

ROY COOPER  
Governor  
MICHAEL S. REGAN  
Secretary  
LINDA CULPEPPER  
Director



I concur w/ recommendations  
in the Hearing officer's Report  
except for change noted in  
addendum (attached).  
JLM  
5/15/19

April 25, 2019

## MEMORANDUM

**TO:** Linda Culpepper, Director  
Division of Water Resources

**FROM:** Tom Fransen, Chief, Water Planning Section *TCF*  
Division of Water Resources

**SUBJECT:** Hearing Officer's Report and Recommendations  
Town of Siler City, NPDES Wastewater Permit No. NC0026441  
Siler City WWTP, Chatham County

On January 24, 2019, I served as Hearing Officer for a public hearing at the Siler City Town Hall Courtroom in Siler City, North Carolina. The purpose of the hearing was to gather public comments regarding the Division's proposal to reopen and modify the NPDES permit for the Siler City WWTP.

Public notice of the draft permit (Attachment A) was originally published in *The Chatham News* on October 25, 2018 and posted on the DWR website. In response to several requests, the Division agreed to hold a public hearing. Public notice of the hearing (Attachment B) was published in *The Chatham News + Record* on December 20, 2018 and posted on the DEQ website at <https://deq.nc.gov/news/events/public-hearing-siler-city-wwtp-permit-nc002644>. The hearing was then held, and oral and written comments were received. The comment period ended on January 31, 2019. Due to the federal shutdown in January, we accepted comments from the U.S. Fish & Wildlife Service on February 7.

I have considered all comments received and worked with the Division staff to identify a course of action. This report presents my findings and recommendations for the subject NPDES wastewater permit, NC0026441. Revised copies of the permit and fact sheet are provided as Attachments C and D and highlight changes from the original draft versions.

The report has been prepared using the following outline:

- I. Background
- II. Public Hearing
- III. Comments Received/ Response to Comments
- IV. Summary and Discussion
- V. Recommended Actions  
Attachments



## I. Background

**Facility and Permit.** The Town of Siler City owns and operates the Siler City WWTP, a 4.0 MGD activated sludge treatment plant. The plant discharges treated wastewaters to Loves Creek, 0.4 mile upstream of its confluence with the Rocky River.

The discharge is subject to, among other things, limits for biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), ammonia nitrogen (NH<sub>3</sub>-N), and total phosphorus (TP) (Table 1). The Town has complied with these limits (2012-2018) with a few minor exceptions. The plant has bypassed its final filters multiple times due to storm events and inflow and infiltration (I/I) into its collection system, but it has still met the limits.

**Table 1. Existing Effluent Limitations (Partial List)**

PARAMETER	EFFLUENT LIMITATIONS	
	Monthly Average	Weekly Average
BOD <sub>5</sub> (April 1- Oct 31) (Nov 1 – March 31)	5.0 mg/L 10.0 mg/L	7.5 mg/L 15.0 mg/L
TSS	30.0 mg/L	45.0 mg/L
NH <sub>3</sub> as N (April 1- Oct 31) (Nov 1 – March 31)	1.0 mg/L 2.0 mg/L	3.0 mg/L 6.0 mg/L
Total Phosphorus (April 1 – Sept 30)* (Oct 1 – March 31)*	0.5 mg/L (quarterly average) 2.0 mg/L (quarterly average)	
Total Nitrogen	Monitor Only	

\* Seasonal timeframes were modified to accommodate quarterly limits.

The current treatment plant, constructed in 1998, was designed to treat a combination of municipal and industrial wastewaters. However, because it was not subject to total nitrogen (TN, or nitrogen) limits, the plant was not designed to remove nitrogen.

**Past Industrial Users, Water Quality Impacts.** Until 2011, the plant received high-strength wastewaters from two poultry processing facilities, Pilgrim's Pride and Townsend Poultry. The Town's discharge averaged 31.5 mg/L TN, or 667 lb/day, from 2004-2008, when both poultry facilities were operating. The discharge raised nitrogen concentrations in downstream waters significantly. Loves Creek and the Rocky River experienced excessive growth of aquatic plants and filamentous algae, and Woody's Dam Lake (Reaves Lake) is listed on the 303(d) list as impaired due to chlorophyll-a exceedances.

Pilgrim's Pride closed its facility May 2008, and Townsend Poultry closed in October 2011, and the Town's discharge decreased to 14 mg/L TN, or 200 lb/day (2016-2017). The degree of improvement in water quality has not been determined, but residents of the area indicate that the streams have visibly improved.

A 2011 DWR report recommended that total nitrogen limits representing best available technology be added to the permit at its 2011 renewal. However, both poultry processors had already closed, and neither was expected to reopen in the foreseeable future. Without the industrial inputs, effluent TN concentrations from the WWTP declined significantly. Rather than add TN limits to the Town's permit – and prompt costly plant upgrades that might prove unnecessary later – the Division added a reopener condition that allowed it to reopen the permit to add nutrient limits later if necessary.

**New Industrial User.** In May 2016, Siler City announced that Mountaire Farms Inc. would operate a new poultry processing facility at the former Townsend Poultry site. Per the reopener provision in its permit, the Town notified the Division on December 9, 2016, that it intended to

accept wastewater from the industry beginning in early 2019. The Division then notified the Town by letter on June 8, 2017, that it planned to reopen the permit to address the expected increase of nitrogen in its discharge.

Per its permit, the Town conducted a treatability analysis to evaluate the impact of Mountaire Farms' initial production levels (Phase 1, 0.75 MGD) on the Town's discharge. It later conducted a second analysis to examine the impacts at full production (Phase 2, 1.25 MGD). The studies estimated that, with the addition of Mountaire Farms' wastewaters, the Town's nitrogen discharge will likely return to previous (2004-2008) levels or greater: 30 mg/L TN, or 640 lb/day in Phase 1 and 38 mg/L TN, or 990 lb/day at full Phase 2 production.

The projected increase in nitrogen is expected to impact the receiving waters to a greater degree than previous poultry operations did unless significant controls are implemented first. Thus, there is a compelling need to limit Siler City's nitrogen discharge and protect water quality in Loves Creek and downstream waters. The Town has proposed to upgrade its plant to reduce its nitrogen discharge to current levels, and it has secured tentative funding for \$5.75 million for the project.

Proposed Permit Modification. In October 2016, the Division published notice of its intent to reopen the permit to establish the following nitrogen control requirements:

- A technology-based Total Nitrogen (TN) limit of 73,058 lb/yr (equivalent to 6.0 mg/L TN at 4.0 MGD, or 200 lb/day), to become effective January 1, 2023;
- Two new conditions requiring the Town to (1) evaluate the potential to reduce its TN discharge through optimization of the existing plant and (2) implement effective measures within 22 months of permit issuance, while plant upgrades are still underway; and
- A new condition specifying how annual mass TN loads are to be calculated and reported.

The draft permit would ensure that, within four years, the Town will sufficiently upgrade its treatment processes to hold nitrogen discharges to current levels. It also aims to identify and implement operational improvements ("optimization") while the upgrades are designed and constructed.

## II. Public Hearing

Public notice of the draft permit was originally published in *The Chatham News* on October 25, 2018 (Attachment A) and posted on the DWQ website. In response to multiple requests received, the Division agreed to hold a public hearing. Public notice of the hearing (Attachment B) was published in *The Chatham News + Record* on December 20, 2018 and posted on the DEQ website at <https://deq.nc.gov/news/events/public-hearing-siler-city-wwtp-permit-nc002644>. The public hearing was held on January 24, 2019, at 6:00 p.m., at the Siler City Town Hall Courtroom in Siler City. The purpose of the hearing was to gather comments regarding the proposed reopening and modification of the NPDES permit for the Town's WWTP. Oral and written comments were received at the hearing, and additional written comments were received during the comment period. The comment period ended on January 31, 2019, except that comments from U.S. Fish & Wildlife Service staff were accepted on February 7, in light of the federal government's partial shutdown in January.

Approximately 54 people attended the public hearing including 38 members of the general public; five Town employees or consultants; ten staff members of DWR's Central Office

(Raleigh), the Raleigh Regional Office, and DEQ's Public Information Office; and the hearing officer. The sign-in sheet for non-speakers is attached as Attachment E.

Nineteen individuals spoke at the hearing. The speakers' sign-in sheet is included as Attachment F. Written comments received are available on the Division's website at the link provided in Attachment I. (Large attachments of supporting materials are not included but are available upon request.)

As hearing officer, I provided opening and closing comments (Attachment G). Mike Templeton provided an overview of DWR's draft NPDES permit (Attachment H), and comments were then heard.

### III. Comments Received/ Response to Comments

Division staff have reviewed all comments received. This section summarizes the key comments and responses to those comments.

#### A. Impacts of the Town's Discharge on Water Quality and Natural Resources

##### Comments:

- The Rocky River is a significant and valuable resource and recreation area, and it should be protected.
- Nitrogen discharges from the Pilgrim's Pride and Townsend Poultry resulted in thick, slimy, noxious algal growth and dead zones in downstream waters, especially in the Rocky River.
- The proposed discharge will release even more total nitrogen (TN) into Loves Creek and the Rocky River.
- The proposed discharge will not protect existing uses - fishing, swimming, aquatic life, drinking water supply - in the creek and downstream waters.
- Several aquatic species found in downstream waters are considered rare, threatened, or endangered according to state or federal listings and the NC Wildlife Action Plan; for example, the Cape Fear Shiner and Mimic Shiner (finfish) and the Brook Floater and Savannah Lilliput (freshwater mussels). Efforts are underway to aid their recovery. Reduced water quality in the streams could hamper this and other restoration efforts.
- The recent removal of Woody's Dam has improved habitat in the vicinity and reconnected populations of rare and endangered mussels.
- The shiners seem to tolerate the growth of filamentous algae, but sedentary species are more susceptible to impacts.

**Response:** The Division recognizes that the Siler City WWTP will discharge significantly more nitrogen due to the wastes from the new Mountaire Farms facility. History shows that the added nitrogen will impact Loves Creek, Rocky River, and downstream waters. It may also pose some threat to aquatic life in those streams, including rare, threatened, or endangered species.

It is the Division's intent to address these issues as quickly as possible.

## B. Necessary Steps to Protect Water Quality and Natural Resources

**Comment:** The Clean Water Act (CWA) and Endangered Species Act (ESA) require DWR to protect designated uses in these streams.

**Response:** The Division intends to comply with both state and federal requirements and believes that, in the absence of a TMDL, the proposed approach best meets the intent of the Acts.

### Comments:

- The proposed discharge violates the CWA: the streams are listed on the 303(d) list as "impaired", and a TMDL or water quality study is required as soon as possible to determine protective water quality-based limits.
- The nitrogen discharge should be regulated to limit its impacts and protect water quality in Loves Creek and the Rocky River.
- The proposed limits are technology-based, not water quality-based as required for a discharge to impaired waters.

### Response:

The Division does not yet have a basis for setting water quality-based effluent limits (WQBELs) for Siler City or other dischargers in the watershed. Either a Total Maximum Daily Load (TMDL) or nutrient criteria for the affected waters must be established to set protective WQBELs. Neither process can be completed quickly.

- TMDL: It will likely take 5-8 years to complete a TMDL or water quality management study for the watershed and 1-3 years more to adopt implementing rules. Typically, point sources are allowed five years to complete the necessary upgrades and comply with any new limits.
  - Protective? Yes. Total time required: 11-16 years.
- Nutrient Criteria: It will take 1-2 years for the NCDP SAC to develop nutrient criteria for the affected waters plus 1-3 years for rulemaking and five for implementation.
  - Protective? Yes. Total time required: 7-10 years.

(The Division initiated a two-year surface water monitoring effort in January 2019 to collect data that will support either effort.)

Instead, the Division proposes to establish a technology-based effluent limitation (TBEL) for nitrogen. The limit is equivalent to the Town's 2016-2017, "no-poultry" loads, approximately 200 lb/day. It will take an estimated four years (now 3½ years) for the Town to upgrade its treatment plant to meet the proposed limit.

- Protective? To be determined. Total time required: 3½ years to implement.

At the same time, the Town must evaluate operational approaches ("optimization") to reducing its nitrogen discharge. The effectiveness of this approach at Siler City has yet to be determined. Similar efforts at municipal treatment plants around the country have achieved significant reductions, but good results are not guaranteed.

- Protective? To be determined. Total time required: 1½-2 years to implement.

It appears that the combination of a establishing a nitrogen limit and requiring optimization is the most expeditious way to achieve real nitrogen reductions in Siler City's discharge and address water quality issues in Loves Creek and the Rocky River.

**Comments:**

- The Town's treatment plant upgrades should be completed more quickly than the four years allowed.
- The nitrogen limit should be more stringent, and the Town should be required to comply immediately.

**Response:** Four years (now 3½ years) is not an unreasonable time to expect the Town to complete the upgrades and comply with the limit. In that time, the Town must secure funding, advertise for and retain a design engineer and contractor, create and submit its design to DWR for approval and obtain of an Authorization to Construct permit, and construct the approved upgrades at the plant without affecting its on-going operations.

The Town's limit is equivalent to 6.0 mg/L TN, which represents a basic nitrogen removal process. The limit will ensure that the Town's nitrogen discharge does not exceed its current levels once the upgrades are completed.

The risk in setting a more stringent limit now is that future studies may reveal that the limit is not as stringent as the interim limit. Nitrogen removal is expensive, and the Town does not have unlimited funding for plant improvements. If the interim limit is more stringent than necessary, the Town will have spent more – perhaps much more – than was necessary.

**Comment:** The timeframe for optimizing plant operations should also be shortened.

**Response:** The current schedule is not overly generous. But the Town determined that the time allowed for preparing its report could be reduced from six months to four months.

**Comment:** Optimization is not likely to be successful because of the Town's inflow and infiltration problems and the resulting overflows and treatment bypasses. These issues should be addressed.

**Response:** I/I may influence the effectiveness of optimization, but the effort may prove effective nonetheless. Although it has bypassed its tertiary filters on several occasions due to spike flows from storm events, the Town has not bypassed its main treatment units and has complied with permit limits. Its monthly average TSS did not exceed 6.0 mg/L in that same period.

The Town continues to restore its collection system in order to reduce inflow and infiltration into the system and thereby reduce the need to bypass its filters.

### C. Economic Considerations and Responsibilities

**Comments:**

- Mountaire Farms should be responsible for managing its wastes and should reduce its nitrogen loads to the Town's treatment plant.
- Mountaire Farms should be required to pay the cost of treating its wastes.
- Mountaire Farms has a poor environmental record elsewhere and should be subject to protective limits here.

- Protecting water quality and the public health should be a higher priority than Mountaire Farms' financial gain.
- New jobs and an economic boost are welcome, but only to a point. Good stewardship now will reap economic benefits, too, as Chatham County is recognized for its natural beauty and resources.

**Response:** It is the Town's responsibility to weigh these considerations and establish terms for the industry's discharge to the Siler City WWTP. The Town had little warning of Mountaire Farms' decision to build its new plant and little time to set those terms. Once the nitrogen limit is added to its permit, the Town can consider whether to add additional requirements in Mountaire Farms' industrial user permit.

**Comment:** Mountaire Farms should not be allowed to discharge until it or the Town have installed the treatment necessary to protect water quality.

**Response:** Mountaire Farms' flows to the Town are regulated through an Industrial User Permit issued by the Town. The IUP was issued in 2017 and authorized Mountaire Farms to release pretreated wastewaters beginning in January 2018. (The facility began discharging in January 2019.)

Under the state's pretreatment program, limits in a municipal NPDES permit are considered in setting limits for industrial users. Because Siler City's NPDES permit does not yet contain a total nitrogen (TN) limit, the Town has had no clear basis for limiting Mountaire Farms' nitrogen discharge.

**Comment:** Requirements for onsite pretreatment should be reconsidered.

**Response:** Installing additional treatment units at the Mountaire Farms facility to remove nitrogen will be extremely expensive and, like the Town's upgrades, require several years to complete.

#### D. Mitigation Opportunities

**Comment:** DWR, the Town, and Mountaire Farms should work to offset the new nutrient loads. Potential project sites in the watershed have been identified (TetraTech, 2005) where BMPs could be implemented to achieve reductions, and some of these measures may still be actionable.

**Response:** Nonpoint source requirements fall outside the scope of the NPDES program and so cannot readily be added to the Town's permit. However, the Division agrees that these efforts could help offset the new loads. DWR staff will meet with local Soil and Water Conservation staff and the Town to consider how these measures could be implemented.

**Comment:** Monitoring should be expanded to evaluate how effective the offsets, BMPs, or other measures are.

**Response:** In January 2019, the Division initiated a two-year instream monitoring project in the Deep River and Rocky River watersheds. Monitoring will continue at the existing ambient and coalition stations in the watersheds and at three new stations each in the two watersheds.

The data collected will be used to support the development of a watershed model for the upper Cape Fear watershed. The model will then be used to support NPDES permitting of nutrients in the watersheds.

The project will not track the effectiveness of these BMPs specifically, but it will provide information on conditions associated with algal bloom frequency and duration, which will also be useful.

#### E. Other Comments

**Comment:** Replace chlorination with ultraviolet or ozone disinfection to protect sensitive aquatic organisms.

**Response:** The Town can consider ultraviolet or ozone disinfection in the design of its plant upgrades. The Division will consider the need for alternative means of disinfection in its design review of the plant upgrades.

**Comments:**

- Set ammonia limits based on EPA's new criteria.
- Ammonia limits are probably protective.

**Response:**

- The state has not yet adopted EPA's new ammonia criteria so will continue to base limits using the current working criteria, which are similar to the EPA's. The Division will consider the new ammonia criteria in the next Triennial Review of water quality standards (now underway) and will implement any new standards through the permit once the standards are adopted into rule.

### III. Summary and Discussion

The Siler City WWTP discharges treated wastewaters to Loves Creek, 0.4 mile upstream of its confluence with the Rocky River. The plant is not subject to nitrogen limits and so is not designed to remove nitrogen.

Mountaire Farms began initial operations in January 2109 and discharges to the Town's collection system and treatment plant. It is not subject to nitrogen limits and so does not remove nitrogen. It will substantially increase the nitrogen load to the Town and to the receiving waters as production levels increase.

Two poultry processors discharged to the plant in the past, and downstream surface waters were impacted significantly. Since the closure of the processors, those waters have begun to recover. They will likely be impacted again and possibly to a greater degree when Mountaire Farms begins production.

There is widespread agreement that this situation must be corrected as soon as possible so as to minimize the impacts to surface waters and to the aquatic species that inhabit them.

The Town has diligently pursued funding to upgrade its treatment plant for nitrogen removal and has received tentative awards totaling \$5.75 million. It now has the opportunity to undertake this project in order to restore water quality downstream of its discharge. However,

some of the funding is conditioned on the Town first demonstrating the need for the project. The Town needs this permit and the proposed TN limit to demonstrate that need.

If the Town does not receive full funding for the project, not only will it have to postpone the upgrades until it can obtain additional funding; it may also have to redirect funding meant for other projects, such as collection system repairs undertaken to reduce inflow and infiltration and to reduce the frequency of filter bypasses at the treatment plant.

Thus, the proposal to establish a nitrogen limit in the Town's permit appears to be the most effective and timely way for the Town to limit its impacts on surface waters.

While the Town's discharge is a significant source of nitrogen in the watershed, other sources also impact water quality. For example, even under current "no-poultry" conditions, impoundments on the Rocky River both upstream and downstream of Loves Creek exhibit low dissolved oxygen levels and signs of nutrient impacts. Turner Reservoir (upstream of Loves Creek) and the Cape Fear River behind Buckhorn Dam (downstream) have both been added to the state's 303(d) list for exceedance of the chlorophyll-a standard. Downstream, Woody's Dam Lake (Reaves Lake) is also on the 303(d) list (the dam was removed in 2018).

The Town is sensitive to concerns about water quality in Loves Creek and the Rocky River. It has adopted ordinances to promote responsible development, proper stormwater management, preservation of sensitive environmental areas, and restoration of natural resources within its jurisdiction. And it is actively working with others on several water quality improvement projects:

- Loves Creek Watershed Stewards - Stormwater management improvements and riparian buffer restoration at Boling Lane Park. The Town has provided staff and materials for buffer restoration, removal of invasive plant species, trail maintenance, public education.
- 205J Stormwater Infrastructure Assessment and Mapping - Town will repair clogged or damaged stormwater infrastructure that may contribute to flooding
- Park Shopping Center restoration
- EEG Floodplain Park
- Brownfields projects - Phase I and II Environmental Site Assessments on former industrial sites (also part of EEG floodplain project)
- Septic Repair Grant (205J funds) - Rocky River watershed, Liberty to Goldston
- Loves Creek signs and stream naming contest
- CAM Site Readiness Spring Litter Sweep
- Pedestrian Master Plan - implementing pedestrian projects to reduce motor vehicle miles

The Town has also hired a full-time grants administrator to manage the many varied funding sources and opportunities for its various projects.

#### IV. Recommended Actions

I recommend that the Division issue the proposed modification of the Siler City permit NC0026441 as soon as possible and as follows:

- The permit should include the total nitrogen limit and the January 1, 2023, compliance date as originally proposed. This leaves the Town slightly more than 3½ years to complete its treatment plant upgrades.
- The milestones for the optimization study should be extended by four months to allow for the delay in permit issuance. The overall schedule should be shortened to 20 months by reducing the time for report preparation from six months to four months.

Markup copies of the revised permit and fact sheet are included as Attachments C and D, respectively. The recommended changes in each are shown in underline/ strikethrough format.

I also encourage the Division to:

- Meet with the Chatham County Soil and Water Conservation staff and the Town to consider how to promote projects that would reduce nutrient contributions from farms and other sites in the watershed.
- Continue the surface water monitoring project begun in January 2019 and use the results in developing a watershed model for the Rocky River.
- Assist the Town in updating its Headworks Analysis for nitrogen if an update is warranted following completion of the treatment plant upgrades.
- Continue to support the Town in its efforts to reduce I/I flows into its collection and treatment systems.
- Continue to support the Town in its water quality protection efforts.
- Support resolution of the low dissolved oxygen problem at the Hackney Millpond, as appropriate.

# Attachments

- A. Public Notice of Draft Permit
- B. Public Notice of Hearing
- C. Permit NC0026441, with Recommended Revisions
- D. Permit Fact Sheet, with Revisions
- E. Non-Speakers' Sign-In Sheet
- F. Hearing Officer Presentation
- G. NPDES Staff Presentation
- H. Speakers' Sign-In Sheet
- I. Public Comments (available in electronic form)

