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Damilola S. Olawuyi
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David R. Boyd
Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment

Michael Fakhri
Special Rapporteur on the right to food

Pedro Arrojo-Agudo
Special Rapporteur on the human rights to safe drinking water and sanitation

THE CHEMOURS COMPANY RESPONSE TO SPECIAL RAPPORTEUR LETTER
REF: AL OTH 113/2023

The Chemours Company ("Chemours") is pleased to reply to the letter dated 25 September 2023 sent by (i) the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, (ii) the Working Group on the issue of human rights and transnational corporations and other business enterprises, (iii) the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, (iv) the Special Rapporteur on the right to food, and (v) the Special Rapporteur on the human rights to safe drinking water and sanitation (collectively, "Independent Experts").

Chemours understands that your letter seeks to bring to our attention allegations and concerns in connection with Fayetteville Works, our manufacturing plant located in Bladen and Cumberland Counties, North Carolina, United States. Chemours is grateful for the invitation to respond to your letter.

Pursuant to that invitation, Chemours provides herein responses to the comments and questions contained in your letter, including the information contained in the communication sent to the Independent Experts. Unfortunately, that communication contained certain mischaracterizations about Chemours and Fayetteville Works. Through this response, Chemours seeks to correct those mischaracterizations and provide accurate information that will assist the Independent Experts in their assessment of the issues brought to their attention. In particular, and as demonstrated herein, Chemours takes seriously its commitments to corporate responsibility and

sustainability. Moreover, Chemours has taken and continues to take concrete action to ensure that its important role in the supply chain for products relied upon and needed by the international community is carried out in a manner consistent with international principles, including the U.N. Guiding Principles on Business and Human Rights.

Chemours hopes that the information contained herein is useful and would be pleased to respond to any additional questions from the Independent Experts. Chemours thanks the Independent Experts for their consideration.

I. Executive Summary

The questions presented by the Independent Experts concern Chemours's role in the global supply chain, its manufacturing of materials essential to that supply chain, and how Chemours is conducting its operations in a sustainable and environmentally protective manner. Answering such questions requires an understanding of the factual background and applicable science. Chemours has set forth in this letter what we believe is a fair summary of the relevant facts and the applicable science, with references to publicly available supporting material. As we explain:

- Chemours is a relatively new company (eight years old) with not only a strong commitment to the goals of corporate responsibility and sustainability, all in accordance with applicable United Nations principles, but also a demonstrated record of success in achieving those goals. This includes an industry leading emphasis on reducing discharges of and exposure to PFAS chemicals.

- Chemours is a worldwide leader and innovator in the manufacture of advanced fluoropolymers, which are materials essential to the global community and the environment. They are essential building blocks across many industries for the manufacture of critical products that people rely on. In particular, fluoropolymers are playing a critical role in the transition to a low-carbon economy.

- Certain of Chemours's fluoropolymers continue to require the use of a fluorinated polymer processing aid in order to be able to be manufactured to the product quality and performance demands required across the globe. Chemours uses its HFPO-DA technology (sometimes called GenX) as a polymer processing aid in the manufacture of certain fluoropolymers. The HFPO-DA technology platform was developed through a voluntary stewardship program and was later approved by US EPA, based on extensive studies showing that it did not bioaccumulate and has a favorable toxicological profile. HFPO-DA is manufactured only at the Chemours facility near Fayetteville, North Carolina.

- Although Chemours is not aware of any epidemiological studies showing health impacts from exposures to HFPO-DA or other PFAS originating from Fayetteville Works, Chemours has taken a broad and unprecedented set of actions, costing hundreds of millions of dollars, to eliminate almost all PFAS discharges from Fayetteville Works. Chemours has also made alternative sources of drinking water available to, among other recipients, anyone whose private

drinking water well has been identified above the highly stringent health advisory level of 10 parts per trillion recently set for HFPO-DA by US EPA.

- Chemours is also undertaking a number of studies to advance the science of PFAS chemistry and toxicology. Significantly, Chemours has not been waiting for the results of the toxicology studies to take action, but has already stopped all discharges of its process water at Fayetteville Works, is destroying over 99.99% of targeted air emissions, is remediating past discharges through a range of technologies, and is providing alternate drinking water to those already impacted.

- Chemours is transporting materials from its facility in the Netherlands to Fayetteville Works for the sole purpose of recycling, which will reduce emissions.

- The proposed expansion at Fayetteville Works under consideration by regulators will support green energy projects and has been designed to not increase overall PFAS emissions.

Please find below our detailed response.

II. History of Chemours and Commitment to Sustainability

Chemours is a relatively new independent publicly traded company that was spun off by E. I. du Pont de Nemours & Co. ("DuPont"). Since beginning operations as an independent company in July 2015, Chemours has emerged as a company dedicated to being an industry leader with a corporate culture built on integrity and good corporate citizenship. Our company and our management are committed to environmental stewardship and sustainability as core goals in all aspects of our operations and to using advanced chemistry safely, responsibly and sustainably. In that regard, we wish to highlight the four Strategic Pillars which guide our everyday actions:

Innovation & Sustainable Solutions: Using deep knowledge and technical capabilities, we develop solutions to customers' toughest problems and enable the creation of products that meet market demand for more sustainable solutions.

Environmental Leadership: We are guided by a commitment to do what's good for people and the planet. Through Responsible Manufacturing we operate in a manner that keeps the local community beautiful, healthy, and safe for everyone.

Community Impact: We are committed to making a meaningful difference as an active and invested member of the communities where we live, work, play, and call home.

Greatest Place to Work for All: From the frontline to the back office, we strive to make Chemours a company where all employees can reach their full potential and understand that their work makes a meaningful difference.

These principles are not platitudes for us, but rather are calls to action and have resulted in major projects and accomplishments over our eight years of operations. In that regard, Chemours

is implementing our 2030 Corporate Responsibility Commitment goals, which align with the 2030 United Nations Sustainable Development Goals.[1] Included within Chemours's goals is our public commitment to reduce air and water process emissions of fluorinated organic chemicals from a 2018 baseline by 99% or greater by 2030. PFAS (per- and polyfluoroalkyl substances), which your letter focuses on, are a subset of fluorinated organic chemicals.

We have also publicly pledged our ongoing support to the Ten Principles of the United Nations Global Compact and the United Nations Guiding Principles on Business and Human Rights. Chemours committed to the Ten Principles in 2018 and demonstrates progress on that commitment through our annual Sustainability Report. In keeping with our commitments to those principles, and our belief that companies have a critical role to play in achieving the United Nations Sustainable Development Goals ("UN SDGs"), we mapped our Corporate Responsibility Commitment goals to the UN SDGs and their targets to better understand where we can have an impact and add value.

One of the Corporate Responsibility Commitment goals we committed to in 2018 is to have at least 50% of our revenue coming from offerings that make a specific contribution to the UN SDGs. In support of this goal, we developed a product sustainability assessment methodology, EVOLVE 2030, which enables us to evaluate and maximize the UN SDG contributions of our current offering portfolio and potential new offerings in our development pipeline. We have already demonstrated that more than 48% of our revenue comes from offerings that make a specific contribution to the UN SDGs and we will continue to evolve an even more resilient and sustainable portfolio.[2]

As detailed in our latest annual Sustainability Report[3], we are proud to report that our company has taken other extensive measures and has made significant progress already towards meeting our other 2030 goals. Some of Chemours's achievements thus far include:

- Reaching a 53% reduction in total fluorinated organic chemical process emissions to air and water—surpassing the halfway point to our 2030 goal of a 99% reduction. Indeed, Chemours is leading the industry in reducing such emissions and advancing analytical and abatement technologies to reach our 2030 goal, and we have openly shared our scientific and technological advancements in this area with environmental regulatory bodies and other interested parties.

- Reaching a 30% reduction in Scope 1 and 2 greenhouse gas emissions—reaching the halfway point of our 2030 goal.

- Committing 36% of our $50 million investment in science, technology, engineering, and mathematics; safety; and environmental initiatives across our local communities.

[1] *Available at* https://www.chemours.com/en/sustainability/2030-goals.
[2] Chemours was honored to be invited to the UN Private Sector Forum at the UN Headquarters in New York during Climate Week 2023. Our CEO attended the Forum to highlight our commitment to accelerating progress and partnerships to achieve the UN SDGs.
[3] *Available at* https://www.chemours.com/en/sustainability.

- Surpassing our sustainable supply chain goal by assessing sustainability performance of 90% of our suppliers by spend by 2022.

At Chemours, sustainability is central to everything we do, including the products we make. As detailed further in the section that follows, Chemours's chemistry is integral to modern life and to the new, green economy that rests on the performance of bold, technological innovations. Chemours is committed to producing products that are essential to a sustainable future while protecting human health and the environment in doing so.

III. Criticality of Fluoropolymers to Meeting the Needs of the International Community

Chemours is a global provider of performance chemicals that are key inputs in end products and processes in a variety of industries. One of Chemours's business segments is its Advanced Performance Materials ("APM") segment, which provides high-end polymers and other advanced materials that deliver unique attributes, including chemical inertness, thermal stability, and dielectric properties critical in many modern manufacturing processes. Chemours's APM business creates materials and products—including fluoropolymers—that are essential for countless industries including the medical, automotive, electronics, aerospace, energy, and semiconductor industries. **Fluoropolymers are used in every car, airplane, and cellphone.** They are critical to maintaining the integrity and quality of the vast majority of prescription drugs.

Fluoropolymers are also critical to the global imperative to transition to a low-carbon economy. They are used in the production of hydrogen from renewable sources and are at the heart of the hydrogen fuel cell which shows great potential for harnessing green hydrogen as an alternative to fossil fuels. Chemours's fluoropolymers are also essential in manufacturing the lithium-ion batteries central to electrifying cars and other modes of transportation. And fluoropolymers in ion exchange membranes are critical to the production of chlorine for applications such as water purification.

Fluoropolymers are also used in medical equipment including catheters, saline bags, and filtration devices that supply oxygen to newborn babies that are medically compromised. The manufacturing of all computer chips requires the use of fluoropolymers, as they are essential to maintaining the highest levels of purity in the fabrication processes. Fluoropolymers are critical components of high-speed communications. Fluoropolymers also allow for light-weighting of vehicles to reduce energy consumption and reduce emissions. In industrial applications, fluoropolymers are used in the infrastructure of manufacturing processes in piping and vessels to protect employees from harsh chemicals.

Fluoropolymers have a unique combination of properties making them durable, efficient, reliable, versatile, and ultimately fundamental to the products they enable. Their properties include fire resistance, weather resistance, temperature resistance, chemical resistance, non-wetting and non-sticking properties, and high-performance dielectric properties. While some chemistries might offer a similar performance to fluoropolymers for a particular parameter or property, it is the unique combination of properties that set fluoropolymers apart and make them vital to the sectors and industries they serve.

Although we emphasize here the important societal need for the fluoropolymers we manufacture, we by no means are suggesting that that importance necessitates inappropriate, unsustainable, or harmful manufacturing practices. It does not, and we at Chemours are absolutely committed to demonstrating that the fluoropolymers the world needs can be manufactured safely and sustainably.

IV. Development and Use of GenX Technology

Your letter and much public attention has been focused on our manufacture and use of HFPO Dimer Acid and its ammonium salt. The trade name "GenX" or "GenX technology" includes HFPO Dimer Acid and its ammonium salt and these compounds will be collectively referred to here as "HFPO-DA". These compounds, as discussed below, (i) are integral to Chemours's manufacturing of a wide range of fluoropolymers, and (ii) were developed by Chemours's predecessor, and approved by US EPA, as a suitable replacement to an earlier polymer processing aid that US EPA was seeking to phase out, namely perfluorooctanoic acid ("PFOA"). HFPO-DA has an entirely different chemical, toxicological, and functional profile and set of uses than did PFOA.

HFPO-DA was originally developed by DuPont to enable the manufacture of high performance fluoropolymers without the use of PFOA, as part of US EPA's PFOA Stewardship Program. In 2006, EPA invited DuPont and other fluoropolymer and telomer manufacturers to participate in a voluntary stewardship program with goals of reducing PFOA emissions and product content by 95% by 2010 while working towards total elimination by 2015.[4] DuPont agreed to participate in the program and committed to (and then met) the goals EPA had set forth prior to its spin-off of Chemours in 2015.[5]

To meet its PFOA Stewardship Program commitments, DuPont undertook a research and development program to find technology replacements for PFOA in applications for the production of its specific products. From those research efforts HFPO-DA emerged as a suitable substitute for the use of PFOA as a polymer processing aid for DuPont. To be clear, HFPO-DA was not developed to replace all prior uses of PFOA and other manufacturers developed their own replacement technologies as applicable.

In accordance with Section 5 of the United States Toxic Substances Control Act ("TSCA"), in 2008 DuPont submitted a pre-manufacture notice ("PMN") along with initial toxicity studies and other related information to US EPA seeking to authorize use of HFPO-DA. The toxicity studies submitted were extensive. Following its review of DuPont's PMN, and further discussions with DuPont, US EPA issued in January 2009 a TSCA Section 5(e) Consent Order (the "Section 5(e) Order") which, among other requirements, permitted DuPont to manufacture HFPO-DA

[4] *See Fact Sheet: 2010/2015 PFOA Stewardship Program*, US EPA, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program (last visited Nov. 20, 2023).
[5] *See Letter from Stephen L. Johnson, US EPA, to Charles O. Holliday Jr., Dupont,* (Jan. 25, 2006), *available at* https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/letter-inviting-participation-pfoa-stewardship-program.

subject to certain restrictions, including a requirement that DuPont complete and submit additional studies.[6] DuPont completed and submitted the required studies, the last one in 2013.

After Chemours was spun off from DuPont in 2015, it assumed DuPont's production and use of HFPO-DA technology. Your letter makes several statements regarding exposure levels and toxicity of PFOA and PFOS and we thank you for the opportunity to clarify the factual context.

Chemours does not use or manufacture—and has never used or manufactured—PFOA or PFOS at the Fayetteville Works facility. DuPont, the prior facility operator, did previously manufacture PFOA at the facility, before the transition to HFPO-DA, but the facility has never manufactured PFOS, and this compound is not part of the chemistry used historically at the facility. In that regard, your letter references a 2013 study detecting PFOS in fish taken from the Cape Fear River. Because the facility has never used or manufactured PFOS, any PFOS detected in the area did not originate from Fayetteville Works' manufacturing operations.[7]

Among the reasons that HFPO-DA was selected as a replacement for PFOA is that it has an entirely different toxicity profile than PFOA or PFOS. For example, the half-lives for HFPO-DA in mammals are on the order of hours (as compared to days or years for PFOA or PFOS).[8] HFPO-DA is a short-chain perfluorocarboxylic acid, while PFOA is a long-chain molecule (HFPO-DA has two chains of three carbons separated by an oxygen, as opposed to one chain of eight carbons for PFOA). Based on studies showing rapid elimination in rats, mice, and primates, among other studies, it is widely-accepted that HFPO-DA is rapidly eliminated from peoples' bodies.[9] This is supported by an exposure study that did not find HFPO-DA in the blood of residents of North Carolina.[10]

HFPO-DA also does not bioaccumulate in the environment,[11] and Chemours has submitted to US EPA extensive data demonstrating that there are no significant levels of HFPO-DA exposure

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[6] Consent Order, *In the Matter of Dupont Company, P-08-508 and P-08-509*, (April 9, 2009) https://chemview.epa.gov/chemview/proxy?filename=sanitized_consent_order_p_08_0508c.pdf.

[7] Based on an additional study conducted that included analysis of a range of PFAS compounds in fish, North Carolina has subsequently issued a fish consumption advisory for the Cape Fear River based on presence of PFOS. *See Fish Consumption Advisories*, NC Dept. of Health and Human Services, (July 13, 2023) https://epi.dph ncdhhs.gov/oee/fish/advisories.html.

[8] *See, e.g.*, Gannon, S.A., W.J. Fasano, M.P. Mawn, D.L. Nabb, R.C. Buck, L.W. Buxton, G.W. Jepson, and S.R. Frame. 2016. Absorption, distribution, metabolism, excretion, and kinetics of 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid ammonium salt following a single dose in rat, mouse, and cynomolgus monkey. Toxicology 340(18):1–9. https://doi.org/10.1016/j.tox.2015.12.006.

[9] *See* US EPA, *Human Health Toxicity Values for Hexafluoropropylene Oxide (HFPO) Dimer Acid and Its Ammonium Salt (CASRN 13252-13-6 and CASRN 62037-80-3), Also Known as "GenX Chemicals"* (Oct. 2021) at 21–26 (acknowledging the rapid elimination of HFPO-DA and citing several sources), *available at* https://www.epa.gov/system/files/documents/2021-10/genx-chemicals-toxicity-assessment_tech-edited_oct-21-508.pdf.

[10] *See* Kotlarz, N., J. McCord, D. Collier, C. S. Lea, M. Strynar, A. B. Lindstrom, A. A. Wilkie, J. Y. Islam, K. Matney, P. Tarte, M. E. Polera, K. Burdette, J. DeWitt, K. May, R. C. Smart, D. R. U. Knappe, and J. A. Hoppin. 2020. Measurement of novel, drinking water-associated PFAS in blood from adults and children in Wilmington, North Carolina. Environmental Health Perspectives 128(7):77005 (independent researchers at North Carolina State University found no detectable levels of HFPO-DA in the blood of any participants, even for those individuals consuming drinking water with low levels of HFPO-DA). https://doi.org/10.1289/EHP6837.

[11] *See* Holden et al., *GenX and PFAS uptake by Food Plants* (2021), https://ncpfastnetwork.com/wp-content/uploads/sites/18487/2020/10/Duckworth_PFAST102320.pdf; Wang et al., *Concentrations of*

to the general population from any sources other than drinking water, including food, dust, air, soil, consumer products, firefighting foam, ground water, or surface water.[12] HFPO-DA does not degrade into PFOA or other long chain compounds if released into the environment.

Further, Chemours is not currently aware of any epidemiological studies linking HFPO-DA to any disease in humans. Instead, recent epidemiological evidence shows no increased risk of cancers or liver disease attributable to exposure to HFPO-DA.[13]

We note that there has been debate in the scientific community about what a safe level for HFPO-DA is in drinking water. Based on animal studies performed by DuPont, and using conservative factors to lower the safe level to account for uncertainty, the State of North Carolina initially determined that concentrations below 71 parts per billion would be safe. There are no reports of drinking water sources in North Carolina exceeding that level. The State, however, in 2017 reduced its safe level by a factor of 500, to 140 parts *per trillion*. And in a Heath Advisory issued in June 2022, EPA announced a safe level for HFPO-DA of just *10 parts per trillion*, a level that would have been beyond the detection limits of modern analytical chemistry not many years ago. Chemours has publicly questioned the scientific bases for these levels, even with accounting for the need to resolve reasonable uncertainties on the side of assuring access to safe drinking water, and has pointed to flaws in the underlying methodology used.

But, most importantly to addressing the questions raised in your letter, Chemours has already taken actions, as described in the next section, relating to (i) reducing levels of HFPO-DA sourced from the Cape Fear River to below 10 parts per trillion and (ii) that providing persons using private wells with concentrations of HFPO-DA above 10 parts per trillion (a small subset of the thousands of such wells tested by Chemours) with an alternative drinking water source primarily through connection to public water or with an effective whole house filtration system, all at Chemours's expense (with bottled water supplied pending such connection or installation).

V. The Fayetteville Works Facility

Your letter is focused on concerns about discharges of PFAS from our Fayetteville Works facility in North Carolina and any potential impact of those discharges on the residents who live along the lower Cape Fear River. Chemours, consistent with our commitment to corporate responsibility and stewardship, has focused from the early days of our existence on achieving dramatic reductions in the levels of PFAS discharges from the facility. We have devoted enormous human and financial resources to this effort, and have transformed the facility, as described below, into one that is not only state of the art for discharge control, but is also, we believe, the best of its

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Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) in Food and Environmental Media in the United States, Data Report issued by Statera Environmental, 20 May 2022; Li et al., *First Report on the Bioaccumulation and Trophic Transfer of Perfluoroalkyl Ether Carboxylic Acids in Estuarine Food Web*, Environ. Sci. Technol. (2021), https://doi.org/10.1021/acs.est.1c00965.

[12] *See* Letter and Attachments from Sheryl Telford, Chemours, to Elizabeth (Betsy) Behl, US EPA (May 31, 2022).

[13] *See* Expert report of Dr. Ellen Chang, *Epidemiology of Hexafluoropropylene Oxide Dimer Acid and Its Ammonium Salt*, attached as Exhibit 5 to Chemours's Mar. 18, 2022 Request for Correction of GenX Chemicals Toxicity Assessment (concluding that epidemiological data in North Carolina "do not indicate a pattern of increased cancer incidence" and "do not support an effect of HFPO-DA on liver disease in humans"), https://www.epa.gov/system/files/documents/2022-03/3.18.22-request-for-correction-letter-and-exhibits_0.pdf.

kind in the world. We have done this in close coordination with governmental regulators and with transparency and openness towards the surrounding community.

Chemours has undertaken this transformation notwithstanding its understanding that the very low levels of PFAS that had been detected in private wells and the Cape Fear River were not creating health impacts. Much of our efforts have been undertaken pursuant to commitments we made in a Consent Order[14] and a later Addendum thereto,[15] agreed to by Chemours, the North Carolina Department of Environmental Quality ("NC DEQ") and by Cape Fear River Watch, a non-governmental organization, and entered in 2019 and 2020, respectively. These commitments have been supervised by the Superior Court for Bladen County, North Carolina. Chemours has provided detailed quarterly reports to NC DEQ, Cape Fear River Watch, and the public on its compliance with the Consent Order.[16] But as described below, our efforts began well before the Consent Order was finalized.

Our efforts have been in five principal areas: (i) reduction of process water discharges of PFAS to the Cape Fear River; (ii) comprehensive measures to prevent stormwater and groundwater discharges of PFAS; (iii) installation of best-in-class air pollution control equipment to drastically minimize air emissions of PFAS; (iv) an extensive program to provide clean sources of drinking water to impacted residents; and (v) scientific studies to advance the PFAS knowledge base. We are pleased to tell you about each.

(i) Reduction of Process Water Discharges

Fayetteville Works is the only Chemours facility that manufactures HFPO-DA for use as a polymer processing aid. The HFPO-DA is then shipped to and used at other facilities. The part of the facility used for HFPO-DA production, called the PPA (Polymer Processing Aid) plant, has never discharged process wastewater to the Cape Fear River. Instead, all process wastewater from this plant has always been captured and shipped off-site for incineration.

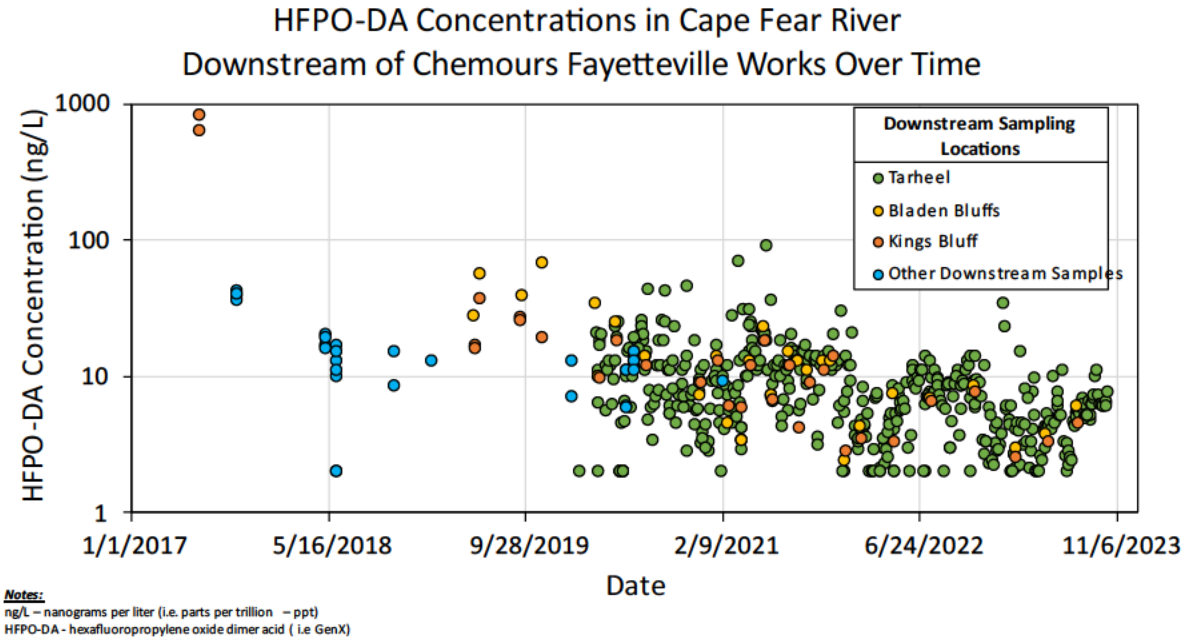
Other parts of the facility, which manufacture vinyl ethers, monomers, and other advanced chemistry products, had until June 2017 discharged process wastewater through a permitted outfall to the Cape Fear River, and that wastewater contained PFAS, including HFPO-DA, as an unintended byproduct. Chemours was already evaluating alternatives for additional equipment to abate PFAS discharges when the presence of PFAS in the Cape Fear River became a major public concern in June 2017.

Chemours immediately took action to respond to the public concerns: in June 2017, it began capturing the waste stream believed to be the primary source of HFPO-DA byproducts for offsite transportation and disposal. Starting in November 2017, Chemours, at the request of North Carolina DEQ, began capturing *all* of its process wastewater from the facility (other than what is recycled within the facility) for off-site disposal. In other words, for the past six years, *no process wastewater from Chemours's operation has been discharged to the Cape Fear River*. Further, the

[14] Consent Order, *North Carolina v. The Chemours Co. FC, LLC* (N.C. Super. Ct., Feb. 25, 2019), https://deq.nc.gov/media/12453/download.
[15] Addendum to Consent Order, *North Carolina v. The Chemours Co. FC, LLC* (N.C. Super. Ct., Oct. 12, 2020) https://www.deq.nc.gov/genx/consentorder/10122020-addendum-chemours-consent-order/download.
[16] *Available at* https://www.chemours.com/en/about-chemours/global-reach/fayetteville-works/compliance-testing.

Consent Order prohibits any discharges of Chemours process water from the facility's outfall to the Cape Fear River unless and until a new permit is issued by DEQ authorizing such discharges.

The cessation of process wastewater discharges by itself resulted in a greater than 95% reduction in the amount of HFPO-DA going from the facility to the Cape Fear River. Together with other measures discussed below, the overall reduction in PFAS impacts from the facility to the Cape Fear River has been even greater. For example, the reduction in HFPO-DA concentration in the Cape Fear River downstream of the facility is shown here (note that the scale is logarithmic). As can be seen, the concentration at Kings Bluff, where most public water downstream is sourced, has been below the EPA Heath Advisory level of 10 parts per trillion (or ng/L) for the last two years:



(ii) Comprehensive Measures to Prevent Stormwater and Groundwater Discharges of PFAS

Although process water discharges from Chemours's operations at the facility stopped in 2017, there continued to be lower levels of PFAS, including HFPO-DA, contained in stormwater and groundwater leaving the facility. This PFAS originates primarily from legacy manufacturing activities. Chemours has taken focused measures to address these discharges, which together are proving very effective. These measures have included:

- Constructing a system to capture and treat to remove PFAS (using granular activated carbon, a proven technology) from substantial amounts of stormwater from a process operation area at the facility.

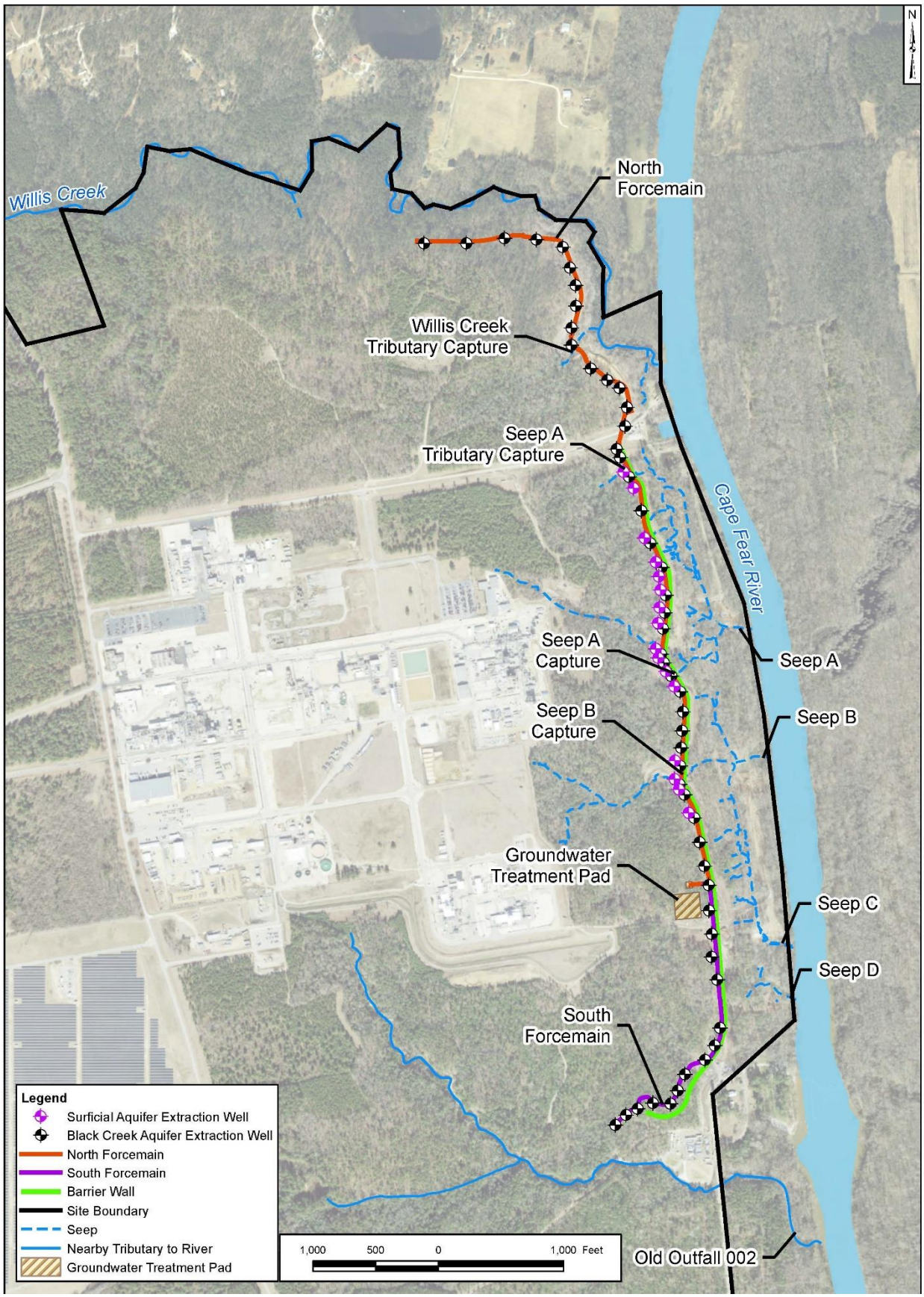
- Constructing a system to capture the water that had been flowing through an old discharge channel to the Cape Fear River, and treating that water using granular activated carbon.

- Abating discharges from a number of groundwater "seeps" that had previously transported PFAS emitted from legacy operations at the facility to the Cape Fear River. This project has included innovative use of in situ carbon treatment cells which have proven effective and have removed over 95% of the PFAS in the seeps.[17]

The largest Chemours undertaking has been the construction of a barrier wall that spans over one mile (1600 meters) and extends as deep as 100 feet (30 meters) sub-surface.[18] This wall, constructed at a cost of over $100 million, is situated between the Fayetteville Works facility and the Cape Fear River to prevent the flow of groundwater from the facility to the river. The barrier wall works in conjunction with a state-of-the-art groundwater extraction and granular activated carbon treatment system that removes more than 99% of the captured PFAS compounds prior to discharge to the river. The following pictures, showing the location of the barrier wall and seeps, the treatment system as built, and the construction of the barrier wall, reflect the magnitude of the project and Chemours's commitment to it:

[17] Additional information on Chemours's actions to monitor and prevent PFAS transport through seeps is included in the Onsite Seeps Long-Term Loading Baseline Report (Sep. 20, 2023), *available at* https://www.chemours.com/en/about-chemours/global-reach/fayetteville-works/compliance-testing.

[18] *See Cape Fear River barrier wall: our progress*, Chemours, https://www.chemours.com/en/about-chemours/global-reach/fayetteville-works (last visited Nov. 20, 2023).


Willis Creek
North Forcemain
Willis Creek Tributary Capture
Seep A Tributary Capture
Cape Fear River
Seep A Capture
Seep A
Seep B Capture
Seep B
Groundwater Treatment Pad
Seep C
Seep D
South Forcemain
Old Outfall 002
N
Legend
Surficial Aquifer Extraction Well
Black Creek Aquifer Extraction Well
North Forcemain
South Forcemain
Barrier Wall
Site Boundary
Seep
Nearby Tributary to River
Groundwater Treatment Pad
1,000 500 0 1,000 Feet





(iii) Installation of Additional Air Pollution Control Equipment

One of the central requirements of the Consent Order was that Chemours install a state-of-the-art thermal oxidizer by the end of 2019, less than a year from the entry of the Consent Order. Chemours completed this over-$100 million project on time, and the thermal oxidizer is destroying

over 99.99% of the PFAS in the vent streams that are routed to it, which includes most of the air streams at the facility.[19] We have been pleased to host governmental and non-governmental guests wanting to learn from our experiences with this project. The following photograph shows the size of this massive equipment:



In addition to the thermal oxidizer, Chemours installed carbon adsorption units at other parts of the facility to control additional emission sources, on a compressed time schedule beginning prior to the Consent Order. Collectively, the thermal oxidizer, carbon adsorption units, and other measures have reduced HFPO-DA air emissions from the facility by over 99% as compared to a 2017 baseline.

(iv) Alternate Drinking Water Sources

In addition to taking the actions described above to further and substantially reduce PFAS emissions and discharges from the Fayetteville Works facility, Chemours has undertaken a vast program, in accordance with the Consent Order, providing alternate water supplies to impacted residents with drinking water supplied by private wells. Under this program, Chemours has offered and funded:

(i) a testing program of private wells in four counties near the facility (Cumberland, Bladen, Robeson and Sampson counties) and four downstream counties (New Hanover, Brunswick, Columbus and Pender counties). Over 18,000 wells have been sampled to date;

[19] Additional information on the thermal oxidizer, and demonstration of the greater than 99.99% destruction efficiency, are included in the Thermal Oxidizer Performance Test Report (Mar. 2020), *available at* https://www.chemours.com/en/-/media/files/corporate/fayetteville-works/2020-03-thermal-oxidizer-test-report.pdf.

(ii) connections to public water supply or installation of whole building filtration units to surrounding residents, businesses, schools, and public buildings with private drinking water wells with HFPO-DA levels over the EPA health advisory level of 10 parts per trillion. Over 2,000 well owners have been notified of their eligibility for such connections or installations;

(iii) installation of three under-sink reverse osmosis units to residents with wells with HFPO-DA levels below 10 parts per trillion but having levels of at least one of 11 other PFAS compounds above 10 parts per trillion (or 70 parts per trillion in the aggregate). Over 3,000 private well owners have had reverse osmosis systems installed to date; and

(iv) provision of bottled drinking water to anyone awaiting alternative water supplies. Over 8,000 well owners have received bottled water; over 3,000 still are receiving bottled water (through home delivery or provision of store vouchers).

This program remains very active and is closely supervised by NC DEQ. Given the scope of the program, Chemours believes that it has implemented it robustly, successfully and with sensitivity to the interests of those impacted.[20]

(v) Scientific Studies

Another important aspect of Chemours's activities in addressing PFAS-related concerns has been its focus on advancing PFAS science in multiple areas. These include:

- Toxicology. In addition to the many studies of HFPO-DA performed in connection with the regulatory approval of that substance, Chemours is engaged in substantial additional toxicology research to better understand the impact of exposure to low levels of PFAS compounds. As required under the Consent Order, Chemours is funding extensive toxicological testing, in accordance with US EPA and OECD guidelines, of five PFAS compounds selected by NC DEQ that are byproducts from operations at Fayetteville Works. Chemours is performing toxicological studies of other compounds as directed by US EPA.

- Analytical chemistry. Chemours has been a leader in advancing the capabilities of analytical chemistry to be able to detect more PFAS compounds and at lower detection levels. For example, under the Consent Order, it funded the development of a sampling and analytical methodology for the measurement of total organic fluorine in air emissions and process wastewater. It has also developed non-targeted analysis to be able to find previously unidentified compounds.

- Fate and transport. Chemours funded the development of a study analyzing the fate and transport of PFAS originating from the facility in air, surface water and groundwater.

[20] Additional information on Chemours's replacement drinking water actions taken to date is included in the NC DEQ Consent Order Progress Report For Third Quarter 2023 (Oct. 23, 2023), *available at* https://www.chemours.com/en/about-chemours/global-reach/fayetteville-works/compliance-testing.

- Site assessment. Chemours has also funded a comprehensive assessment to understand the nature of on-site and off-site groundwater contamination at the facility and has submitted a proposed corrective action plan to address that contamination.

All of these activities are advancing what the scientific community knows about PFAS as well as providing a comprehensive understanding of the environmental conditions at the facility. And again, these are studies being undertaken along with concrete immediate actions, not instead of them.

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In addition to our many significant actions in the five areas above, Chemours has taken numerous steps to provide information and engage with the community in Eastern North Carolina. In May 2018, our business and Fayetteville Works site leadership held a community meeting, open to any member of the public, to discuss site operations and what Chemours was doing to continue to decrease the emissions of the site. We formed a Community Advisory Panel comprised of a cross-section of community members with whom site leadership regularly engages to explain operations, preview plans and gather input to ensure we are aware of community questions and concerns so that we can proactively work together to address any questions or issues that arise.

We have also opened our site to print, radio, and television news outlets on several occasions, offering interviews, tours, and showing media firsthand the numerous emissions control technologies we had put, and were continuing to put, in place. From 2018 until the start of the COVID-19 pandemic, we offered the same information, conversation, and tours to elected representatives stretching from Cumberland and Bladen counties through New Hanover and Brunswick counties, and several community groups, including Clean Cape Fear. We have worked hard to ensure that every conversation is factual, informative, and a true two-way dialogue. We have also strived to ensure that our website and Facebook pages are up to date, accurate, and accessible so that the community can stay informed and even sign up to directly receive emails with progress updates.

VI. Recycling Material from the Netherlands

Chemours would like to provide clarifications and corrections regarding another issue raised in your letter, which alleges that "the Fayetteville Works facility has received hazardous PFAS waste from The Netherlands." This allegation relates to the Fayetteville Works facility engagement in the safe and environmentally beneficial recycling of used polymer processing aid materials from the Chemours Dordrecht Works facility in the Netherlands.

The recycling process is as follows. Chemours's Dordrecht Works facility in the Netherlands uses HFPO-DA as a polymer processing aid in the production of fluoropolymers. After being used as a polymer processing aid, the HFPO-DA is recovered in totes in a dilute aqueous solution. The totes are then shipped from Dordrecht Works to Fayetteville Works for reclamation. At Fayetteville Works, the spent HFPO-DA material from Dordrecht Works is purified at the PPA plant at the facility. Wastewater and waste acids from the reclamation process at the Fayetteville Works PPA plant are shipped offsite for incineration, and air emissions are

controlled by a scrubber and carbon adsorption unit. The purified HFPO-DA from Fayetteville Works is returned to Dordrecht Works for reuse as a polymer processing aid. Thus, rather than having to manufacture all HFPO-DA entirely from virgin materials, Chemours is able to utilize a substantial amount of recycled material, reducing environmental impacts from production and disposal in both Europe and the United States. This recycling of HFPO-DA is environmentally beneficial and has been repeatedly consented to by the applicable regulatory agencies.

VII. Fayetteville Works Expansion

Your letter refers to Chemours's pending application to the NC DEQ for an air permit to expand its production at the Fayetteville Works facility. We are pleased to tell you that the planned expansion, which is subject to permit approval, includes design plans for emissions controls that will allow for increases in manufacturing without projected increases in the overall fluorinated organic compounds emitted from the site. The planned increases in manufacturing, ***without an overall increase in emissions***, are to support important increased demand for our products from clean energy and other industries.

Chemours has been transparent with both the public and NC DEQ regarding the planned expansion and is following established regulatory procedures for permitting the expansion. Our company hosted two public information sessions on the planned expansion in September 2022, to ensure that members of the community had an opportunity to understand more about the site, the project plans, and environmental impact of the project – which is designed specifically not to increase overall emissions volumes.[21] Those who attended had the opportunity to pose questions and engage in dialogue in small groups with plant leadership, Environment Health and Safety professionals, and experts in emission control technologies and sustainability. The events also provided opportunity for media to engage, understand, and report on the plans. In October 2022, we submitted to NC DEQ an air permit modification application for the expansion.[22] Over the past year, since submitting the application, Chemours has been responding to questions and engaging with NC DEQ as part of the established regulatory process. NC DEQ has stated that it "will conduct a comprehensive review of the application" and "plans to schedule a full public engagement process, including a public comment period and public hearings, to be announced at a later date."[23]

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[21] *See* Chemours, "Chemours Schedules Information Sessions on Planned Production Expansion," https://www.chemours.com/en/-/media/files/corporate/fayetteville-works/chemours_hosting-public-information-session_press-release_9-6-22.pdf?rev=9d17c72811914215aac3738b4e739345&hash=F1C38D4E42E8376A907FBC72C4F433E4.

[22] *See* Chemours, "Air Permit Application," https://www.deq.nc.gov/air-quality/permits/public-communication/chemours-vinyl-ethers-expansion-permit-applicationfinalpublic-copypdf/open.

[23] *See* NC DEQ, "Chemours Application for Air Permit Modification Under Review," https://www.deq.nc.gov/news/press-releases/2022/11/03/chemours-application-air-permit-modification-under-review.

VIII. Conclusion

Chemours appreciates your review of the information contained in this letter, and we would be pleased to provide the Independent Experts with further information and substantiation for any statement we have made. We would also welcome any follow-up questions that you may have.

Sincerely,

[redacted]

The Chemours Company

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