032	1,202,836
Water Treatment Plant:				
Salaries and employee benefits	588,403	569,692	18,711	562,574
Other operating costs	584,499	497,110	87,389	535,645
Total water treatment plant	1,172,902	1,066,802	106,100	1,098,219
Indian Creek Pumping Station:				
Other operating costs	699,761	212,639	487,122	72,838
Total Indian Creek pumping station	699,761	212,639	487,122	72,838
Wastewater Treatment - Killian Creek:				
Salaries and employee benefits	325,177	322,044	3,133	240,923
Other operating costs	525,135	432,644	92,491	348,081
Capital outlay	51,465	51,464	1	-
Total wastewater treatment - Killian Creek	901,777	806,152	95,625	589,004

LINCOLN COUNTY, NORTH CAROLINA

ENTERPRISE FUND - WATER AND SEWER FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
BUDGET AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Debt Service:				
Principal	1,344,427	1,344,427	-	1,348,571
Interest	397,809	302,413	95,396	541,923
Total debt service	1,742,236	1,646,840	95,396	1,890,494
Total expenditures	9,869,856	8,273,766	1,596,090	7,008,448
Revenues over (under) expenditures	326,651	5,223,534	4,896,883	3,712,143
Other Financing Sources (Uses):				
Fund balance appropriated	1,028,460	-	(1,028,460)	-
Long-term debt issued	69,000	68,860	(140)	-
Debt issuance costs	(69,000)	-	69,000	-
Transfers in (out)	(1,355,111)	(1,355,111)	-	(2,442,524)
Total other financing sources (uses)	(326,651)	(1,286,251)	(959,600)	(2,442,524)
Revenues and other financing sources over (under) expenditures and other financing uses	$ -	3,937,283	$ 3,937,283	1,269,619
Reconciliation of Modified Accrual Basis (Modified Accrual) to Full Accrual Basis:				
Reconciling items:				
Debt principal		1,344,427		1,348,571
Capital outlay capitalized		684,581		25,486
Long-term debt issued		(68,860)		-
Water and Sewer Capital Fund activity:				
Interest income		14,215		14,472
Intrafund transfers		488,097		2,442,524
Capital contributions		10,000		2,962,527
Depreciation		(3,036,317)		(2,823,329)
Decrease in net pension asset		-		(196,920)
Increase in deferred outflows of resources - pensions		468,590		96
Increase in net pension liability		(560,030)		(151,857)
Decrease in deferred inflows of resources - pensions		48,368		399,465
Gain (loss) on disposal of capital assets		(3,833)		-
(Increase) decrease in compensated absences		1,362		(12,570)
(Increase) decrease in other post-employment benefits		(136,000)		(144,067)
Change in accrued interest		(168,095)		-
Total reconciling items		(913,495)		3,864,398
Change in net position		$ 3,023,788		$ 5,134,017

LINCOLN COUNTY, NORTH CAROLINA

ENTERPRISE FUND - WATER AND SEWER CAPITAL FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
BUDGET AND ACTUAL (NON-GAAP)
FROM INCEPTION AND FOR THE YEAR ENDED JUNE 30, 2017

		Actual			
	Project Authorization	Prior Years	Current Year	Closed Projects	Total to Date
Revenues:					
Investment earnings	$ -	$ 41,066	$ 14,215	$ -	$ 55,281
Miscellaneous	-	17,247	-	-	17,247
Total revenues	-	58,313	14,215	-	72,528
Expenditures:					
Capital outlay	22,152,085	3,174,440	2,647,329	3,037,033	2,784,736
Revenues over (under) expenditures	(22,152,085)	(3,116,127)	(2,633,114)	(3,037,033)	(2,712,208)
Other Financing Sources (Uses):					
Long-term debt issued	12,303,174	-	3,399,000	3,399,000	-
Transfers in (out)	9,848,911	3,407,239	488,097	(361,967)	4,257,303
Total other financing sources (uses)	22,152,085	3,407,239	3,887,097	3,037,033	4,257,303
Revenues and other financing sources over (under) expenditures and other financing uses	$ -	$ 291,112	$ 1,253,983	$ -	$ 1,545,095

LINCOLN COUNTY, NORTH CAROLINA

ENTERPRISE FUND - EAST LINCOLN COUNTY
WATER AND SEWER DISTRICT FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
BUDGET AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Budget	Actual	Variance Over/Under	Actual
Non-Operating Revenues:				
Ad valorem taxes	$ -	$ 23,339	$ 23,339	$ 875,860
Investment earnings	-	230	230	1,519
Total revenues	-	23,569	23,569	877,379
Expenditures:				
Other operating costs	-	815	(815)	28,848
Debt Service:				
Principal	825,000	825,000	-	760,000
Interest	42,014	6,361	35,653	57,046
Total expenditures	867,014	832,176	34,838	845,894
Revenues over (under) expenditures	(867,014)	(808,607)	58,407	31,485
Other Financing Sources (Uses):				
Transfers in (out)	867,014	867,014	-	-
Revenues and other financing sources over (under) expenditures and other financing uses	$ -	58,407	$ 58,407	31,485
Reconciliation of Modified Accrual Basis (Modified Accrual) to Full Accrual Basis:				
Reconciling items:				
Debt principal		825,000		760,000
Change in net position		$ 883,407		$ 791,485

LINCOLN COUNTY, NORTH CAROLINA

COMBINING STATEMENT OF NET POSITION
INTERNAL SERVICE FUNDS
JUNE 30, 2017

	Health Insurance Fund	Workers' Compensation Fund	Total Internal Service Funds
Assets:			
Current assets:			
Cash and cash equivalents	$ 3,958,919	$ 97,962	$ 4,056,881
Accounts receivable, net	1,582	19	1,601
Prepaid items	360,967	10,000	370,967
Total assets	4,321,468	107,981	4,429,449
Liabilities:			
Current liabilities:			
Accounts payable and other accrued liabilities	1,065,143	459,157	1,524,300
Net Position:			
Unrestricted	3,256,325	(351,176)	2,905,149
Total net position	$ 3,256,325	$ (351,176)	$ 2,905,149

LINCOLN COUNTY, NORTH CAROLINA

COMBINING STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN FUND NET POSITION
INTERNAL SERVICE FUNDS
FOR THE YEAR ENDED JUNE 30, 2017

	Health Insurance Fund	Workers' Compensation Fund	Total Internal Service Funds
Operating Revenues:			
Contributions from employer	$ 6,408,476	$ -	$ 6,408,476
Contributions from employees	1,078,659	-	1,078,659
Workers' compensation premiums	-	584,827	584,827
Total operating revenues	7,487,135	584,827	8,071,962
Operating Expenses:			
Health, administration, and consultant fees	6,780,160	137,921	6,918,081
Health and workers' compensation claims	93,069	667,669	760,738
Total operating expenses	6,873,229	805,590	7,678,819
Operating income (loss)	613,906	(220,763)	393,143
Non-Operating Revenues (Expenses):			
Investment earnings	14,231	27	14,258
Miscellaneous	33,333	-	33,333
Total non-operating revenues (expenses)	47,564	27	47,591
Change in net position	661,470	(220,736)	440,734
Net Position:			
Beginning of year - July 1	2,594,855	(130,440)	2,464,415
End of year - June 30	$ 3,256,325	$ (351,176)	$ 2,905,149

LINCOLN COUNTY, NORTH CAROLINA

COMBINING STATEMENT OF CASH FLOWS
INTERNAL SERVICE FUNDS
FOR THE YEAR ENDED JUNE 30, 2017

	Health Insurance Fund	Workers' Compensation Fund	Total Internal Service Funds
Operating Activities:			
Cash received from interfund services	$ 7,486,669	$ 584,812	$ 8,071,481
Cash received from other operating revenues	33,333	-	33,333
Cash paid for goods and services	(7,251,673)	(500,812)	(7,752,485)
Net cash provided (used) by operating activities	268,329	84,000	352,329
Investing Activities:			
Interest on investments	14,231	27	14,258
Net increase (decrease) in cash and cash equivalents/investments	282,560	84,027	366,587
Cash and Cash Equivalents/Investments:			
Beginning of year - July 1	3,676,359	13,935	3,690,294
End of year - June 30	$ 3,958,919	$ 97,962	$ 4,056,881
Reconciliation of Operating Income (Loss) to Net Cash Provided (Used) by Operating Activities:			
Operating income (loss)	$ 613,906	$ (220,763)	$ 393,143
Adjustments to Reconcile Operating Income (Loss) to Net Cash Provided (Used) by Operating Activities:			
Non-operating items	33,333	-	33,333
(Increase) decrease in prepaids	(88,802)	-	(88,802)
Increase (decrease) in accounts payable	(289,642)	304,778	15,136
Total adjustments	(345,577)	304,763	(40,814)
Net cash provided (used) by operating activities	$ 268,329	$ 84,000	$ 352,329

LINCOLN COUNTY, NORTH CAROLINA

INTERNAL SERVICE FUNDS
HEALTH INSURANCE FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
FINANCIAL PLAN AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Financial Plan	Actual	Variance Over/Under	Actual
Operating Revenues:				
Contributions from employer	$ 5,966,000	$ 6,408,476	$ 442,476	$ 6,040,133
Contributions from employees	1,127,795	1,078,659	(49,136)	1,051,547
Flex account	150,000	-	(150,000)	-
Total operating revenues	7,243,795	7,487,135	243,340	7,091,680
Operating Expenditures:				
Health and consultant fees	6,967,000	6,780,160	186,840	7,583,401
Patient monitoring	734,795	93,069	641,726	58,952
Total operating expenditures	7,701,795	6,873,229	828,566	7,642,353
Operating income (loss)	(458,000)	613,906	1,071,906	(550,673)
Non-Operating Revenues:				
Miscellaneous revenue	-	33,333	33,333	1,488
Investment earnings	8,000	14,231	6,231	17,997
Total non-operating revenues	8,000	47,564	39,564	19,485
Other Financing Sources (Uses):				
Appropriated fund balance	450,000	-	(450,000)	-
Change in net position - budgetary basis	$ -	$ 661,470	$ 661,470	$ (531,188)

Note: Prepared on the budgetary basis which is modified accrual.

LINCOLN COUNTY, NORTH CAROLINA

INTERNAL SERVICE FUNDS
WORKERS' COMPENSATION FUND
SCHEDULE OF REVENUES AND EXPENDITURES -
FINANCIAL PLAN AND ACTUAL (NON-GAAP)
FOR THE YEAR ENDED JUNE 30, 2017
WITH COMPARATIVE ACTUAL AMOUNTS FOR THE YEAR ENDED JUNE 30, 2016

	2017			2016
	Financial Plan	Actual	Variance Over/Under	Actual
Operating Revenues:				
Workers' compensation premiums	$ 550,699	$ 584,827	$ 34,128	$ 551,758
Operating Expenditures:				
Admin and consultant fees	84,000	137,921	(53,921)	130,242
Workers' compensation claims	341,250	667,669	(326,419)	75,331
Reserve	125,949	-	125,949	-
Total operating expenditures	551,199	805,590	(254,391)	205,573
Operating income (loss)	(500)	(220,763)	(220,263)	346,185
Non-Operating Revenues:				
Miscellaneous revenue	-	-	-	61,765
Investment earnings	500	27	(473)	4
Total non-operating revenues	500	27	(473)	61,769
Change in net position - budgetary basis	$ -	$ (220,736)	$ (220,736)	$ 407,954

Note: Prepared on the budgetary basis which is modified accrual.

LINCOLN COUNTY, NORTH CAROLINA

AGENCY FUNDS
COMBINING STATEMENT OF CHANGES IN ASSETS AND LIABILITIES
FOR THE YEAR ENDED JUNE 30, 2017

	Balance July 1, 2016	Additions	Deductions	Balance June 30, 2017
Social Services:				
Assets:				
Cash and cash equivalents	$ 77,012	$ 285,121	$ 241,757	$ 120,376
Total assets	$ 77,012	$ 285,121	$ 241,757	$ 120,376
Liabilities:				
Intergovernmental payable	$ 77,012	$ 285,121	$ 241,757	$ 120,376
Total liabilities	$ 77,012	$ 285,121	$ 241,757	$ 120,376
Tax Collector Fund:				
Assets:				
Cash and cash equivalents	$ 58,041	$ 4,716,408	$ 4,698,387	$ 76,062
Total assets	$ 58,041	$ 4,716,408	$ 4,698,387	$ 76,062
Liabilities:				
Intergovernmental payable	$ 58,041	$ 4,716,408	$ 4,698,387	$ 76,062
Total liabilities	$ 58,041	$ 4,716,408	$ 4,698,387	$ 76,062
Register of Deeds SB202 Fund:				
Assets:				
Cash and cash equivalents	$ 6,119	$ 69,744	$ 69,806	$ 6,057
Total assets	$ 6,119	$ 69,744	$ 69,806	$ 6,057
Liabilities:				
Intergovernmental payable	$ 6,119	$ 69,744	$ 69,806	$ 6,057
Total liabilities	$ 6,119	$ 69,744	$ 69,806	$ 6,057
Inmate Trust Fund:				
Assets:				
Cash and cash equivalents	$ 8,421	$ 297,059	$ 283,723	$ 21,757
Total assets	$ 8,421	$ 297,059	$ 283,723	$ 21,757
Liabilities:				
Intergovernmental payable	$ 8,421	$ 297,059	$ 283,723	$ 21,757
Total liabilities	$ 8,421	$ 297,059	$ 283,723	$ 21,757

LINCOLN COUNTY, NORTH CAROLINA

AGENCY FUNDS
COMBINING STATEMENT OF CHANGES IN ASSETS AND LIABILITIES
FOR THE YEAR ENDED JUNE 30, 2017

	Balance July 1, 2016	Additions	Deductions	Balance June 30, 2017
Miscellaneous Fund:				
Assets:				
Cash and cash equivalents	$ 151,278	$ 333,663	$ 306,085	$ 178,856
Total assets	$ 151,278	$ 333,663	$ 306,085	$ 178,856
Liabilities:				
Intergovernmental payable	$ 151,278	$ 333,663	$ 306,085	$ 178,856
Total liabilities	$ 151,278	$ 333,663	$ 306,085	$ 178,856
Totals - All Agency Funds:				
Assets:				
Cash and investments	$ 300,871	$ 5,701,995	$ 5,599,758	$ 403,108
Total assets	$ 300,871	$ 5,701,995	$ 5,599,758	$ 403,108
Liabilities:				
Intergovernmental payable	$ 300,871	$ 5,701,995	$ 5,599,758	$ 403,108
Total liabilities	$ 300,871	$ 5,701,995	$ 5,599,758	$ 403,108

LINCOLN COUNTY, NORTH CAROLINA

GENERAL FUND
SCHEDULE OF AD VALOREM TAXES RECEIVABLE
JUNE 30, 2017

Fiscal Year	Uncollected Balance June 30, 2016	Additions	Collections and Credits	Uncollected Balance June 30, 2017
2016-2017	$ -	$ 53,788,586	$ 53,010,615	$ 777,971
2015-2016	747,335	-	365,123	382,212
2014-2015	383,716	-	168,662	215,054
2013-2014	276,401	-	97,426	178,975
2012-2013	179,037	-	45,168	133,869
2011-2012	129,701	-	12,256	117,445
2010-2011	84,040	-	5,172	78,868
2009-2010	78,497	-	3,560	74,937
2008-2009	83,614	-	3,460	80,154
2007-2008	75,981	-	3,223	72,758
2006-2007	62,044	-	62,044	-
Total	$ 2,100,366	$ 53,788,586	$ 53,776,709	2,112,243

Less: allowance for uncollectible ad valorem taxes receivable:	
General Fund	(741,375)
Ad Valorem Taxes Receivable, Net	
General Fund	$ 1,370,868
Reconciliation of Collections and Credits with Revenues:	
Ad valorem taxes - General Fund	$ 53,404,086
Reconciling items:	
Interest and penalties	(325,320)
Abatements related to prior years	8,587
2% discount allowed	661,036
Taxes written off	62,044
Collection of taxes previously written off	(2,002)
Interest and penalties from VTS	(31,722)
Total collections and credits	$ 53,776,709

LINCOLN COUNTY, NORTH CAROLINA

ANALYSIS OF CURRENT TAX LEVY
COUNTY-WIDE LEVY
FOR THE YEAR ENDED JUNE 30, 2017

	County-Wide			Total Levy	
	Property Valuation	Rate	Amount of Levy	Property Excluding Registered Motor Vehicles	Registered Motor Vehicles
Original Levy:					
County-Wide:					
Property taxed at current year's rate	$ 8,783,462,521	$ 0.611	$ 53,666,956	$ 48,653,462	$ 5,013,494
Late list penalties	-		56,611	56,611	-
Total original levy	8,783,462,521		53,723,567	48,710,073	5,013,494
Discoveries:					
Current year taxes	35,870,049		219,166	214,165	5,001
Abatements and Discounts	(25,228,642)		(154,147)	(153,855)	(292)
Total property valuation	$ 8,794,103,928				
Net Levy			53,788,586	48,770,383	5,018,203
Uncollected taxes at June 30, 2017			777,971	777,039	932
Current Year's Taxes Collected			$ 53,010,615	$ 47,993,344	$ 5,017,271
Current Levy Collection Percentage			98.55%	98.41%	99.98%

LINCOLN COUNTY, NORTH CAROLINA

ANALYSIS OF CURRENT TAX LEVY
COUNTY-WIDE LEVY
FOR THE YEAR ENDED JUNE 30, 2017

Secondary Market Disclosures:

Assessed Valuation:

Assessment Ratio (1)	100%
Real property	$ 7,039,512,528
Personal property	625,939,050
Public service companies	395,337,578
Registered vehicles	733,314,772
Total assessed valuation	$ 8,794,103,928
Tax rate per $100 (2)	$ 0.611
Levy (includes discoveries, releases, and abatements) (3)	$ 53,788,586
In addition to the County-wide rate, the County levies taxes on behalf of several fire districts	$ 7,233,961

(1) Percentage if appraised value has been established by statute

(2) Valuation of railroads, telephone companies, and other utilities as determined by the North Carolina Property Tax Commission

(3) The levy includes interest and penalties.

LINCOLN COUNTY, NORTH CAROLINA

EMERGENCY TELEPHONE SYSTEM FUND UNSPENT BALANCE
PSAP RECONCILIATION
JUNE 30, 2017

Amounts reported on the Emergency Telephone System Fund budget to actual (Schedule C-6) are different from the PSAP Revenue-Expenditure Report because:

Ending fund balance, reported on budget to actual (Schedule C-6)	$	535,999
Ineligible 911 expenditures reported in the Emergency Telephone System Fund		124,397
Ending balance, PSAP Revenue - Expenditure Report	$	660,396

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STATISTICAL SECTION

This part of the Lincoln County comprehensive annual financial report presents detail information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information say about the County's overall financial health.

Contents **Page**

Financial Trends – These schedules contain trend information to help the reader understand how the County's financial performance and well-being have changed over time, tables 1 – 4. 126-130

Revenue Capacity – These schedules contain information to help the reader assess the factors affecting the County's ability to generate its property taxes, tables 5 – 8. 131-134

Debt Capacity – These schedules present information to help the reader assess the affordability of the County's current levels of outstanding debt and the County's ability to issue additional debt in the future, tables 9 - 12. 135-138

Demographic and Economic Information – These schedules offer demographic and economic indicators to help the reader understand the environment within which the County's financial activities take place to help make comparisons over time and with other governments, tables 13 - 14. 139-140

Operating Information – These schedules contain information about the County's operations and resources to help the reader understand how the County's financial information relates to the services the County provides and the activities it performs, tables 15 - 17. 141-146

Sources: Unless otherwise noted, the information in these schedules is derived from the comprehensive annual financial report for the relevant year. The County implemented GASB Statement 34 in fiscal year 2003; schedules presenting government-wide information include information beginning in that year.

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Schedule 1
Lincoln County
Net Position by Component,
Last Ten Fiscal Years
(accrual basis of accounting)

	Fiscal Year									
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Governmental activities										
Net investment in capital assets	$ 23,939,226	$ 20,388,761	$ 25,451,479	$ 50,294,495	$ 52,215,432	$ 54,900,561	$ 54,146,520	$ 52,409,026	$ 55,659,430	$ 58,995,204
Restricted					13,918,975	14,286,857	9,177,119	7,513,118	8,895,232	12,339,420
Unrestricted	(76,836,707)	(72,813,944)	(84,710,471)	(87,582,889)	(104,678,297)	(102,610,445)	(91,146,787)	(82,089,234)	(72,836,306)	(69,053,644)
Total governmental activities net position	(52,897,481)	(52,425,183)	(59,258,992)	(37,288,394)	(38,543,890)	(33,423,027)	(27,823,148)	(22,167,090)	(8,281,644)	2,280,980
Business-type activities										
Net investment in capital assets	54,035,788	59,892,883	59,902,755	61,285,375	57,936,188	50,496,688	53,989,857	56,348,162	61,317,027	61,048,458
Unrestricted	11,997,461	7,016,581	6,288,801	3,629,961	8,595,720	6,854,093	4,384,501	5,263,073	5,986,673	8,783,460
Total business-type activities	66,033,249	66,909,464	66,191,556	64,915,336	66,531,908	57,350,781	58,374,358	61,611,235	67,303,700	69,831,918
Primary government										
Net investment in capital assets	77,975,014	80,281,644	85,354,234	111,579,870	110,151,620	105,397,249	108,136,377	108,757,188	116,976,457	120,043,662
Restricted					13,918,975	14,286,857	9,177,119	7,513,118	8,895,232	12,339,420
Unrestricted	(64,839,246)	(65,797,363)	(78,421,670)	(83,952,928)	(96,082,577)	(95,756,352)	(86,762,286)	(76,826,161)	(66,849,633)	(60,270,184)
Total primary government net position	$ 13,135,768	$ 14,484,281	$ 6,932,564	$ 27,626,942	$ 27,988,018	$ 23,927,754	$ 30,551,210	$ 39,444,145	$ 59,022,056	$ 72,112,898

Schedule 2
Lincoln County
Changes in Net Position,
Last Ten Fiscal Years
(accrual basis of accounting)

	Fiscal Year									
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Expenses										
Governmental activities:										
General government	$ 7,838,749	$ 14,596,135	$ 15,587,341	$ 10,434,240	$ 15,226,309	$ 14,220,069	$ 15,128,230	$ 17,453,401	$ 19,892,679	19,017,062
Public safety	23,430,338	23,753,716	24,480,904	24,782,004	24,982,363	25,701,983	26,685,171	26,537,779	27,812,079	29,972,508
Economic and physical development	1,892,385	3,326,492	2,135,200	2,120,590	2,201,122	1,808,417	3,610,352	2,353,021	1,569,081	1,850,463
Human services	21,226,794	19,029,439	18,392,778	19,559,449	18,298,851	18,773,508	18,738,888	17,324,069	17,080,572	17,149,240
Culture and recreation	1,691,147	1,882,197	2,004,323	2,218,417	2,209,728	2,380,555	2,360,608	2,610,692	1,498,480	2,133,169
Transportation	-	-	-	-	-	-	-	-	321,507	217,002
Education	20,859,917	23,989,368	30,238,363	23,306,217	20,731,065	20,801,271	19,863,983	21,484,615	18,193,559	20,222,666
Interest on long term debt	4,907,325	5,258,614	5,408,907	6,604,596	8,423,957	4,251,585	3,941,948	3,189,629	3,035,798	2,940,263
Total governmental activities	81,846,655	91,835,961	98,247,816	89,025,513	92,073,395	87,937,388	90,329,180	90,953,206	89,403,755	93,502,373
Business-type activities:										
Solid Waste	5,345,843	5,880,066	4,594,260	5,038,688	2,087,537	4,309,839	4,234,410	4,925,026	4,406,194	6,038,674
Water and Sewer	6,526,756	7,437,335	6,864,685	7,194,130	7,999,309	7,409,355	8,378,593	7,987,776	8,563,573	9,630,713
East Lincoln County water and sewer	263,982	240,057	215,190	199,921	162,434	136,426	94,001	109,284	85,894	7,176
Total business activities	12,136,581	13,557,458	11,674,135	12,432,739	10,249,280	11,855,620	12,707,004	13,022,086	13,055,661	15,676,563
Total primary government expenses	93,983,236	105,393,419	109,921,951	101,458,252	102,322,675	99,793,008	103,036,184	103,975,292	102,459,416	109,178,936
Program Revenues										
Governmental activities										
Charges for services:										
General government	1,114,334	1,645,146	1,478,645	1,471,098	1,590,384	1,571,735	1,758,889	1,899,052	1,970,356	2,007,317
Public safety	4,536,817	4,566,789	4,294,060	5,133,736	4,424,537	4,665,583	4,750,346	4,644,806	5,635,205	5,824,386
Human services	3,881,436	3,888,397	4,175,651	3,679,433	3,118,534	2,753,487	2,486,344	2,075,201	1,405,400	1,381,443
Culture and recreation	2,100	2,950	2,517	1,047	21,337	20,134	20,461	91,436	81,187	90,851
Operating grants and contributions:										
General government	1,033,216	933,098	884,019	1,022,821	965,069	1,031,533	1,545,655	726,230	3,059,063	1,031,959
Public safety	364,292	393,051	736,783	711,154	755,636	677,364	507,169	688,347	923,587	940,929
Economic and physical development	4,000	410,726	4,850	15,120	260,283	112,909	9,255	30,360	30,229	30,330
Human services	8,252,407	9,093,058	9,084,230	10,646,933	10,034,395	9,960,365	10,393,912	11,495,059	11,739,707	11,146,419
Culture and recreation	-	-	-	-	-	-	-	-	118,195	122,615
Education	1,219,535	1,334,250	1,821,162	942,883	820,381	116,456	112,836	132,620	-	-
Capital grants and contributions:										
General government	132,720	993,870	1,444,381	20,583,014	508,081	1,288,253	1,143,064	1,314,334	626,090	27,957
Public safety	-	-	-	-	-	55,295	-	-	-	-
Education	-	-	-	-	-	809,283	1,036,450	829,500	783,400	870,520
Total governmental activities program revenues	20,540,857	23,261,335	23,926,298	44,207,239	22,498,637	23,062,397	23,764,381	23,926,945	26,372,419	23,474,726

Schedule 2
Lincoln County
Changes in Net Position,
Last Ten Fiscal Years
(accrual basis of accounting)

	Fiscal Year									
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Business-type activities:										
Solid Waste	2,926,931	2,994,637	2,987,950	3,208,740	3,720,626	3,547,567	3,708,037	3,757,118	4,143,385	4,633,323
Charges for service - Water and Sewer	9,150,036	7,564,083	6,951,482	7,288,758	7,524,847	7,493,520	7,673,169	9,343,337	10,694,992	13,471,115
Capital grants and contributions - Water	3,449,828	1,973,895	505,880	139,913	78,841	346,610	834,730	-	2,962,527	10,000
Total business-type activities program revenues	15,526,795	12,532,615	10,445,312	10,637,411	11,324,314	11,387,697	12,215,936	13,100,455	17,800,904	18,114,438
Total primary government program revenues	36,067,652	35,793,950	34,371,610	54,844,650	33,822,951	34,450,094	35,980,317	37,027,400	44,173,323	41,589,164
Net (Expense)/Revenue										
Governmental activities	(61,305,798)	(68,574,625)	(74,321,518)	(44,818,274)	(69,574,757)	(64,874,989)	(66,564,799)	(67,026,261)	(63,031,336)	(70,027,647)
Business-type activities	3,390,214	(1,024,843)	(1,228,823)	(1,795,328)	1,075,034	(467,923)	(1,319,307)	78,369	4,745,243	2,437,875
Total primary government net (expense)/revenue	(57,915,584)	(69,599,468)	(75,550,341)	(46,613,602)	(68,499,723)	(65,342,912)	(67,884,106)	(66,947,892)	(58,286,093)	(67,589,772)
General Revenues and Other Changes in Net Position										
Governmental activities:										
Property taxes	43,830,954	53,625,181	54,718,453	54,568,588	54,905,801	56,124,728	57,879,585	57,588,885	59,381,739	60,610,716
Local option sales tax	16,360,401	13,803,138	10,913,165	10,369,667	11,785,721	12,224,284	13,071,926	14,423,993	15,459,998	18,480,201
Utility franchise tax	318,899	321,802	273,740	231,349	238,690	233,252	228,408	229,091	220,188	223,349
Real estate transfer tax	1,005,843	514,599	531,807	387,864	534,686	697,046	737,628	858,192	974,733	1,380,914
Other taxes and licenses	494,670	746,779	646,101	639,076	365,652	431,955	430,687	476,454	401,490	436,698
Unrestricted intergovernmental	472,872	456,991	294,812	500,722	479,922	289,491	317,328	330,007	306,511	320,620
Investment earnings	1,604,805	662,836	109,631	91,606	87,795	75,727	162,391	90,279	172,123	152,094
Transfers	-	-	-	-	-	-	(563,160)	-	-	-
Gain (loss) on disposal of capital assets	-	(1,084,403)	-	-	(79,006)	(80,631)	-	-	-	-
Total governmental activities:	64,088,444	69,046,923	67,487,709	66,788,872	68,319,261	69,995,852	72,264,793	73,996,901	76,916,782	81,604,592
Business-type activities:										
Property taxes	1,302,839	557,775	472,991	487,936	495,073	878,437	931,496	912,435	875,860	23,339
Investment earnings	712,156	258,880	37,924	31,172	46,465	55,390	19,989	48,656	71,362	67,004
Transfers	-	1,084,403	-	-	-	-	563,160	-	-	-
Gain (loss) on disposal of capital asset	-	-	-	-	-	(9,647,031)	-	-	-	-
Total business-type activities	2,014,995	1,901,058	510,915	519,108	541,538	(8,713,204)	1,514,645	961,091	947,222	90,343
Total primary government	66,103,439	70,947,981	67,998,624	67,307,980	68,860,799	61,282,648	73,779,438	74,957,992	77,864,004	81,694,935
Change in Net Position										
Governmental activities	2,782,646	472,298	(6,833,809)	21,970,598	(1,255,496)	5,120,863	5,020,748	6,970,640	13,885,446	11,576,945
Prior period adjustment	-	-	-	-	-	-	-	882,835	-	(1,014,321)
Business-type activities	5,405,209	876,215	(717,908)	(1,276,220)	1,616,572	(9,181,127)	(9,181,127)	1,039,460	5,692,465	2,528,218
Prior period adjustment	-	-	-	-	-	-	-	-	-	-
Total primary government	$ 8,187,855	$ 1,348,513	$ (7,551,717)	$ 20,694,378	$ 361,076	$ (4,060,264)	$ (4,160,379)	$ 8,892,935	$ 19,577,911	$ 13,090,842

Schedule 3
Lincoln County
Fund Balances, Governmental Funds
Last Ten Fiscal Years
(modified accrual basis of accounting)

	Fiscal Year		
	2008	2009	2010
General Fund			
Reserved for:			
State statute	$ 6,184,221	$ 4,642,450	$ 4,923,594
Unreserved			
Undesignated	10,239,759	15,686,057	15,256,358
Total General Fund	$ 16,423,980	$ 20,328,507	$ 20,179,952
All Other Governmental Funds			
Reserved for:			
State statute	$ 625,717	$ 545,926	$ 499,044
Unreserved, reported in:			
Capital projects funds	4,431,429	13,070,660	10,666,888
Special revenue funds	4,449,812	6,458,680	6,384,275
Total all other governmental funds	$ 9,506,958	$ 20,075,266	$ 17,550,207

	Fiscal Year						
	2011	2012	2013	2014	2015	2016	2017
General Fund							
Nonspendable							
Prepaids	$ 412,743	$ 588,275	$ 616,277	$ 630,872	$ 631,607	$ 256,545	$ 229,546
Restricted							
Stabilization for State statute	4,425,101	4,642,158	5,280,132	8,046,523	5,149,448	6,909,752	5,093,410
Restricted, all other	46,046	48,767	50,322	39,044	1,073,458	1,180,740	1,329,743
Committed		-	-	-	-	1,000,000	-
Assigned	2,881,150	2,050,429	2,105,045	2,202,711	-	5,500,388	3,405,237
Unassigned	11,342,260	11,895,426	11,744,605	12,687,339	20,307,623	18,408,808	24,512,423
Total General Fund	19,107,300	19,225,055	19,796,381	23,606,489	27,162,136	33,256,233	34,570,359
All Other Governmental Funds							
Restricted							
Stabilization for State statute	495,726	690,235	53,821	238,438	-	98,860	791,716
Restricted, all other	603,986	338,169	441,368	619,600	-	1,145,108	403,898
Committed	3,496,614	2,436,170	1,613,295	749,985	-	303,043	421,667
Unassigned	-	-	-	-	-	(49,382)	(63,822)
	4,596,326	3,464,574	2,108,484	1,608,023	-	1,497,629	1,553,459
Capital Project Funds							
Restricted							
Stabilization for State statute	540,662	15,898	3,032,244	233,514	298,605	28,313	4,810,048
Restricted, all other	1,523,768	821,143	821,523	6,115,000	-	-	602,817
Committed	1,225,391	1,232,123	-	-	-	-	-
Unassigned	-	-	(3,627,036)	(3,428,193)	(446,330)	(1,253,918)	(4,834,074)
	3,289,821	2,069,164	226,731	2,920,321	(147,725)	(1,225,605)	578,791
Special Revenue Funds							
Restricted							
Stabilization for State Statute					260,327	98,860	791,716
Restricted, all other	11,368,364	8,183,748	5,428,970	3,951,663	731,109	1,145,108	403,898
Committed	-	-	-	-	-	303,043	421,667
Unassigned	(201,780)	-	-	-	(225,000)	(49,382)	(63,822)
Total Special Revenue Funds	$ 11,166,584	$ 8,183,748	$ 5,428,970	$ 3,951,663	$ 766,436	$ 1,497,629	$ 1,553,459

Schedule 4
Lincoln County
Changes in fund Balances, Governmental Funds
Last Ten Fiscal Years
(modified accrual basis of accounting)

	Fiscal Year									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Revenues										
Ad valorem taxes	43,831,868	53,306,067	54,655,457	54,810,341	49,019,309	55,825,088	58,162,842	57,541,002	59,103,531	60,643,519
Local option sales taxes	16,360,401	13,803,138	10,913,165	10,369,667	11,785,721	12,224,284	13,071,926	14,423,993	15,459,998	18,480,201
Other taxes and licenses	1,819,412	1,583,180	1,451,648	1,258,289	859,857	1,362,253	1,396,723	1,563,737	1,596,411	2,040,961
Unrestricted intergovernmental revenues	472,872	456,991	294,812	500,722	479,922	289,491	317,328	330,007	306,511	320,620
Restricted intergovernmental revenues	10,005,506	12,071,547	13,135,650	12,693,675	11,113,384	12,950,384	13,123,144	13,745,936	14,052,982	13,216,065
Permits and fees	2,250,774	1,460,117	1,280,703	1,143,681	1,336,428	1,553,264	1,808,245	1,934,378	2,368,484	2,785,238
Sales, service and rents	7,176,094	7,911,950	8,016,111	7,971,588	7,264,115	6,881,299	6,244,150	6,143,014	5,938,525	5,743,361
Investment earnings	1,604,805	658,773	107,649	88,420	973,684	1,138,844	157,173	79,964	3,164,036	921,331
Miscellaneous	1,007,343	1,102,712	880,474	1,139,064	70,272	64,404	1,625,197	1,470,514	154,122	137,836
Total Revenues	84,529,075	92,354,475	90,735,669	89,975,447	82,902,692	92,289,311	95,906,728	97,232,545	102,144,600	104,289,132
Expenditures										
General Government	6,973,330	6,680,816	6,805,984	7,288,803	7,596,084	7,758,943	7,783,862	8,562,450	10,319,572	10,929,722
Public Safety	22,973,155	24,414,534	25,211,834	25,839,073	19,566,218	26,760,653	27,363,121	28,039,030	30,568,246	32,404,426
Economic and physical development	1,891,301	2,560,826	2,141,124	2,130,806	2,216,098	1,824,298	1,620,028	1,822,269	1,513,856	1,807,485
Human services	21,030,957	19,932,951	19,486,941	20,796,790	20,259,280	20,368,292	20,025,104	19,223,105	19,162,102	18,644,959
Transportation	-	-	-	-	-	-	-	-	321,507	171,298
Culture and Recreation	1,567,316	1,828,106	1,991,265	2,076,511	2,057,344	2,190,042	2,263,800	2,464,064	2,622,894	2,183,661
Education	17,109,628	17,742,846	18,421,240	18,421,240	17,742,846	18,043,320	18,386,184	18,517,937	18,908,697	20,667,575
Capital Outlay	8,523,119	12,481,380	15,117,985	8,452,355	-	7,436,995	7,594,533	8,477,934	2,540,899	4,487,994
Debt Service:										
Principal	7,743,368	7,872,139	8,770,711	8,970,463	9,116,549	9,037,158	10,202,473	9,054,196	9,053,807	8,846,700
Interest	4,907,326	5,258,614	5,408,907	6,604,596	4,935,755	4,251,585	3,841,493	3,651,770	3,213,983	3,059,430
Total Expenditures	92,719,500	98,772,212	103,355,991	100,580,637	83,490,174	97,671,286	99,080,598	99,812,755	98,225,563	103,203,250
Excess of revenues over (under) expenditures	(8,190,425)	(6,417,737)	(12,620,322)	(10,605,190)	(587,482)	(5,381,975)	(3,173,870)	(2,580,210)	3,919,037	1,085,882
Other Financing Sources (Uses)										
Transfers in	22,881,375	13,131,113	9,451,904	10,679,484	4,835,242	3,617,444	3,244,510	3,398,124	1,608,769	7,527,537
Transfers out	(22,881,375)	(13,235,823)	(9,451,904)	(10,679,484)	(4,490,310)	(3,617,444)	(3,244,510)	(3,398,124)	(1,608,769)	(7,527,537)
Bonds & installment financing issued	109,002	20,990,000	28,027,000	27,005,000	30,255,000	-	15,440,691	-	5,244,000	2,088,470
Bond premium	-	5,282	204,331	1,330,062	2,868,507	-	-	-	-	-
Advance refunding payments to trustee	-	-	(18,284,623)	(17,300,000)	(32,763,202)	-	(7,740,891)	-	(5,141,066)	-
Total other financing sources (uses)	109,002	20,890,572	9,946,708	11,035,062	705,237	-	7,699,800	-	102,934	2,088,470
Net change in fund balances	(8,081,423)	14,472,835	(2,673,614)	429,872	117,755	(5,381,975)	4,525,930	(2,580,210)	4,021,971	3,174,352
Debt service as a percentage of noncapital expenditures	14.46%	13.99%	14.12%	15.84%	20.03%	16.72%	17.55%	13.54%	13.21%	13.71%

Schedule 5
Lincoln County
Assessed Value and Actual Value of Taxable Property
Last Ten Fiscal Years

Fiscal Year	Real Property: Residential Property	Real Property: Commercial Property	Real Property: Industrial Property	Less (1): Tax Exempt Real Property	Personal Property: Registered Vehicles	Personal Property: Other	Public Service Companies (2)	Total Taxable Assessed Value	Total Direct Tax Rate (3)	Estimated Actual Taxable Value (4)	Assessed Value as a Percentage of Actual Value
2008	$ 4,400,993,725	$ 486,377,033	$ 238,927,010	$ 233,414,057	$ 664,054,035	$ 596,207,091	$ 356,817,245	$ 6,509,962,082	0.610	$ 7,743,501,941	84.07%
2009 (5)	6,112,750,043	759,355,287	333,748,227	341,501,704	646,033,399	628,739,407	351,143,578	8,490,268,237	0.570	8,559,601,005	99.19%
2010	6,292,916,491	778,326,312	336,731,226	362,572,322	596,946,534	637,110,209	355,024,551	8,634,483,001	0.570	8,852,248,309	97.54%
2011	6,321,866,239	801,334,600	350,263,463	379,000,238	578,958,863	625,157,771	346,389,974	8,644,970,672	0.570	8,078,656,828	107.01%
2012 (5)	6,042,292,471	769,901,024	340,175,570	402,679,047	608,812,906	548,502,912	335,237,971	8,242,243,807	0.598	8,353,343,273	98.67%
2013	6,069,664,351	789,290,541	336,637,941	409,512,321	627,250,127	572,370,853	348,054,638	8,333,756,130	0.598	7,982,525,029	104.40%
2014	6,360,853,481	795,884,052	338,903,200	416,961,179	613,724,810	565,094,475	354,997,816	8,612,496,655	0.598	8,371,057,943	102.88%
2015	6,308,804,410	796,831,718	350,862,508	420,023,945	593,681,026	562,239,937	365,935,449	8,558,331,103	0.598	8,305,272,937	103.05%
2016 (5)	6,091,573,583	804,391,566	420,815,464	383,285,265	636,617,770	595,668,262	392,333,841	8,558,115,221	0.611	9,009,297,457	94.99%
2017	6,094,640,416	803,928,981	426,281,505	285,338,374	733,314,772	625,939,050	395,337,578	8,794,103,928	0.611	9,525,553,594	92.32%

Source: Annual County Report of Valuation and Property Tax Levies

Notes:

(1) Included as tax exempt includes property excluded as "Senior Citizens and Disabled Persons Exclusion" G.S. 105-277.1, Property listed at "present-use value" G.S. 105-277.4, and property listed as historic property G.S. 105-278. Present use value property is agricultural, horticultural and forestland for which the owner has applied for the property to be taxed at its present use. The difference in taxes on the present use basis and the taxes that would have been payable are a lien on the property and are deferred. The taxes become due if the property ceases to qualify for present use value. The preceding three fiscal years taxes are then required to be paid.

(2) Public service companies valuations are provided to the County by the North Carolina Department of Revenue. These amounts include both real and personal property.

(3) Per $100 of value.

(4) The estimated market value is calculated by dividing the assessed value by an assessment-to-sales ratio determined by the State Department of Revenue. The ratio is based on actual property sales which took place during the fiscal year. The ratio for the most recent year is not yet available.

(5) Years revaluation of property increased tax values, Lincoln County is reassessed every 4 years.

Schedule 6
Lincoln County
Direct and Overlapping Property Tax Rates,
Last Ten Fiscal Years

	Fiscal Year									
	2008	2009(1)	2010	2011	2012	2013	2014	2015	2016	2017
Lincoln County	0.6100	0.5700	0.5700	0.5700	.59800	.59800	.59800	.59800	0.6110	0.6110
Municipality Rates:										
Lincolnton (2)	0.5600	0.5600	0.5600	0.5600	0.5600	0.5600	.5600	.5600	0.5600	0.5600
Special District										
East Lincoln Water and Sewer District (3)	0.0750	0.0200	.0175	.0175	.0290	0.0355	.0359	.0342	0.0325	0.0000
Fire Districts (4)										
Alexis	0.1450	0.1142	0.1050	0.1100	0.1100	0.1100	0.1100	0.1100	0.1165	0.1165
Boger City	0.0700	0.0700	0.0700	0.0750	0.0925	0.0925	0.0925	0.0925	0.0999	0.0999
Crouse	0.0600	0.0600	0.0600	0.0600	0.0609	0.0609	0.0609	0.0609	0.0640	0.0640
Denver	0.1150	0.0981	0.09675	0.09675	0.1099	0.1099	0.1099	0.1099	0.1125	0.1125
East Lincoln	0.0650	0.0606	0.0606	0.0606	0.0680	0.0785	0.0785	0.0850	0.0850	0.0860
Howards Creek	0.0500	0.0700	0.1000	0.1000	0.1050	0.105	0.1150	0.1150	0.1203	0.1223
North Brook	0.0600	0.0600	0.0600	0.0600	0.0600	0.035	0.0800	0.0400	0.0400	0.0400
North 321	0.0350	0.0350	0.0350	0.035	0.0350	0.06	0.03500	0.0800	0.1000	0.1000
Pumpkin Center	0.1000	0.0951	0.0951	0.0951	0.0951	0.0951	0.0938	0.0900	0.0970	0.9700
South Fork	0.0500	0.0776	0.0910	0.091	0.0910	0.091	0.1236	0.1236	0.1250	0.1250
Union	0.0650	0.0750	0.0750	0.075	0.0750	0.09	0.0900	0.0900	0.0900	0.0900

Note: (1) Real property was revalued on January 1, 2004 and 2008
these revaluations are reflected in the following fiscal year.
(2) Lincoln County is an overlapping district of the City of Lincolnton
(3) Lincoln County is an overlapping district of the East Lincoln Water and Sewer District
(4) Fire districts are overlapping districts of the County, the East Lincoln Water and Sewer District but not of the City of Lincolnton

Schedule 7
Lincoln County
Principal Property Tax Payers,
Current Year and Nine Years Ago

		Fiscal Year 2017			Fiscal Year 2008		
Taxpayer	**Type of Business**	**Assessed Valuation**	**Rank**	**Percentage of Total Assessed Valuation**	**Assessed Valuation**	**Rank**	**Percentage of Total Assessed Valuation**
Duke Energy Corp.	Utility	$ 289,295,350	1	3.29%	$ 271,081,273	1	4.16%
The Timken Company	Bearing manufacturer	74,888,221	2	0.85%	125,924,772	2	1.93%
Cataler North America Corp.	Auto parts manufacturer	65,376,523	3	0.74%	41,256,280	4	0.63%
Julis Blum	Furniture Hardware manf.	61,016,996	4	0.69%	66,905,895	3	1.03%
838 Lincoln County Parkway LLC	Manufacturing	43,643,130	5	0.50%			
Rutherford Electric Membership	Utility	34,193,645	6	0.39%	25,970,467	6	0.40%
Wal Mart Real Estate Business	Real Estate / Mfg	32,509,357	7	0.37%			
Medline Industries	Medical Supply Manufacturing	28,588,602	8	0.33%			
1000 East Powell Drive LLC	Real Estate / Mfg	20,428,808	9	0.23%			
Aptar Group Inc	Manufacturing	19,975,580	10	0.23%			
Bellsouth TEL CORP	Utility				27,729,305	5	0.43%
RSI Home Products INC	Manufacturing				21,862,447	7	0.34%
ALPHARMA USPD INC	Medical Supply Manufacturing				16,456,995	8	0.25%
Robert Bosch Tool Corp	Manufacturing				15,990,021	9	0.25%
TKC LIV LLC	Real Estate / Manufacturing				12,347,427	10	0.19%
Totals		**$ 669,916,212**		**7.94%**	**$ 625,524,882**		**10.23%**

Source: Lincoln County Tax Department

Schedule 8
Lincoln County
Property Tax Levies and Collections
Last Ten Fiscal Years

Fiscal Year	Taxes Levied for the Fiscal Year (Original Levy)	Adjustments	Total Adjusted Levy	Collected within the Fiscal Year of the Levy		Collections in Subsequent Years	Total Collections to Date		Uncollected
				Amount	Percentage of Original Levy		Amount	Percentage of Adjusted Levy	
2008	$ 39,495,597	$ 260,891	$ 39,756,488	$ 38,884,020	98.45%	$ 799,710	$ 39,683,730	99.82%	$ 72,758
2009	48,397,102	144,571	48,541,673	47,330,210	97.80%	1,131,309	48,461,519	99.83%	80,154
2010	48,978,334	323,666	49,302,000	48,202,295	98.42%	1,024,768	49,227,063	99.85%	74,937
2011	49,168,763	152,177	49,320,940	48,295,770	98.22%	946,302	49,242,072	99.84%	78,868
2012	49,318,299	19,177	49,337,476	48,213,572	97.76%	1,006,459	49,220,031	99.76%	117,445
2013	49,575,234	563,425	50,138,659	48,908,152	98.65%	1,096,638	50,004,790	99.73%	133,869
2014	51,400,496	151,116	51,551,612	50,570,651	98.39%	801,986	51,372,637	99.65%	178,975
2015	50,455,214	105,063	50,560,277	49,283,713	97.68%	1,061,510	50,345,223	99.57%	215,054
2016	52,246,531	106,268	52,352,799	51,605,464	98.77%	365,123	51,970,587	99.27%	382,212
2017	53,404,086	384,500	53,788,586	53,010,615	99.26%	-	53,010,615	98.55%	777,971
									$ 2,112,243

Source: Lincoln County Tax Department

Schedule 9
Lincoln County
Ratios of Outstanding Debt by Type,
Last Ten Fiscal Years

	Governmental Activities			Business-type Activities					
Fiscal Year	General Obligation Bonds	Installment Loans	Capital Leases	General Obligation Bonds	State Clean Water Loan	Installment Loans	Total Primary Government	Per Capita (1)	Percentage of Personal Income (1)
2008	$ 80,473,856	$ 27,126,921	$ -	$ 6,891,144	$ 2,250,000	$ 3,459,975	$ 120,201,896	1,616	5.42%
2009	94,466,234	26,252,404	-	5,563,766	2,000,000	3,549,219	131,831,623	1,768	5.36%
2010	98,845,751	24,919,175	-	4,414,249	1,750,000	20,152,669	150,081,844	1,982	5.91%
2011	102,135,000	22,364,464	-	3,295,000	1,500,000	20,290,166	149,584,630	1,867	5.78%
2012	96,000,000	21,462,915	-	2,675,000	1,250,000	21,804,848	143,192,763	1,812	4.94%
2013	89,020,000	19,405,757	-	2,135,000	1,000,000	20,370,950	131,931,707	1,659	4.49%
2014	84,425,797	24,753,975	-	1,605,000	750,000	19,351,064	130,885,836	1,641	4.19%
2015	75,085,000	22,664,779	-	1,085,000	500,000	18,356,716	117,691,495	1,467	3.75%
2016	70,043,087	20,874,972	-	575,000	250,000	16,897,825	108,640,884	1,335	*
2017	61,235,000	22,678,475	-	-	-	22,211,020	106,124,495	1,294	*

Notes: Details regarding the County's outstanding debt can be found in the notes to the financial statements.

(1) See Schedule 13 for personal income and population data. These ratios are calculated using personal income and population for the prior calendar year. Calendar 2016 personal income not available to calculate fiscal year 2017.

* Information not yet available.

Schedule 10
Lincoln County
Ratios of Net General Bonded Debt Outstanding,
Last Ten Fiscal Years

Fiscal Year	General Bonded Debt Outstanding: General Obligation Bonds	General Bonded Debt Outstanding: Total	Percentage of Personal Income(1)	Percentage of Actual Taxable Value of Property(2)	Per Capita(1)
2008	$ 87,365,000	$ 87,365,000	3.94%	1.34%	$ 1,174
2009	100,030,000	100,030,000	4.07%	1.18%	1,342
2010	103,260,000	103,260,000	4.07%	1.20%	1,364
2011	105,430,000	105,430,000	4.07%	1.22%	1,316
2012	98,675,000	98,675,000	3.40%	1.20%	1,249
2013	91,155,000	91,155,000	3.10%	1.09%	1,146
2014	86,030,797	86,030,797	2.75%	1.00%	1,079
2015	76,170,000	76,170,000	2.42%	0.89%	950
2016	70,618,087	70,618,087	*	0.83%	868
2017	61,235,000	61,235,000	*	0.70%	746

Notes: Details regarding the County's outstanding debt can be found in the notes to the Financial Statements.
(1) See Schedule 13 for personal income and population data. These ratios are calculated using personal income and population for the prior calendar year.
(2) See schedule 5 for property value data.

* Information not yet available.

Schedule 11
Lincoln County
Legal Debt Margin Information,
Last Ten Fiscal Years
(dollars in thousands)

	Fiscal Year									
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Assessed Value of Property	$ 6,509,962	$ 8,490,268	$ 8,634,483	$ 8,644,971	$ 8,242,244	$ 8,333,756	$ 8,612,497	$ 8,558,331	$ 8,558,115	$ 8,794,104
Debt Limit, 8% of Assessed Value (Statutory Limitation)	520,797	679,221	690,759	691,598	659,380	666,700	689,000	684,666	684,649	703,528
Amount of Debt Applicable to Limit										
Gross debt	120,202	131,832	150,082	149,585	143,193	131,932	130,886	117,691	108,641	106,124
Less: Amount available for repayment of general obligation bonds	-	-	-	-	-	-	-	-	-	-
Debt outstanding for water and sewer purposes	12,601	11,113	26,317	25,085	25,730	23,506	21,706	19,942	17,723	18,386
Total net debt applicable to limit	107,601	120,719	123,765	124,499	117,463	108,426	109,180	97,750	90,918	87,738
Legal Debt Margin	$ 413,196	$ 558,503	$ 566,994	$ 567,098	$ 541,917	$ 558,275	$ 579,820	$ 586,917	$ 593,731	$ 615,790
Total net debt applicable to the limit as a percentage of debt limit	20.66%	17.77%	17.92%	18.00%	17.81%	16.26%	15.85%	14.28%	13.28%	12.47%

Note: NC Statute GS159-55 limits the County's outstanding debt to 8% of the appraised value of property subject to taxation. The following deductions are made from gross debt to arrive at net debt applicable to the limit: money held for payment of principal; debt incurred for water, sewer, gas, or electric power purposes; uncollected special assessments, funding and refunding bonds not yet issued; and revenue bonds.
The legal debt margin is the difference between the debt limit and the county's net debt outstanding applicable to the limit, and represents the County's legal borrowing authority.

Schedule 12
Lincoln County
Direct and Overlapping Governmental Activities Debt
As of June, 2017

Governmental Unit	Debt Outstanding	Estimated Percentage Applicable	Estimated Share of Direct and Overlapping Debt
Cities:			
City of Lincolnton (1)	$ 1,290,933	100.00%	$ -
Direct - Lincoln County			83,913,475
Total direct and overlapping debt			$ 83,913,475

(1) Source: City of Lincolnton Finance Department

Schedule 13
Lincoln County
Demographic and Economic Statistics
Last Ten Fiscal Years

Year	Population(1)	Personal Income (2) (thousands of dollars)	Per Capita Personal Income (2)	Public School Enrollment(3)	Unemployment Rate(4)	Number of Building Inspections Performed(5)
2008	74,405	$ 2,215,799	$ 32,418	12,193	4.80%	34,693
2009	74,552	2,459,872	32,912	11,792	7.50%	24,536
2010	75,718	2,537,929	33,375	11,984	13.60%	13,921
2011	80,134	2,589,120	33,029	11,790	12.70%	13,121
2012	79,026	2,901,233	36,580	11,509	10.50%	13,149
2013	79,512	2,936,860	36,973	11,627	8.80%	13,219
2014	79,740	3,123,495	39,171	11,683	6.70%	15,465
2015	80,202	3,142,032	38,774	11,589	5.90%	19,868
2016	81,397	*	*	11,646	4.70%	24,373
2017	82,033	*	*	11,503	3.70%	29,446

* Information not yet available.

Notes:
(1) N.C. State Data Center. Estimates are as of beginning of fiscal year.
(2) Bureau of Economic Analysis, U. S. Department of Commerce. Figures are for the prior calendar year
(3) Lincoln County School Administrative Unit.
(4) N. C. Employment Security Commission, Annual Average for prior calendar year.
(5) Lincoln County Building and Land Development Department. Inspections are for entire County figures are for prior calendar year.

Schedule 14
Lincoln County
Principal Employers
Current Year and Nine Years Ago

		2017			2008		
Employer	**Product or Service**	**Employees**	**Rank**	**Percentage of Total County Employment**	**Employees**	**Rank**	**Percentage of Total County Employment**
Lincoln County Schools	Education	1,297	1	3.19%	1,386	1	6.36%
Carolinas Medical Center	Medical Care	858	2	2.11%	467	9	2.14%
RSI Home Products	Vanities and Marble Counter Tops	773	3	1.90%	500	5	2.29%
Wal-Mart Stores, Inc.	Discount Stores	740	4	1.82%	315	11	1.44%
Lincoln County Government	County Government	695	5	1.71%	482	7	2.21%
Timken Company	Tapered Roller Bearings	641	6	1.57%	639	2	2.93%
Julius Blum, Inc.	Cabinet and Furniture Hardware	422	7	1.04%	410	10	1.88%
Robert Bosch Tool Corporation	Tools Manufacturer and Distributor	352	8	0.86%	476	8	2.18%
Cataler North America	Automobile Components	347	9	0.85%			
United Technologies	Technology	311	10	0.76%	125	28	0.57%
VT LeeBoy, Inc.	Asphalt Paving Equipment	285	11	0.70%	140	26	0.64%
G & W	Laboratory	222	12	0.55%	190	19	0.87%
State of North Carolina	Various Government Agencies	139	13	0.34%	241	14	1.11%

Total Civilian Labor Force for the County	40,703	35,607

Sources: Lincoln Economic Development Association
North Carolina Employment Security Commission
Telephone survey Planning Department

Schedule 15
Lincoln County
Full-time Equivalent County Government Employees by Function
Last Ten Fiscal Years

Function/Program		Full-time Equivalent Employees as of June 30, 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
General government											
Governing body		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Administration and Finance		12.0	13.0	13.2	13.2	13.2	13.2	13.2	13.2	15.5	20.0
Management Information Systems		6.0	7.0	7.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0
Elections		3.0	3.5	3.8	3.8	3.8	3.8	4.0	4.0	4.0	11.8
Tax		24.5	26.0	27.8	24.8	24.0	25.0	25.0	25.0	25.5	26.8
Register of Deeds		9.5	8.5	8.4	8.0	8.0	8.0	7.0	7.0	6.5	7.5
Public Buildings		17.5	14.5	14.5	13.4	13.4	13.4	13.4	13.4	16.0	28.8
Public safety											
Sheriff		117.0	128.0	128.0	126.1	128.0	128.0	128.0	128.0	144.5	132.0
Communications		21.5	24.0	21.4	22.5	22.5	22.5	19.8	19.8	22.5	22.0
Jail		41.0	42.5	43.4	43.4	43.4	43.4	44.6	44.6	45.0	44.0
Emergency Management		6.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5
Ambulance Services		65.0	81.0	82.0	76.3	76.3	76.3	78.4	78.4	94.3	92.3
Fire Marshal	(1)	-	-	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
Building and Land Development		24.0	20.0	18.0	18.0	18.0	18.0	20.0	20.0	21.0	23.0
Animal Control		7.0	10.0	11.0	10.8	11.0	11.0	11.2	11.2	13.5	15.5
Economic and physical development											
Cooperative Extension		1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	2.0	1.8
Soil and Water Conservation		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0
Human services											
Health		75.0	85.0	81.5	78.4	78.4	78.4	73.4	73.4	66.3	65.0
Social Services		111.0	122.0	121.7	121.7	121.7	121.7	125.7	130.7	129.0	128.3
Veterans Service		1.5	1.5	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0
Juvenile Crime Prevention		-	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Office on Aging		5.5	6.5	6.5	6.5	6.5	5.5	4.0	4.0	5.8	5.5
Transportation		11.5	14.0	17.5	22.4	22.4	22.4	16.6	16.6	23.3	25.5

Schedule 15
Lincoln County
Full-time Equivalent County Government Employees by Function
Last Ten Fiscal Years

	Full-time Equivalent Employees as of June 30,									
Function/Program	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Cultural and recreation										
Recreation	15.0	26.5	30.6	29.7	29.7	29.7	25.4	25.4	24.0	15.3
Library	17.5	17.5	17.3	16.3	16.4	16.4	18.4	18.4	18.3	18.8
Historical Coordinator	1.0	-	-	-	-	-	-	-	-	-
Water & Sewer	42.0	43.0	43.0	42.6	42.6	42.6	39.8	39.8	37.3	36.8
Solid Waste	41.0	48.0	48.6	43.6	43.6	43.6	40.2	40.2	46.3	49.8
Total	681.5	752.5	757.2	740.4	741.9	744.0	729.2	734.2	781.1	792.0

Source: County Personnel Office

Note: This schedule represents number of persons employed as of June 30 of each year. Vacant positions are not included in the above numbers. Full-time personnel work 2,080 hours per year (less vacation and sick leave). For purposes of this schedule the number of part-time employees has been divided by 2.5 to arrive at the full time equivalents.

(2) Fire Marshal was consolidated into Emergency Management in FY 2005.

Schedule 16
Lincoln County
Operating Indicators by Function
Last Ten Fiscal Years

Function/Program	Fiscal Year 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
General government										
Management Information Systems										
Work orders	3,804	3,798	4,870	5,571	5,604	5,679	4,110	3,325	3,926	4,630
Elections										
Registered voters	47,306	49,218	49,899	49,959	53,240	51,728	52,544	52,661	55,744	58,634
Votes cast in general elections (votes odd years city; even county wide)	36,066	1,421	n/a	23,427	36,892	1,943	6,905	24,032	24,372	36,241
Tax										
Number of land records created	936	1,144	126	140	250	n/a	73	485	651	862
Number of ownership transfers - real estate/mfg. homes	6,679	6,118	2,411	4,293	3,995	n/a	3,671	4,350	4,792	5,391
Number of tax bills created - real/personal	66,168	69,202	68,330	68,499	68,400	n/a	70,635	71,596	73,854	74,902
Number of tax bills created - registered vehicles	89,394	89,224	87,540	85,796	84,814	n/a	n/a	84,928	78,076	79,651
Register of Deeds										
Total documents recorded	19,179	15,066	13,427	12,042	n/a	14,589	12,566	12,092	13,647	15,069
Deeds recorded	3,905	2,706	2,666	2,382	n/a	2,747	3,029	3,028	3,405	3,956
Marriage licenses issued	488	471	505	514	n/a	497	537	567	583	516
Births occurring	485	523	424	346	n/a	413	438	461	464	458
Deaths occurring	518	486	474	452	n/a	494	500	495	555	546
Certified copies issued	5,344	5,300	4,991	4,759	n/a	4,929	4,918	4,902	5,499	5,404
Public safety										
Arrests	3,265	3,213	2,928	2,975	3,979	4,205	4,607	3,848	3,025	2,921
Civil papers served	13,036	13,255	13,715	12,311	12,586	12,591	11,755	13,174	11,394	10,544
Jail bookings	3,942	3,622	3,516	3,584	3,773	4,198	4,138	4,065	4,548	4,399
Average daily jail population	110	125	123	134	133	136	134	135	138	154
Communications total calls	106,576	110,305	93,074	89,575	94,480	76,336	106,520	111,509	113,207	144,171
Building permits issued	1,795	1,884	2,238	3,035	3,019	2,616	2,849	2,960	7,514	4,191
Building inspections conducted	24,536	13,921	13,121	13,131	13,149	13,219	15,465	19,868	24,373	29,446
Emergency medical calls answered	14,331	14,394	15,367	16,002	16,763	18,679	17,517	14,957	14,521	15,237
Emergency patients transported	7,249	7,868	7,994	8,143	8,213	8,718	8,241	10,036	10,239	8,858
Number of firemen and officers	476	500	500	500	450	564	450	453	411	554
Number of fire calls answered	2,955	3,000	3,000	3,000	6,348	7,300	8,203	9,746	8,401	8,567
Number of fire marshal inspections	1,250	1,300	1,300	1,300	1,750	2,000	1,750	1,776	1,135	1,309
Animals entering shelter	3,969	2,611	4,779	4,235	4,163	3,883	3,309	3,285	3,262	2,834
Animals euthanized	2,577	1,555	2,601	2,485	2,271	2,107	1,114	735	484	423

Schedule 16
Lincoln County
Operating Indicators by Function
Last Ten Fiscal Years

	Fiscal Year									
Function/Program	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Economic and physical development										
Cooperative Extension client contacts	33,984	50,055	49,206	69,149	63,688	73,990	50,790	77,013	23,500	51,500
Soil and Water Conservation										
Clients assisted	2,673	3,183	3,634	3,658	3,750	3,713	3,752	3,752	3,707	3,684
Funds landowners received from fed & state programs	$ 284,656	$ 443,203	$ 233,644	$ 176,714	$ 346,154	$ 496,530	$ 247,227	$ 667,686	$ 441,710	$ 480,047
Human services										
Health Department patient visits										
Adult Health	4,972	4,922	4,091	3,790	2,684	2,568	3,108	3,055	1,949	2,515
Child Health	1,219	1,514	1,160	1,115	1,083	1,075	1,103	1,061	425	1,173
Family Planning	4,932	5,892	6,842	4,836	4,723	3,935	4,357	4,413	4,107	4,153
Immunizations/Flu	2,961	3,362	5,076	2,285	1,144	1,014	1,352	1,481	1,187	1,657
Maternal Health	1,296	1,831	1,851	1,125	374	750	940	1,519	1,517	1,484
Primary Care	7,251	7,231	7,225	6,052	5,899	4,172	3,355	3,191	2,855	3,837
Sexually transmitted diseases	2,178	2,588	3,054	2,748	2,562	1,924	2,296	2,745	2,695	3,360
Tuberculosis	626	602	652	324	477	494	294	661	845	889
Case Management (child service & maternity care)	1,972	2,398	2,005	1,748	-	-	-	-	-	-
Lab services (in-house)	12,375	12,452	9,898	10,895	9,536	8,153	8,237	7,650	5,490	5,864
(referred)	5,063	4,797	4,116	4,356	4,030	3,863	4,121	4,454	3,951	4,410
WIC (women infants and children)	23,269	24,715	24,180	24,345	24,490	24,864	23,381	20,910	20,765	19,855
Home Health (unduplicated patients)	379	525	406	365	504	567	518	478	-	-
Environmental Health										
Food & Lodging permits	62	70	71	68	77	39	26	40	27	18
Food, Lodging & Institutional Inspections	782	796	834	859	1,257	802	842	863	860	864
Sewage system permits	841	377	302	273	349	317	433	471	605	803
Sewage system finals	375	271	208	164	213	168	235	247	263	332
Water samples	250	344	294	258	308	284	401	397	447	436
New well permits (began 7/1/07)	189	145	96	102	137	68	107	76	179	207
Wells Inspected (water for sampling)	123	177	120	107	85	98	107	148	147	150
Swimming pools	31	37	25	31	31	27	32	33	39	22
Lead investigations	1	2	-	-	-	-	-	1	-	-
Complaint investigations	62	118	121	56	175	75	94	70	57	65
Social Services cases (may contain duplicates)										
Child & adult protective services	126	108	108	116	109	97	92	98	93	85
Children in foster care	97	76	53	56	62	78	82	80	86	108
Work first cases	150	160	133	128	121	119	119	120	108	106
NC health choice cases	626	666	756	826	817	866	866	866	776	784
Medicaid cases	7,437	8,027	8,952	8,966	9,098	9,163	9,364	12,075	11,678	11,822
Food stamp cases	2,487	3,657	4,372	5,244	5,654	4,922	5,365	5,505	5,163	4,591
Child support cases	2,809	2,823	2,863	2,765	2,920	2,919	2,874	2,834	2,767	2,714

Schedule 16
Lincoln County
Operating Indicators by Function
Last Ten Fiscal Years

	Fiscal Year									
Function/Program	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Transportation clients served	632	667	2,444	2,900	3,810	2,966	2,591	2,120	2,112	589
Transportation trips provided	-	19,254	19,253	20,184	23,442	24,969	17,540	15,445	15,606	17,801
Culture and recreation										
Recreation (shelter & facility reservations)				816	896	1,157	1,296	n/a	n/a	1,339
Library volumes in collection	133,498	134,854	137,971	148,408	142,853	144,907	143,880	173,251	157,541	141,099
Library circulation	329,072	323,544	326,429	308,342	280,413	285,669	283,041	245,675	252,018	241,229
Water/Sewer (Business activity)										
Number of water customers	9,583	9,585	9,584	9,730	9,901	10,165	10,680	9,743	10,420	12,491
Average daily water production	2,402,250	2,296,000	2,910,000	2,800,000	2,620,000	2,790,000	2,619,000	2,800,000	2,971,000	3,141,498
Number of sewer customers	3,538	3,660	3,699	3,812	3,843	4,027	3,851	4,472	5,022	5,196
Average daily sewage treatment	610,333	700,000	729,000	780,000	880,000	825,000	799,250	900,000	1,045,000	1,019,628
Landfill										
Tons of waste sanitary landfill	44,680	45,508	48,496	46,692	43,093	38,766	39,008	39,008	35,969	36,814
Tons of waste demolition landfill	7,809	11,264	12,796	16,131	18,282	12,342	9,283	9,283	7,308	8,505
Tons of recyclables	1,870	1,848	2,175	2,187	2,048	2,423	2,537	2,537	1,870	3,009
Tons of white goods	1,184	968	1,023	800	1,125	1,411	1,616	1,616	2,334	2,669
Tons of tires	1,371	1,185	1,281	1,209	1,280	1,064	1,069	1,069	1,064	1,190

Source: Various County Departments

Schedule 17
Lincoln County
Capital Asset Statistics by Function
Last Ten Fiscal Years

	Fiscal Year									
Function/Program	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
General government										
Buildings	22	22	22	24	24	25	25	25	26	27
Public safety										
Law enforcement stations	3	3	3	3	3	3	3	3	3	3
Patrol units	71	77	77	77	77	77	79	83	83	95
Jail capacity	168	168	168	168	168	168	168	168	168	168
Emergency medical stations	3	5	6	7	7	7	9	6	6	8
Emergency medical apparatus	20	22	23	23	24	24	24	24	24	24
Fire department stations	13	15	15	15	16	17	18	19	19	19
Economic and physical development										
Transportation										
Number of transportation vehicles	13	12	15	18	19	19	21	21	21	22
Cultural and recreation										
Number of libraries	3	3	3	3	3	3	3	3	3	3
Number of county parks										
Developed	2	4	4	4	5	5	6	6	6	6
Undeveloped	2	1	1	1	1	1	-	-	-	-
Park acreage:										
Developed	37	115	115	115	149	149	265	265	265	265
Undeveloped	54	116	116	116	116	116	-	-	-	-
Number of community centers	2	2	2	2	2	2	2	2	2	2
Number of gyms/centers	2	2	2	2	2	2	2	2	2	2
Water/Sewer (Business activity)										
Number of water plants	1	1	1	1	1	1	1	1	1	1
Miles of water mains	285	300	315	336	313	313	322	325	332	332
Number of wastewater plants	1	1	2	2	2	1	1	1	1	1
Miles of sanitary sewer	90	100	155	155	171	171	171	176	176	233
Landfill										
Number of sanitary landfills	1	1	1	1	1	1	1	1	1	1
Number of demolition landfills	1	1	1	1	1	1	1	1	1	1
Number of convenience sites	7	7	7	7	7	7	7	7	7	7

Source: Various County Departments

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Report On Internal Control Over Financial Reporting And On Compliance And Other Matters Based On An Audit Of Financial Statements Performed In Accordance With *Government Auditing Standards*

Independent Auditor's Report

To the Board of Commissioners
Lincoln County
Lincolnton, North Carolina

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to the financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the accompanying financial statements of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of Lincoln County, North Carolina, as of and for the year ended June 30, 2017, and the related notes to the financial statements, which collectively comprise Lincoln County's basic financial statements, and have issued our report thereon dated December 11, 2017. Our report includes a reference to other auditors who audited the financial statements of the Lincoln County ABC Board, as described in our report on Lincoln County's financial statements. The financial statements of the Lincoln County ABC Board were not audited in accordance with *Government Auditing Standards*.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered Lincoln County's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Lincoln County's internal control. Accordingly, we do not express an opinion on the effectiveness of the County's internal control.

Our consideration of internal control was for the limited purpose described in the preceeding paragraph and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies; and therefore, material weaknesses or significant deficiencies may exist that were not identified. However, as described in the accompanying Schedule of Findings and Questioned Costs, we identified certain deficiencies in internal control that we consider to be material weaknesses and significant deficiencies.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a

timely basis. We consider the deficiencies described in the accompanying Schedule of Findings and Questioned Costs as items 2017-001 and 2017-002 to be material weaknesses.

A *significant deficiency* is a deficiency or combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance. We consider the deficiency described in the accompanying Schedule of Findings and Questioned Costs as item 2017-003 to be a significant deficiency.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Lincoln County's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, non-compliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed an instance of non-compliance or other matter that is required to be reported under *Government Auditing Standards* and which is described in the accompanying Schedule of Findings and Questioned Costs as item 2017-001.

Lincoln County's Responses to Findings

Lincoln County's responses to the findings identified in our audit are described in the accompanying Schedule of Findings and Questioned Costs. Lincoln County's responses were not subjected to the auditing procedures applied in the audit of the financial statements, and accordingly, we express no opinion on them.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Martin Starnes & Associates, CPAs, P.A.

Martin Starnes & Associates, CPAs, P.A.
Hickory, North Carolina
December 11, 2017

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& ASSOCIATES, CPAs, P.A.
"A Professional Association of Certified Public Accountants and Management Consultants"

Report On Compliance For Each Major Federal Program; Report On Internal Control Over Compliance; In Accordance With OMB Uniform Guidance And The State Single Audit Implementation Act

Independent Auditor's Report

To the Board of Commissioners
Lincoln County
Lincolnton, North Carolina

Report on Compliance for Each Major Federal Program

We have audited Lincoln County, North Carolina's, compliance with the types of compliance requirements described in the *OMB Compliance Supplement* and the *Audit Manual for Governmental Auditors in North Carolina*, issued by the Local Government Commission that could have a direct and material effect on each of Lincoln County's major federal programs for the year ended June 30, 2017. Lincoln County's major federal programs are identified in the summary of auditor's results section of the accompanying Schedule of Findings and Questioned Costs.

Management's Responsibility

Management is responsible for compliance with the requirements of laws, regulations, contracts, and grants applicable to its federal programs.

Auditor's Responsibility

Our responsibility is to express an opinion on compliance for each of Lincoln County's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance), and the State Single Audit Implementation Act. Those standards, the Uniform Guidance, and the State Single Audit Implementation Act require that we plan and perform the audit to obtain reasonable assurance about whether non-compliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about Lincoln County's compliance with those requirements and performing such other procedures, as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of Lincoln County's compliance.

Opinion on Each Major Federal Program

In our opinion, Lincoln County complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2017.

Other Matters

The results of our auditing procedures disclosed an instance of noncompliance, which is required to be reported in accordance with Uniform Guidance and which is described in the accompanying Schedule of Finding and Questioned Costs as item 2017-004. Our opinion on each major federal program is not modified with respect to this matter.

Lincoln County's response to the noncompliance finding identified in our audit is described in the accompanying Schedule of Findings and Questions Costs. Lincoln County's response was not subjected to the auditing procedures applied in the audit of compliance and accordingly, we express no opinion on the response.

Report on Internal Control Over Compliance

Management of Lincoln County is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered Lincoln County's internal control over compliance with the types of requirements that could have a direct and material effect on a major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing our opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with OMB Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the County's internal control over compliance.

Our consideration of internal control over compliance was for the limited purpose described in the preceding paragraph and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies and therefore, material weaknesses or significant deficiencies may exist that were not identified. However, as discussed below, we identified certain deficiencies in internal control over compliance that we consider to be material weaknesses and significant deficiencies.

A *deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, non-compliance with a type of compliance requirement of a federal program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material non-compliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. We consider the deficiency in internal control over compliance described in the accompanying Schedule of Findings and Questioned Costs as item 2017-004 to be a material weakness.

A *significant deficiency in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal

program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance. We consider the deficiency in internal control over compliance described in the accompanying Schedule of Findings and Questioned Costs as item 2017-005 to be a significant deficiency.

Lincoln County's Responses to Findings

Lincoln County's responses to the internal control over compliance findings identified in our audit are described in the accompanying Schedule of Findings and Questioned Costs. Lincoln County's responses were not subjected to the auditing procedures applied in the audit of the financial statements, and accordingly, we express no opinion on them.

Purpose of this Report

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of OMB Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Martin Starnes & Associates, CPAs, P.A.

Martin Starnes & Associates, CPAs, P.A.
Hickory, North Carolina
December 11, 2017

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MARTIN ♦ STARNES
& ASSOCIATES, CPAs, P.A.
"A Professional Association of Certified Public Accountants and Management Consultants"

Report On Compliance For Each Major State Program; Report On Internal Control Over Compliance; In Accordance With OMB Uniform Guidance And The State Single Audit Implementation Act

Independent Auditor's Report

To the Board of Commissioners
Lincoln County
Lincolnton, North Carolina

Report on Compliance for Each Major State Program

We have audited Lincoln County, North Carolina's, compliance with the types of compliance requirements described in the *Audit Manual for Governmental Auditors in North Carolina*, issued by the Local Government Commission that could have a direct and material effect on each of Lincoln County's major State programs for the year ended June 30, 2017. Lincoln County's major State programs are identified in the summary of auditor's results section of the accompanying Schedule of Findings and Questioned Costs.

Management's Responsibility

Management is responsible for compliance with the requirements of laws, regulations, contracts, and grants applicable to its State programs.

Auditor's Responsibility

Our responsibility is to express an opinion on compliance for each of Lincoln County's major State programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and applicable sections of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance), as described in the *Audit Manual for Governmental Auditors in North Carolina*, and the State Single Audit Implementation Act. Those standards, Uniform Guidance, and the State Single Audit Implementation Act require that we plan and perform the audit to obtain reasonable assurance about whether non-compliance with the types of compliance requirements referred to above that could have a direct and material effect on a major State program occurred. An audit includes examining, on a test basis, evidence about Lincoln County's compliance with those requirements and performing such other procedures, as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major State program. However, our audit does not provide a legal determination of Lincoln County's compliance.

Opinion on Each Major State Program

In our opinion, Lincoln County complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major State programs for the year ended June 30, 2017.

Other Matters

The results of our auditing procedures disclosed an instance of noncompliance, which is required to be reported in accordance with Uniform Guidance and which is described in the accompanying Schedule of Finding and Questioned Costs as item 2017-004. Our opinion on each major State program is not modified with respect to this matter.

Lincoln County's response to the noncompliance findings identified in our audit is described in the accompanying Schedule of Findings and Questions Costs. Lincoln County's response was not subjected to the auditing procedures applied in the audit of compliance and accordingly, we express no opinion on the response.

Report on Internal Control Over Compliance

Management of Lincoln County is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered Lincoln County's internal control over compliance with the types of requirements that could have a direct and material effect on a major State program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing our opinion on compliance for each major State program and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the County's internal control over compliance.

Our consideration of internal control over compliance was for the limited purpose described in the preceding paragraph and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies and therefore, material weaknesses or significant deficiencies may exist that were not identified. However, as discussed below, we identified certain deficiencies in internal control over compliance that we consider to be material weaknesses and significant deficiencies.

A *deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, non-compliance with a type of compliance requirement of a State program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material non-compliance with a type of compliance requirement of a State program will not be prevented, or detected and corrected, on a timely basis. We consider the deficiency in internal control over compliance described in the accompanying Schedule of Findings and Questioned Costs as item 2017-004 to be a material weakness.

A *significant deficiency in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance with a type of compliance requirement of a State program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance. We consider the deficiency in internal control over compliance described in the accompanying Schedule of Findings and Questioned Costs as item 2017-005 to be a significant deficiency.

Lincoln County's Responses to Findings

Lincoln County's responses to the internal control over compliance findings identified in our audit are described in the accompanying Schedule of Findings and Questioned Costs. Lincoln County's responses were not subjected to the auditing procedures applied in the audit of the financial statements, and accordingly, we express no opinion on them.

Purpose of this Report

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Martin Starnes & Associates, CPAs, P.A.

Martin Starnes & Associates, CPAs, P.A.
Hickory, North Carolina
December 11, 2017

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LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2017

1. Summary of Auditor's Results

Financial Statements

Type of report the auditor issued on whether the financial statements audited were prepared in accordance to GAAP:	Unmodified
Internal control over financial reporting:	
• Material weakness(es) identified?	Yes
• Significant deficiency(s) identified?	Yes
Non-compliance material to financial statements noted?	Yes

Federal Awards

Internal control over major federal programs:	
• Material weakness(es) identified?	Yes
• Significant deficiency(s) identified?	Yes
Type of auditor's report issued on compliance for major federal programs:	Unmodified
Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)?	Yes

Federal Program/Cluster Name	CFDA#
Medicaid Cluster	93.778, 93.775, 93.777

Dollar threshold used to distinguish between Type A and Type B programs:	$2,134,067
Auditee qualified as low-risk auditee?	No

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2017

1. Summary of Auditor's Results (continued)

State Awards

Internal control over major State programs:

- Material weakness(es) identified? Yes
- Significant deficiency(es) identified? Yes

Type of auditor's report issued on compliance for major State programs: Unmodified

Any findings disclosed that are required to be reported in accordance with the State Single Audit Implementation Act? Yes

Identification of major State programs:

Program Name

Medicaid Cluster

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2017

2. Financial Statement Findings

Finding 2017-001 Expenditures Exceeded Appropriations

Material Weakness

Criteria: General Statutes require that all money received and expended by a local government should be included in the budget ordinance. The statutes require that funds be appropriated before incurring the obligation for funds and that amounts be pre-audited prior to disbursements being made.

Condition: In the current year, there were violations of the N.C. General Statute 159-8(a). Expenditures exceeded appropriations and, therefore, a failure in the pre-audit requirement. The budget amendment and pre-audit process were not effective.

Effect: Budget amendments were not submitted to and approved by the Board during the current year causing the County to be over-expended in the General Fund, the Emergency Telephone System Fund, the Law Enforcement Fund, and the East Lincoln Water and Sewer District Fund.

Cause: Inadequate pre-audit process and budget monitoring by management. The County expended more than appropriated because pre-audit and budget amendments were not utilized to account for departmental expenditures, special revenue fund expenditures, and operating expenditures in the East Lincoln Water and Sewer District Fund in excess of budgeted amounts.

Identification of a Repeat Finding: This is a repeat finding from the immediate previous audit, 2016-001.

Recommendation: Management and the Board should ensure that amounts are pre-audited prior to obligation and disbursement of funds and proper review of budget reports is performed to ensure compliance in future years.

Views of Responsible Officials and Planned Corrective Actions: Management concurs with the condition, context, and recommendations. Management and the Board will adopt the budget in the future based on function, not department, and more closely monitor expenditures.

2. Financial Statement Findings (continued)

Finding 2017-002 Deficit Fund Equity

Material Weakness

Criteria: Management should have a control system in place to reduce the likelihood that funds operate in a deficit.

Condition: The Worker's Comp Fund has deficit fund equity for the third year.

Effect: The Worker's Comp Fund continued to operate with a deficit in the current year.

Cause: The County adopted a balanced financial plan; however, revenues and transfers were insufficient to cover the cost of operations and project expenditures.

Identification of a Repeat Finding: This is a repeat finding from the immediate previous audit, 2016-002.

Recommendation: The County should reevaluate the cost of providing services and adjust charges to ensure that revenues and transfers cover all related costs.

Views of Responsible Officials and Planned Corrective Actions: Management will evaluate charges related to the Workers' Compensation Fund and will take measures to ensure charges cover costs. Future transfers will be used to offset the deficits in these funds.

2. Financial Statement Findings (continued)

Finding 2017-003 Controls over Information Submitted to Actuary

Significant Deficiency

Criteria: Management should have a system in place to reduce the likelihood of errors in financial reporting.

Condition: While testing controls over the submission of OPEB and LEO information to the actuary, five exceptions were noted related to date of birth, hire date, and retirement date information where the information per personnel records did not agree with the list of personnel information submitted to the actuary. Lincoln County does not have a control in place for a secondary review of comparing information submitted to the actuary for OPEB and LEO to personnel records.

Cause: There is a lack of internal controls over the process of submission of OPEB and LEO information to the actuary.

Effect: Errors in financial reporting could occur.

Identification of Repeat Finding: This is a repeat finding from the immediate previous audit, 2016-004.

Recommendation: Lincoln County should have an additional control in place for a secondary review of comparing information submitted to the actuary for OPEB and LEO to personnel records.

Views of Responsible Officials and Planned Corrective Actions: Management concurs with the finding and will review information submitted to the actuary in the future.

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2017

3. Federal Award Findings and Questioned Costs

US Department of Health and Human Services
Passed through the NC Dept. of Health and Human Services
Program Name: Medical Assistance Program (Medicaid; Title XIX)
CFDA # 93.778
Grant Number: XIX-MAP17

Finding: 2017-004

Non-Material Non-compliance

Material Weakness

Criteria: Management should have an adequate system of internal control procedures in place to ensure proper timely termination of benefits for participants.

Condition: Two recipients were not terminated timely due to delayed communication by the Social Security Administration. Upon further review and recalculation, one of the recipients was still eligible for benefits. The other recipient was not eligible and incorrectly received benefits.

Context: Of the 4,136 casefiles, we examined 79 and determined that two (2.6%) participants were not terminated timely. Upon further review and recalculation, one (1.3%) of the participants was still eligible for benefits. The other one (1.3%) recipient was not eligible and incorrectly received benefits.

Effect: Participants could be receiving benefits when they are not eligible due to not being terminated timely.

Cause: Caseworker failed to terminate case in a timely manner due to delayed communication by the Social Security Administration.

Questioned Costs: $4,286 is the amount provided by NCDHHS as the total amount of costs reported for the case that was ineligible for benefits. In accordance with 2 CFR 200, auditors must report known questioned costed when likely questioned costs are greater than $25,000. Therefore, the overpayment of $4,286 (federal share $2,838) is being questioned.

Recommendation: County should continue monitoring cases by performing second party review procedures on a monthly basis to ensure that cases are terminated timely.

Views of Responsible Officials and Planned Corrective Actions: Management concurs with this finding. Refer to the Corrective Action Plan.

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2017

3. Federal Award Findings and Questioned Costs

US Department of Health and Human Services
Passed through the NC Dept. of Health and Human Services
Program Name: Medical Assistance Program (Medicaid; Title XIX)
CFDA # 93.778
Grant Number: XIX-MAP17

Finding: 2017-005

Significant Deficiency

Criteria: In accordance with 2 CFR 200, management must have an adequate system of internal control procedures in place to adequately safeguard confidential information from unauthorized use in compliance with applicable laws and regulations. In accordance with the Division of Social Services Fiscal Manual, DSS employees should control physical access to the State network terminals or personal computers that are connected to the State mainframe.

Condition: Upon surprise inspection, two unattended work stations of DSS employees were logged onto the State network without anyone attending to the work station.

Effect: Unauthorized access to the State system could be obtained due to the unattended log-on to the system throughout the DSS building.

Cause: Lack of proper internal controls over data security.

Questioned Costs: The finding represents an internal control issue; therefore, no questioned costs are applicable.

Context: During a surprise walkthrough, we examined 18 workstations and determined that 2 (11%) workstations were not properly secured. The workstation was unattended and logged onto the State system.

Recommendation: Require the County Data Processing Department to implement procedures to require logout of workstations where access to the State DSS system is granted. The control procedures should include random verification of logout in instances where offices are unattended.

Views of Responsible Officials and Planned Corrective Actions: Management concurs with this finding. Refer to the Corrective Action Plan.

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2017

4. State Award Findings and Questioned Costs

N.C. Department of Health and Human Services
Program Name: Medical Assistance Program (Medicaid; Title XIX)

Finding: 2017-004 – Management should have an adequate system of internal control procedures in place to ensure proper timely termination of benefits for participants. See more details at Finding 2017-004 in Section III – Federal Award Findings and Questioned Costs.

N.C. Department of Health and Human Services
Program Name: Medical Assistance Program (Medicaid; Title XIX)

Finding: 2017-005 – In accordance with 2 CFR 200, management must have an adequate system of internal control procedures in place to adequately safeguard confidential information from unauthorized use in compliance with applicable laws and regulations. In accordance with the Division of Social Services Fiscal Manual, DSS employees should control physical access to the State network terminals or personal computers that are connected to the State mainframe. See more details at Finding 2017-005 in Section III – Federal Award Findings and Questioned Costs.

COUNTY OF LINCOLN, NORTH CAROLINA
115 WEST MAIN STREET, 3RD FLOOR CITIZENS CENTER, LINCOLNTON, NORTH CAROLINA 28092

FINANCE DEPARTMENT
(704) 736-8865
FAX (704) 735-0273

CORRECTIVE ACTION PLAN
FOR THE YEAR ENDED JUNE 30, 2017

2. Financial Statement Findings

Finding: 2017-001

Name of Contact Person: Deanna Rios, Finance Director

Corrective Action/Management's Response: Management concurs with the condition, context, and recommendations. Management and the Board will ensure that pre-audit of expenditures is completed prior to disbursement of funds to ensure compliance in future years.

Proposed Completion Date: Management will implement the above procedure immediately.

Finding: 2017-002

Name of Contact Person: Deanna Rios, Finance Director

Corrective Action/Management's Response: Management will evaluate charges related to the Workers' Compensation Fund and will take measures to ensure charges cover costs. Future transfers will be used to offset the deficits in these funds. Charges to individual funds have been increased to reduce the deficit.

Proposed Completion Date: Management will implement the above procedure immediately.

Finding: 2017-003

Name of Contact Person: Deanna Rios, Finance Director

Corrective Action/Management's Response: Management concurs with the finding and will review OPEB and LEO reports in the future.

Proposed Completion Date: Management will implement the above procedure immediately.

COUNTY OF LINCOLN, NORTH CAROLINA
115 WEST MAIN STREET, 3RD FLOOR CITIZENS CENTER, LINCOLNTON, NORTH CAROLINA 28092

FINANCE DEPARTMENT
(704) 736-8865
FAX (704) 735-0273

CORRECTIVE ACTION PLAN
FOR THE YEAR ENDED JUNE 30, 2017

3. Federal Award Findings and Questioned Costs

Finding: 2017-004

Name of Contact Person: Susan McCracken, DSS Director

Corrective Action/Management's Response: SSI Termination Reports will be printed and monitored by the Adult Medicaid Supervisor on a monthly basis. Evaluation of ongoing benefits for SSI terminated cases will begin within one week after appearing on the report. All SSI terminations will be completed by one caseworker to ensure consistency and ease of monitoring for accuracy. The Adult Medicaid Supervisor and the Quality and Training worker will perform random second party reviews to ensure timeliness and accuracy at a rate of 5% and document the results on a monthly basis.

Proposed Completion Date: Immediately and ongoing

Finding: 2017-005

Name of Contact Person: Susan McCracken, DSS Director

Corrective Action/Management's Response: The Security Officer and the Backup Security Officer will perform a monthly random sample of unattended workstations. Each month, a minimum of 10% of the current agency position count will be tested. A log will be completed and maintained with the following information:

DATE	ROOM #	EMPLOYEE NAME	STATUS

Any workstation(s) found to be unattended and unsecure will be shared with the Agency Director and the Staff's Unit Supervisor.

Additionally, signage will be posted in staff common areas throughout the building as a reminder to "Lock Your Computer".

All current staff will be retrained. They will be required to read the attached Unattended Work Areas policy and sign the certification on page 2.

All new staff will be required to read the attached Unattended Work Areas policy and sign the certification on page 2 at new staff orientation.

Proposed Completion Date: Immediately and ongoing

COUNTY OF LINCOLN, NORTH CAROLINA
115 WEST MAIN STREET, 3RD FLOOR CITIZENS CENTER, LINCOLNTON, NORTH CAROLINA 28092

FINANCE DEPARTMENT
(704) 736-8865
FAX (704) 735-0273

CORRECTIVE ACTION PLAN
FOR THE YEAR ENDED JUNE 30, 2017

4. State Award Findings and Questioned Costs

Finding: 2017-004

See Finding 2017-004 in Section III – Federal Award Findings and Questioned Costs of the Corrective Action Plan.

Finding: 2017-005

See Finding 2017-005 in Section III – Federal Award Findings and Questioned Costs of the Corrective Action Plan.

LINCOLN COUNTY, NORTH CAROLINA

SCHEDULE OF PRIOR YEAR AUDIT FINDINGS
FOR THE YEAR ENDED JUNE 30, 2016

2016-001: Updated and repeated as 2017-001

2016-002: Updated and repeated as 2017-002

2016-003: Corrected

2016-004: Updated and repeated as 2017-003

2016-005: Corrected

2016-006: Corrected

LINCOLN COUNTY, NORTH CAROLINA
SCHEDULE OF EXPENDITURES OF FEDERAL AND STATE AWARDS
FOR THE YEAR ENDED JUNE 30, 2017

Grantor/Pass-through Grantor/Program Title	Federal CFDA Number	State/ Pass-through Grantor's Number	Fed. (Direct & Pass-through) Expenditures	State Expenditures	Pass-through to Subrecipients
Federal Awards:					
U.S. Department of Agriculture					
Food and Nutrition Service					
Passed-through the N.C. Dept. of Health and Human Services:					
Division of Social Services:					
Administration:					
Supplemental Nutrition Assistance Program (SNAP) Cluster					
State Administrative Matching Grants for the Supplemental Nutrition Assistance Program- Admin	10.561	175NC406S2514	$ 524,528	$ -	$ -
State Administrative Matching Grants for the Supplemental Nutrition Assistance Program - Fraud Admin	10.561	175NC406S2514	41,715	-	-
Total SNAP Cluster			566,243	-	-
Passed-through the N.C. Dept. of Health and Human Services:					
Division of Public Health:					
Administration:					
Special Supplemental Nutrition Program for Women, Infants, & Children (WIC)	10.557	13A2-5403-GG	324,586	-	-
Direct Benefit Payments:					
Special Supplemental Nutrition Program for Women, Infants, & Children (WIC)	10.557	13A2-5403-GU	1,010,628	-	-
Total Division of Public Health			1,335,214	-	-
Total U.S. Department of Agriculture			1,901,457	-	-
U.S. Department of Housing and Urban Development					
Office of Community Planning and Development					
Passed-through N.C. Dept. of Commerce					
Community Development Block Grants/State's program and Non-Entitlement Grants in Hawaii	14.228	B-12-DC-37-0001	88,845	-	-
Community Development Block Grants/State's Program and Non-Entitlement Grants in Hawaii	14.228	02-D-2683; 12-C-2423	37,459	-	-
Total U.S. Department of Housing and Urban Development			126,304	-	-
U.S. Department of Justice					
Office for Victims of Crime					
Passed-through N.C. Dept. of Public Safety					
Crime Victim Assistance	16.575	PROJ011176	39,162	-	-
Total Office for Victims of Crime			39,162	-	-
U.S. Department of Treasury					
Direct Program:					
Treasury Forfeiture Fund Program	21.000		7,781	-	-
Total U.S. Department of Treasury			7,781	-	-
U.S. Department of Transportation					
Federal Transit Administration					
Passed-through the N.C. Dept. of Transportation					
Formula Grants for Rural Areas- Admin	20.509	36233.114.6.1	164,729	25,523	-
Formula Grants for Rural Areas- Capital	20.509	36233.114.6.3; 36233.114.6.4	133,664	16,708	-
Total U.S. Department of Transportation			298,393	42,231	-
National Science Foundation					
Education and Human Resources	47.076		737	-	-
Total National Science Foundation			737	-	-
U. S. Department of Homeland Security					
Federal Emergency Management Agency					
Passed-through N.C. Dept. of Public Safety:					
Emergency Management Performance Grants	97.042	EMPG-2016-37109	35,000	-	-
Emergency Management Performance Grants - SEP	97.042	EMPG-2016-37109	17,959	-	-
Total U. S. Department of Homeland Security			52,959	-	-
U.S. Department of Health & Human Services					
Administration for Community Living					
Division of Social Services					
Passed-through the N.C. Dept. of Insurance					
State Health Insurance Assistance Program	93.324	905A 0090-01-00	3,182	-	-
Medicare Enrollment Assistance Program	93.071	14AANCMSHI	395	-	-
Total N.C. Department of Insurance			3,577	-	-

LINCOLN COUNTY, NORTH CAROLINA
SCHEDULE OF EXPENDITURES OF FEDERAL AND STATE AWARDS
FOR THE YEAR ENDED JUNE 30, 2017

Grantor/Pass-through Grantor/Program Title	Federal CFDA Number	State/ Pass-through Grantor's Number	Fed. (Direct & Pass-through) Expenditures	State Expenditures	Pass-through to Subrecipients
Division of Aging and Adult Services					
Passed-through Centralina Council of Governments					
Aging Cluster:					
Special Programs for the Aging, Title III, Part B, Grants for Supportive Services and Senior Centers - Access Services	93.044	AANCT3SS	77,806	13,730	-
Special Programs for the Aging, Title III, Part B, Grants for Supportive Services and Senior Centers - In Home & Support Services	93.044	AANCT3SS	212,128	37,434	-
Special Programs for the Aging, Title III, Part C, Nutrition Services - Congregate Nutrition	93.045	AANCT3CM	71,004	12,530	-
Nutrition Services Incentive Program	93.053	AANCNSIP	8,833	-	-
Total Aging Cluster			369,771	63,694	-
National Family Caregiver Support, Title III, Part E Services - Family Caregiver Support	93.052	AANCT3FC	25,051	1,670	-
Special Programs for the Aging - Title III, Part D Disease Prevention and Health Promotion Services	93.043	AANCT3PH	2,486	439	-
Total Division of Aging and Adult Services			397,308	65,803	-
Passed-through the N.C. Dept. of Health and Human Services:					
Division of Social Services:					
Foster Care and Adoption Cluster:					
Administration:					
Adoption Assistance - Adoption Training	93.659	1701NCADPT	5,016	-	-
Adoption Assistance - Optional Adoption Training	93.659	1701NCADPT	3,895	-	-
Foster Care_Title IV-E - Child Protective Services	93.658	1701NCFOST	101,039	33,687	-
Foster Care_Title IV-E - Admin Foster Care	93.658	1701NCFOST	5,454	-	-
Foster Care_Title IV-E - Foster Care TRN	93.658	1701NCFOST	3,987	-	-
Foster Care_Title IV-E - Foster Care/Off TRN	93.658	1701NCFOST	246,673	-	-
Foster Care_Title IV-E	93.658	1701NCFOST	63,548	-	-
Direct Benefit Payments:					
Foster Care_Title IV-E - Admin County Paid	93.658	1701NCFOST	2,057	1,029	-
Foster Care_Title IV-E - Family Foster Max	93.658	1701NCFOST	186	-	-
Foster Care_Title IV-E	93.658	1701NCFOST	120,507	30,262	-
Foster Care_Title IV-E - Foster Care In Excess	93.658	1701NCFOST	7,681	1,914	-
Foster Care_Title IV-E - Max Level III	93.658	1701NCFOST	12,503	-	-
Adoption Assistance - Adoption Subsidy & Vendor	93.659	1701NCADPT	294,317	73,470	-
Total Foster Care and Adoption Cluster (Note 3)			866,863	140,362	-
Special Children Adoption Fund Cluster:					
Promoting Safe and Stable Families	93.556	1701NCFPSS - G1711NCFPCV	30,430	-	-
Total Special Children Adoption Fund Cluster (Note 3)			30,430	-	-
Temporary Assistance for Needy Families Cluster:					
Administration:					
Temporary Assistance for Needy Families (TANF)/ Work First	93.558	1701NCTANF	125,390	-	-
Temporary Assistance for Needy Families (TANF)/ Work First Service	93.558	1701NCTANF	680,339	-	-
Direct Benefit Payments:					
Temporary Assistance for Needy Families (TANF)/ Work First Payments & Penalties	93.558	1701NCTANF	250,294	-	-
Temporary Assistance for Needy Families (TANF)	93.558	1701NCTANF	24,000	-	-
Total Temporary Assistance for Needy Families Cluster			1,080,023	-	-
Administration:					
Chafee Foster Care Independence Program	93.674	1701NC1420	16,298	4,074	-
Stephanie Tubbs Jones Child Welfare Services Program	93.645	G1701NCCWSS	33,361	-	-
Low Income Home Energy Assistance	93.568	G17B1NCLIEA	43,538	-	-
Low Income Home Energy Assistance - Payments	93.568	G17B1NCLIEA	221,700	-	-
Low Income Home Energy Assistance - Crisis Intervention Program	93.568	G17B1NCLIEA	269,089	-	-
Child Support Enforcement	93.563	1704NC4005	522,687	5	-
Direct Benefit Payments:					
Chafee Foster Care Independence Program	93.674	1701NC1420	39,142	-	-
Total Division of Social Services			3,123,131	144,441	-
Administration for Children and Families					
Division of Social Services:					
Administration:					
Social Services Block Grant - CPS TANF to SSBG	93.667	G1701NCSOSR	114,047	-	-
Social Services Block Grant - In-Home Services	93.667	G1701NCSOSR	8,545	-	-
Social Services Block Grant - In-Home Services over 60	93.667	G1701NCSOSR	2,541	3,759	-
Social Services Block Grant	93.667	G1701NCSOSR	29,363	-	
Social Services Block Grant - Other Services and Training	93.667	G1701NCSOSR	147,858	14,659	-
Total Administration for Children and Families			302,354	18,418	-

LINCOLN COUNTY, NORTH CAROLINA
SCHEDULE OF EXPENDITURES OF FEDERAL AND STATE AWARDS
FOR THE YEAR ENDED JUNE 30, 2017

Grantor/Pass-through Grantor/Program Title	Federal CFDA Number	State/ Pass-through Grantor's Number	Fed. (Direct & Pass-through) Expenditures	State Expenditures	Pass-through to Subrecipients
Child Care Development Fund Cluster					
Division of Social Services:					
Child Care Mandatory and Matching Funds of the Child Care Development Fund - Administration	93.596	G1701NCCCDF	64,023	-	-
Division of Child Development:					
Child Care and Development Block Grant - Discretionary	93.575	536147; 536151	659,880	-	-
Child Care Mandatory and Matching Funds of the Child Care Development Fund - Mandatory	93.596	536145	267,275	-	-
Child Care Mandatory and Matching Funds of the Child Care Development Fund - Match	93.596	536148	346,286	128,742	-
Total Child Care and Development Fund Cluster			1,337,464	128,742	-
Temporary Assistance for Needy Families (TANF)	93.558	536150	266,840	-	-
Foster Care Title IV-E	93.658	536153	34,072	16,947	-
Smart Start			-	425	
State Appropriations			-	130,218	-
TANF-MOE			-	315,391	-
Total Subsidized Child Care Program Cluster (Note 3)			1,638,376	591,723	-
Center for Medicare and Medicaid Services					
Passed-through the N.C. Dept. of Health and Human Services:					
Medicaid Cluster:					
Division of Medical Assistance:					
Administration:					
Medical Assistance Program	93.778	XIX-MAP17	31,471	6,901	
Medical Assistance Program	93.778	XIX-MAP17	35,955	-	
Medical Assistance Program	93.778	XIX-MAP17	100,881	-	
Medical Assistance Program	93.778	XIX-MAP17	1,435,977	-	
Medical Assistance Program	93.778	XIX-MAP17	60,553	-	
Medical Assistance Program	93.778	XIX-MAP17	14,441	7,177	
Direct Benefit Payments:					
Medical Assistance Program	93.778	XIX-MAP17	59,556,864	31,236,731	-
Total Medicaid Cluster			61,236,142	31,250,809	-
Children's Health Insurance Program - North Carolina Health Choice:					
Administration	93.767	CHIP17	35,540	58	-
Direct Benefit Payments	93.767	CHIP17	1,744,102	7,963	-
Total Division of Medical Assistance			63,015,784	31,258,830	-
Administration of Children and Families					
Passed-through the N.C. Dept. of Health and Human Services					
Division of Social Services					
Temporary Assistance for Needy Families	93.558	13A1-5151-T2	8,411	-	-
Total Administration of Families and Children			8,411	-	-
Health Resources and Service Administration					
Passed-through the N.C. Dept. of Health and Human Services					
Division of Public Health					
Maternal and Child Health Services Block Grant to the States	93.994	1271-5318-AP, 1271-5745-AP	50,056	37,547	-
Total Health Resources and Service Administration			50,056	37,547	-
Office of Population Affairs					
Passed-through the N.C. Dept. of Health and Human Services					
Family Planning Services	93.217	13A1-592A-FP	23,985	-	-
Total Office of Population Affairs			23,985	-	-
Center for Disease Control and Prevention					
Passed-through the N.C. Dept. of Health and Human Services:					
Division of Public Health:					
Hospital Preparedness Program (HPP) and Public Health Emergency Preparedness (PHEP) Aligned Cooperative Agreements	93.074	1264-2680-M8	51,436	-	-
Project Grants and Cooperative Agreements for Tuberculosis Control Programs	93.116	1460-272A-NF, 1460-272B-NF	50	-	-
Immunization Cooperative Agreements	93.268	1331-631C-EJ	7,682	-	-
PPHF Capacity Building Assistance to Strengthen Public Health Immunization Infrastructure and Performance financed in part by Prevention and Public Health funds	93.539	1331-627C-VP, 1331-627D-VP, 1331-627E-VP	8,510	-	-
Cancer Prevention and Control Programs for State, Territorial and Tribal Organizations financed in part by Prevention and Public Health funds	93.752	1320-310D-JS, 1320-310E-JS	47,430	-	-
Preventive Health and Health Services Block Grant funded solely with Prevention and Public Health Funds (PPHF)	93.758	126C-5503-PF	26,708	-	-

LINCOLN COUNTY, NORTH CAROLINA
SCHEDULE OF EXPENDITURES OF FEDERAL AND STATE AWARDS
FOR THE YEAR ENDED JUNE 30, 2017

Grantor/Pass-through Grantor/Program Title	Federal CFDA Number	State/ Pass-through Grantor's Number	Fed. (Direct & Pass-through) Expenditures	State Expenditures	Pass-through to Subrecipients
HIV Cluster:					
HIV Prevention Activities Health Department Based	93.940	1311-981D-HV	3,000	-	-
Sexually Transmitted Diseases (STD) Prevention and Control Grants	93.977	1311-462B-NB, 1311-462C-NB	988	-	-
Total HIV Cluster (Note 3)			3,988	-	-
Total Division of Public Health			145,804	-	-
Total U.S. Department of Health and Human Services			68,708,786	32,116,762	-
Total Federal Awards			$ 71,135,579	$ 32,158,993	$ -
State Awards:					
N.C. Department of Agriculture and Consumer Services					
Division of Soil & Water					
N.C. Agriculture Cost Share Funds				30,330	
Total N.C. Department of Agriculture and Consumer Services				30,330	
N.C. Department of Natural and Cultural Resources					
Division of State Library:					
State Aid to Public Libraries				118,507	
LSTA Grant EZ Planning NC-16-16				55,025	
LSTA Grant EZ Planning NC-16-21				19,351	
Total N.C. Department of Cultural Resources				192,883	
N.C. Department of Commerce					
Commerce Fellows Grant				140	
Total N.C. Department of Commerce				140	
N.C. Department of Environmental Quality					
Division of Waste Management					
White Goods Management Program				6,566	
Electronics Management				6,038	
Scrap Tire Fund - SWMGT				1,746	
Total N.C. Department of Environmental Quality				14,350	
N.C. Department of Health and Human Services					
Division of Social Services					
State Child Welfare/CPS/CS LD				141,871	
DCD Smart Start				83,570	
CWS Adopt Subsidy & Vendor Payments- Direct Benefit Payments				298,887	
Extended F/C Maximization Non Title IV-E - Direct Benefit Payments				6,106	
F/C At Risk Maximization- Direct Benefit Payments				12,945	
SAA/SAD - Direct Benefit Payments				19,125	
SC/SA Domiciliary Care Payment- Direct Benefit Payments				367,472	
SFHF Maximization- Direct Benefit Payments				23,254	
State Foster Home- Direct Benefit Payments				78,520	
Total N.C. Division of Social Services				1,031,750	
Division of Public Health					
Food and Lodging Fees				18,008	
General Aid to Counties				173,178	
General Communicable Disease Control				12,488	
Breast and Cervical Cancer Program				5,610	
Child Health				1,731	
Women's Health Service Fund				3,354	
HMHC-Family Planning				439	
Maternal Health (HMHC)				5,932	
HIV/STD State				100	
HIV/STD SSBG Aid				400	
Sexually Transmitted Diseases				1,852	
School Nurse Funding Initiative				150,000	
TB Medical Service				787	
Tuberculosis				1,825	
Electronic Health Record				20,000	
Division of Aging and Adult Services					
Passed through Centralina Council of Governments					
Administration:					
Senior Center General				10,877	
Total Division of Public Health				406,581	
Total N. C. Department of Health and Human Services				1,438,331	

LINCOLN COUNTY, NORTH CAROLINA
SCHEDULE OF EXPENDITURES OF FEDERAL AND STATE AWARDS
FOR THE YEAR ENDED JUNE 30, 2017

Grantor/Pass-through Grantor/Program Title	Federal CFDA Number	State/ Pass-through Grantor's Number	Fed. (Direct & Pass-through) Expenditures	State Expenditures	Pass-through to Subrecipients
N.C. Department of Public Instruction					
Public School Building Capital Fund				870,520	
Total N.C. Department of Public Instruction				870,520	
N.C. Department of Public Safety					
Division of Juvenile Justice					
Juvenile Crime Prevention Programs					
Administration				6,302	
JCPC Refund				1,796	
CIS Strengthening Families				27,749	
Mediation				16,088	
CIS Restitution				35,918	
CIS After School Program				41,566	
CIS Transition				20,493	
Family Centered Treatment				15,219	
Total Division of Juvenile Justice				165,131	
Total N.C. Department of Public Safety				165,131	
N.C. Department of Transportation					
ROAP- Employment		36236.11.6.1		19,995	
ROAP- EDTAP		36220.10.7.1		78,714	
ROAP Rural General Public Transportation		36228.22.7.1		97,515	
Total N.C. Department of Transportation				196,224	
N.C. Dept. of Administration					
Veterans Services				8,959	
Total N.C. Department of Administration				8,959	
N.C. Information Technology Service					
Lincoln County E-911 PSAP Construction				179,463	
Total N.C. Information Technology Service				179,463	
Total State awards				3,096,331	
Total Federal and State awards			$ 71,135,579	$ 35,255,324	$ -

Notes to the Schedule of Expenditures of Federal and State Financial Awards:

Note Basis of Presentation

The accompanying Schedule of Expenditures of Federal and State awards (SEFSA) includes the federal and State grant activity of Lincoln County under the programs of the federal government and the State of North Carolina for the year ended June 30, 2017. The information in this SEFSA is presented in accordance with the requirements of Title 2 U.S. *Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* and the State Single Audit Implementation Act. Because the SEFSA presents only a selected portion of the operations of Lincoln County, it is not intended to and does not present the financial position, changes in net position or cash flows of Lincoln County.

Note Summary of Significant Accounting Policies

Expenditures reported in the SEFSA are reported on the modified accrual basis of accounting. Such expenditures are recognized following the cost principles contained in Uniform Guidance, wherein certain types of expenditures are not allowable or are limited as to reimbursements. Lincoln County has elected not to use the 10-percent de minimis indirect cost rate as allowed under the Uniform Guidance.

Note Cluster of Programs

The following are clustered by the NC Department of Health and Human Services and are treated separately for state audit requirement purposes: Foster Care and Adoption, Special Children Adoption Fund, Subsidized Child Care, and HIV.

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EVALUATION BY FINANCIAL FEASIBILITY CONSULTANTS
LINCOLN COUNTY, NORTH CAROLINA
ENTERPRISE SYSTEM
REVENUE BONDS, SERIES 2018

We have evaluated the accompanying Forecast Statement of Revenues, Expenses, Debt Service, and Debt Service Coverage (the "Forecast Statement") for Lincoln County, North Carolina ("County") Combined Water & Sewer Enterprise System (the "System") for the five fiscal years ending June 30, 2019 through June 30, 2023 (the "Forecast Period"). Our evaluation was conducted in accordance with guidelines for the water and sewer industry and included such procedures as we considered necessary to evaluate the assumptions of the County.

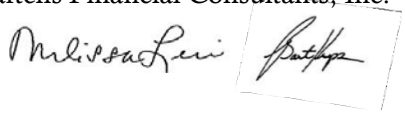
The primary purpose of the Series 2018 Bonds is to upgrade the County's water treatment plant ("WTP"). In evaluating the financial feasibility of the System and associated bond issuance, those assumptions that we believe are most significant include:

- Projected operating costs for providing water and sewer services to meet demand during the Forecast Period;
- Projected growth in customers and demand for water and sewer services, and the resulting impact on forecast revenues during the Forecast Period;
- Projected water and sewer rate adjustments during the Forecast Period; and,
- Projected future debt issues and the timing of additional debt service payments to meet capital investment needs.

The accompanying Forecast Statement is presented on a cash basis to be consistent with the County's budgeting process for the System, and the specific requirements of the coverage tests in the County's Trust Agreement dated October 1, 2018 (the "Trust Agreement"). The Forecast Statement, together with the Summary of Significant Forecast Assumptions, which is included as an integral part of the forecast, constitutes the "Feasibility Evaluation" for the proposed capital projects and bond financing.

In our opinion, the accompanying Forecast Statement is presented in conformity with industry guidelines for presentation of a forecast, and the underlying assumptions provide a reasonable basis for the County's forecast. Based upon the assumptions in our report, the projected Revenues provide adequate funds to maintain the debt service coverage ratios required by the Trust Agreement during the Forecast Period for the issuance of the Series 2018 Bonds. However, there will be differences between the forecast and actual results because events and circumstances frequently do not occur as expected, and those differences may be material. We have no responsibility to update this report for events and circumstances occurring after the date of this report.

Raftelis Financial Consultants, Inc.



Charlotte, North Carolina
September 12, 2018

By: Melissa Levin
Senior Manager

Bart Kreps
Vice President

APPENDIX J.3

Lincoln County, North Carolina

Historical Statement of Revenues, Expenses, Debt Service and Debt Service Coverage
For the Fiscal Years Ending June 30th

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
	Audited	*Audited*	*Audited*	*Audited*	*Audited*
Operating Revenues:					
Charges for service (1)	$ 7,342,550	$ 7,479,048	$ 9,004,085	$ 10,447,941	$ 13,013,052
Water and sewer tap fees	78,216	145,700	137,570	236,782	442,755
Other operating revenues	72,754	48,421	51,033	6,750	15,000
Subtotal: Operating Revenues	7,493,520	$ 7,673,169	$ 9,192,688	$ 10,691,473	$ 13,470,807
Operating Expenses:					
Water treatment and distribution	$ (3,572,481)	$ (3,750,263)	$ (3,757,572)	$ (3,937,882)	$ (4,416,406)
Sewer collection and pumping	(1,130,203)	(1,320,150)	(1,163,589)	(1,260,439)	(1,703,649)
Depreciation	(2,171,845)	(2,219,146)	(2,673,997)	(2,823,329)	(3,036,317)
Subtotal: Operating Expenses (2)	(6,874,529)	(7,289,559)	(7,595,158)	(8,021,650)	(9,156,372)
Operating Income	**$ 618,991**	**$ 383,610**	**$ 1,597,530**	**$ 2,669,823**	**$ 4,314,435**
Non-Operating Revenues (Expenses):					
Investment income	$ 36,538	$ 9,986	$ 32,474	$ 40,071	$ 40,400
Gain(loss) capital assets		$ (568,050)	$ (10,000)		$ (3,833)
Miscellaneous revenue			150,649	3,519	308
Interest and Fees	(534,826)	(520,984)	(382,618)	(541,923)	(470,508)
Subtotal: Non-Operating Revenues (Expenses)	$ (498,288)	$ (1,079,048)	$ (209,495)	$ (498,333)	$ (433,633)
Income (Loss) Before Transfers, Contributions, Special Items, & Extraordinary Items	**$ 120,703**	**$ (695,438)**	**$ 1,388,035**	**$ 2,171,490**	**$ 3,880,802**
Adjustments					
Depreciation	$ 2,171,845	$ 2,219,146	$ 2,673,997	$ 2,823,329	$ 3,036,317
Gain(loss) capital assets	-	568,050	10,000	-	3,833
Interest and Fees	534,826	520,984	382,618	541,923	470,508
Subtotal: Adjustments	$ 2,706,671	$ 3,308,180	$ 3,066,615	$ 3,365,252	$ 3,510,658
Income Available for Subordinated Indebtedness, System G.O. Indebtedness, and System Other Indebtedness	**$ 2,827,374**	**$ 2,612,742**	**$ 4,454,650**	**$ 5,536,742**	**$ 7,391,460**
Parity Indebtedness	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Subordinate Indebtedness - Total Debt Service	**$ (1,877,398)**	**$ (2,012,698)**	**$ (1,737,342)**	**$ (1,890,494)**	**$ (1,646,840)**
Total Debt Service Coverage	**1.51**	**1.30**	**2.56**	**2.93**	**4.49**
Net Revenues After Total Debt	**$ 949,976**	**$ 600,044**	**$ 2,717,308**	**$ 3,646,248**	**$ 5,744,620**

Notes to the Historical Forecast Statement:

(1) Water and Sewer User Charges include revenues from monthly minimum charges and volumetric rates from the sale of water and sewer for all the County's customer classes. They also include system development fee revenue assessed for new development, and revenue from assessing penalties and bulk water sales. Increasing rates of development and new construction have contributed to increasing revenue collections for the County, especially in the form of system development fees. The portion of total Charges for Services attributable to system development fees is shown below, based on data provided by County staff.

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
	Audited	*Audited*	*Audited*	*Audited*	*Audited*
System Developm ent Fee Revenue Collected					
Water System Development Fees	$ 287,250	$ 453,200	$ 653,396	$ 1,275,789	$ 1,877,732
Sewer System Development Fees	208,368	370,028	539,494	1,046,990	1,572,678
Subtotal: System Development Fee Revenue	**$ 495,618**	**$ 823,228**	**$ 1,192,890**	**$ 2,322,780**	**$ 3,450,410**
		66.1%	*44.9%*	*94.7%*	*48.5%*

(2) Operating expenses increased moderately from FY 2013 - FY 2017, but the rate of revenue growth exceeded the rate of expense growth, leading to growing operating income from FY 2014 - FY 2017. Operating expense data was provided by County staff.

Lincoln County, North Carolina

Forecast Statement of Operating Revenues, Expenses, Debt Service and Debt Service Coverage
For the Fiscal Years Ending June 30th

	FY 2018 *Unaudited*	FY 2019 *Budget*	FY 2020 *Projection*	FY 2021 *Projection*	FY 2022 *Projection*	FY 2023 *Projection*
Operating Revenues						
Water User Charges (1)	$ 6,076,567	$ 6,581,588	$ 7,153,034	$ 7,776,426	$ 8,057,435	$ 8,350,531
Water System Development Fees (2)	2,079,438	1,300,056	1,300,056	1,300,056	1,300,056	1,300,056
Sewer User Charges (1)	2,937,560	3,401,551	4,050,648	4,826,630	5,011,688	5,204,766
Sewer System Development Fees (2)	2,249,221	778,862	778,862	778,862	778,862	778,862
Water and Sewer Taps (3)	493,470	376,400	376,400	376,400	376,400	376,400
Fire Protection (3)	9,300	15,000	15,000	15,000	15,000	15,000
Subtotal: Operating Revenues	$ 13,845,556	$ 12,453,456	$ 13,674,000	$ 15,073,374	$ 15,539,440	$ 16,025,614
Operating Expenses						
Water Operating Expenses (4)	$ (3,797,630)	$ (4,325,361)	$ (4,498,375)	$ (4,678,310)	$ (4,865,443)	$ (5,060,061)
Sewer Operating Expenses (4)	(2,429,657)	(2,762,573)	(2,873,076)	(2,987,999)	(3,107,519)	(3,231,820)
Subtotal: Operating Expenses	$ (6,227,287)	$ (7,087,934)	$ (7,371,451)	$ (7,666,309)	$ (7,972,962)	$ (8,291,880)
Non-Operating Revenues (Expenses)						
Investment Income	$ 114,853	$ 15,150	$ 15,302	$ 15,455	$ 15,609	$ 15,765
Subtotal: Non-Operating Revenues (Expenses)	$ 114,853	$ 15,150	$ 15,302	$ 15,455	$ 15,609	$ 15,765
Incom e Availab le for Deb t Service	**$ 7,733,122**	**$ 5,380,672**	**$ 6,317,850**	**$ 7,422,519**	**$ 7,582,088**	**$ 7,749,499**
15% of Unrestricted Net Position	$ 2,148,262	$ 1,573,466	$ 1,700,250	$ 1,852,144	$ 1,636,714	$ 1,405,697
Incom e Availab le for Parity Indeb tedness	**$ 9,881,384**	**$ 6,954,138**	**$ 8,018,100**	**$ 9,274,663**	**$ 9,218,802**	**$ 9,155,196**
Parity Indeb tedness						
Proposed Series 2018 Bonds (5)	$ -	$ (212,416)	$ (927,350)	$ (1,214,850)	$ (1,210,850)	$ (897,350)
Forecast Series 2019 Bonds (6)	-	-	(571,050)	(761,400)	(761,400)	(815,163)
Subtotal: Parity Indebtedness	$ -	$ (212,416)	$ (1,498,400)	$ (1,976,250)	$ (1,972,250)	$ (1,712,513)
Deb t Service Coverage - Parity Indeb tedness (7)	**n/a**	**32.74**	**5.35**	**4.69**	**4.67**	**5.35**
Incom e Availab le for Sub ordinated Indeb tedness, System G.O. Indeb tedness, and System Other Indeb tedness	**$ 7,733,122**	**$ 5,168,256**	**$ 4,819,450**	**$ 5,446,269**	**$ 5,609,838**	**$ 6,036,986**
Sub ordinate Indeb tedness, System G.O. Indeb tedness, and System Other Indeb tedness						
2004 Federal Revolving Loan	$ (25,823)	$ (25,216)	$ (24,610)	$ (24,004)	$ (23,391)	$ -
2002 Federal Revolving Loan	(34,686)	(33,872)	(33,057)	(32,243)	(31,429)	-
2007 Federal Revolving Loan	(160,142)	(156,551)	(152,960)	(149,369)	(145,778)	(142,187)
2009 Sewer Revolving Loan	(1,178,800)	(1,157,100)	(1,135,400)	(1,113,700)	(1,092,000)	(1,070,300)
2012 Installment Financing	(309,822)	(301,944)	-	-	-	-
2013 Refunding of 2003 COPS	(6,156)	(3,764)	(3,773)	(17,075)	(16,407)	(15,748)
2016 Carolina Bank Financing	(219,683)	(219,785)	(219,418)	(218,982)	(219,463)	(218,863)
Interconnection SRF Loan (8)	-	-	-	(443,275)	(475,900)	(469,000)
WWTP Upgrade SRF Loan (8)	-	-	-	-	(1,096,667)	(966,000)
Subtotal: Subordinate Indebtedness	$ (1,935,112)	$ (1,898,232)	$ (1,569,218)	$ (1,998,648)	$ (3,101,035)	$ (2,882,098)
Total Deb t Service	**$ (1,935,112)**	**$ (2,110,649)**	**$ (3,067,618)**	**$ (3,974,898)**	**$ (5,073,285)**	**$ (4,594,611)**
Deb t Service Coverage: Total Deb t (9)	**4.00**	**2.55**	**2.06**	**1.87**	**1.49**	**1.69**
Net Revenues After Total Deb t	**$ 5,798,010**	**$ 3,270,024**	**$ 3,250,232**	**$ 3,447,621**	**$ 2,508,803**	**$ 3,154,888**
Other Expenditures						
CIP Planned PAYGO (10)	$ (449,092)	$ (752,000)	$ (705,000)	$ (735,000)	$ (695,000)	$ (695,000)
Surplus Revenues Rem aining After Other Expenditures	**$ 5,348,919**	**$ 2,518,024**	**$ 2,545,232**	**$ 2,712,621**	**$ 1,813,803**	**$ 2,459,888**
B eginning Operating Fund B alance (11)	**$ 12,700,000**	**$ 14,321,747**	**$ 10,489,771**	**$ 11,335,002**	**$ 12,347,624**	**$ 10,911,427**
Surplus/(Deficit)	$ 5,348,919	$ 2,518,024	$ 2,545,232	$ 2,712,621	$ 1,813,803	$ 2,459,888
CIP Funded from Reserves	(3,727,172)	(6,350,000)	(1,700,000)	(1,700,000)	(3,250,000)	(4,000,000)
Ending Fund B alance	**$ 14,321,747**	**$ 10,489,771**	**$ 11,335,002**	**$ 12,347,624**	**$ 10,911,427**	**$ 9,371,315**

Notes to the Forecast Statement:

(1) Water and Sewer User Charges include revenues from monthly minimum charges and volumetric rates from the sale of water and sewer for all the County's customer classes. They also include revenue from assessing penalties and bulk water sales. Rates and charges are increasing over the Forecast Period due to rate adjustments in each year through FY 2021, as well as increases in the number of accounts and water/sewer demand in each fiscal year of the Forecast Period. Residential and commercial water/sewer demand is projected to increase 3.0% annually. Customer accounts are expected to grow by 5% for residential customers and 4% for commercial customers, which is based on information provided by County staff and consistent with historical account data over the past several years. Refer to Explanatory Notes 4, 8, and 9 for more information.

(2) Revenues from system development fees are projected to remain constant throughout the Forecast Period. The County's system development fees were calculated for FY2019 to comply with the recently passed North Carolina General Statute 162A Article 8. Based on the calculations, the County's sewer system development fees are lower than those previously charged. Budgeted revenues for the sewer system development fees reflect this decrease.

(3) Tap fee and fire protection revenue are anticipated to remain constant throughout the Forecast Period. See Explanatory Note 9 for more information.

(4) Overall, operating expenses are anticipated to increase by 4% per year over the Forecast Period. See Explanatory Note 7 for more information on water and sewer operating expenses.

(5) The Series 2018 Bonds will fund the $13,237,530 Water Treatment Plant (WTP) upgrade that will increase the capacity of the plant from 3.99 million gallons per day (MGD) to 8 MGD. The assumed debt service for these bonds was provided by Davenport and Company, LLC. Funds from the Series 2018 Bonds will also be used to prepay the County's 2012 Installment Loan. The amounts shown in the table reflect payments made to date on this loan. See Explanatory Note 6 for more information.

(6) The County plans to issue additional revenue bonds in 2019 (Forecast Series 2019 Bonds). The Forecast Series 2019 Bonds will fund the approximately $5,482,000 Water Line project. They will also contribute approximately $11,437,160 to the Wastewater Treatment Plant (WWTP) upgrade, a project that will increase the capacity of the facility from 3.35 MGD to 6.68 MGD. The assumed debt service for these bonds was provided by Davenport and Company, LLC.

(7) According to Section 7.4 Rate Covenant of the Trust Agreement, Income Available for Debt Service plus 15% of the unrestricted net position of the Enterprise System will not be less than 120% of Parity Indebtedness.

(8) The Forecast Interconnection State Revolving Fund (SRF) Loan (20-year term, 2% interest rate) beginning in FY 2021 will fund the approximately $6,885,000 Interconnection with the City of Lincolnton. The Forecast WWTP Upgrade SRF Loan (20-year term, 2% interest rate) beginning in FY 2022 will fund the remaining approximately $10,000,000 required for the WWTP upgrade.

(9) According to Section 7.4 Rate Covenant of the Trust Agreement, Income Available for Debt Service will not be less than 100% of Parity Indebtedness, Subordinated Indebtedness, System G.O. Indebtedness and System Other Indebtedness.

(10) Planned PAYGO represents capital projects funded with cash from user rates and charges. The County anticipates funding approximately 5% of its annual capital improvement program (CIP) with PAYGO. See Explanatory Note 5 for more information.

(11) The beginning fund balance for FY 2019 was estimated by County staff.

LINCOLN COUNTY
SUMMARY OF SIGNIFICANT FORECAST ASSUMPTIONS
EXPLANATORY NOTES

FOR THE FIVE FISCAL YEARS ENDING
JUNE 30, 2019 THROUGH JUNE 30, 2023

1. Basis of Presentation

Raftelis Financial Consultants, Inc. ("Raftelis") has been engaged by Lincoln County, North Carolina (the "County") to evaluate the financial feasibility of a proposed expansion to its Combined Enterprise Water and Sewer System (the "System"). The opinion letter to the County is based upon the Forecast Statement of Revenues, Expenses, Debt Service, and Debt Service Coverage (the "Forecast Statement") and this Summary of Significant Forecast Assumptions (taken together, the "Feasibility Evaluation") which presents, to the best of Raftelis' knowledge and belief based upon available information provided by the County, the expected revenue, expenses, debt service, and debt service coverage for the System during the Forecast Period (as defined below).

All schedules in the Feasibility Evaluation have been presented in accordance with the County's annual accounting cycle, based upon its fiscal year beginning July 1 and ending June 30 ("Fiscal Year" or "FY"). Accordingly, the forecast reflects the County's judgement as of September 12, 2018, the date of this forecast, of the expected conditions and the County's expected course of action during each of the five fiscal years ending June 30, 2019 through June 30, 2023 (the "Forecast Period").

The Feasibility Evaluation has been included as a part of the Official Statement for the County's Enterprise System Revenue Bonds, Series 2018 ("Series 2018 Bonds"), which are the first series of Bonds to be issued under the Trust Agreement, dated as of October 1, 2018 (the "Trust Agreement"), between the County and U.S. Bank National Association, as trustee (the "Trustee"). The proceeds from the Series 2018 Bonds will not be sufficient to fund all to the County's capital needs during the Forecast Period. To fund the remaining capital needs of the System, the County plans to issue additional revenue bonds, use secured state revolving fund ("SRF") loans, and use cash generated from user rates and charges, and reserves.

The Feasibility Evaluation is based upon cost, operating, demographic and other relevant information provided by the County and the debt service schedules provided to the County by its Financial Advisor, Davenport & Company LLC. Unless otherwise noted, the Feasibility Evaluation is presented in conformity with the methodology for calculating debt service coverage for the Series 2018 Bonds as set forth in the Trust Agreement. Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to such terms in the Trust Agreement.

The Trust Agreement outlines several requirements for rates and charges in Section 7.4 - Rate Covenant (the "Rate Covenant"), which are as follows:

(a) The County covenants to fix, charge and collect rates, fees, rentals and charges for the use of and for services furnished or to be furnished by the Enterprise System, and that from time to time and as often as it shall appear necessary, it shall revise such rates, fees, rentals and

charges as may be necessary or appropriate, in order that, for the Fiscal Year ending June 30, 2019, and for each Fiscal Year thereafter, the sum of (1) Income Available for Debt Service for such Fiscal Year and (2) 15% of the unrestricted net position of the Enterprise System for such Fiscal Year will be not less than 120% of the Long-Term Debt Service Requirement for Parity Indebtedness for such Fiscal Year.

(b) In addition, the County covenants to fix, charge and collect rates, fees, rentals and charges for the use of and for services furnished or to be furnished by the Enterprise System, and that from time to time and as often as it shall appear necessary, it shall revise such rates, fees, rentals and charges as may be necessary or appropriate, in order that for the Fiscal Year ending June 30, 2019, and for each Fiscal Year thereafter, the Income Available for Debt Service for such Fiscal Year will be not less than 100% of the Long-Term Debt Service Requirement for Parity Indebtedness, Subordinated Indebtedness, System G.O. Indebtedness and System Other Indebtedness for such Fiscal Year.

In the Forecast Statement, the forecasts of revenues and expenses are prepared on a cash basis consistent with the County's budgeting process for the System and are adjusted to meet the specific requirements of the coverage tests identified in the Trust Agreement. Compliance with the first part of the Rate Covenant is demonstrated on the Forecast Schedule under the heading Debt Service Coverage – Parity Indebtedness. Since the ratio calculated using the Income Available for Parity Debt Service, which is calculated to be consistent with Income Available for Debt Service as defined in the Trust Agreement, plus an estimate for the amount represented by 15% of the System Unrestricted Net Assets, is significantly greater than 1.20 in each year of the forecast, the requirements of the first test are met for the forecast period. Compliance with the second part of the Rate Covenant is demonstrated on the Forecast Schedule under the heading Debt Service Coverage – Total Debt. Since the ratio calculated using Income Available for Debt Service is greater than 1.00 in each year of the forecast, the requirements under the second test are also met for the Forecast Period.

The assumptions disclosed herein are those that the County believes are significant to the forecast. There will be differences between forecasted and actual results because events and circumstances frequently do not occur as expected, and those differences may be material.

2. Background and Scope of Operations

Governance & Overview of Service Area

Located in southwestern North Carolina in the Catawba-Wateree River Basin[1], the County encompasses a land area of approximately 308 square miles[2] which includes several townships, the largest of which are the Catawba Springs township (including Denver, Westport and Lowesville), Ironton township (including Iron Station and Maiden), and Lincolnton township (City of Lincolnton). The Catawba Springs township, located 30 minutes from uptown Charlotte and adjacent to Lake Norman, has experienced rapid growth in recent years. The City of Lincolnton is the County Seat. The County's estimated population as of July 2017 was 82,033.

The County operates under a Commission-Manager form of government, which includes County Commissioners elected at large. The County Commission is the policy making and legislative body of the County, and oversees the operation of the County's proprietary funds, which include the water, sewer, and solid waste enterprises. The County Manager serves as the chief executive officer of the County, overseeing operations and serving as technical advisor during County Board of Commissioners meetings.

Water Services

The County owns and operates a water treatment plant ("WTP") located at Lake Norman with a maximum treatment capacity of 3.99 million gallons per day ("MGD"). An intake structure pumps water from the lake which is then treated at the WTP. Two clearwells (1.0 MGD each) are used to store processed water, five elevated water tanks are used to maintain water pressure, and 336 miles of distribution lines transport water to customers within the service area.

Lake Norman is rated as having a "higher" contamination susceptibility relative to other water sources in North Carolina as of September 2017,[3] but the County has not experienced water quality problems in recent years. The County's water meets the quality requirements of the federal Safe Drinking Water Act.

The County has an interconnection with the City of Lincolnton's ("City") water system, which is used as a backup water supply. In 2014, the County entered a water purchase agreement with the City to purchase up to 2.25 MGD, with a minimum purchase amount of 111 million gallons per year (the "City Agreement"). The City Agreement is stated to expire on September 1, 2024; provided, however, that the City Agreement shall automatically renew for additional one-year terms following such expiration date. To terminate the City Agreement, either party must give a five-year notice of termination. As of the date of this Official Statement, neither party has given such notice.

[1] See https://www.ncwater.org/Data_and_Modeling/Catawba/ for more information about the river basin.

[2] American FactFinder, United States Census. Website: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

[3] Lincoln County 2017 Annual Drinking Water Quality Report: Lincoln County Water System, p. 2. http://www.lincolncounty.org/index.aspx?NID=233

Sewer Services

The County owns and operates the Killian Creek Wastewater Treatment Plant ("WWTP") with a maximum treatment capacity of 3.35 MGD. The County's collection system consists of gravity sewer lines of various size and 41 pump stations. The WWTP discharges treated effluent into Killian Creek, a waterway in the Catawba River Basin.

3. Regulations

The operation of the County's water and sewer facilities is regulated by the United States Environmental Protection Agency ("EPA") and the North Carolina Department of Environmental Quality ("DEQ"). The water and sewer projects identified in the capital improvement plan (see Explanatory Note 5) have been designed by the County to be in compliance with all appropriate regulations and to address the water and sewer requirements of the County's service area. Even though Federal and State environmental legislation and regulations are constantly evolving, management does not anticipate regulatory changes that will require additional capital costs to maintain operating permits during the Forecast Period or that will otherwise have a material impact on the construction cost of the projects to be funded by the Series 2018 Bonds or other financings.

The County is currently in compliance with all Federal and State environmental legislation and regulations, and necessary measures are being taken to ensure that the state's Division of Water Quality standards for discharge and non-discharge are met in the future. Management has indicated that the County is proactive in addressing regulatory issues and maintains water and sewer master planning documents.

4. Demand for Services

The County provides water and sewer service to approximately 17,433 customers inside the County and 154 customers outside the County. Based on a review of customer information and historical billing data, the County has experienced an increase in the number of customers connected to the water and sewer systems. The number of water customers has increased on average by approximately 4.6% from 2013 to 2017 and the number of sewer customers has increased on average by 5.8% per year during this same period. Due to the County's regional economic outlook projections, the forecast assumes that customer accounts will increase by 5% annually for residential customers and 4% annually for commercial customers within the County; all other types of customer accounts are expected to remain at a 0% growth rate. During the Forecast Period, the combined total number of water and sewer accounts is forecast to increase by 4.9% per year.

Exhibit 1 presents the number of water and sewer accounts by customer class. It should be noted that Inside-County customers account for approximately 99% of total water accounts and 100% of total sewer accounts.

Exhibit 1

Water and Sewer Account Projections

	Projected **FY 2018 (1)**	*Projected* **FY 2019**	*Projected* **FY 2020**	*Projected* **FY 2021**	*Projected* **FY 2022**	*Projected* **FY 2023**
Water						
Residential In-County	10,947	11,494	12,069	12,673	13,306	13,972
Residential Out-of-County	126	126	126	126	126	126
Commercial In-County	817	850	884	919	956	994
Commercial Out-of-County	28	28	28	28	28	28
Industrial In-County	77	77	77	77	77	77
Industrial Out-of-County	-	-	-	-	-	-
Agricultural	-	-	-	-	-	-
Total Water Accounts	11,995	12,575	13,184	13,823	14,493	15,197
% Change		*4.8%*	*4.8%*	*4.8%*	*4.8%*	*4.9%*
Sewer - Water & Sewer Customers						
Residential In-County	5,162	5,420	5,691	5,975	6,274	6,588
Commercial In-County	382	398	413	430	447	465
Industrial In-County	46	46	46	46	46	46
Total Sewer Accounts	5,590	5,864	6,150	6,451	6,767	7,099
% Change		*4.9%*	*4.9%*	*4.9%*	*4.9%*	*4.9%*
Sewer Only Customers						
Industrial In-County	2	2	2	2	2	2
Total Sewer-Only Accounts	2	2	2	2	2	2
T o tal Acco unts	**17,587**	**18,441**	**19,336**	**20,276**	**21,262**	**22,298**
% Change	*0.0%*	*4.9%*	*4.9%*	*4.9%*	*4.9%*	*4.9%*

(1) FY 2018 account numbers form the basis of projections, and are derived from FY 2017 customer billing records provided by the County. The FY 2017 customer billing records represent the average number of active retail water and sewer accounts.

Throughout the water industry, there is a trend of declining per capita consumption as customers install high efficiency appliances and low-flow water fixtures, while adopting more efficient water use behaviors.

However, due to growth in the area, total water consumption for the County increased by approximately 10% from FY 2016 through FY 2017. The forecast is based on the most recent year's demand information (FY 2017), and it has been assumed that demand will continue to increase each year, but at a more moderate rate. Residential and commercial water and sewer demand is projected to increase by 3.0% annually for FY 2018 through FY 2023 (industrial and agricultural demand is projected to stay at a 0% growth rate). Projected customer demand is shown in Exhibit 2. It should also be noted that the County has a minimum allowance of 2.5 thousand gallons (kgal) for water and sewer service in its monthly minimum charge, so not all usage is billed at volumetric rates (see Explanatory Note 8, "Rates and Charges").

Exhibit 2

Water and Sewer Demand Projections – Usage Above 2.5 Kgal

	Projected **FY 2018 (1)**	*Projected* **FY 2019**	*Projected* **FY 2020**	*Projected* **FY 2021**	*Projected* **FY 2022**	*Projected* **FY 2023**
Water Demand (Kgal)						
Residential	308,938	318,206	327,752	337,585	347,712	358,144
Commercial	156,823	161,528	166,374	171,365	176,506	181,801
Industrial	123,877	123,877	123,877	123,877	123,877	123,877
Agricultural	23	23	23	23	23	23
Total Water Demand	589,661	603,633	618,025	632,849	648,118	663,844
% Change		*2.4%*	*2.4%*	*2.4%*	*2.4%*	*2.4%*
Sewer Demand (Kgal)						
Residential	130,836	134,761	138,804	142,968	147,258	151,675
Commercial	74,965	77,214	79,530	81,916	84,373	86,905
Industrial	26,166	26,166	26,166	26,166	26,166	26,166
Total Sewer Demand	231,967	238,141	244,500	251,050	257,797	264,746
% Change		*2.7%*	*2.7%*	*2.7%*	*2.7%*	*2.7%*
T o tal Usage (Kgal)	**821,628**	**841,775**	**862,526**	**883,900**	**905,915**	**928,590**
% Change		*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*

(1) FY 2018 demand numbers form the basis of projections, and are derived from FY 2017 customer billing records provided by the County.

Exhibit 3 lists the County's top ten largest retail water and sewer customers, and their annual consumption and revenues as of June 30, 2018 (unaudited).

Exhibit 3

Water and Sewer Top 10 Customers – Usage and Revenues

Water

	Customer Name	Consumption (Gallons)		Revenues	% of Total Water System Revenues
1	Timken Company	25,505,600	$	120,485	1.34%
2	RW Garcia Co. Inc.	18,978,930		90,364	1.00
3	City of High Shoals	19,415,140		43,684	0.48
4	Cataler North American Corp	8,980,900		41,538	0.46
5	Julius Blum Inc.	8,028,600		37,993	0.42
6	Mariners Point @ Smithstone HOA	5,555,060		31,783	0.35
7	Riverwalk Apartments	5,346,200		30,535	0.34
8	Sam's Xpress Car Wash	3,688,090		21,133	0.23
9	West Lincoln High School	3,652,900		20,963	0.23
10	The Terraces Retirement Community HOA	3,555,700		20,293	0.22
	Total	102,707,120	$	458,771	5.09%

Sewer

	Customer Name	Consumption (Gallons)		Revenues	% of Total Sewer System Revenues
1	Riverwalk Apartments	5,346,200	$	33,578	0.67%
2	Mariners Point @ Smithstone HOA	4,097,800		25,725	0.51
3	The Terraces Retirement Community HOA	3,555,700		22,315	0.45
4	Sam's Xpress Car Wash	3,225,600		19,182	0.38
5	East Lincoln High School	2,601,800		15,489	0.31
6	Auto Bell Car Wash Inc.	2,281,550		13,593	0.27
7	Natalie Commons Retail Group LLC	1,966,530		11,728	0.23
8	Julius Blum Inc.	1,749,300		10,442	0.21
9	Rock Springs School	1,635,790		9,770	0.20
10	Walmart Stores East LP	1,607,670		9,604	0.20
	Total	28,067,940	$	171,426	3.43%

5. Capital Improvement Plan

The Capital Improvement Plan ("CIP") for the County consists of a variety of water and sewer projects that are anticipated to occur over the Forecast Period. The CIP provides a comprehensive list of projects needed to maintain the water and sewer facilities in good working condition, provide water and sewer service to new customers, and to ensure the County follows all federal, state, and local regulations and mandates. The total CIP projects from FY 2019 – FY 2023 are approximately $71.6 million, of which $42.0 million relate to water projects and $29.6 million relate to wastewater projects.

The most significant projects in the CIP are the WTP Project and the WWTP Upgrade. The WTP project will add approximately 4 MGD of capacity to the existing plant (resulting in a total capacity of 8 MGD), while the WWTP project will add 3.33 MGD of capacity to the existing 3.35 MGD plant, resulting in a total capacity of 6.68 MGD. As mentioned previously, the County's increase in water customers over the past five years was 5.2% per year and 6.5% per year for sewer.[4] It is anticipated that this level of growth will continue in the future. The water and wastewater treatment plant expansion projects are needed to facilitate this level of growth.

Other water projects include water line improvements, water tank rehabilitation, and miscellaneous capital projects. Other sewer projects include a pump station rehabilitation and miscellaneous capital projects. Exhibit 4 shows the detailed CIP over the Forecast Period.

[4] Customer account increases were estimated from numbers provided in the County's 2017 Comprehensive Annual Financial Report (CAFR), available at http://www.lincolncounty.org/documentcenter/view/12227.

Exhibit 4

Capital Improvement Plan

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Water Treatment					
Water Treatment Plant Improvements - 8 MGD	$ 13,237,530	$ -	$ -	$ -	$ -
NC 73 Water Line Loop Improvements	5,482,000	-	-	-	-
Interconnection with City of Lincolnton - Reepsville Rd	-	-	6,885,000	-	-
Water Treatment Plant Transmission Line	6,100,000	-	-	-	-
Replace NC 16 Waterline - Phase II (1)	-	-	-	-	-
Replace NC 16 Waterline - Future Phases	-	1,200,000	1,200,000	-	-
Vehicles & Equipment	192,000	250,000	250,000	250,000	250,000
General Capital Improvement Projects	110,000	90,000	120,000	80,000	80,000
Coordinated Improvements Agreement (1)	-	-	-	-	-
Elevated Water Tank (1)	-	-	-	-	-
St James Road Transmission Water Line (1)	-	-	-	-	-
Cleveland Utility Connection	-	-	-	2,750,000	-
Highway 182 Waterline Loop to Crouse	-	-	-	-	3,500,000
Subtotal: Water Treatment	$ 25,121,530	$ 1,540,000	$ 8,455,000	$ 3,080,000	$ 3,830,000
Wastewater Treatment					
WWTP Upgrade to 6.68 MGD - Revenue Bond	$ 11,437,160	$ -	$ -	$ -	$ -
WWTP Upgrade to 6.68 MGD-Revolving Loan	-	-	14,000,000	-	-
Sewer Pump Station Rehabilitations	450,000	365,000	365,000	365,000	365,000
Sewer Improvements as Identified	250,000	500,000	500,000	500,000	500,000
Vehicles & Equipment (1)	-	-	-	-	-
Subtotal: Wastewater Treatment	$ 12,137,160	$ 865,000	$ 14,865,000	$ 865,000	$ 865,000
T o tal Capital Impro vement Plan	**$ 37,258,690**	**$ 2,405,000**	**$ 23,320,000**	**$ 3,945,000**	**$ 4,695,000**

(1) Projects without capital expenditures during the forecast period will be financed with funding already set aside by the County in restricted reserve funds. These projects are not included in the operating fund cash balances shown.

The CIP will be funded by a combination of proposed revenues bonds, SRF Loans, reserves, and PAYGO (revenues generated through rates), as shown in Exhibit 5. The County plans to use the Series 2018 Bonds to fund the water treatment plant expansion. The Forecast Series 2019 Bonds will be used to fund the NC 73 Waterline and the WWTP upgrade. Forecast SRF Loans will fund the Interconnection with the City of Lincolnton and a portion of the WWTP upgrade. The remaining CIP projects over the Forecast Period will be funded with PAYGO and existing reserve funds. Exhibit 5 shows the total five-year capital spending plan for the water and sewer systems, along with projected funding sources.

Exhibit 5

Five-Year Capital Expenditure Projections and Funding Sources

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Total
Water Treatment						
Water Treatment Plant (Revenue Bond, Series 2018)	$ 13,237,530	$ -	$ -	$ -	$ -	$ 13,237,530
NC 73 Water Line (Revenue Bond, Series 2019)	5,482,000	-	-	-	-	5,482,000
Interconnection SRF Loan	-	-	6,885,000	-	-	6,885,000
Reserves	6,100,000	1,200,000	1,200,000	2,750,000	3,500,000	14,750,000
Pay-go	302,000	340,000	370,000	330,000	330,000	1,672,000
Subtotal: Water Treatment	$ 25,121,530	$ 1,540,000	$ 8,455,000	$ 3,080,000	$ 3,830,000	$ 42,026,530
Wastewater Treatment						
WWTP upgrade (Revenue Bond, Series 2019)	$ 11,437,160	$ -	$ -	$ -	$ -	$ 11,437,160
WWTP upgrade SRF Loan	-	-	14,000,000	-	-	14,000,000
Reserves	250,000	500,000	500,000	500,000	500,000	2,250,000
Pay-go	450,000	365,000	365,000	365,000	365,000	1,910,000
Subtotal: Wastewater Treatment	$ 12,137,160	$ 865,000	$ 14,865,000	$ 865,000	$ 865,000	$ 29,597,160
Total Capital Improvement Plan by Funding Source	**$ 37,258,690**	**$ 2,405,000**	**$ 23,320,000**	**$ 3,945,000**	**$ 4,695,000**	**$ 71,623,690**
Capital Improvement Plan by Funding Source - Summary						
Proposed Series 2018 Bonds	$ 13,237,530	$ -	$ -	$ -	$ -	$ 13,237,530
Forecast Series 2019 Bonds	16,919,160	-	-	-	-	16,919,160
Interconnection SRF Loan	-	-	6,885,000	-	-	6,885,000
WWTP Upgrade SRF Loan	-	-	14,000,000	-	-	14,000,000
Reserves	6,350,000	1,700,000	1,700,000	3,250,000	4,000,000	17,000,000
Pay-go	752,000	705,000	735,000	695,000	695,000	3,582,000
Total Capital Improvement Plan by Funding Source	**$ 37,258,690**	**$ 2,405,000**	**$ 23,320,000**	**$ 3,945,000**	**$ 4,695,000**	**$ 71,623,690**

In total, approximately 5% of the five-year capital plan is expected to be funded with annual revenues generated from rates and charge (PAYGO). The PAYGO funding allows the County to generate revenues to support the Rate Covenant, because the revenues are included in calculating Income Available for Debt Service but the capital projects are not, as per the Rate Covenant and as shown in the Forecast Statement.

6. Financing Plan

The County's Financial Advisor, Davenport and Company, LLC, has provided information regarding the timing, size, and terms of the bonds to be issued over the Forecast Period. This financing plan has been designed to accomplish the following objectives:

- Provide funds as needed and in the most cost-effective manner;
- Meet with credit criteria established by rating agencies; and
- Lessen the impact on rates.

Exhibit 6 provides an estimated summary of the Sources and Uses of Funds for the Series 2018 Bonds.

Exhibit 6

Sources and Uses of Series 2018 Bond Funds

	Series 2018 New Money Bonds (1)
Sources	
Par Amount	$ 12,570,000
Premium	1,086,931
Total	$ 13,656,931
Uses	
Project Fund Deposits	$ 13,237,530
Cost of Issuance	326,736
Delivery Date Expenses	92,058
Additional Proceeds	607
Total	$ 13,656,931

(1) As part of the Series 2018 Revenue Bond, the County is planning to prepay the County's outstanding 2012 Installment Loan in addition to the new money sources and uses shown in this exhibit. The Series 2018 Bonds to be issued to prepay the 2012 Loan are not reflected in this exhibit.

Exhibit 7 shows the debt service schedule for the County's outstanding and planned indebtedness. Existing debt service declines over the Forecast Period in FY 2020 when debt service payments for the 2012 Installment Financing Loan ends, and in FY 2023 when debt service payments for the 2002 and 2004 Federal Revolving Loans end. However, total debt service increases over the Forecast Period (with the exception of FY 2023), due to the debt service associated with the Series 2018 Bonds and the Forecast Series 2019 Bonds.

Exhibit 7

Existing and Proposed Long-Term Debt Service

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Existing Debt					
2004 Federal Revolving Loan - $387,438	$ 25,216	$ 24,610	$ 24,004	$ 23,391	$ -
2002 Federal Revolving Loan - $520,430	33,872	33,057	32,243	31,429	-
2007 Federal Revolving Loan - $2,295,067	156,551	152,960	149,369	145,778	142,187
2009 Sewer Revolving Loan - $17,500,000	1,157,100	1,135,400	1,113,700	1,092,000	1,070,300
2012 Installment Financing $2,706,000 (1)	301,944	-	-	-	-
2013 Refunding of 2003 COPS	3,764	3,773	17,075	16,407	15,748
2016 Carolina Bank Financing - $3,468,000	219,785	219,418	218,982	219,463	218,863
Total Existing Debt	$ 1,898,232	$ 1,569,218	$ 1,555,373	$ 1,528,468	$ 1,447,098
Pro po sed Debt					
Water Treatment Plant Upgrade Revenue Bond - Series 2018	$ 212,416	$ 927,350	$ 1,214,850	$ 1,210,850	$ 897,350
Water Line Improvement & WWTP Upgrade Revenue Bond - Series 2019	-	571,050	761,400	761,400	815,163
Interconnection with City of Lincolnton SRF Loan	-	-	443,275	475,900	469,000
WWTP Upgrade SRF Loan	-	-	-	1,096,667	966,000
Total Proposed Debt	$ 212,416	$ 1,498,400	$ 2,419,525	$ 3,544,817	$ 3,147,513
T o tal Debt	**$ 2,110,649**	**$ 3,067,618**	**$ 3,974,898**	**$ 5,073,285**	**$ 4,594,611**

(1) Debt service was provided by the County's financial advisor, Davenport and Company, LLC, and reflects the debt service to be paid in future years following the prepayment of the 2012 Loan.

7. Operating Expenses

Exhibit 8 shows a combined forecast of operating expenses, non-operating expenses, and other expenditures for the water and sewer utilities. Operating expenses represent normal recurring expenses incurred during the County's annual accounting cycle based upon its fiscal year ending June 30. Operating expenses for Fiscal Years 2018 and 2019 are based on the County's approved budget. Operating expenses in future years are based on the FY 2019 budget and escalated at 4% per year. Operating expenses are consistent with the definition of Current Expenses as provided in the Trust Agreement, and which are used in deriving Income Available for Debt Service. Operating expenses include the following:

- Personnel expenses which include salaries and benefits for water and sewer personnel.
- Operations expenses which include electricity and natural gas costs, bulk water purchases from the City of Lincolnton[5], maintenance and repair expenses, etc.
- Supplies which include chemicals used for water and sewer treatment, fuel for fleet, informs, office supplies, etc.
- Contracted service and indirect costs which include services for odor control, water tank maintenance and larger maintenance projects as well as indirect costs paid to the General Fund for support functions such finance, human resources, billing and collections, etc.
- Miscellaneous expenses include other ancillary expenses such as dues and subscriptions.

Non-operating expenses include existing and proposed debt service and planned capital expenditures funded with PAYGO. As mentioned previously, total debt service increases each year of the Forecast Period (with the exception of FY 2023), due to the debt service associated with the Series 2018 Bonds and the Forecast Series 2019 Bonds.

[5] The County has a water purchase agreement with the City of Lincolnton to purchase up to 2.25 MGD, with a minimum purchase requirement of 111 million gallons per year.

Exhibit 8

Operating and Non-Operating Expenses & Capital Expenditures – Water and Sewer

	FY 2019 Budget	FY 2020 Projected	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected
Operating Expenses					
Water Operating Expenses					
Water Distribution					
Personnel	$ 976,886	$ 1,015,961	$ 1,056,600	$ 1,098,864	$ 1,142,818
Operations	740,870	770,505	801,325	833,378	866,713
Supplies	553,500	575,640	598,666	622,612	647,517
Contracted Services and Indirect Costs	708,802	737,154	766,640	797,306	829,198
Other/Miscellaneous	46,555	48,417	50,354	52,368	54,463
Subtotal: Water Distribution	$ 3,026,613	$ 3,147,678	$ 3,273,585	$ 3,404,528	$ 3,540,709
% Change	*15.5%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Water Treatment Plant					
Personnel	$ 688,442	$ 715,980	$ 744,619	$ 774,404	$ 805,380
Operations	402,552	418,654	435,400	452,816	470,929
Supplies	161,081	167,524	174,225	181,194	188,442
Contracted Services and Indirect Costs	40,550	42,172	43,859	45,613	47,438
Other/Miscellaneous	6,123	6,368	6,623	6,888	7,163
Subtotal: Water Treatment Plan	$ 1,298,748	$ 1,350,698	$ 1,404,726	$ 1,460,915	$ 1,519,351
Subtotal: Water Operating Expenses	**$ 4,325,361**	**$ 4,498,375**	**$ 4,678,310**	**$ 4,865,443**	**$ 5,060,061**
% Change	*13.9%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Sewer Operating Expenses					
Sewage Collection					
Personnel	$ 507,348	$ 527,642	$ 548,748	$ 570,698	$ 593,525
Operations	675,200	702,208	730,296	759,508	789,888
Supplies	305,200	317,408	330,104	343,308	357,041
Contracted Services and Indirect Costs	204,000	212,160	220,646	229,472	238,651
Other/Miscellaneous	6,734	7,003	7,283	7,575	7,878
Subtotal: Sewer Collection	$ 1,698,482	$ 1,766,421	$ 1,837,078	$ 1,910,561	$ 1,986,984
% Change	*4.1%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Wastewater Treatment Plant					
Personnel	$ 362,996	$ 377,516	$ 392,616	$ 408,321	$ 424,654
Operations	326,575	339,638	353,224	367,352	382,047
Supplies	222,840	231,754	241,024	250,665	260,691
Contracted Services and Indirect Costs	136,000	141,440	147,098	152,982	159,101
Other/Miscellaneous	15,680	16,307	16,959	17,638	18,343
Subtotal: Waterwater Treatment Plant	$ 1,064,091	$ 1,106,655	$ 1,150,921	$ 1,196,958	$ 1,244,836
% Change	*33.2%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Subtotal: Sewer Operating Expenses	**$ 2,762,573**	**$ 2,873,076**	**$ 2,987,999**	**$ 3,107,519**	**$ 3,231,820**
Subtotal: Operating Expenses	**$ 7,087,934**	**$ 7,371,451**	**$ 7,666,309**	**$ 7,972,962**	**$ 8,291,880**
% Change	*13.8%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
No n-Operating Expenses					
Existing and Proposed Debt Service					
Existing Debt Service	$ 1,898,232	$ 1,569,218	$ 1,555,373	$ 1,528,468	$ 1,447,098
Proposed Debt Service	$ 212,416	$ 1,498,400	$ 2,419,525	$ 3,544,817	$ 3,147,513
Subtotal: Existing and Proposed Debt Service	**$ 2,110,649**	**$ 3,067,618**	**$ 3,974,898**	**$ 5,073,285**	**$ 4,594,611**
% Change	*9.1%*	*45.3%*	*29.6%*	*27.6%*	*-9.4%*

Other Expenditures						
CIP Planned PAYGO	$ 752,000	$ 705,000	$ 735,000	$ 695,000	$ 695,000
Subtotal: Other Expenditures	**$ 752,000**	**$ 705,000**	**$ 735,000**	**$ 695,000**	**$ 695,000**
T o tal Co mbined System Expenses	**$ 9,950,583**	**$ 11,144,069**	**$ 12,376,207**	**$ 13,741,246**	**$ 13,581,491**
% Change	*15.6%*	*12.0%*	*11.1%*	*11.0%*	*-1.2%*

8. Rates and Charges

As an enterprise fund, water and sewer operations are financed and operated as a distinct business enterprise. Appropriate fees and charges are established to ensure that the water and sewer utility systems can operate on a self-sustaining basis. The County had a formal rate study completed during FY 2017-2018. A rate increase of 6% for water and 15% for sewer was approved and implemented on July 1, 2018. Rate increases of 5% per year for water and 15% for sewer are anticipated in FY 2020 and FY 2021 of the Forecast Period. The projected rate increases over the Forecast Period are required to meet the operating and capital needs of the water and sewer enterprise fund.

Water Charges

The County has a water rate structure with two components: a monthly minimum charge and a volumetric charge, as shown in Exhibit 9. The monthly minimum includes 2.5 kgal of water use. Customers will pay this monthly charge whether they use any water or not. It also should be noted that the monthly minimum charges for Outside-County customers are two times the monthly minimum charge for inside-County customers. Usage exceeding 2.5 kgal is billed at the volumetric rates which are tiered. The first-tier rate is assessed to water use between 2.5 kgal and 12 kgal. All water use more than 12 kgal is assessed the rate at the second tier. It should be noted the second-tier rate varies based on if water restrictions are in place (during times of drought). Exhibit 9 shows the current and projected rates over the Forecast Period.

Exhibit 9

Current and Projected Monthly Water Rates and Charges

	Approved **FY 2018**	*Approved* **FY 2019**	*Projected* **FY 2020**	*Projected* **FY 2021**	*Projected* **FY 2022**	*Projected* **FY 2023**
Minimum Bill (includes up to 2.5 Kgal)						
Inside County	$ 20.00	$ 21.20	$ 22.26	$ 23.37	$ 23.37	$ 23.37
Outside County	$ 40.00	$ 42.40	$ 44.52	$ 46.75	$ 46.75	$ 46.75
% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*
Residential Charge per Kgal						
Tier 1: 2.5-12 kgal	$ 4.72	$ 5.00	$ 5.25	$ 5.52	$ 5.52	$ 5.52
Tier 2:						
> 12 kgal No Restrictions	$ 5.72	$ 6.06	$ 6.37	$ 6.68	$ 6.68	$ 6.68
> 12 kgal Voluntary Restrictions	$ 7.15	$ 7.58	$ 7.96	$ 8.36	$ 8.36	$ 8.36
> 12 kgal Mandatory Restrictions	$ 11.44	$ 12.13	$ 12.73	$ 13.37	$ 13.37	$ 13.37
Bulk Water	$ 8.00	$ 8.48	$ 8.90	$ 9.35	$ 9.35	$ 9.35
% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*
Commercial Charge per Kgal						
> 2.5 kgal	$ 5.72	$ 6.06	$ 6.37	$ 6.68	$ 6.68	$ 6.68
Interruptible Agricultural Rate	$ 4.00	$ 4.24	$ 4.45	$ 4.67	$ 4.67	$ 4.67
Bulk Water	$ 8.00	$ 8.48	$ 8.90	$ 9.35	$ 9.35	$ 9.35
% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*
Industrial Charge per Kgal (>2.5 Kgal)	$ 4.72	$ 5.00	$ 5.25	$ 5.52	$ 5.52	$ 5.52
% Change		*6.0%*	*5.0%*	*5.0%*	*0.0%*	*0.0%*

Sewer Charges

The County has two types of sewer customers: sewer-only customers, and customers receiving both water and sewer service. Sewer-only customers are industrial customers within the County. They pay a fixed fee per month and are not billed for usage. For customers receiving both water and sewer service, sewer usage is based on 100% of the customer's water consumption. These customers are billed under a rate structure like that of the water system: the monthly minimum charge includes 2.5 kgal, and then a two-tiered volumetric rate structure is applied to use above the minimum. Exhibit 10 shows the current and projected sewer rates over the Forecast Period.

Exhibit 10

Current and Projected Monthly Sewer Rates

	Approved **FY 2018**	*Approved* **FY 2019**	*Projected* **FY 2020**	*Projected* **FY 2021**	*Projected* **FY 2022**	*Projected* **FY 2023**
Minimum Bill						
0-2.5 kgal	$ 22.00	$ 25.30	$ 29.10	$ 33.46	$ 33.46	$ 33.46
Sewer-only customers	$ 31.89	$ 36.67	$ 42.17	$ 48.50	$ 48.50	$ 48.50
% Change	*0.0%*	*15.0%*	*15.0%*	*15.0%*	*0.0%*	*0.0%*
Residential Charge per Kgal						
Tier 1: 2.5-12 kgal	$ 5.19	$ 5.97	$ 6.86	$ 7.89	$ 7.89	$ 7.89
Tier 2:						
> 12 kgal No Restrictions	$ 6.29	$ 7.23	$ 8.32	$ 9.57	$ 9.57	$ 9.57
> 12 kgal Voluntary Restrictions	$ 7.86	$ 9.04	$ 10.39	$ 11.95	$ 11.95	$ 11.95
> 12 kgal Mandatory Restrictions	$ 12.58	$ 14.47	$ 16.64	$ 19.13	$ 19.13	$ 19.13
% Change		*15.0%*	*15.0%*	*15.0%*	*0.0%*	*0.0%*
Commercial Charge per Kgal	$ 5.92	$ 6.81	$ 7.83	$ 9.00	$ 9.00	$ 9.00
Industrial Charge per Kgal (>2.5 Kgal) (1)	$ 5.92	$ 6.81	$ 7.83	$ 9.00	$ 9.00	$ 9.00
% Change	*0.0%*	*15.0%*	*15.0%*	*15.0%*	*0.0%*	*0.0%*

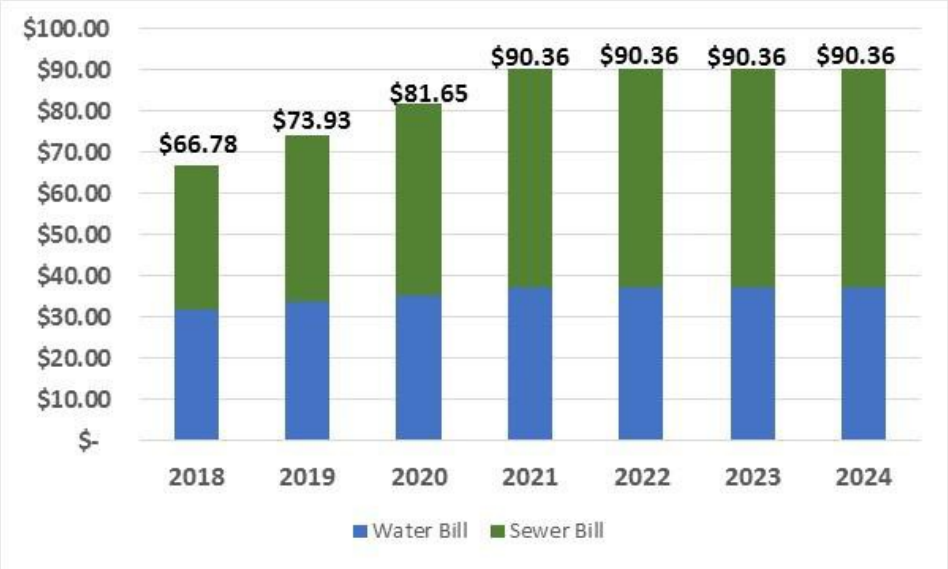
(1) Industrial customers that receive both water and sewer service are billed for usage; only sewer-only customers have a flat fee without usage charges.

Impact of Rate Increases on a Typical Customer

Exhibit 11 shows the actual and projected water and sewer bills for the average residential customer with a 3/4" meter that uses 5 kgal of water per month. Based on the approved rates for FY 2019, the average residential customer bill for both water and sewer is $73.93 per month, which is an increase of 11% over the prior year. Based on projected rate increases, the average residential customer bill will increase by 10% in FY 2020 and 11% in FY 2021. No rate increase or changes in the customer bills are anticipated in FY 2023 or FY 2024.

Exhibit 11

Residential Customer Bills, FY 2018 to FY 2024 (Usage of 5 kgal per month)



9. Revenues

To meet the financial obligations of the Series 2018 Bonds, other debt service obligations, and other water and sewer expenses, revenue requirements must be recovered exclusively from revenues associated with the water and sewer enterprises. Income Available for Debt Service, as defined in the Trust Agreement, shall include Revenues of the Enterprise System less Current Expenses. Revenues include revenues as determined in accordance with generally accepted accounting principles as well as revenues from taps, connection fees, sampling and monitoring fees, system development fee revenues, and fees and charges from special assessments.

Exhibit 12 shows the projection of operating and non-operating revenues during the Forecast Period for the combined water and sewer systems. Operating revenues are comprised of revenues from user rates and charges and revenues from other customer charges and fees. User charge revenue consists of revenues from monthly base charges and volumetric rates for retail customers, as explained in Explanatory Note 8. Base charge revenues are derived by applying the rates in Exhibit 9 and Exhibit 10 to the number of customers and water use in Exhibit 1 and Exhibit 2, respectively. The anticipated increase in the number of accounts and water/sewer flow, combined with the projected rate increases result in increases in user charges of approximately 12.5% per year for FY 2019 – FY 2021. Thereafter, revenues from user charges are anticipated to increase by 3.8% per year. Charges for services also include bulk water sales and penalties from late charges or cut-off for non-payments. Bulk water sales and revenues from penalties are anticipated to remain constant over the Forecast Period.

Revenues from water system development fees are anticipated to remain constant throughout the Forecast Period, and revenues from sewer system development fees are anticipated to decrease in FY 2019 and then remain constant over the Forecast Period. On July 20, 2017, the North Carolina General Assembly enacted General Statute 162A Article 8 (Article 8), which provides for the uniform authority to implement system development fees[6] for public water and wastewater systems in North Carolina. According to the statute, system development fees must be adopted in accordance with the conditions and limitations of Article 8, and those fees in effect as of October 1, 2017 must conform to the requirements set forth in the Article no later than July 1, 2018. In March of 2018, Raftelis completed an evaluation to develop cost-justified water and wastewater system development fees for the County. These cost-justified fees were adopted by the County as part of its FY 2019 Budget. The County has complied with the North Carolina General Statute 162A Article 8.

Water and sewer tap revenues are derived from connection fees against new customers for the cost to install meters and connect customers to service lines. Water and sewer taps are expected to remain constant over the Forecast Period. Other Operating Revenues include revenues from fire protection fees, which are anticipated to also remain constant over the Forecast Period.

[6] System development fees are one-time charges assessed to new water and/or wastewater customers, or developers or builders, to recover a proportional share of capital costs incurred to provide service availability and capacity for new customers.

Exhibit 12

Estimated Annual Revenues – Water and Sewer Systems

	Projected FY 2019	*Projected* FY 2020	*Projected* FY 2021	*Projected* FY 2022	*Projected* FY 2023
Operating Revenue					
Charges for Services					
Water					
Minimum Charge	$ 3,237,884	$ 3,562,375	$ 3,919,663	$ 4,107,690	$ 4,305,016
Volumetric Charge	3,269,704	3,516,659	3,782,764	3,875,744	3,971,514
Bulk Water Sales	14,000	14,000	14,000	14,000	14,000
Penalties	60,000	60,000	60,000	60,000	60,000
Subtotal: Water Charges for Services	6,581,588	7,153,034	7,776,426	8,057,435	8,350,531
Sewer					
Minimum Charge	$ 1,780,812	$ 2,148,098	$ 2,591,198	$ 2,718,060	$ 2,851,197
Volumetric Charge	1,560,739	1,842,550	2,175,433	2,233,628	2,293,569
Penalties	60,000	60,000	60,000	60,000	60,000
Subtotal: Sewer Charges for Service	3,401,551	4,050,648	4,826,630	5,011,688	5,204,766
Water System Development Fees	$ 1,300,056	$ 1,300,056	$ 1,300,056	$ 1,300,056	$ 1,300,056
Sewer System Development Fees	778,862	778,862	778,862	778,862	778,862
Water and Sewer Taps	376,400	376,400	376,400	376,400	376,400
Other Operating Revenues	15,000	15,000	15,000	15,000	15,000
Total Operating Revenue	$ 12,453,456	$ 13,674,000	$ 15,073,374	$ 15,539,440	$ 16,025,614
No n-Operating Revenue					
Investment earnings	$ 15,150	$ 15,302	$ 15,455	$ 15,609	$ 15,765
Total Operating and No n-Operating Revenues	**$ 12,468,606**	**$ 13,689,301**	**$ 15,088,829**	**$ 15,555,049**	**$ 16,041,379**
% Change	*-10.7%*	*9.8%*	*10.2%*	*3.1%*	*3.1%*

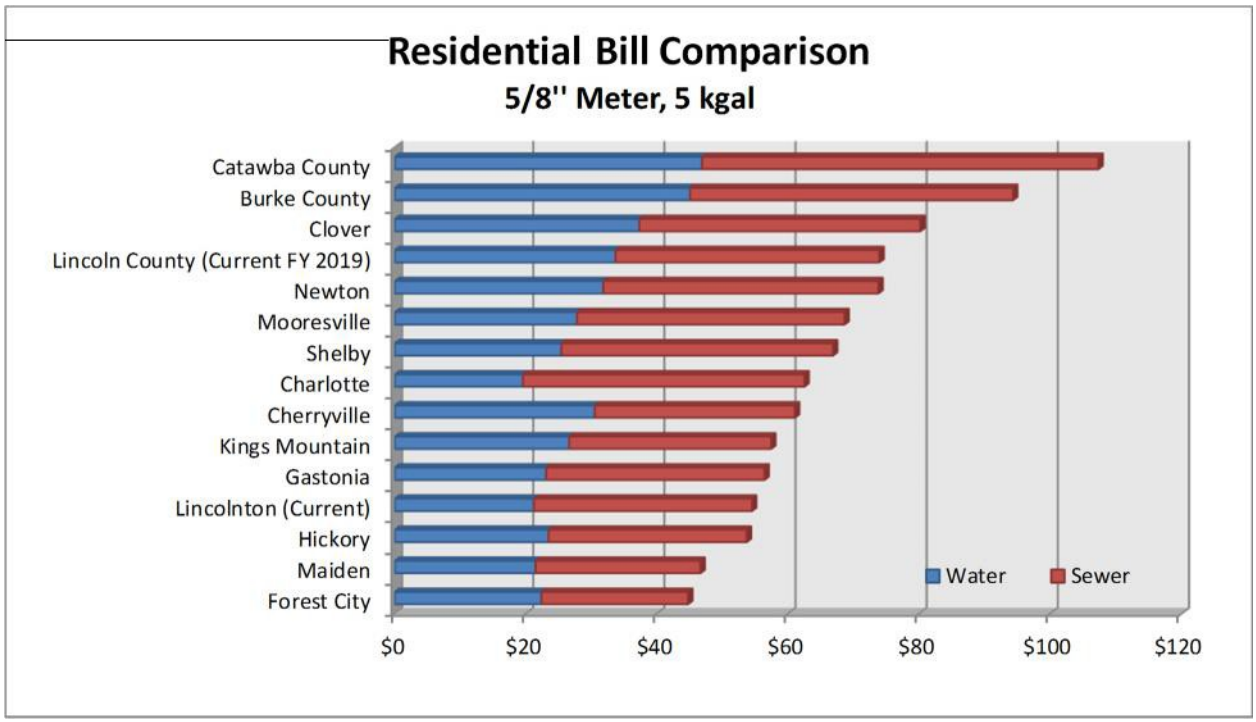
10. Monthly Bill Comparison

The County's rates for water and sewer became effective July 1, 2018. As mentioned previously, the Feasibility Evaluation assumes that additional water and sewer rate adjustments will be required during the Forecast Period. To ensure that revenue requirements are met, the County has forecast rate increases each year through FY 2021, after which point rates will remain constant until further increases are necessary.

The County also considers the objective to maintain rates that are reasonably affordable and provide a competitive cost environment relative to other utilities. Exhibit 13 shows a comparison of water and sewer bills with other representative communities. As shown, the combined water and sewer bill for a residential customer in the County (using approximately 5,000 gallons per month) is $73.93 per month or $887.15 per year. The median household income (MHI) in Lincoln County was $49,283, which is approximately 2% higher than the MHI for the state of North Carolina.[7] The combined water and sewer bill for the average residential customer is approximately 1.8% of MHI, which is below the Environmental Protection Agency's affordability threshold of 4% of MHI for both water and sewer.[8]

Exhibit 13

Comparison of Rates with Other Representative Communities (5/8" meter and 5,000 gallons per month)



[7] https://www.census.gov/quickfacts/fact/table/lincolncountynorthcarolina,nc/PST045217

[8] Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development (Environmental Protection Agency, March 1997) page 19.

11. Fund Balance

The unrestricted reserve fund balance for FY 2019 through FY 2024 is shown in Exhibit 14. The beginning unrestricted fund balance for FY 2019 was estimated and provided by County staff. A portion of the unrestricted fund balance will be used to fund several projects in the County's CIP. Exhibit 14 shows the estimated beginning and ending fund balance over the Forecast Period, as well as the estimated days cash on hand. Days cash on hand represents fund balance available to cover operating costs in the event of a disaster. As shown, the County has enough fund balance to cover more than one year's worth of operating costs in each year of the Forecast Period. While days cash on hand is declining over the Forecast Period, the lowest days cash on hand is still considered strong since it is above 365 days cash on hand.

Exhibit 14

Combined System Operating Fund Balance

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Operating Fund						
Beginning Fund Balance	$ 12,700,000	$ 14,321,747	$ 10,489,771	$ 11,335,002	$ 12,347,624	$ 10,911,427
Surplus/(Deficit) from Rates	5,348,919	2,518,024	2,545,232	2,712,621	1,813,803	2,459,888
CIP Funded from Reserves	(3,727,172)	(6,350,000)	(1,700,000)	(1,700,000)	(3,250,000)	(4,000,000)
Ending Fund Balance	$ 14,321,747	$ 10,489,771	$ 11,335,002	$ 12,347,624	$ 10,911,427	$ 9,371,315
Estimated Days Cash on Hand	*839*	*540*	*561*	*588*	*500*	*413*

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Appendix K – Environmental Information Documents

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WK DICKSON
community infrastructure consultants

25 July 2018

State Environmental Review Clearinghouse
1301 Mail Service Center
Raleigh, NC 27699-1301

RE: Killian Creek WWTP Upgrade – NEPA Scoping, Lincoln County, NC

To whom it may concern:

The Killian Creek Wastewater Treatment Plan (WWTP) Upgrade Project consists of the design, permitting and construction of a wastewater treatment plant upgrade which will expand the facility's existing sequencing batch reactor (SBR) treatment capacity from 3.3 mgd to 6.65 mgd. It includes the design, permitting and construction of all structures, piping and supporting electrical system for the proposed facility. This expansion is necessary to provide adequate treatment capacity for currently allocated and anticipated future flows for the next 20 years in growing Lincoln County.

A portion of the project's funding will be provided by the NC Clean Water State Revolving Fund. As a result, an Environmental Information Document (EID) will be prepared. To expedite and facilitate the review process, the Lincoln County requests inter-agency comment regarding potential natural and cultural impacts associated with this project, if any.

As shown in the attached maps, the proposed limits of disturbance (LOD) will be approximately 5.4 acres, approximately 1.75 acres of which will be located within the existing plant's disturbed/maintained footprint. The remaining portion of the project area is dominated by mature hardwood and pine mixed forest. Prior to EID submittal, an detailed environmental evaluation will be completed within the project area and its results summarized in the document.

Because the project will result in nominal changes to existing environmental resources, no significant impacts to these resources are anticipated.

Please review the proposed project and either confirm that significant impacts to environmental resources are not anticipated, or provide further guidance. Should you have questions, or require clarification, please call.

note: this document can be downloaded by visiting:
https://transfer.wkdickson.com/message/tcnU7QVtZUx6X9O6B2b1ak

616 Colonnade Drive
Charlotte, NC 28205
Tel. 704.334.5348
Fax 704.334.0078
www.wkdickson.com

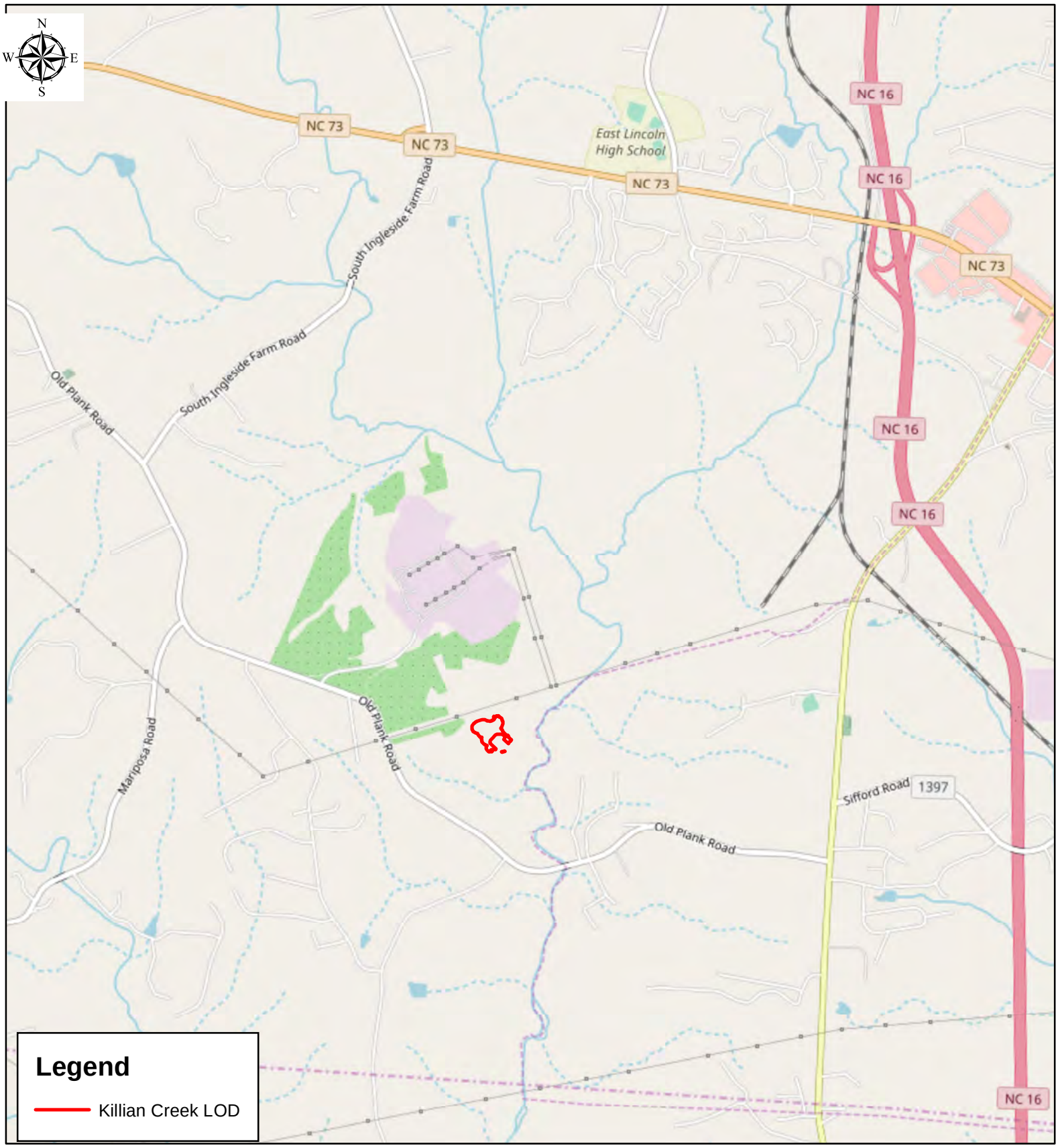
We appreciate your timely response to this important public infrastructure project.

Sincerely,

W.K. Dickson & Co., Inc.



Ward Marotti
Senior Scientist



1 inch = 2,500 feet

0 1,250 2,500

Feet

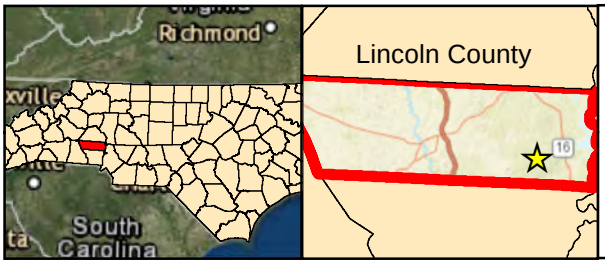


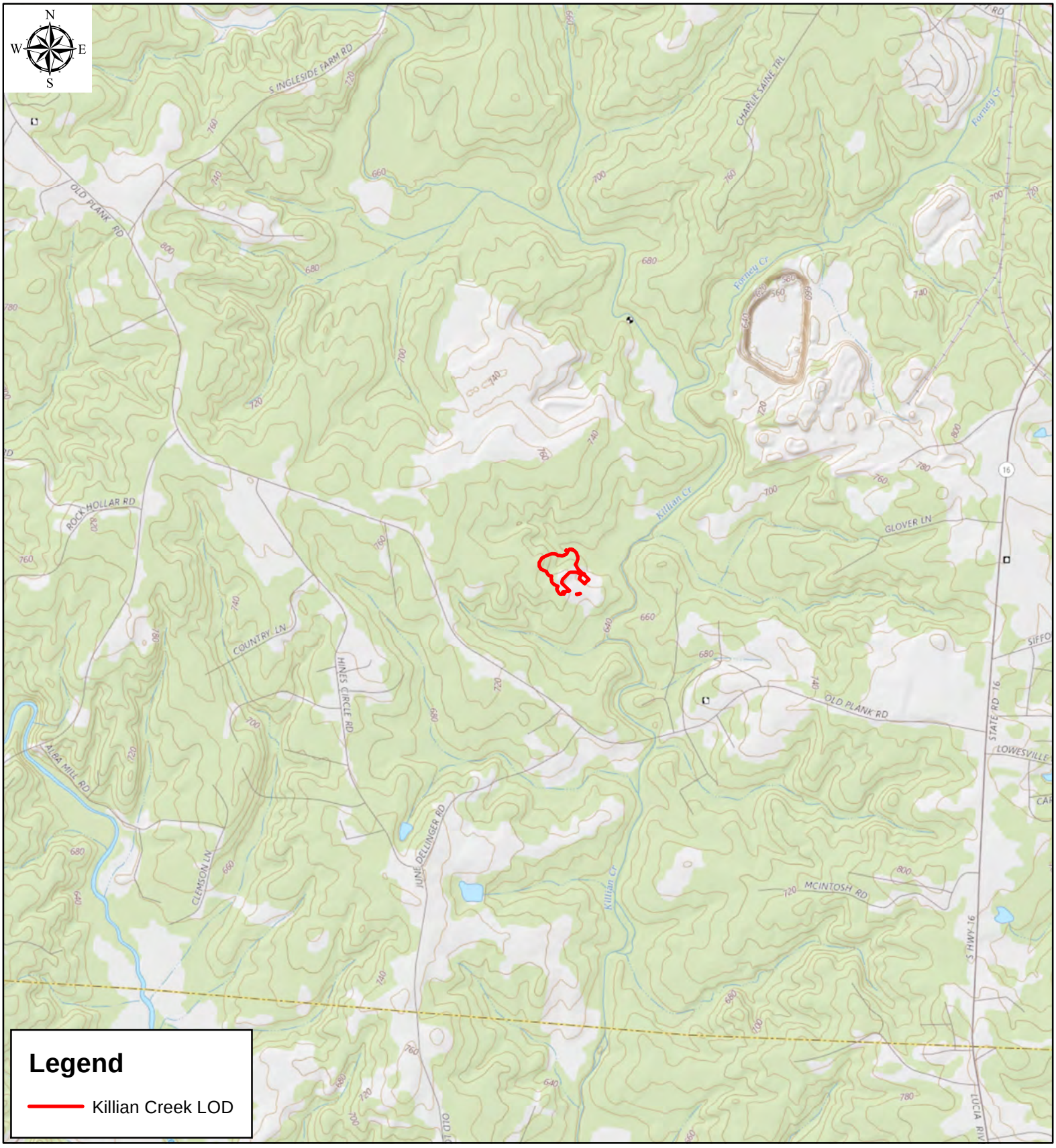
Figure 1

General Location

Killian Creek WWTP Improvements

Lincoln County, NC

WK DICKSON



1:24,000

0 1,000 2,000
Feet

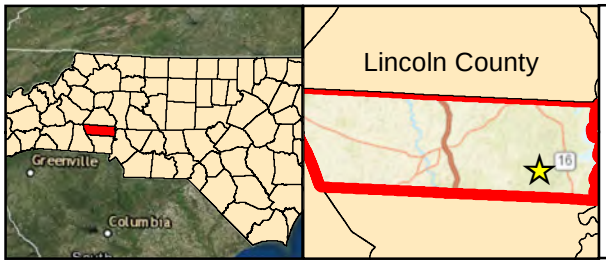


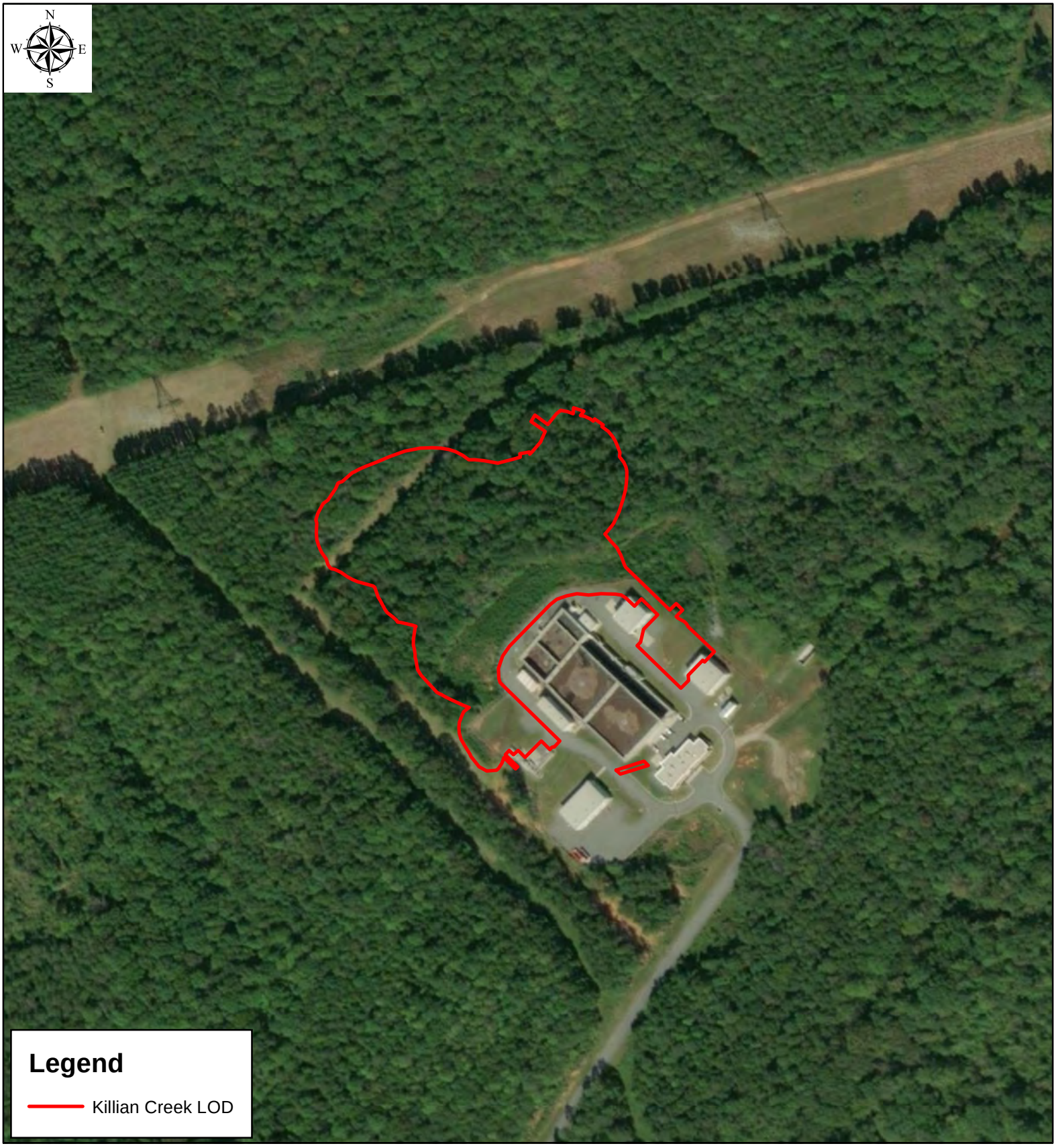
Figure 2

USGS 7.5 Minute Quadrangles: Lowesville

Killian Creek WWTP Improvements

Lincoln County, NC

WK DICKSON



1 inch = 250 feet

0 125 250
Feet



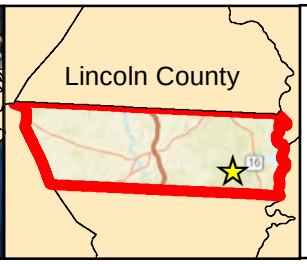


Figure 3

Aerial Photo

Killian Creek WWTP Improvements

Lincoln County, NC

WK DICKSON

STATE OF NORTH CAROLINA
DEPARTMENT OF ADMINISTRATION

ROY COOPER
GOVERNOR

MACHELLE SANDERS
SECRETARY

September 20, 2018

Mr. Ward Marotti
Lincoln County
c/o WK Dickson
616 Colonnade Drive
Charlotte, North Carolina 28205

Re: SCH File # 19-E-0000-0021; Proposed project is for the Killiam Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd.

Dear Mr. Marotti:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are comments made by the agencies in the review of this document.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

Crystal Best

Crystal Best
State Environmental Review Clearinghouse

Attachments
cc: Region F

Mailing Address:
NC DEPARTMENT OF ADMINISTRATION
1301 MAIL SERVICE CENTER
RALEIGH, NC 27699-1301

Telephone: (919) 807-2425
Fax: (919) 733-9571
COURIER #51-01-00
Email: state.clearinghouse@doa.nc.gov
Website: www.ncadmin.nc.gov

Location:
116 WEST JONES STREET
RALEIGH, NORTH CAROLINA

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
JAMIE RAGAN
Director

NORTH CAROLINA
Environmental Quality

MEMORANDUM

To: Crystal Best
State Clearinghouse Coordinator
Department of Administration

From: Lyn Hardison
Division of Environmental Assistance and Customer Service
Environmental Assistance and Project Review Coordinator
Washington Regional Office

RE: 19-0021
Scoping – Proposed project is for the Killian Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity form 3.3 mgd to 6.65 mgd.
Lincoln County

Date: August 30, 2018

The Department of Environmental Quality has reviewed the proposal for the referenced project. Based on the information provided, several of our agencies have offered some valuable information and advice that will assist the applicant in preparing the necessary environmental documents. The comments are attached for the applicant's consideration.

The Department agencies will continue to be available to assist the applicant with their questions and concerns while they are preparing the documents for further review.

Thank you for the opportunity to respond.

Attachments

NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
LINDA CULPEPPER
Interim Director

August 13, 2018

MEMORANDUM

To: Lyn Hardison
Department of Environmental Quality

From: David Wainwright
SEPA Coordinator, Division of Water Resources

Subject: SCH #19-0021
Proposed upgrades to the Killian Creek Wastewater Treatment Plant
Lincoln County

The Division of Water Resources' (DWR) NPDES Complex Permitting Branch in the Central Office has reviewed the scoping document for Killian Creek Wastewater Treatment Plant Improvement project. The NPDES Complex Permitting Branch has provided the following comment:

Engineering Alternatives Analysis (EAA). Please note that the Division cannot guarantee that an NPDES permit for a new or expanding discharge will be issued. Final decisions can only be made after the Division receives and evaluates a formal permit application for the new/expanded discharge. In accordance with North Carolina Administrative Code 15A NCAC 2H .0105(c), the most environmentally sound alternative should be selected from all reasonably cost-effective options. Therefore, as a component of all NPDES permit applications for new or expanding flow, a detailed engineering alternatives analysis (EAA) must be prepared. The EAA must justify requested flows and provide an analysis of potential non-discharge wastewater treatment alternatives. A copy of the Division guidance for preparing EAA documents can be found at the following link: Engineering Alternatives Analysis (EAA).

If you have any questions regarding the above comment, please contact David Hill in the NPDES Complex Permitting Branch at 919-707-3612 or via email at David.Hill@ncdenr.gov.

ec: Julie Grzyb, NPDES Complex Permitting Branch
David Hill, NPDES Complex Permitting Branch

North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1617 Mail Service Center | Raleigh, North Carolina 27699-1617
919.707.9000



North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Lyn Hardison, Environmental Assistance and SEPA Coordinator
NCDENR Division of Environmental Assistance and Customer Services

FROM: Olivia Munzer, Western Piedmont Coordinator
Habitat Conservation

DATE: 16 August 2018

SUBJECT: Scoping for the Killian Creek Wastewater Treatment Plant, Lincoln County. DEQ Project No. 19-0021.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the subject information. Comments are provided in accordance with provisions of the National Environmental Policy Act and Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e).

WK Dickson is requesting scoping for the Killian Creek Wastewater Treatment Plant (WWTP) Upgrade project in the Lincoln County, North Carolina. The 5.4-acre project will expand the WWTP's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd to accommodate future growth in Lincoln County.

The site flows to Killian Creek in the Catawba River basin. We have historical records of the state significantly rare seagreen darter (*Etheostoma thalassinum*) in Killian Creek. Within the vicinity of the site, we have records of the state threatened and federal candidate Georgia aster (*Symphyotrichum georgianum*). However, no known records of federal or state-listed species at the site. The lack of records from the site does not imply or confirm the absence of federal or state-listed species. An on-site survey is the only definitive means to determine if the proposed project would impact rare, threatened, or endangered species.

The environmental document should include a detailed assessment of existing natural resources within the project area and should discuss the potential of mitigating impacts to wetlands, waters, and high-quality upland habitat. We encourage the applicant to consult the Department of Environmental Quality's *Guidance for Preparing SEPA Documents and Addressing Secondary and Cumulative Impacts* in preparing the environmental document. This document is available at https://deq.nc.gov/permits-regulations/sepa. To facilitate our review of proposed project impacts on aquatic and terrestrial wildlife resources, we request the following information is included in the environmental document. Although some of the information, requests and comments may not be applicable to this project, these should

Mailing Address: Habitat Conservation • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

facilitate preparation of an environmental document that addresses impacts to aquatic and terrestrial wildlife resources.

1. Include descriptions of aquatic and terrestrial wildlife resources within the project area, and a listing of federally or state designated threatened, endangered or special concern species. A listing of designated species can be found on the N.C. Natural Heritage Program's website at http://www.ncnhp.org. Any protected species surveys should be conducted by biologists with both state and federal endangered species permits.
2. The project footprint should be surveyed for wetlands and streams to ensure there are no impacts to surface waters. In addition to providing wildlife habitat, wetland areas and streams aid in flood control and water quality protection. U.S. Army Corps of Engineers Section 404 Permits and NCDWR Section 401 Certifications are required for any impacts to jurisdictional streams or wetlands. Include descriptions of any streams or wetlands affected by the project.
3. Define the service area for the project, including any ETJs (extra-territorial jurisdiction), and provide a map of the service area.
4. Provide a description of project activities that will occur within wetlands and streams, such as fill or channel alteration. Also describe the impacts from an increase in wastewater discharge into the stream. The amount of impacts by alternative project designs should be listed.
5. Provide a description and a cover type map showing acreage of upland wildlife habitat impacted by the project.
6. Discuss the extent to which the project will result in loss, degradation or fragmentation of wildlife habitat (wetlands and uplands).
7. Discuss any measures proposed to avoid or reduce impacts of the project or to mitigate unavoidable habitat losses.
8. Discuss the cumulative impacts of secondary development facilitated by the proposed project. Such discussion should weigh the economic benefits of such growth against the costs of associated environmental impact.
   (a) Include specific measures (e.g., local ordinances) that will be used to address stormwater and sedimentation at the source. Include specific requirements for both residential and industrial developments and Best Management Practices (BMPs) that will be required.
   (b) Include specific measures (e.g., local ordinances) that will be used to protect stream corridors, riparian habitat, and a minimum of the 100-year floodplain from filling and development. Commitments by the project sponsors to protect area streams with riparian buffers through purchase or conservation easement are of particular interest.

We offer the following general recommendations to minimize impacts to aquatic and terrestrial wildlife resources.

1. We recommend a minimum 100-foot forested buffer for perennial streams and a 50-foot forested buffer for intermittent streams.
2. Re-seed disturbed areas with native plant seed mixtures that are beneficial to wildlife. Avoid using Bermudagrass, redtop, tall fescue, and lespedeza in seed mixtures as these species are invasive and/or non-native and provide little benefit to wildlife. Consider planting native, wildflower seed mixes that will create pollinator habitat within any easements.

3. Manage non-native, invasive species by pretreating the project site prior to construction, preventing spread during construction, and control non-native, invasive species throughout the monitoring period.

4. Sediment and erosion control measures should use advanced methods and installed prior to any land-disturbing activity. The use of **biodegradable and wildlife-friendly sediment and erosion control devices** is strongly recommended. Silt fencing, fiber rolls and/or other products should have loose-weave netting that is made of natural fiber materials with movable joints between the vertical and horizontal twines. Silt fencing that has been reinforced with plastic or metal mesh should be avoided as it impedes the movement of terrestrial wildlife species. These measures should be routinely inspected and properly maintained. Excessive silt and sediment loads can have numerous detrimental effects on aquatic resources including destruction of spawning habitat, suffocation of eggs, and clogging of gills of aquatic species.

Thank you for the opportunity to provide input in the early planning stages for this project. If I can provide further assistance, please call (336) 290-0056 or email olivia.munzer@ncwildlife.org.

ec: Allen Ratzlaff, U.S. Fish and Wildlife Service

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
MICHAEL SCOTT
Director

NORTH CAROLINA
Environmental Quality

Date: August 9, 2018

To: Michael Scott, Director
Division of Waste Management

Through: Janet Macdonald
Inactive Hazardous Sites Branch – Special Projects Unit

From: Bonnie S. Ware
Inactive Hazardous Sites Branch

Subject: NEPA Project #19-0021, Lincoln County, Lincoln County, North Carolina

The Superfund Section has reviewed the proximity of sites under its jurisdiction to the Lincoln County project. Proposed project is for the Killiam Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd.

No sites were identified within one mile of the project as shown on the attached report.

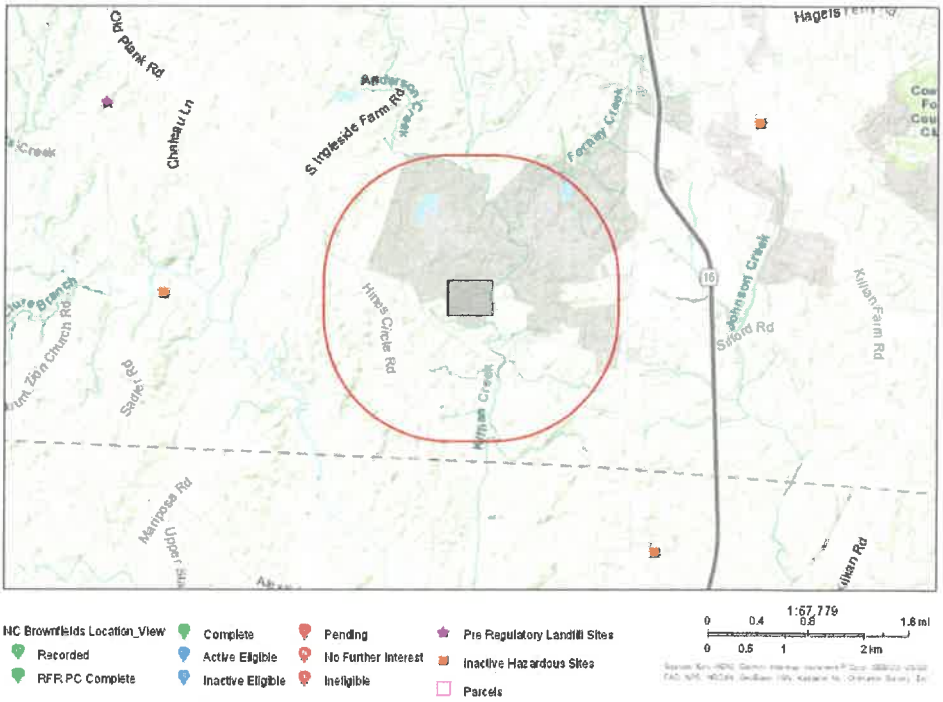
Please contact Janet Macdonald at 919.707.8349 if you have any questions.

SEPA/NEPA Review Report

Area of Interest (AOI) Information

Area : 2,850.77 acres

Aug 9 2018 13:28:22 Eastern Daylight Time



19-0021

Summary

Name	Count	Area(acres)	Length(mi)
Certified DSCA Sites	0	N/A	N/A
Federal Remediation Branch Sites	0	N/A	N/A
Inactive Hazardous Sites	0	N/A	N/A
Pre-Regulatory Landfill Sites	0	N/A	N/A
Brownfields Program Sites	0	N/A	N/A

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
MICHAEL SCOTT
Director

NORTH CAROLINA
Environmental Quality

DATE: August 22, 2018

TO: Michael Scott, Division Director through Sharon Brinkley

FROM: Deb Aja, Western District Supervisor - Solid Waste Section

RE: NEPA Project 19-0021, Lincoln County, N.C.
Lincoln County Killian Creek Wastewater Treatment Plant Upgrade

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The Solid Waste Section has reviewed the environmental scoping document for the Lincoln County project to construct an upgrade at the Killian Creek Wastewater Treatment Plant, Lincoln County, North Carolina. The review has been completed and has found no adverse impact on the surrounding community and likewise knows of no situations in the community, which would affect this project from a solid waste perspective.

During the project, every feasible effort should be made to minimize the generation of waste, to recycle materials for which viable markets exist, and to use recycled products and materials in the development of this project where suitable. Any waste generated by this project that cannot be beneficially reused or recycled must be disposed of at a solid waste management facility approved to manage the respective waste type. The Section strongly recommends that any contractors are required to provide proof of proper disposal for all waste generated as part of the project.

A list of permitted solid waste management facilities is available on the Solid Waste Section portal site at: http://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/solid-waste-management-annual-reports/solid-waste-permitted-facility-list

Please contact Kim Sue, Environmental Senior Specialist, for any questions regarding solid waste management. Ms. Sue may be reached at (704) 235-2163 or by email at kim.sue@ncdenr.gov.

Cc: Jason Watkins, Field Operations Branch Head
Kim Sue, Environmental Senior Specialist

North Carolina Department of Environmental Quality | Division of Waste Management
Asheville Regional Office | 2090 U.S. Highway 70 | Swannanoa, North Carolina 28778
828.296.4500

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Reviewing Regional Office: MRO
Project Number: 19-0021 Due Date: 08/30/2018
County: Lincoln

After review of this project it has been determined that the DEQ permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Processing Time (statutory time limit)
☐	Permit to construct & operate wastewater treatment facilities, non-standard sewer system extensions & sewer systems that do not discharge into state surface waters.	Application 90 days before begins construction or award of construction contracts. On-site inspection may be required. Post-application technical conference usual.	30 days (90 days)
☐	Permit to construct & operate, sewer extensions involving gravity sewers, pump stations and force mains discharging into a sewer collection system	Fast-Track Permitting program consists of the submittal of an application and an engineer's certification that the project meets all applicable State rules and Division Minimum Design Criteria.	30 days (N/A)
☒	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begins activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
☐	Water Use Permit	Pre-application technical conference usually necessary.	30 days (N/A)
☐	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a groundwater monitoring well located on property not owned by the applicant, and for a large capacity (>100,000 gallons per day) water supply well.	7 days (15 days)
☐	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
☒	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100 thru 2Q.0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113).	90 days
☒	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
☒	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 20.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950	Please Note - The Health Hazards Control Unit (HHCU) of the N.C. Department of Health and Human Services, must be notified of plans to demolish a building, including residences for commercial or industrial expansion, even if no asbestos is present in the building.	60 days (90 days)
☒	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres are to be disturbed. Plan must be filed with and approved by applicable Regional Office (Land Quality Section) at least 30 days before beginning activity. A NPDES Construction Stormwater permit (NCG010000) is also usually issued should design features meet minimum requirements. A fee of $65 for the first acre or any part of an acre. An express review option is available with additional fees.		20 days (30 days)
☐	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.		(30 days)
☐	Sedimentation and erosion control must be addressed in accordance with _____ Local Government's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.		Based on Local Program
☐	Compliance with 15A NCAC 2H .0126 - NPDES Stormwater Program which regulates three types of activities: Industrial, Municipal Separate Storm Sewer System & Construction activities that disturb ≥1 acre.		30-60 days (90 days)
☐	Compliance with 15A NCAC 2H 1000 -State Stormwater Permitting Programs regulate site development and post-construction stormwater runoff control. Areas subject to these permit programs include all 20 coastal counties, and various other counties and watersheds throughout the state.		45 days (90 days)

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Reviewing Regional Office: MRO
Project Number: 19-0021 Due Date: 08/30/2018
County: Lincoln

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Processing Time (statutory time limit)
☐	Mining Permit	On-site inspection usual. Surety bond filed with DEQ Bond amount varies with type mine and number of acres of affected land. Affected area greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
☐	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, and certify construction is according to DEQ approved plans. May also require a permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of $200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)
☐	Oil Refining Facilities	N/A	90-120 days (N/A)
☐	Permit to drill exploratory oil or gas well	File surety bond of $5,000 with DEQ running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to DEQ rules and regulations.	10 days N/A
☐	Geophysical Exploration Permit	Application filed with DEQ at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
☐	State Lakes Construction Permit	Application fee based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property	15-20 days N/A
☐	401 Water Quality Certification	Compliance with the T15A 02H .0500 Certifications are required whenever construction or operation of facilities will result in a discharge into navigable water as described in 33 CFR part 323.	60 days (130 days)
☐	Compliance with Catawba, Goose Creek, Jordan Lake, Randleman, Tar Pamlico or Neuse Riparian Buffer Rules is required. Buffer requirements: http://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permits/401-riparian-buffer-protection-program		
☐	Nutrient Offset: Loading requirements for nitrogen and phosphorus in the Neuse and Tar-Pamlico River basins, and in the Jordan and Falls Lake watersheds, as part of the nutrient-management strategies in these areas. DWR nutrient offset information: http://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-offset-information		
☐	CAMA Permit for MAJOR development	$250.00 - $475.00 fee must accompany application	75 days (150 days)
☐	CAMA Permit for MINOR development	$100.00 fee must accompany application	22 days (25 days)
☒	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
☒	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
☒	Plans and specifications for the construction, expansion, or alteration of a public water system must be approved by the Division of Water Resources/Public Water Supply Section prior to the award of a contract or the initiation of construction as per 15A NCAC 18C .0300 et. seq., Plans and specifications should be submitted to 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. All public water supply systems must comply with state and federal drinking water monitoring requirements. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
☒	If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Water Resources/Public Water Supply Section at 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
☐	Plans and specifications for the construction, expansion, or alteration of the _____ water system must be approved through the _____ delegated plan approval authority. Please contact them at _____ for further information.		

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Reviewing Regional Office: MRO
Project Number: 19-0021 Due Date: 08/30/2018
County: Lincoln

Other Comments (attach additional pages as necessary, being certain to comment authority)

Division	Initials	No comment	Comments	Date Review
DAQ	CA	☐	See checked items	8/30/18
DWR-WQROS (Aquifer & Surface)	AHP &	☐	Properly abandon any water wells that may be in the project's path (box checked). MRO-DWR-WQROS defers to comments submitted by DWR-SEPA coordinator in regards to NPDES permitting on 8/13/18 by David Wainwright (NPDES box checked). Based on the site maps, it does not appear that streams or wetlands will likely be impacted by the construction project, but the site should be reviewed in the field before construction to confirm that a 401 certificate is not necessary (box was not checked). &	8/29/18 / /
DWR-PWS	JHW	☐	See above comments	8/9/18
DEMLR (LQ & SW)	ZSK	☐	See above comments	8/10/18
DWM – UST	RHT	☐	RE: Project Review Form: 19-0021 I have read through the scoping document for the proposed project. The following comments are pertinent to my review: 1. The Mooresville Regional Office (MRO) UST Section recommends removal of any abandoned or out-of-use petroleum USTs or petroleum above ground storage tanks (ASTs) within the project area. The UST Section should be contacted regarding use of any proposed or on-site petroleum USTs or ASTs. We may be reached at 704-663-1699. 2. Any petroleum spills must be contained and the area of impact must be properly restored. Petroleum spills of significant quantity must be reported to the North Carolina Department of Environment & Natural Resources – Division of Waste Management Underground Storage Tank Section in the Mooresville Regional Office at 704-663-1699. 3. Any soils excavated during demolition or construction that show evidence of petroleum contamination, such as stained soil, odors, or free product must be reported immediately to the local Fire Marshall to determine whether explosion or inhalation hazards exist. Also, notify the UST Section of the Mooresville Regional Office at 704-663-1699. Petroleum contaminated soils must be handled in accordance with all applicable regulations. If you have any questions or need additional information, please contact me at Ron.Taraban@ncdenr.gov or by phone at 704-235-2167.	8/15/18
Other Comments		☐		/ /

REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

☐ **Asheville Regional Office**
2090 U.S. 70 Highway
Swannanoa, NC 28778-8211
Phone: 828-296-4500
Fax: 828-299-7043

☐ **Fayetteville Regional Office**
225 Green Street, Suite 714,
Fayetteville, NC 28301-5043
Phone: 910-433-3300
Fax: 910-486-0707

☒ **Mooresville Regional Office**
610 East Center Avenue, Suite 301,
Mooresville, NC 28115
Phone: 704-663-1699
Fax: 704-663-6040

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

☐ **Raleigh Regional Office**
3800 Barrett Drive,
Raleigh, NC 27609
Phone: 919-791-4200
Fax: 919-571-4718

☐ **Washington Regional Office**
943 Washington Square Mall,
Washington, NC 27889
Phone: 252-946-6481
Fax: 252-975-3716

☐ **Wilmington Regional Office**
127 Cardinal Drive Ext.,
Wilmington, NC 28405
Phone: 910-796-7215
Fax: 910-350-2004

☐ **Winston-Salem Regional Office**
450 Hanes Mill Road, Suite 300,
Winston-Salem, NC 27105
Phone: 336-776-9800
Fax: 336-776-9797

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

AUG 08 2018

COUNTY: LINCOLN

H02: WASTEWATER TREATMENT FACILITIES

STATE NUMBER: 19-E-0000-0021
DATE RECEIVED: 08/03/2018
AGENCY RESPONSE: 08/30/2018
REVIEW CLOSED: 09/04/2018

MS CINDY WILLIAMS
CLEARINGHOUSE COORDINATOR
DPS - DIV OF EMERGENCY MANAGEMENT
FLOODPLAIN MANAGEMENT PROGRAM
4218 MAIL SERVICE CENTER
RALEIGH NC

REVIEW DISTRIBUTION

CENTRALINA COG
DEPT OF ENVIRONMENTAL QUALITY
DEPT OF NATURAL & CULTURAL RESOURCE
DEPT OF TRANSPORTATION
DNCR - NATURAL HERITAGE PROGRAM
DPS - DIV OF EMERGENCY MANAGEMENT

PROJECT INFORMATION

APPLICANT: Lincoln County
TYPE: National Environmental Policy Act Scoping

DESC: Proposed project is for the Killiam Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd. - view documents at: https://transfer.wkdickson.com/message/tcnU7QVtZUx6X9O6B2b1ak

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: [X] NO COMMENT [ ] COMMENTS ATTACHED

SIGNED BY: John D Brubaker DATE: 24 August 2018

RECEIVED
Secretary's
SEP 04 2018
Office
DOA

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: LINCOLN

H02: WASTEWATER TREATMENT FACILITIES

STATE NUMBER: 19-E-0000-0021
DATE RECEIVED: 08/03/2018
AGENCY RESPONSE: 08/30/2018
REVIEW CLOSED: 09/04/2018

MR RODNEY BUTLER
CLEARINGHOUSE COORDINATOR
DNCR - NATURAL HERITAGE PROGRAM
1651 MAIL SERVICE CENTER
RALEIGH NC

REVIEW DISTRIBUTION

CENTRALINA COG
DEPT OF ENVIRONMENTAL QUALITY
DEPT OF NATURAL & CULTURAL RESOURCE
DEPT OF TRANSPORTATION
DNCR - NATURAL HERITAGE PROGRAM
DPS - DIV OF EMERGENCY MANAGEMENT

PROJECT INFORMATION

APPLICANT: Lincoln County
TYPE: National Environmental Policy Act
Scoping

DESC: Proposed project is for the Killiam Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd. - view documents at: https://transfer.wkdickson.com/message/tcnU7QVtZUx6X9O6B2b1ak

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☐ NO COMMENT ☑ COMMENTS ATTACHED

SIGNED BY: M. Wolf DATE: 8/30/18

North Carolina Department of Natural and Cultural Resources
Natural Heritage Program

Governor Roy Cooper

Secretary Susi H. Hamilton

NCNHDE-6742

August 20, 2018

Attn: Crystal Best
North Carolina Clearinghouse

RE: Clearinghouse 19-0021

Dear North Carolina Clearinghouse:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

Based on the project area mapped with your request, a query of the NCNHP database, indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is found within the project area or is indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here:
https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Clean Water Management Trust Fund easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919-707-8603.

Sincerely,
NC Natural Heritage Program

MAILING ADDRESS:
1651 Mail Service Center
Raleigh, NC 27699-1651

Telephone: (919) 707-8107
www.ncnhp.org

LOCATION:
121 West Jones Street
Raleigh, NC 27603

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
Clearinghouse 19-0021
August 20, 2018
NCNHDE-6742

Element Occurrences Documented Within a One-mile Radius of the Project Area

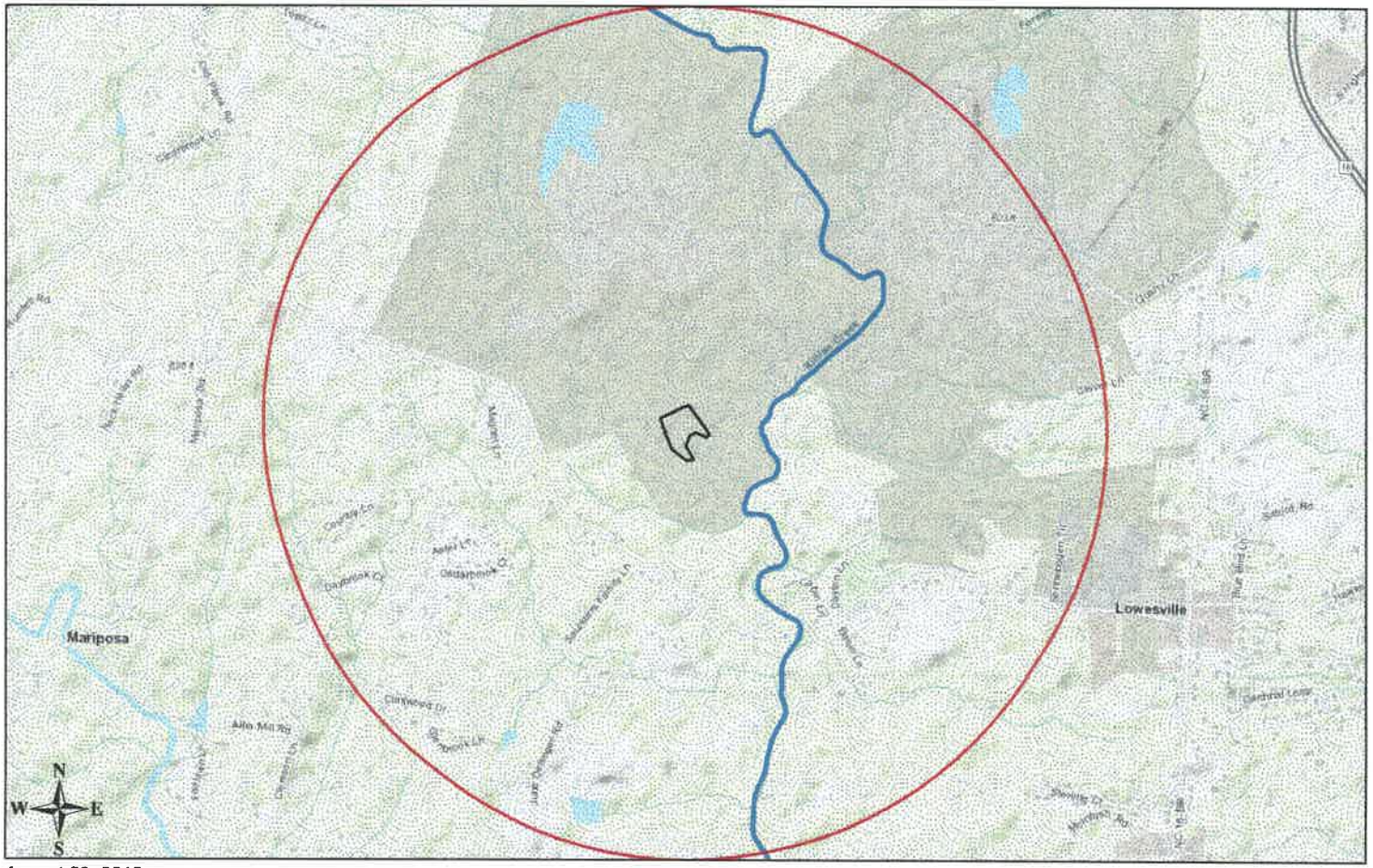
Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Crustacean	38118	Cambarus johni	Carolina Foothills Crayfish	2017-06-28	E	3-Medium	---	Significantly Rare	G3	S3
Freshwater Fish	32459	Etheostoma thalassinum	Seagreen Darter	1993-06-29	E	3-Medium	---	Significantly Rare	G4	S3
Vascular Plant	12037	Rhus michauxii	Michaux's Sumac	1917-Pre	H	5-Very Low	Endangered	Endangered	G2G3	S2

No Natural Areas are Documented Within a One-mile Radius of the Project Area

No Managed Areas are Documented Within a One-mile Radius of the Project Area

Definitions and an explanation of status designations and codes can be found at https://ncnhde.natureserve.org/content/help. Data query generated on August 20, 2018; source: NCNHP, Q3 July 2018. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

NCNHDE-6742: Clearinghouse 19-0021



August 20, 2018

- Project Boundary
- Buffered Project Boundary
- Natural Heritage Element Occurrence (NHEO)

1:21,692

.0 0.175 0.35 0.7 mi

0 0.275 0.55 1.1 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: LINCOLN

H02: WASTEWATER TREATMENT FACILITIES

STATE NUMBER: 19-E-0000-0021
DATE RECEIVED: 08/03/2018
AGENCY RESPONSE: 08/30/2018
REVIEW CLOSED: 09/04/2018

Received: 08/16/2018
State Historic Preservation Office

CH 18-2097

We are unable to open the below link to review the documents. Please submit a .pdf of the documents to environmental.review@ncdcr.gov referencing: CH 18-2097.
Thank you.

MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORDINATOR
DEPT OF NATURAL & CULTURAL RESOURCE
STATE HISTORIC PRESERVATION OFFICE
MSC 4617 - ARCHIVES BUILDING
RALEIGH NC

REVIEW DISTRIBUTION

CENTRALINA COG
DEPT OF ENVIRONMENTAL QUALITY
DEPT OF NATURAL & CULTURAL RESOURCE
DEPT OF TRANSPORTATION
DNCR - NATURAL HERITAGE PROGRAM
DPS - DIV OF EMERGENCY MANAGEMENT

PROJECT INFORMATION

APPLICANT: Lincoln County
TYPE: National Environmental Policy Act Scoping

DESC: Proposed project is for the Killiam Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd. - view documents at: https://transfer.wkdickson.com/message/tcnU7QVtZUx6X9O6B2b1ak

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☐ NO COMMENT ☒ COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley DATE: 8.17.18

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

Andy

COUNTY: LINCOLN

H02: WASTEWATER TREATMENT FACILITIES

STATE NUMBER: 19-E-0000-0021
DATE RECEIVED: 08/03/2018
AGENCY RESPONSE: 08/30/2018
REVIEW CLOSED: 09/04/2018

MS CARRIE ATKINSON
CLEARINGHOUSE COORDINATOR
DEPT OF TRANSPORTATION
STATEWIDE PLANNING - MSC #1554
RALEIGH NC

Transportation Planning Division
AUG 9 2018

REVIEW DISTRIBUTION

CENTRALINA COG
DEPT OF ENVIRONMENTAL QUALITY
DEPT OF NATURAL & CULTURAL RESOURCE
DEPT OF TRANSPORTATION
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If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☑ NO COMMENT ☐ COMMENTS ATTACHED

SIGNED BY: John A Bailey DATE: 8/13/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF ADMINISTRATION

ROY COOPER
GOVERNOR

MACHELLE SANDERS
SECRETARY

October 24, 2018

Mr. Ward Marotti
Lincoln County
c/o WK Dickson
616 Colonnade Drive
Charlotte, North Carolina 28205

Re: SCH File # 19-E-0000-0021; Proposed project is for the Killiam Creek Wastewater Treatment Plant upgrade which will expand the facility's existing sequencing batch reactor treatment capacity from 3.3 mgd to 6.65 mgd.

Dear Mr. Marotti:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter are **additional comments** made by the agencies in the review of this document.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,
Crystal Best
Crystal Best
State Environmental Review Clearinghouse

Attachments
cc: Region F

Mailing Address:
NC DEPARTMENT OF ADMINISTRATION
1301 MAIL SERVICE CENTER
RALEIGH, NC 27699-1301

Telephone: (919) 807-2425
Fax: (919) 733-9571
COURIER #51-01-00
Email: state.clearinghouse@doa.nc.gov
Website: www.ncadmin.nc.gov

Location:
116 WEST JONES STREET
RALEIGH, NORTH CAROLINA

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

October 19, 2018

Ward Marotti
WK Dickson
616 Colonnade Drive
Charlotte, NC 28205

Re: Killiam Creek Wastewater Treatment Plant Upgrade, Lincoln County, CH 18-2097

Dear Mr. Marotti:

Thank you for your email of September 24, 2018, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

WK DICKSON
community infrastructure consultants

25 July 2018

Ms. Catherine Janiczak
US Army Corps of Engineers
Charlotte Regulatory Field Office
151 Patton Ave., Room 208
Asheville, NC 28801-5006

RE: Killian Creek WWTP Upgrade – NEPA Scoping, Lincoln County, NC

Ms. Janiczak:

The Killian Creek Wastewater Treatment Plan (WWTP) Upgrade Project consists of the design, permitting and construction of a wastewater treatment plant upgrade which will expand the facility's existing sequencing batch reactor (SBR) treatment capacity from 3.3 mgd to 6.65 mgd. It includes the design, permitting and construction of all structures, piping and supporting electrical system for the proposed facility. This expansion is necessary to provide adequate treatment capacity for currently allocated and anticipated future flows for the next 20 years in growing Lincoln County.

A portion of the project's funding will be provided by the NC Clean Water State Revolving Fund. As a result, an Environmental Information Document (EID) will be prepared. To expedite and facilitate the review process, the Lincoln County requests inter-agency comment regarding potential natural and cultural impacts associated with this project, if any.

As shown in the attached maps, the proposed limits of disturbance (LOD) will be approximately 5.4 acres, approximately 1.75 acres of which will be located within the existing plant's disturbed/maintained footprint. The remaining portion of the project area is dominated by mature hardwood and pine mixed forest. Prior to EID submittal, an detailed environmental evaluation will be completed within the project area and its results summarized in the document.

Because the project will result in nominal changes to existing environmental resources, no significant impacts to these resources are anticipated.

Please review the proposed project and either confirm that significant impacts to environmental resources are not anticipated, or provide further guidance. Should you have questions, or require clarification, please call.

616 Colonnade Drive
Charlotte, NC 28205
Tel. 704.334.5348
Fax 704.334.0078
www.wkdickson.com

We appreciate your timely response to this important public infrastructure project.

Sincerely,

W.K. Dickson & Co., Inc.



Ward Marotti
Senior Scientist

WK DICKSON
community infrastructure consultants

25 July 2018

Ms. Janet Mizzi
Field Supervisor
US Fish and Wildlife Service
160 Zillicoa Street
Asheville, NC 28801

RE: Killian Creek WWTP Upgrade – NEPA Scoping, Lincoln County, NC

Ms. Mizzi:

The Killian Creek Wastewater Treatment Plan (WWTP) Upgrade Project consists of the design, permitting and construction of a wastewater treatment plant upgrade which will expand the facility's existing sequencing batch reactor (SBR) treatment capacity from 3.3 mgd to 6.65 mgd. It includes the design, permitting and construction of all structures, piping and supporting electrical system for the proposed facility. This expansion is necessary to provide adequate treatment capacity for currently allocated and anticipated future flows for the next 20 years in growing Lincoln County.

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As shown in the attached maps, the proposed limits of disturbance (LOD) will be approximately 5.4 acres, approximately 1.75 acres of which will be located within the existing plant's disturbed/maintained footprint. The remaining portion of the project area is dominated by mature hardwood and pine mixed forest. Prior to EID submittal, an detailed environmental evaluation will be completed within the project area and its results summarized in the document.

Because the project will result in nominal changes to existing environmental resources, no significant impacts to these resources are anticipated.

Please review the proposed project and either confirm that significant impacts to environmental resources are not anticipated, or provide further guidance. Should you have questions, or require clarification, please call.

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Charlotte, NC 28205
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www.wkdickson.com

We appreciate your timely response to this important public infrastructure project.

Sincerely,

W.K. Dickson & Co., Inc.



Ward Marotti
Senior Scientist

Appendix L – Public Meeting

L.1 Sample Public Notice

L.2 Public Meeting Information (To be added after meeting is held.)

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LINCOLN COUNTY, NC PUBLIC MEETING NOTICE

Lincoln County will hold a Public Hearing at the Lincoln County Citizens Center on the 3rd Floor in the Board of Commissioner Room located at 115 West Main Street, Lincolnton, NC 28092 at the regular meeting on _____at _____pm.

As part of this regularly scheduled meeting, the governing body expects to discuss the Engineering Report/Environmental Document –"Killian Creek WWTP Phase 3 Expansion" previously submitted to the North Carolina Department of Water Infrastructure on _____and associated request for funding under the North Carolina Division of Infrastructure, Clean Water State Revolving Fund (CWSRF). Topics to be presented and discussed at the meeting include:

- Identification of need and purpose of the project.
- Brief description of the project.
- Brief description of alternatives considered.
- Impact of project on monthly sewer bill for a typical residential user of 5,000 gallons per month.
- Identification of funding requirements and sources of funding being sought.

A copy of the Engineering Report and Environmental Information Document may be reviewed at the Lincoln County Department of Public Works located on the 2nd floor of the Citizens Center during regular business hours Monday, Tuesday, Thursday and Friday from 8:30 am -12:00 and 2:00 pm – 5:00 pm the week of_____.

Date of Notice: _____
Name of Person Preparing Notice: _____
Telephone number of person preparing Notice: _____

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Appendix M - Response to NCDEQ Technical and Environmental Review Comments

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Request for Additional Information
With WK Dickson's Response (February 1, 2019)

A. General Comments: No Response Needed

1) Engineering Reports not approved by May 1, 2019 may lose assurance of funding and may need to reapply for funding.
2) Provide a response to all comments on a "Comment for Comment" basis. You can include this as an Appendix in the Revised Engineering Report.
3) Submit two copies of the revised report incorporating all changes and an electronic copy on a CD.

B. Technical Comments

4) Summary
   a) Alternatives listed in item 1.3 should match with alternatives listed in section 5 – Alternative Analysis on page 34.

      Response:
      Corrected in revised ER/EID.

   b) Item 1.5 - Project Funding and User Fees does not provide information on the total cost of the project and how it will be funded through different sources. Provide this information with the amount and sources of funding the project.

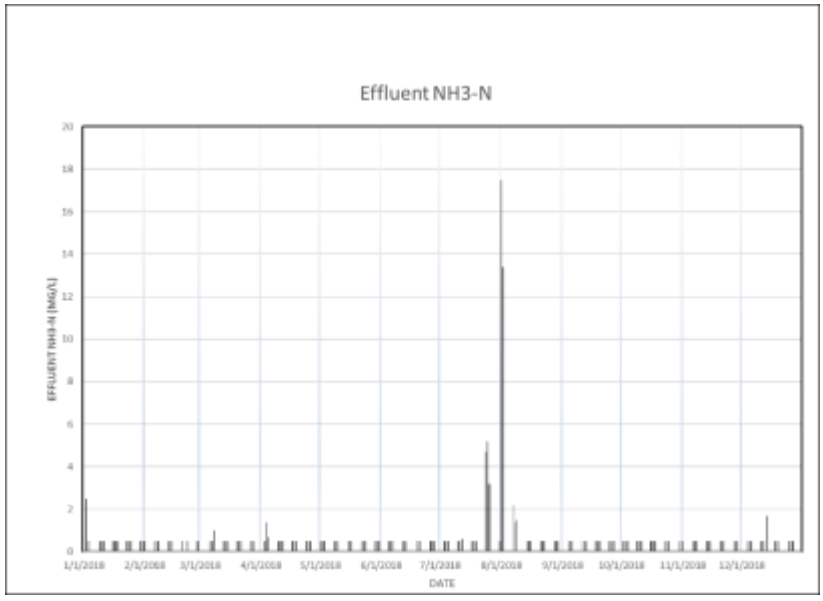
      Response:
      ER Item 1.5 has been revised to include total costs and funding sources. It is also noted in this Section and Section 8 was revised to address the proposed use of capacity development funds to offset a portion of the sewer user fees.

5) Section 2 - Current Situation
   a) Table 2.2.1- General Wastewater Condition shows that the WWTP does not have any NOVs or SOCs. Our records show that there are two enforcement cases going on for the facility for violation of NPDES weekly and monthly limits for ammonia nitrogen in August 2018. Provide information on this violation and enforcement cases.

      Response:
      A NOV was received by Lincoln County for an incident on August 1 and 2, 2018. This occurred during the final phases of the preparation of the ER/EID with related correspondence in October and December after the ER/EID was finalized and submitted. An additional NOV for toxicity was received on January 8, 2019. Table 2.2.1 has been revised to incorporate these NOV's and a copy of the related NOV correspondence added in Appendix B.3, B.4 and B.5.

      In early August, the plant experienced a sudden increase in effluent ammonia nitrogen from 0.5 mg/L on July 31 to 17.5 mg/L on August 1 and 13.4 mg/L on August 2. As reflected in the below graph of the 2018 Killian effluent ammonia nitrogen, it is noted that the elevated ammonia nitrogen level appears to have occurred only during the short period between July 24 and August 9, 2018 with the remainder of the year in compliance with the future speculative 1 mg/L monthly average and 3 mg/L weekly average permit

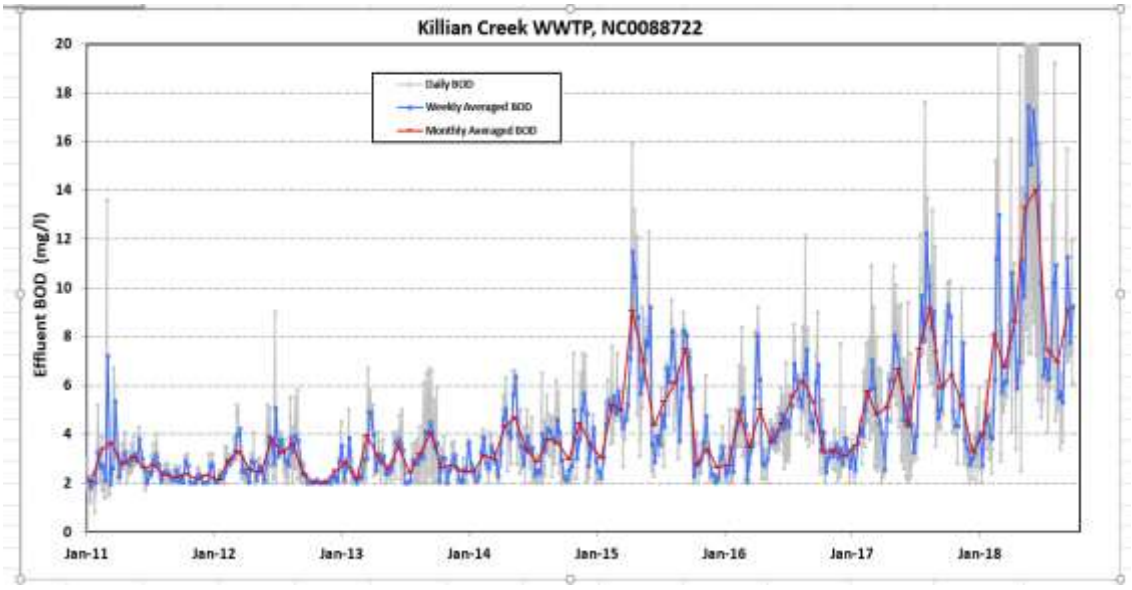
limits. Attempts to identify the source or cause of the early August excursion have not been successful. There were no spikes in influent loading, change in process pH or other toxicity impacts observed. During first two weeks of August 2018, effluent ammonia nitrogen, BOD_5 and TSS were observed to be elevated above normal effluent levels indicative of a change in the biological system performance perhaps due to an unusual discharge within the collection system. It is further understood that the plant may have had some issues with a blower during this period. Combined with hot weather, this could have impacted aeration capabilities.



The proposed plant expansion includes plans to modify the SBR process increasing the SBR cycle time from 4.8 to 6.0 hours and providing additional anoxic contact time. This is expected to promote better nitrification and denitrification and further stabilize the ammonia nitrogen removal process. The new process will continue to utilize dissolved oxygen monitors for process control and proposes to add ORP as an additional process control. The expansion is to also include provisions to increase the existing SBR blower capacity to meet the oxygen demand and the addition of a mix-no aeration step immediately prior to settle to promote better separation of solids before decanting. The proposed jet aeration system within the new SBR system is also expected to improve the oxygen transfer and mixing efficiency.

An additional NOV was received on January 8 (Appendix B.5) regarding a toxicity violation in October 2018. Follow-up toxicity testing with multiple dilutions was performed in November and December with no toxicity noted.

b) The review of DMR data from 2011 to 2018 showed that the plant performance was poor in 2017 and 2018 as compared to previous years. Please see effluent BOD chart below. Does the plant experience any operational or functional problems with SBRs or filters? Will this plant be able to meet stringent monthly and weekly effluent BOD limits of 5 mg/l and 7.5 mg/l respectively after expansion?



<u>Response:</u>
Attached is a summary sheet of the Killian Creek WWTP performance over the period 2015 to 2018 with notations regarding the number of instances the speculative permit conditions have been exceeded. In response to these results, the proposed expansion design is taking the following actions to improve the plant performance to meet the speculative permit limits:

1) *The existing SBR system influent piping is being modified to provide better distribution of the influent within the existing SBR Basins #1 and #2 and the new SBR Basins #3 and #4 will have influent piping to distribute the influent within the basin.*

2) *The SBR process is being modified to increase the cycle time from 4.8 hours to 6.0 hours to provide an increase in the anoxic contact time to improve the biological nitrogen and phosphorus removals.*

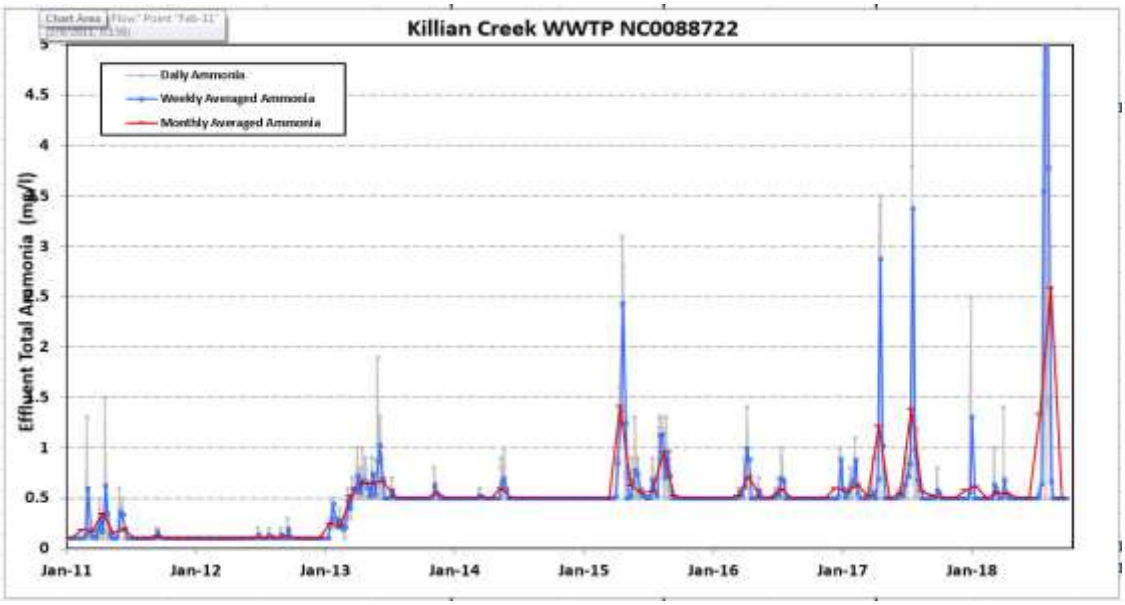
3) *The SBR process is expected to include a non-aerated mix step immediately prior to settling to assist in removing excess air from the biological floc to improve settling.*

4) *Alum is to be introduced immediately prior to the SBR process to assist with phosphorus removal. This is anticipated to improve the BOD removal in addition to phosphorus removal.*

5) *The SBR process will utilize an on-line Dissolved Oxygen monitor for controlling the SBR aeration system. It is proposed to add an ORP monitoring system within the new process to further assist in monitoring and control of the nitrification process.*

6) *Discussions with plant operation staff have indicated that the plant periodically experiences issues in achieving the desired minimum DO levels within the existing SBR basins during the aeration cycle in combination with hot weather conditions. Recent issues with the floating mixers and blowers have contributed to this problem. The existing blowers are proposed to be modified during the expansion to increase speed providing an approximate 58% increase in capacity. The new SBR system is also utilizing a jet aeration system that is expected to be more reliable and provide a higher oxygen transfer efficiency. The existing fine bubble diffusers are also being evaluated to determine if the original diffusers installed in 2009 have lost some aeration transfer efficiency due aging diffusers membranes.*

c) DMR data and violation report review also showed that ammonia nitrogen concentration in the effluent is increasing (See the charge below). The plant needs to demonstrate that it will be able to meet 1 mg/l monthly average and 3 mg/l weekly average limits for ammonia nitrogen after expansion to 6.6 MGD.



Response:
As reflected in the attached summary of the plant monitoring results from 2015 to 2018 and previous graph of 2018 ammonia effluent in response to Item 5.b, the ammonia nitrogen excursions appear to be more random than an increasing trend. As noted in the response to item 5.b and 5.c, the proposed expansion is taking actions to improve the ammonia nitrogen and BOD removal consistency with the expansion improvements.

6) Section 3 – Future Situation
a) Provide details on current flow allocation commitments to understand future wastewater flow to the treatment plant.

Response:
An additional comment has been added to Table 3.2.2 regarding future flow allocations and a copy of the County's recent FTSE 10-18 dated October 26, 2018 has been added to Appendix F.3. The FTSE documents the current actual and obligated flow at 2.883 mgd or 86.06% of the permitted capacity. Additional flow allocation requests are also being delayed until the current proposed plant expansion is completed providing additional permitted capacity.

b) The Division does not agree with option 4 i.e. Merolina Community Viz Model (MCVM) used to project future population and wastewater flow. Population projection methods used for regional transportation projects may not be applicable to predict future population for water and wastewater projects. If long term economic development is the driving force for this WWTP expansion project, then quantify it to justify the higher population growth in this area.

Response:
Population projection was revised to utilize the Option 3 projection methodology based upon the historical average growth rate of the Catawba Springs and Ironton Townships between 2000 and 2014. These are the two fastest growth regions of Lincoln County due to the proximity to Lake Norman, Charlotte and Hickory and recent upgrade of US Highway 16 to a divide four (4) lane highway and completion of Interstate 485 providing improved access to eastern Lincoln County.

Option 1 based upon percent of land area and Option 2 based upon the percent of the current population were not believed to reflect the true growth pattern of the area. The Option 4 Metrolina Community Viz Model was left in the report for information purposes and further documentation of the anticipate growth of the region.

Tables 3.1 and 3.2 have been revised to reflect the Option 3 alternative population projection.

c) Provide details on methodology and assumptions used to project future wastewater flow in table 3.2.1on page 31. Also note that this table shows that the current flow is 1.02 MGD but the flow projection using MCVM is 2.27 MGD for year 1. This increase of almost 1.25 MGD in one year and total flow of 4.77 MGD in 2037 do not appear to be realistic and it is not justified. The county needs to use a realistic population projection method to justify future population growth and need for plant expansion.

` *Response:*
Conflict has been resolved and population methodology changed to Option 3 based upon the historical population growth within the Catawba Springs and Ironton Townships.

d) The average daily flow from 2017 to 2037 in Table 3.2.2 does not match with effluent flow predicted in previous tables. Please update all tables to show consistency.

Response:
Conflict has been resolved and Table 3.2.2 updated to agree. It is noted, however, that the flow projections based upon the populations do not accurately reflect the anticipated growth. Lincoln County currently has flow allocations equal to 80% of the current permitted 3.35 mgd capacity with additional requests and area developments pending the expansion of capacity. This is expected to accelerate the initial growth in flow.

7) Section 5 – Alternative Analysis

a) Table 5.1.4 shows that adjustment of SBR cycle time, increased anoxic contact and addition of chemical will help the WWTP achieve BOD, Ammonia Nitrogen, TN and TP limits. Please provide performance information from other WWTPs with SBR and filters to demonstrate that proposed alternative will be able to meet future stringent BOD, TN and TP limits.

Response:
Information from four (4) WWTP's utilizing SBR and effluent filters provided by Evoqua plus information from a recent WK Dickson plant upgrade for the City of Dahlonega GA is attached. This data generally demonstrates the ability of the SBR and effluent filter process at other facilities to achieve BOD_5, Ammonia N limits, Total Nitrogen and phosphorus levels equal to the speculative effluent limits for Killian Creek. Achievement of the phosphorus limits at these plants may be impacted by the chemical feed and corresponding phosphorus permit limits for the respective plants. The required effluent limits for the respective plants are unknown and could impact the related plant process control.

b) Table 5.2.1 shows capital cost estimate for independent MBR system. Please replace this table to provide capital costs for expansion of existing SBR system.

Response: Table 5.2.1 has been replaced with correct Table 5.2.1.1

c) Table 5.2.1.6 showing replacement costs from year 16 to 20 is missing after table 5.2.1.5. Please add this table to the ER.

Response: The missing Table 5.2.1.6 has been added into report.

d) Please explain what is the intermittent operation and maintenance cost listed for independent MBR system in Table 5.2.4. Please provide supporting table or explanation for this cost. What is the intermittent O&M cost for other alternatives?

Response:

Tables 2.2.2.9 & 2.2.2.10 were omitted from previous ER and have been added. Intermittent O&M is related to the replacement of membranes at year 10. The 20-year replacement is included in the Equip O&M.

8) Plans & Specifications

Our preliminary review of calculations shows that the document is missing BOD, TN and TP removal calculation. Please submit these calculations with the additional information requested for the ER/EID. Also send a copy of these additional calculations to Bing Bai, ATC reviewer, NPDES Complex Permitting Unit.

Response: Calculation of removals is attached and will be added to the ATC.

C. Environmental Comments

9) Section 7.0 Environmental Information Document (General): Note that the Existing Conditions discussion should describe the project site AND surrounding area. For many of the resource categories, the description is limited to the WWTP site. Please revise the document to include descriptions of the surrounding area. With this project supporting area growth and development, it is especially important to include the surrounding area that maybe be impacted by future development as part of the analysis of environmental assessment.

   Response: EID sections have been updated to provide descriptions of the surrounding areas, where appropriate.

10) Section 7.5 Forest Resources: There is no discussion of secondary and cumulative impacts (SCI). Please include a description of anticipated SCI and mitigative measures.

   Response: Section updated to address SCI to forest resources.

11) Section 7.6 Wetlands & Streams: Please provide a figure showing streams and wetlands in the broader project area likely to be affected by SCI.

   Response: Figures showing National Wetland Inventory wetlands and NC streams were added.

12) Section 7.7 Water Resources: The discussion of impacts addresses construction impacts but not operational impacts. The expansion of the wastewater treatment plant will significantly increase the amount of effluent discharged to Killian Creek. The impacts of this discharge into the creek and downstream waters is a crucial part of the environmental assessment for the project and must be adequately addressed in this document.

   Response: Section updated to address downstream impacts to water resources, including speculative permit limits included in Appendix B.

13) Section 7.8 Shellfish, Fish, and Their Habitats: See comment C.4 above and revise this section accordingly to address operation impacts associated with the increased discharge to Killian Creek.

   Response: Section updated to address downstream impacts to shellfish, fish and their habitats, including speculative permit limits included in Appendix B.

14) Section 7.9 Wildlife and Natural Vegetation: Table 7.9 lists the state-threatened Georgia aster and indicates that habitat for the species is present within the limits of disturbance of the project, but there is discussion of the species under impacts and mitigation. Revise the discussion to clearly discuss potential impacts and mitigation for this species.

Response: Section updated to reflect two surveys for Georgia aster: one in 2004 and one in 2008.

15) Section 7.11 Public Lands and Scenic, Recreational, and State Natural Areas: There is no discussion for SCI for this resource category. Please address the potential for SCI resulting from growth and development.

Response: Section updated to discuss SCI impacts and mitigation to public lands and scenic recreational and state natural areas.

16) Section 7.13 Air Quality: The Existing Environment discussion is confusing. Please clarify what air emissions are associated with the existing plant and what emissions are typical for the surrounding area.

Response: Section updated to clarify.

17) Section 7.16 Environmental Justice: This section references Figure 7.15, which does not appear to be included in the report. Please include a figure that shows the census block group used for the Environmental Justice Analysis. Also note that the text reference Table 7.15 but the table is numbered Table 7.16. Please correct this discrepancy.

Response: Table reference in section updated. Figure added.

18) Section 9.0 Public Participation: There are places in this section that refer to a public hearing and others that refer to a public meeting. The public participation requirement can be met with the less formal public meeting. For clarity, please revise all references to say "meeting" rather than "hearing" unless the county does intend to hold the more formal public hearing.

Response:
The term "hearing" noted in 3 places has been changed to "meeting".

19) See the attached comments from the NC Dept. of Environmental Quality and the NC Department of Public Safety. Revise the ER/EID as needed to address these comments and add a copy of these comments to the document. Additional comments from outside agencies are expected and will be forwarded as soon as they are available.

Response:

1. *Lyn Hardison, Division of Environmental Assistance and Customer Service*

Identified permits are acknowledged and will be reviewed for applicability on this project.

2. *<u>David Wainwright, SEPA Coordinator, Division of Water Resources</u>*
   We are contacting Mr. David Hill of NPDES Complex Permitting regarding the request for additional information and updated ER/EID and will forward a copy to this agency if requested.
3. *<u>Olivia Munzer, North Carolina Wildlife Resources Commission</u>*
   Comments related to identified concerns are as follows:
   a. *Section 7.15.2 has been clarified regarding chlorine. Chlorine is not utilized at the plant other than small bottle quantities of chlorine-based chemical that may be used for disinfection of equipment and tools during maintenance activities. This does not represent a significant potential impact to the effluent.*
   b. *Lincoln County has a pretreatment program to monitor and control pollutants harmful to the environment and treatment plant that includes specific limitations on heavy metals and mercury. Additionally, whole effluent toxicity testing is included within the required monitoring to identify the presence of potentially disruptive pollutants. It is understood that the NPDES permitting unit takes low stream flows (i.e. 7Q10) into consideration in deriving permit limitations.*
   c. *PPCP are of concern to all municipal wastewater treatment facilities. Lincoln County will continue to monitor concerns and take actions as necessary of control in accordance with regulatory agency guidelines.*
   d. *The proposed expansion area is adjacent to the existing plant site and minimum clearing will be performed as necessary for construction and scheduled to avoid the May -August roosting season for bats if feasible.*

4. *<u>Bonnie S. Ware, NCDEQ Inactive Hazardous Sites Branch</u>*
   a. *As stated, there are no known hazardous waste sites within one-mile of the project.*

5. *<u>Deb Aja, NCDEQ Western District Solid Waste Section</u>*
   a. *Construction practices will be promoted to minimize and recycle materials where suitable. All wastes that cannot be recycled will be required to be disposed at an approved waste facility with documented of all off-site disposal.*

Item 5)c) Response Attachment-

KILLIAN CREEK WWTP DMR EFFLUENT DATA

Parameter	Units	2015	2016	2017	2018	AVERAGE
FLOW:						
Average Daily	MGD	1.004	0.979	0.945	1.043	0.976
Maximum Daily	MGD	1.861	1.329	1.612	2.411	1.601
Minimum Daily	MGD	0.835	0.760	0.571	0.731	0.722
Influent BOD5:						
Average	mg/L	231	262	262	272	252
Maximum	mg/L	488	825	395	435	569
# of Samples	#	157	129	130	175	
Days > 250 mg/L	#	43	76	103	109	74
Days > 300 mg/L	#	11	18	14	33	14
Influent TSS:						
Average	mg/L	269	278	283	272	277
Maximum	mg/L	516	1126	714	478	785
# of Samples	#	157	129	130	154	
Days > 250 mg/L	#	75	76	103	108	85
Days > 300 mg/L	#	33	32	34	26	33
Effluent BOD5:						
Average	mg/L	4.9	4.1	5.4	8.6	5.8
Maximum	mg/L	15.9	12.1	17.6	58.8	5.8
# of Samples	#	156	156	156	156	624.0
Days > 5	#	60.0	39	69	116	71.0
Days > 7.5	#	24	12	30	62	32.0
Effluent TSS:						
Average	mg/L	3.5	3.3	2.6	3.2	3.2
Maximum	mg/L	14.0	14.4	7	24	14.8
# of Samples	#	158	156	156	156	626.0
Days > 30	#	0	0	0	0	0.0
Ammonia N:						
Average	mg/L	0.6	0.5	0.7	0.8	0.7
Maximum	mg/L	3.1	1.4	6.1	17.5	7.0
# of Samples	#	158.0	156	156	155	625.0
Days > 1 mg/L	#	14	1	4	11	7.5
Days > 3 mg/L	#	1	0	3	5	2.3
Effluent Total Nitrogen:						
Average	mg/L	6.3	6.2	3.1	3.3	4.7
Maximum	mg/L	11.3	10.6	6.5	5.1	7.0
# of Samples	#	12	12	12	12	48.0
Days > 6.0 mg/L	#	6	4	1	0	2.8
Effluent Total Phosphorus						
Average	mg/L	2.8	3.6	3.5	4.0	3.5
Maximum	mg/L	4	6	4.9	8.83	5.9
# of Samples	#	12	12	12	12	48.0
Days > 1.0 mg/L	#	12	12	12	11	11.8
Effluent Fecal Col.						
Average	#/100 ML	19	35	77.2	39.4	42.8
Maximum	#/100 ML	530	370	950.0	630.0	620.0
# of Samples	#	157	156	156	157	626.0
Days > 200 #/100 L	#	2	3	13	4	5.5

Item 8 Attachment –

AUTHORIZATION TO CONSTRUCT APPLICATION

Tab 5 - Item 11 Pollutant Removal Calculations

POLLUTANT	DESIGN INFLUENT CONCENTRATION (mg/L)	DESIGN EFFLUENT CONCENTRATION (mg/L)	DESIGN PERCENT REMOVAL %
BOD5	262	5	98.1%
TSS	283	30	89.4%
Ammonia N	35	1	97.1%
Total Nitrogen*	52	6	88.5%
Total Phosphorus	8	1	87.5%

* TKN is assumed to = Total Nitrogen as Nitrate and Nitrite N are generally very low.

See ATC -TAB 5 Item H.7 for additional computations related to the SBR Aeration and Digester Aeration computations.

Item 7) a) Attachment –
Evoqua Plants plus Dahlonega Plant Performance Information

NPDES Monitoring Data Download						
Pigeon Forge STP, TN						
Monitoring Period Range: 01/01/2018 to 11/31/2018						
Facility ID: TN0021237						
	BOD, carbonaceous	Solids, total suspended	Nitrogen, ammonia total	Nitrogen, total (as N)	Phosphorus, total (as P)	Flow (Mo. Ave)
	05 day, 20 C		(as N)			Design Flow = 6.0 MGD
Mon Pd End Date:	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG	MGD
01/31/2018	3.4	3.2	0.19	3.5	0.45	1.79
02/28/2018	2.5	2.5	0.07	3	0.1	3.12
03/31/2018	2.4	2.5	0.15	5.1	0.39	3.37
04/30/2018	3.3	3.1	0.26	7.1	3	2.64
05/31/2018	2.4	2.5	0.17	5	0.64	2.39
06/30/2018	2.8	2.5	0.22	7.6	0.76	2.55
07/31/2018	2.9	2.5	0.67	6	0.54	2.8
08/31/2018	2.1	2.5	0.29	4.9	0.17	2.86
09/30/2018	2.7	3.1	0.22	4.9	0.62	2.78
10/31/2018	2.4	2.5	0.14	3.7	0.27	2.8
11/30/2018	2.4	2.5	0.19	1.7	0.44	3.08
12/31/2018						
11 Month Average:	2.7	2.7	0.2	4.8	0.7	2.74
Point Washington WWTF						
Monitoring Period Range: 01/01/2018 to 11/31/2018						
Facility ID: FLA010252						
	BOD, carbonaceous	Solids, total suspended	Nitrogen, total (as N)	Flow (Mo. Ave)		
	05 day, 20 C			Design Flow = 4.0 MGD		
Mon Pd End Date:	MO AVG	MO AVG	MO AVG	MGD		
01/31/2018	5.2	1.5	5.4	1.02		
02/28/2018	6.8	1.1	3.75	1.41		
03/31/2018	4.8	1.3	4.25	1.84		
04/30/2018	3.1	1.2	3.69	1.12		
05/31/2018	4.3	1	3.49	1.18		
06/30/2018	2.8	1.8	7.48	1.61		
07/31/2018	2.4	2	8.26	1.65		
08/31/2018	5	1.4	8.93	1.2		
09/30/2018	2.5	2	5.96	1.43		
10/31/2018	2.6	2.8	7.86	1.27		
11/30/2018	3	2.8	7.44	1.35		
12/31/2018						
Average:	3.9	1.7	6.0	1.371		

City of Marathon Area 4 WWTP						
Monitoring Period Range: 01/01/2018 to 11/31/2018						
Facility ID: FLA550973						
	BOD, carbonaceous	Solids, total suspended	Nitrogen, total (as N)	Phosphorus, total (as P)	Flow (Mo. Ave)	
	05 day, 20 C				Design Flow =0.4 MGD	
Mon Pd End Date:	MO AVG	MO AVG	MO AVG	MO AVG	MGD	
1/31/2018	3.95	4.2	2.88	0.69	0.22	
2/28/2018	8.74	1.75	3.75	0.425	0.22	
3/31/2018	4.26	3.45	5.9	2.7	0.24	
4/30/2018	2.69	33.95	1.62	0.54	0.21	
5/31/2018	5.16	0.87	1.92	0.68	0.22	
6/30/2018	13.5	1.09	2.18	0.68	0.22	
7/31/2018	7.59	1.09	1.28	1.06	0.22	
8/31/2018	6.63	2.05	3.02	0.825	0.2	
9/30/2018	3.64	2.15	1.66	0.43	0.19	
10/31/2018	4.99	1.06	1.32	0.57	0.2	
11/30/2018	6.94	0.85	0.76	1.08	0.23	
12/31/2018						
Average:	6.2	4.8	2.4	0.9	0.215	
City of Marathon Area 3 WWTP						
Monitoring Period Range: 01/01/2018 to 11/31/2018						
Facility ID: FLA642851						
	BOD, carbonaceous	Solids, total suspended	Nitrogen, total (as N)	Phosphorus, total (as P)	Flow (Mo. Ave)	
	05 day, 20 C				Design Flow = 0.25 MGD	
Mon Pd End Date:	MO AVG	MO AVG	MO AVG	MO AVG	MGD	
1/31/2018	3.9	1.8	1.6	0.75	0.143	
2/28/2018	5.1	2.23	3.95	1.35	0.14	
3/31/2018	4.85	2.21	4.85	0.45	0.14	
4/30/2018	13.84	2.44	2.03	0.68	0.168	
5/31/2018	4.13	1.03	2.04	1.21	0.146	
6/30/2018	2.56	1.16	3.37	0.95	0.147	
7/31/2018	1.78	2.3	1.92	1.32	0.163	
8/31/2018	1.7	1.65	1.27	1	0.165	
9/30/2018	2.15	0.5	0.5	0.7	0.163	
10/31/2018	6.4	4.4	1.22	0.24	0.169	
11/30/2018	4.16	1.8	2.64	1.41	0.158	
12/31/2018						
Average:	4.6	2.0	2.3	0.9	0.155	

Ridings of Chaddsford STP, PA

Monitoring Period Range: 01/01/2018 to 10/31/2018

Facility ID: PA0055476

Outfall - Monitoring Location - Limit Set: 001 - 1 - A

	BOD, carbonaceous	Solids, total suspended	Nitrogen, ammonia total	Nitrogen, total (as N)	Phosphorus, total (as P)	Flow (Mo. Ave)
	05 day, 20 C		(as N)			Design Flow = 0.09 MGD
Mon Pd End Date:	MO AVG	MO AVG	MO AVG	MO AVG	MO AVG	MGD
01/31/2018	7	11	0.8	20.5	1.6	0.03143
02/28/2018	5	6	0.6	16.1	0.8	0.03699
03/31/2018	4	6	0.5	17.6	0.8	0.03944
04/30/2018	6	7	0.3	20.5	1.1	0.03797
05/31/2018	5	14	0.5	20.2	1.1	0.04027
06/30/2018	7	10	0.2	16.6	0.6	0.0366
07/31/2018	7	5	0.5	14.6	0.2	0.03562
08/31/2018	3	3	0.6	13.3	0.5	0.03514
09/30/2018	3	4	0.6	16.5	0.6	0.04025
10/31/2018	4	6	0.5	17.4	0.5	0.03508
11/30/2018						
12/31/2018						
Average:	5.1	7.2	0.5	17.3	0.8	0.0369

City of Dahlonega, GA (Aqua Aerobic SBR/Mini-Disk Filter w/ Alum Addition)

Monitoring Period Range: 01/01/2018 to 12/31/2018

Facility ID: GA0026077

Outfall - Monitoring Location - Limit Set: 001 - 1 - A

	BOD, carbonaceous	Solids, total suspended	Nitrogen, ammonia total	Phosphorus, total (as P)	Flow (Mo. Ave)
	05 day, 20 C		(as N)		Design Flow = 1.5 MGD
Mon Pd End Date:	MO AVG	MO AVG	MO AVG	MO AVG	MGD
01/31/2018	2	1	1.69	0.1	0.712
02/28/2018	2	2	0.39	0.1	0.895
03/31/2018	2	1	0.09	0.1	0.766
04/30/2018	2	2	0.13	0.12	0.783
05/31/2018	1	1	0.11	0.11	0.674
06/30/2018	1	2	0.09	0.11	0.687
7/31/2018	1	2	0.09	0.1	0.584
08/31/2018	1	1	0.12	0.1	0.701
09/30/2018	1	1	0.21	0.12	0.72
10/31/2018	2	1	0.31	0.11	0.757
11/30/2018	1	1	0.54	0.09	0.800
12/31/2018	1	1	2.24	0.15	0.867
Average:	1.4	1.3	0.50	0.11	0.746