

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450

601 WEST ROSEMARY STREET, SUITE 220
CHAPEL HILL, NC 27516-2356

Facsimile 919-929-9421

August 2, 2019

Via Email

Sheila Holman
Assistant Secretary for the Environment
N.C. Department of Environmental Quality
1601 Mail Service Center
Raleigh, N.C. 27699-1601
Sheila.holman@ncdenr.gov

Brian D. Long
Plant Manager
Chemours Fayetteville Works
22828 NC Highway 87 W
Fayetteville, NC 28306
Brian.D.Long@chemours.com

Re: Chemours' Old Outfall 002 Remedial Options Pursuant to Consent Order
Paragraph 12

We have reviewed Chemours' Old Outfall 002 Remedial Options Plan, submitted pursuant to paragraph 12 of the consent order, and related portions of Chemours' July 9, 2019 NPDES NC0003573 Permit Application Update; and we submit the following comments and questions on behalf of Cape Fear River Watch.

Comments on the Scope of Chemours' NPDES Application

As Chemours' recognizes, both of its proposed hydraulic control and "capture and treat" options for Old Outfall 002 require a NPDES permit because they would involve the discharge of PFAS pollutants from Chemours' treatment system into Old Outfall 002 and the Cape Fear River. Old Outfall 002 Remedial Options Plan (May 2019) at 7, 10. However, the permit application update that Chemours submitted on July 9, 2019 includes only applications for Outfalls 001, 002, and proposed Outfalls 102 and 00F2—none of which include a discharge associated with Old Outfall 002. Please confirm that once the Old Outfall remedial option is selected, Chemours will be submitting a subsequent NPDES application to cover the associated discharge.

Cape Fear River Watch is in the process of reviewing Chemours' July 9, 2019 NPDES NC0003573 Permit Application Update and will be submitting additional comments.

Comments on Chemours' Proposed Remedial Options

Hydraulic Control

Hydraulic control for groundwater remediation is a long-standing and commonly used practice. Implementing a hydraulic control system and treating the contaminated groundwater at Old Outfall 002 could be an effective method of preventing further contamination to surface water. It is the only option that would specifically target the site's extreme groundwater contamination, and that would also preserve the integrity of the stream. However, it does not appear that Chemours has sufficiently analyzed the hydraulic control option, as it dedicated only a half-page description to the option in its Remedial Options Plan. Old Outfall 002 Remedial Options Plan (May 2019), at 10.

Moreover, Chemours has not provided enough information to allow Cape Fear River Watch or DEQ to make an informed decision on the hydraulic control option. For instance, the operation and placement of extraction wells would be essential for capturing the groundwater. However, it does not appear that Chemours has conducted a full hydrogeological characterization or aquifer tests of the site. Accordingly, Cape Fear River Watch requests that Chemours continue to evaluate the feasibility of a hydraulic system for capturing the contaminated groundwater before it reaches Old Outfall 002, and that the company keeps Cape Fear River Watch and DEQ informed of that evaluation.

Capture and Treat

As an initial matter, it does not appear—based on the limited information provided—that the capture and treat option will adequately address groundwater contamination or the ongoing PFAS loading to surface water. Therefore, as currently described, this option is disfavored.

In addition, Chemours has failed to provide sufficient information in order for Cape Fear River Watch and DEQ to fully evaluate the “capture and treat” option for Old Outfall 002. Nonetheless, DEQ must require that the treated water meet discharge standards set at non-detect to protect communities downstream.

Chemours has provided insufficient information.

Chemours has not provided sufficient information on its proposed capture and treat option. It has not explained how it is defining “dry weather flow,” under Paragraph 12(e)(i) of the consent order, or the basis for its “500 to 1,000 gallons per minute” estimate of dry weather flow. Old Outfall 002 Remedial Options Plan (May 2019) at 2. The concept and estimate of dry weather flow affects GAC utilization calculations and the overall efficacy of the capture and treat option in preventing ongoing PFAS loading to surface water. Therefore, these items must be fully explained and supported by analysis and data. Chemours needs to collect accurate surface water flow estimates based on flume testing over a reasonable amount of time, and provide that data to Cape Fear River Watch and DEQ.

Chemours must also provide a range for dry weather flow that realistically allows Cape Fear River Watch and DEQ to analyze the proposed treatment system and estimated GAC utilization. The estimated flow range presented—500 to 1,000 gallons per minute (gpm)—is too large of a flow range to allow the parties to assess the proposed system. Chemours needs to provide a specific maximum capacity for its proposed treatment system.

Next, Chemours has failed to provide any treatment studies, isotherm information, treatability studies, test results, or even full-scale performance data regarding the performance of its GAC system and resins. Chemours needs to provide this data so that Cape Fear River Watch and DEQ can assess the expected efficacy of the treatment system. If necessary, Chemours should request this material from its vendors.

Similarly, Cape Fear River Watch previously requested copies of any GAC adsorption studies. In response, Chemours provided one past study, and indicated that it will be providing new ones. We request that Chemours provide these new studies to Cape Fear River Watch as they become available.

Finally, Cape Fear River Watch continues to have concerns that the proposed pilot system flow rate of 0.25 – 0.5 gpm is too low, and recommends a minimum of 10.0 – 20.0 gpm to minimize scale-up issues. At a minimum, Chemours should provide its basis for determining that a flow rate of 0.25 – 0.5 gpm is adequate considering scale-up issues.

Discharge standards for the treatment plant should be set at non-detect.

Under the consent order, Chemours's treatment system is required to "meet such discharge standards *as shall be set by DEQ*, and shall, in addition and *at a minimum*, be at least 99% effective in controlling indicator parameters, GenX and PFMOAA." Consent Order Paragraph 12(e)(i) (emphasis added). Because a 99% reduction would not alone sufficiently protect downstream communities, DEQ should require that the treated water meet discharge standards set at non-detect.

First, initial sampling results for PFAS in Old Outfall 002 are extremely high. For instance, one of the upstream locations taken in Old Outfall 002 has contained PFMOAA at 241,000 parts per trillion (ppt), PFO₂HxA at 47,000 ppt, GenX at 20,000 ppt, and PFO₃OA at 12,000 ppt. Old Outfall 002 Monthly Sampling Results at *5, *6. The total PFAS concentration measured for the sampling event conducted on May 15, 2019 at that location was over 345,000 ppt. *Id.* PFAS concentrations collected at the location closest to Chemours' proposed dam and water capture location are also extremely high: PFMOAA at 91,000 ppt, PFO₂HxA at 18,000 ppt, GenX at 8,000 ppt, PMPA at 5,800 ppt, and PFO₃OA at 4,600 ppt. *Id.* at *1, *2. Based on these values, the total PFAS concentration would not be sufficiently protective even after a 99% reduction in GenX and PFMOAA.

Moreover, the sampling data exclude numerous other PFAS that Chemours has detected—coming from the facility and from upstream sources. Chemours Fayetteville Works NPDES NC0003573 Permit Application Update, Attachment F-3, F-4. Compounding the issue, the treatment plant is being designed for dry weather flows, meaning that any flows that exceed

the treatment plant's capacity would be allowed to bypass treatment and directly discharge into surface water, *regardless of how much PFAS is in that the bypass water.*

The initial Old Outfall 002 sampling results—combined with the fact that there would be severely contaminated bypasses and ongoing upstream sources of PFAS—demonstrate that a 99% reduction in GenX and PFMOAA is not sufficiently protective of downstream communities. Therefore, DEQ must require that the treated water meet discharge standards set at non-detect to protect communities downstream.

Regenesis PlumeStop

PlumeStop is a highly risky treatment alternative because it is relatively new. The first installations occurred just within the past few years. As such, no data exists on the long-term effectiveness of this technology. Given that Old Outfall 002 is a major source of PFAS pollution to the Cape Fear River, and that it could take decades to clean up the groundwater contamination seeping into Old Outfall 002, Cape Fear River Watch believes that PlumeStop is not an appropriate remedial option.

Comments on Old Outfall 002 sampling

The sampling location for surface water sample OLOFF-Creek-A2 is south of Old Outfall 002, and appears to be a small tributary branching off of the main channel of Old Outfall 002. However, the concentrations of PFAS at OLOFF-Creek-A2 are still fairly high: PEPA at 1,100 and 1,200 ppt; PFMOAA at 740 and 570 ppt; PFO₂HxA at 1,800 and 1,900 ppt; PMPA at 2,600 and 3,300 ppt; and GenX at 2,900 and 3,000 ppt. Old Outfall 002 Monthly Sampling Results at *3, *4. Therefore, Old Outfall 002 may not be intercepting all of the groundwater along its course, and PFAS-contaminated groundwater could be migrating further south. Cape Fear River Watch requests that Chemours conduct further investigation south of the Old Outfall 002 in order to fully assess these site conditions.

Remaining Questions from Cape Fear River Watch

1. Chemours' Engineering Report for the proposed "capture and treat" option states that "overall GAC utilization has been assumed to be 75% of theoretical calculated from the isotherm test results." Chemours Fayetteville Works NPDES NC0003573 Permit Application Update, Attachment D-1, at 5. Is this statement accurate? What is the basis for the 75%? Please confirm that your calculations of the estimated GAC annual utilization rate are accurate.
2. Chemours' Engineering Report for the proposed "capture and treat" option states for the resin utilization rates that "actual utilization would be 75% of theoretical." Chemours Fayetteville Works NPDES NC0003573 Permit Application Update, Attachment D-1, at 7. Is this statement accurate? What is the basis for the 75%? Please confirm that your calculations of the estimated resin annual utilization rate are accurate.

3. Are the utilization rates shown in Table 2 on page 5 of Chemours Fayetteville Works NPDES NC0003573 Permit Application Update, Attachment D-1, based on initial breakthrough or equilibrium? If Table 2 is not based on initial breakthrough, please expand the table to include the additional information.
4. With respect to Chemours' utilization rate calculations as set forth in Fayetteville Works NPDES NC0003573 Permit Application Update, Attachment D-1, what is the length of the mass transfer zone?
5. Please provide a table in Chemours Fayetteville Works NPDES NC0003573 Permit Application Update, Attachment D-1, showing GAC utilization rates at the influent concentrations of HFPO-DA and PFOMAA tested (similar to the Table 2 on page 5 Attachment D-1), which also includes the utilization results from the other bench, pilot, and drinking water system tests that are associated with this project.
6. With regards to the treatment plant for the proposed "capture and treat" option, are resins being ruled out or will Chemours evaluate the viability of using resins during the next stage of the project, for instance, during pilot testing?

Cape Fear River Watch reserves the right to submit additional comments after Chemours further evaluates its proposed remedial options and completes its pilot testing.

Thank you for your consideration of these comments. We look forward to receiving your responses.

Sincerely,



Jean Zhuang



Kelly Moser

Cc (via email):

Dana Sargent, CFRW
Kemp Burdette, CFRW
Bill Lane, DEQ
Francisco Benzoni, NCDOJ
Michael Abraczinskas, DAQ
Michael Scott, DWM
Linda Culpepper, DWR
David Shelton, Chemours
Brian Long, Chemours
John Savarese, Wachtell, Lipton
Joel Gross, Arnold & Porter