HEARING OFFICER REPORT
for
New NPDES Permit NC00900042
The Chemours Company FC, LLC, Fayetteville, NC

This report is presented to the Director of the North Carolina Division of Water Resources.

INTRODUCTION

This Hearing Officer Report summarizes the major issues raised through the public hearing process, as well as the Hearing Officer recommendations for the new NPDES Permit. The Director of the Division of Water Resources will take final action on these recommendations.

FACILITY BACKGROUND

Chemours is a major industrial facility. Chemours operates an ion exchange monomers process and a polymer processing aid process. Also on-site, DuPont operates a polyvinyl fluoride process, and Kuraray operates Butacite and SentryGlas processes.

Beginning in mid-2017, Per- and Polyfluorinated Substances (PFAS) were found in the Cape Fear River. Certain compounds of concern, including GenX or HFPO dimer acid (HFPO-DA), were traced back to Chemours. Studies of health effects of many PFAS compounds are ongoing. Known health effects of some PFAS compounds include kidney disease, developmental effects to fetuses, and some forms of cancer. Since 2017, Chemours has been prohibited from discharging any process wastewater to the Cape Fear River.

In July of 2017, the North Carolina Department of Health and Human Services (DHHS) set a drinking water provisional health goal of 140 ng/L for GenX. According to DHHS, the provisional drinking water health goal is "not a regulatory level and is not a boundary line between a 'safe' or 'dangerous' level of GenX, but can be used to provide information to affected communities and residents about potential risks from exposure to GenX through drinking water." On June 15, 2022, EPA issued a lifetime, drinking water health advisory of 10 ng/L for GenX chemicals. EPA's drinking water advisory levels "identify the concentration of a contaminant in drinking water at which adverse health effects are not anticipated to occur over specific exposure durations." Health advisories "are not legally enforceable but are intended to inform the public and determine whether local actions are needed to address public health impacts in affected communities." To-date, EPA and the state of NC have not issued any applicable regulatory standards for PFAS.

On February 25, 2019, a Consent Order between DEQ, Chemours, and Cape Fear River Watch was entered in Bladen County Superior Court, with an Addendum entered on October 12, 2020. As part of the Consent Order, Chemours was required to assess pathways for PFAS on and around the site and their potential mass loadings to the Cape Fear River. The assessment was submitted to DEQ on December 6, 2019, and updated quarterly since then. Chemours analysis indicates that the primary source of PFAS loading to the Cape Fear River from the facility is contaminated groundwater. According to a recent mass loading report onsite groundwater contributes over 60% of the remaining PFAS loading to the Cape Fear River from all sources at the facility. This groundwater reaches the Cape Fear River directly through subsurface hydrological connection to the Cape Fear River and through seeps that flow in channels along the surface before entering the river. As required by the Consent Order to reduce PFAS loading to the Cape Fear River, Chemours has proposed to construct an underground barrier wall, groundwater extraction system, and contaminated

groundwater treatment system to prevent the migration of contaminated groundwater into the Cape Fear River. As part of this remediation project, Chemours has requested a new NPDES permit for the discharge of treated groundwater, treated stormwater, and treated surface water from seeps through a new Outfall 004.

Chemours preliminarily estimated that treating groundwater and seeps will reduce overall loading of Total Table 3+ PFAS compounds from the facility from all sources to the river by 51% based on an average of these two sampling events (Cape Fear River PFAS Loading Reduction Plan – Supplemental Information Report, November 2019). According to a more recent mass loading report, onsite groundwater contributes over 60% of the remaining PFAS loading to the Cape Fear River from all sources at the facility.

Under the Consent Order, Chemours must remove at least 99% of indicator parameters HFPO-DA (GenX), PFMOAA, and PMPA before discharge may occur. While the Consent Order requires Chemours to achieve a minimum PFAS removal efficiency of 99%, the conditions included in any discharge permit must also be sufficient to ensure compliance with all applicable regulations, including regulations concerning the establishment of technology based effluent limits (TBELs), based on the permitting record before the agency at the time of permit issuance.

The proposed treatment system for the contaminated groundwater, stormwater, and seeps (seep A and seep B) is designed to remove PFAS compounds. The proposed system will treat groundwater from a series of extraction wells (~70 wells) and surface water (including stormwater) from seep A and seep B. It is capable of treating peak flows of 2.9 MGD, the average flow is projected to be 2.38 MGD. Most of the flow (91%) to the treatment system will be coming from groundwater. All the dry weather flow from seeps A and B as well as 0.5 inches of rain during 24-hour period will be captured and treated. This extracted contaminated groundwater, stormwater, and surface water from seeps A and B would otherwise flow untreated to the Cape Fear River.

The treatment system will include chemical oxidation and pH adjustment to precipitate metals, ultrafiltration membranes to remove precipitated metals and other total suspended solids, a granular activated carbon (GAC) system to remove PFAS compounds, and other associated equipment. Treated effluent will be monitored and sampled at an internal point considered to be Outfall 004 then piped and mixed with existing wastewaters discharged through Outfall 002. The average flow from Outfall 004 is expected to be 2.38 MGD, and the average flow from Outfall 002 prior to the addition of the Outfall 004 is 23.17 MGD. Solids associated with reject streams from filtration and GAC systems will undergo dewatering through a thickening tank and filter press or centrifugation, from which sludge cake will be disposed of offsite and the press water will be recycled to the influent of the thickening tanks.

This permit will not authorize the discharge of any process wastewater from Chemours. The only process wastewater discharged comes from Chemours' tenants DuPont and Kuraray.

The solids generated in the treatment plant will be tested and shipped off-site for appropriate disposal. The GAC will be sent back to the manufacturer for recycling.

PUBLIC HEARING/PUBLIC RECORD

In accordance with North Carolina General Statutes, an in-person public hearing was held on June 21, and a virtual public hearing was held on June 23, 2022, regarding the proposed NPDES permit. Notice of the proposals and the original hearing was published on May 17, 2022, in the *Wilmington Star-News* (notice is attached). On May 17, 2022, a news release about the public hearing was sent to media statewide as well as

parties who voluntarily signed up to receive it, such as attorneys, businesses, and citizens. On May 17, 2022, an announcement of the public hearing was sent to the DWRPublicNotices List serve.

Ms. Amy Chapman, a Supervisor of the Transportation Permitting Branch, served as hearing officer for both hearings. During an in-person hearing 97 people registered as non-speakers and 23 people registered to speak. Most speakers (20) opposed the proposed permit for the variety of reasons described in the next section of the report. One speaker supported the permit and two speakers asked about the reasons for delaying the permit. Registered attendees at the hearing who provided information regarding their affiliation represented entities ranging from environmental and regulatory interest groups; municipalities; citizens, residents, and property owners.

During the virtual hearing 17 people registered, 14 of them registered to speak. Majority of speakers (13) opposed the proposed permit and 1 expressed concern regarding the lack of wall maintenance requirements in the Draft Permit.

During both hearings, general information about the hearing as well as the draft permit was followed by DWR presentations with detailed information about the draft permit. Speakers provided public comments on the draft permit after the DWR presentation. Written comments were accepted for the proposed NPDES permit from May 17, 2022, through June 24, 2022.

The Division received approximately 250 written comments supporting the Draft Permit, most of them were originated from one website and contained identical text. The Division also received approximately 155 comments opposing the Draft Permit.

MAJOR ISSUES RAISED AND DWR RESPONSES

Listed below are the major issues raised through the public hearings and written comments, and the Division staff responses to those issues.

Comment:

a. DEQ must develop TBELs for PFAS removal based on the data from the treatment system at Outfall 003 and the removal shown from the seep treatment systems. As a result, SELC suggests that TBELs should require PFAS removal requirements to exceed 99%. Similar comment was provided by the Brunswick County Administration.
b. Data from October 29, 2020 (Outfall 003) cannot be used because the facility was not properly designed.
c. Seep data supports more stringent permit limits.
d. There is no rational basis for allowing PFAS discharges at the levels proposed.
e. The Division must evaluate the effect of new health advisory level.
f. The Division must go beyond the Consent Order.

Response: The Division agrees with the commenter that it is appropriate to develop TBELs for PFAS removal based on the data from the treatment system at Outfall 003.

Pursuant to the Consent Order, in September of 2019, Chemours commenced operation of a similar system at Outfall 003, an old outfall at the site. Like the proposed Outfall 004 treatment system, the Outfall 003 system utilizes granular activated carbon to remove PFAS from stormwater and surface water (fed by contaminated groundwater). According to Chemours permit application, "The design of the [Outfall 004 treatment system] is similar to the design of the treatment system for Outfall 003. The effluent data that has been submitted to NCDEQ with EPA Form 2C for permit number NC0089915 is therefore considered to be

suitable to estimate the expected effluent data for the GWTS." Chemours application also states that the treatment plant at Outfall 003 listed as a "similar plant" that "resemble[s] production processes, wastewater constituents, or wastewater treatment" proposed at Outfall 004.

The Outfall 003 treatment system has now been in operation for nearly two years. During initial startup of the facility, the treatment system at Outfall 003 was not properly operated and maintained. As documented in a Notice of Violation issued by DEQ on January 26, 2022, during October and November of 2020, "[i]n addition to failing to properly handle sediment that infiltrated the system to ensure that it did not interfere with proper system operations, Chemours did not adequately maintain the structural integrity of the area surrounding the treatment facility sufficient to prevent erosion and gullying of the slope upstream of the dam." This resulted in the system exceeding effluent limits in its permit for PFAS. The Division agrees with the commenter that it is not appropriate to consider the effluent concentrations from periods of time during which the Outfall 003 treatment system was not properly operated and maintained for purposes of determining appropriate limits at Outfall 004.

However, since November of 2020, the system has consistently removed PFAS in compliance with effluent limits. Indeed, since January of 2021, the highest concentrations of indicator parameters at Outfall 003 are as follows:[1]

HFPO-DA: 2.3 ng/L
PFMOAA: 6.4 ng/L
PMPA: 10 ng/L (all values $\leq$ 10 ng/L)

As further documented in the Fact Sheet, based on information submitted during the public comment period, the Publication of EPA's GenX drinking water health advisory of 10 ng/L that was issued on June 15, 2022, and an evaluation of the data from Outfall 003, the Division is establishing an effluent limit for HFPO-DA of <10.0 ng/L. The Division is also establishing effluent limits for PMPA and PFMOAA as 10.0 ng/L and <20.0 ng/L, respectively, based on the procedure established in Chapter 5 of USEPA NPDES Permit Writers' Manual. Limits for all three indicator parameters will take effect after a 6-month optimization period. During the optimization period, effluent limits will be 120 ng/L for HFPO-DA, 320 ng/L for PFMOAA, and 100 ng/L for PFMOAA. These limits are based on the best professional judgement.

The 6-month optimization period provides time for the system to be adjusted and optimized so that it is consistently capable of achieving the final permit limits. Specifically, the optimization period is necessary to account for the installation of a new system and potential differences between the influent at Outfalls 003 and 004. For instance, while the Outfall 003 treatment system treats *surface water*, the Outfall 004 system will treat primarily *groundwater* (>90%). The performance of treatment technology often varies across surface water and groundwater due to the different physical and chemical characteristics of these media. One difference in the chemical characteristics of surface water and groundwater at the Chemours facility can be seen in the different forms of iron. Iron in the groundwater (Outfall 004) primarily exists as a dissolved divalent cation Fe^{2+}. On another hand, the iron in the surface water exists primarily in the form of trivalent oxide or hydroxide, and their various mineral combinations (Fe_2O_3 or $Fe(OH)_3$). Dissolved iron is difficult to remove and it has a tendency to coat the filter surfaces, which will negatively impact GAC performance. Chemours is designing the system to remove dissolved iron, but it must be tested in the field and might need operational or physical adjustment to successfully operate. Additionally, manganese acts very similar to iron and may present identical problems. The permit requires the facility to develop an

[1] In December 2020, the PFMOAA concentration in effluent was 16 ug/L. This result was prior to full optimization of the treatment system, which occurred in early 2021 and further demonstrates the need for an optimization period.

Operations and Maintenance Plan that will ensure optimal operation of the treatment system. The facility is inspected regularly by DEQ employees to maintain compliance with the permit terms and conditions.

The permit allows DEQ to re-evaluate the data after 12 months of the GAC treatment system operations. DEQ will further reduce the limits if the facility demonstrates the ability to consistently achieve levels that are lower than the proposed limits. As noted, wastewater treatment operations need time to optimize their performance. It is especially important for a new technology with a very limited application history.

With regard to the commenter's statement that the Division must evaluate the effect of EPA's drinking water health advisories, it is important to emphasize that the permit regulates surface water, which has a different set of standards from drinking water. The health advisory is applicable to drinking water only and is not an enforceable surface water quality standard. As part of DEQ's Action Strategy for PFAS, the agency is developing regulatory standards and permitting pathways for priority PFAS chemicals.

With regard to the commenter's statement that the Division should move beyond the requirements of the Consent Order, the Division agrees that the requirements of the Consent Order are not the only limits that must be included in an NPDES permit, as any such limits must also ensure compliance with all applicable regulations, including regulations concerning the establishment of TBELS based on the permitting record before the agency at the time of permit issuance. In consideration of these regulations and the hearing record, the Division is lowering effluent limits in the permit to <10 ng/L for HFPO-DA, 10 ng/L for PMPA, and <20 ng/L for PFMOAA after the optimization period is completed.

Comment: The permit must require that more than 0.5 inches of stormwater be treated.

Response: Research indicates that first stormwater flush of 0.5 inches is the most contaminated, addition of more treatment capacity is unlikely to result in significant additional environmental benefits. Furthermore, if the facility is required to treat more stormwater, the size of the treatment pond would be significantly increased, which could interfere with the groundwater flow and extraction from the groundwater extraction system. In addition, larger ponds would result in the destruction of the beneficial buffers.

Comment: The permit must contain a requirement to achieve a non-detect level for all PFAS compounds because Chemours achieved these non-detect levels at Outfall 003.

Response: Engineering studies demonstrate that 3 indicator compounds selected for compliance are the most difficult to remove. As a result, the removal rate for other PFAS is expected to be greater than for the three indicator parameters. The Division's evaluation of the data from Outfall 003 supports this conclusion. Therefore, the Division has determined that use of indicator parameters remains appropriate.

The EPA used similar reasoning to limit the number of monitored parameters to 4 in the Flue-gas desulfurization (FGD) wastewater - "Effluent limits and monitoring for all pollutants of concern is not necessary to ensure that the pollutants are adequately controlled because many of the pollutants originate from similar sources, have similar treatabilities, and are removed by similar mechanisms. Because of this, it may be sufficient to establish effluent limits for one pollutant as a surrogate or indicator pollutant that ensures the removal of other pollutants of concern."

As an additional protective measure, this permit will include a reopener to incorporate limits on additional PFAS if they are shown to break through more quickly than these indicator parameters.

Comment: NCDEQ must require Chemours to move the upstream Cormix sample point at least 20 miles upriver to get out from under the influence of Chemours' overall discharge of PFAS and HFPO-DA into the environment.

Response: The permit upstream sampling point is located above the Willis Creek confluence with Cape Fear River and approximately 0.2 miles above Chemours' intake. Chemours has conducted sampling of HFPO-DA at this location in 2020 and 2021. The majority of data was below detection level (9 samples) and 2 samples were measured at 2 ng/L. These data clearly suggests that the proposed upstream sampling site is outside of the facility's influence on the receiving stream.

Comment: Chemours must factor in background PFAS levels into their effluent river loading calculations. The draft permit identifies the current upstream sample point as the Permittee's river pump station.

Response: The statement regarding upstream sampling point is incorrect. The permit upstream sampling point is located above the Willis Creek confluence with Cape Fear River and approximately 0.2 miles above Chemours' intake. The permit also has a very robust sampling regime at 4 different transects and 3 sampling points along each transect. This sampling is in addition to already existing sampling point at Tar Heel Ferry Bridge. The proposed sampling regime will be sufficient to accurately calculate river loading.

Comment: Chemours must update the percent removal calculation with the measurement from the upriver sample point.

Response: The removal is calculated strictly on the basis of the concentration in the effluent and in the influent of wastewaters received at the treatment system. The upstream concentration has no impact on the treatment system efficiency. In addition, upstream sampling of HFPO-DA indicates that most sampling events show the upstream concentration of the compound to be below detection level, and the rest to be equal to 2 ng/L.

Comment: Chemours should use the same treatment system (reverse osmosis) for this permit as it is currently doing for water within its own facility. Chemours should be required to recycle and reuse all wastewater from Outfall 004.

Response: The entire production need of the facility is 0.6 MGD, Outfall 004 will generate 2.38 MGD. There is not sufficient need to re-use the wastewater from Outfall 004. The facility also does not operate in a continuous regime. As such, there may be periods when production is shut down and the need for re-used water may completely disappears.

Additionally, the RO system employed by the facility generated approximately 35,000 gpd of water. This RO product does not always meet the specification for re-use and the facility uses approximately 84 trucks each month to ship this RO reject and RO off-spec effluent to Texas Molecular.

PFAS concentration in the RO effluent is typically within the range of 2 ng/L to 3.5 ng/L. The proposed GAC treatment system for Outfall 004 should produce similar PFAS concentrations after full optimization. In which case, an increase in the re-use of wastewater will not generate any significant environmental benefits.

If treated wastewater is used in the cooling system, it will be discharged to Cape Fear River without any additional reduction in PFAS concentrations because the facility uses a once-through non-contact cooling system. To the extent the commenter advocates for a redesign of the facility's handling of non-contact cooling water, this is outside the scope of this permit action.

All these factors cause the re-use option to be infeasible.

Comment: There is no safe level of PFAS exposure for many residents in the Lower Cape Fear watershed.

Response: DEQ recognizes the importance of reducing the PFAS reaching downstream communities, and the permit limits require nearly all PFAS to be removed from the contaminated groundwater prior to discharge. The Division expects that effluent concentration of PFAS compounds will be consistently below 10-20 ng/L after the optimization of the system is completed. Without the barrier wall, groundwater extraction system, the treatment system, and this NPDES permit, this contaminated water, which has built up under the facility and in the soils over decades, would otherwise flow untreated to the Cape Fear River.

Comment:

a. Chemours should be required to sample for and control 99% of all PFAS being discharged. and compliance should be based on all PFAS compounds that are being monitored.
b. Sampling should be more frequent.

Response: Engineering studies demonstrate that 3 indicator compounds selected for compliance are the most difficult to remove. As a result, the removal rate for other PFAS is expected to be greater than for the three indicator parameters. The Division's evaluation of the data from Outfall 003 supports this conclusion. Therefore, the Division has determined that use of indicator parameters remains appropriate.

The permit requires monitoring of all 55 PFAS compounds that are typically released from the site, and for which certified methods are available.

The proposed sampling regime is more than adequate to evaluate effluent impacts on the receiving stream. Weekly sampling of limited parameters is more frequent than is required by the existing policy. Typically, NPDES permits only require monthly monitoring for parameters for which limits are being implemented.

Comment: The permit must include total organic fluorine monitoring once the method is approved.

Response: The permit does require total organic fluorine monitoring once the method is approved.

Comment: Installation of the wall can back up the groundwater and negatively impact the drinking water wells in the surrounding community.

Response: The facility is installing approximately 70 wells behind the wall to pump the groundwater and eliminate any back up.

Comment: The facility must be shutdown to prevent any further contamination.

Response: This issue is outside of the NPDES permit scope, though it should be noted that the contaminated groundwater that will be treated by the treatment system authorized in this permit has built up over decades and would continue to flow to the river whether or not the facility was in operation.

Comment: Chemours must pay for the filters and drinking water.

Response: While this issue is outside of the NPDES permit scope, under the Consent Order Chemours is required to sample potentially affected wells in at least eight counties. They are further required to provide alternate drinking water supplies based on the sampling results, including filtration systems and maintenance costs or public water connections and water bills. Additional information for private well user is available on the DEQ website at https://deq.nc.gov/news/key-issues/genx-investigation/genx-information-residents.

Comment: The proposed system has inadequate removal efficiency for PFOA and PFOS.

Response: The proposed system is very similar to the system employed at Outfall 003. Based on the track record of the existing system, the Division expects that Outfall 004 will achieve a removal efficiency for PFOA and PFOS of at least that of the PFAS indicator parameters – initially 99% removal and after 6 months < 10-20 ng/L.

Comment: More information is needed on the discharge.

Response: The Fact Sheet contains significant information on the proposed discharge. In addition, the Permit Application and the Engineering Report are available online from the Laserfiche.

Comment: The permit must contain the wall maintenance requirement.

Response: As part of the review of Chemours 90% design of barrier wall and extraction system, DEQ is requiring Chemours to install additional monitoring wells, incorporate sampling of extraction wells, add performance monitoring to existing wells, provide updated groundwater modeling, and address other general conditions.

Comment: Why is the permit delayed?

Response: Given the importance of the remediation project associated with this permit, the Division needed time to conduct additional review, evaluate complex technical documentation and discuss it with EPA. In addition, the Division recognized the importance of soliciting and incorporating public feedback on the draft permit.

HEARING OFFICER RECOMMENDATIONS

Based on review of the public record and written/oral comments received during the public hearing process, I recommend to the Division Director that the 2022 Draft NPDES Permit NC0090042 for Chemours Company – Fayetteville Works be revised as follows, and issued for five years pending EPA approval:

1. Incorporate the wall maintenance requirements into the permit.
2. Revise initial limits for PFMOAA from 640 ng/L to 320 ng/L, and for PMPA from 130 ng/L to 100 ng/L.
3. Revise the limits for 3 indicator parameters to <10.0 ng/L for HFPO-DA (GenX), 10 ng/L for PMPA, and < 20.0 ng/L for PFMOAA after a 6-month optimization period.

9/15/2022
Date:

Amy Chapman, Supervisor
Transportation Permitting Branch
Division of Water Resources

APPENDICES

A. Draft Permit
B. Fact Sheet
C. Announcement of Public Hearing
D. DWR Hearing Presentation