SOUTHERN ENVIRONMENTAL LAW CENTER

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September 28, 2018

Andrew Wheeler
Acting Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Eric Burneson
Director, Standards and Risk Management Division
Office of Ground Water and Drinking Water
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
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RE: Comments on EPA Response to Per- and Polyfluoroalkyl Substances (PFAS), Docket ID No. EPA-HQ-OW-2018-0270

Dear Acting Administrator Wheeler and Director Burneson:

The Southern Environmental Law Center offers the following comments on actions that the Environmental Protection Agency must take to address the presence of per- and polyfluoroalkyl substances (PFAS) in the nation's drinking water, surface and groundwaters, air, and soil. These comments are submitted on behalf of Cape Fear River Watch, North Carolina Conservation Network, North Carolina Coastal Federation, Sound Rivers, Haw River Assembly, Catawba Riverkeeper Foundation, and the French Broad Riverkeeper.

For nearly four decades, E.I. du Pont de Nemours and Company ("DuPont") and the Chemours Company FC, LLC ("Chemours") knowingly contaminated the air, water, and soil in southeastern North Carolina, including the drinking water supply of more than 250,000 North Carolinians. The people of North Carolina are worried that the years of drinking, fishing from, and swimming in the companies' polluted waters have permanently harmed the health of themselves and their families. And they are furious that companies like DuPont have historically polluted other communities with the same compounds and were simply permitted to continue their toxic pollution in new places.

As EPA has witnessed at its Community Engagement events throughout the country, North Carolina is not the only state that has been intentionally used as a dumping ground for PFAS chemicals—pollution that will persist for years in people's bodies and the environment. There must be immediate action on PFAS. But EPA's current proposed actions are entirely inadequate. Most importantly, (1) they only consider two of the thousands of existing PFAS, allowing companies to continue using the regulatory loopholes that they have used for decades,

and (2) they do nothing to stop additional toxic PFAS from spewing into our air, soil, and water, and remaining there for decades.

A. PFAS are toxic and bioaccumulative, and they persist in the environment and in our bodies.

It is well established that PFAS are a threat to the health and safety of the public. Two of the commonly studied PFAS, perfluorooctanoic acid ("PFOA") and perfluorooctyl sulfonate ("PFOS"), have been found to cause developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, lower birth weight and size, obesity, decreased immune response to vaccines, reduced hormone levels and delayed puberty.[1] Epidemiological studies suggest that many of these same health outcomes result from exposure to other PFAS.[2] PFAS have been found in the air and dust, surface water and groundwater, and soil and sediment.[3] They are extremely resistant to breaking down in the environment, can travel long distances, and have even been found in the Arctic and in the open ocean.[4] They take years to leave the human body, and instead slowly accumulate over time.[5]

Concerned about the extensive health effects of PFOA and PFOS, in 2016, EPA established a lifetime health advisory of 70 parts per trillion ("ppt") for the combined concentrations of PFOA and PFOS in drinking water.[6] Since then, in June 2018, the Agency for Toxic Substances and Disease Registry released an updated Draft Toxicological Profile for PFOA, PFOS, and other PFAS. The report suggested that many of the chemicals are much more harmful than previously thought. For instance, the minimum risk levels, or the amount of a chemical a person can eat, drink, or breathe each day without a detectable risk to health, was determined to be only 11 ppt for PFOA, and 7 ppt for PFOS.[7]

Within the past several decades, companies like DuPont and Chemours have replaced PFOA with "short-chain" PFAS, which have fewer carbons.[8] In May of 2015, two hundred researchers and scientists warned government officials, manufacturers, and the public not to

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[1] Arlene Blum, et al., "The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)," 123 *Environ. Health Perspectives* 5, A 107 (May 2015) (hereinafter "The Madrid Statement"); U.S. Environmental Protection Agency ("EPA"), Fact Sheet on PFOA & PFOS Drinking Water Health Advisories, 2, *available at* https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf (last visited Sept. 19, 2018).

[2] ATSDR, Toxicological Profile for Perfluoroalkyls, Draft for Public Comment, at 5-6, 25-26 (June 2018) (hereinafter "Draft 2018 Toxicological Profile for Perfluoroalkyls"), *available at* https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf (last visited Sept. 19, 2018).

[3] U.S. Dep't of Health and Human Services, Agency for Toxic Substances and Disease Registry, Draft Toxicological Profile for Perfluoroalkyls, 2 (Aug. 2015), included as Attachment 1.

[4] *Id.*; *see also* EPA, Technical Fact Sheet - Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) (Nov. 2017); The Madrid Statement at A 107.

[5] ATSDR, Toxicological Profile for Perfluoroalkyls, Draft for Public Comment, at 3 (Aug. 2015).

[6] EPA, Fact Sheet on PFOA & PFOS Drinking Water Health Advisories at 2.

[7] CFPUA Statement on Recently Released DHHS Report, June 21, 2018, *available at* https://www.cfpua.org/civicalerts.aspx?AID=893; *see also* Draft 2018 Toxicological Profile for Perfluoroalkyls.

[8] *See* Melisa Gomis et al., "Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives," 113 *Environ. International* 1 (2018) (hereinafter "Gomis 2018 study"), included as Attachment 2.

underestimate the danger of short-chain PFAS alternatives.[9] Yet EPA has done exactly that, stating that short-chain PFAS "are generally less toxic and less bioaccumulative in wildlife and humans."[10] The California Department of Toxic Substances Control reviewed recent scientific literature on PFAS compounds, including short-chain PFAS alternatives and, in February 2018, released a draft report highlighting the danger of short-chain PFAS:

> Shorter-chain PFASs are marketed as less toxic compared to the longer-chains, mainly because they appear to bioaccumulate less and to be more readily eliminated from some organisms. Nevertheless, they are equally persistent and more mobile in the environment than the chemicals they are replacing, and also show potential for toxicity.[11]

Citing a 2018 study which compared short and long-chain PFAS compounds, the report ultimately found that the short-chain alternatives could be more toxic than the compounds they are replacing:

> PFECAs and shorter-chain PFAAs may have *similar or higher toxic potency* than the longer-chain PFAAs they are replacing. Using a toxicokinetic model and existing toxicity data sets, a recent study found that PFBA, PFHxA, and PFOA have the same potency to induce increased liver weight, whereas GenX is more potent. The authors concluded that previous findings of lower toxicity of fluorinated alternatives in rats were primarily due to the faster elimination rates and lower distribution to the liver compared to PFOA and other longer-chain PFAAs.[12]

Short-chain alternatives only *appeared* to be less toxic than long-chain PFAS, such as PFOA, because it was leaving the bodies of animal test subjects more readily than long-chain compounds. For humans, however, short-chain PFAS "could likely be intrinsically as potent as their predecessors."[13] As explained by the 2018 study cited by the California Department of Toxic Substances Control, "short-chain PFASs that are rapidly excreted in a species such as the rat may not reach internal concentrations sufficient to result in toxic effects that it could in other species with a longer half-life, such as humans."[14] Therefore, short-chain PFAS are likely to stay in the human bodies long enough to cause severe toxic effects. Short-chain PFAS created to replace PFOA and PFOS could be as harmful, if not more harmful, than the compounds they

[9] The Madrid Statement at A 107; *see also* Scheringer et al., Helsingor Statement on poly- and perfluorinated alkyl substances (PFASs) 114 *Chemosphere* 337 (2014).
[10] EPA, Risk Management for Per- and Polyfluoroalkyl Substances (PFASs) under TSCA, *available at* https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfass (last visited Sept. 19, 2018).
[11] California Department of Toxic Substances Control, "Product – Chemical Profile for Perfluoroalkyl and Polyfluoroalkyl Substances (PFASs) in Carpets and Rugs" 6 (2018) (hereinafter "CDTSC 2018 Report"), included as Attachment 3.
[12] *Id.* at 29 (citation omitted).
[13] Gomis 2018 study at 7-8.
[14] *Id*.

were created to replace.[15] Additionally, because some short-chain PFAS are less effective, larger quantities of short-chain PFAS may be used in manufacturing processes.[16]

B. For decades, chemical companies have freely contaminated our environment with PFAS.

In North Carolina, for nearly four decades, DuPont knowingly contaminated the air, water, and groundwater at its Fayetteville Works Facility, and the Cape Fear River—the drinking water supply for more than 250,000 North Carolinians. After DuPont created Chemours,[17] and passed responsibility for its pollution to its then-subsidiary, the facility continued to quietly release hundreds of thousands of pounds of toxic PFAS.

This was not the first time DuPont contaminated a community and its drinking water. Before DuPont polluted the air and water in southeastern North Carolina, the company devastated communities in West Virginia with its pollution containing PFOA.[18] DuPont knew about the dangers of PFOA beginning in the early 1960s, after the company conducted studies that showed the chemical caused liver damage, was resistant to degradation, and could cause birth defects.[19] By 1981, DuPont found PFOA in the umbilical cord of a pregnant employee, demonstrating that the chemical's toxic effects could reach fetuses.[20] By 1982, DuPont knew that PFOA emissions from its facility's stacks in West Virginia traveled beyond the boundaries of its West Virginia facility and was warned by its own medical director that surrounding communities were likely being exposed to the company's poisonous dust.[21] By 1987, DuPont found the chemical in drinking water around its West Virginia facility, yet told no one outside the company.[22]

Nevertheless, when DuPont lost its supply of PFOA from the 3M Company in 2000, it decided to begin making PFOA in North Carolina, starting a new legacy of pervasive environmental pollution in a new place.[23] Years later, plagued by thousands of civil lawsuits from its PFOA pollution in West Virginia; scientific evidence showing that PFOA causes birth

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[15] *See also* Gomis 2018 study; Gloria Post et al., "Key scientific issues in developing drinking water guidelines for perfluoroalkyl acids: Contaminants of emerging concern," 15 *PLoS Biol* e2002855 (2017); Melissa Gomis, "From emission sources to human tissues: modelling the exposure to per- and polyfluoroalkyl substances," (2017); Nan Sheng et al., "Cytotoxicity of novel fluorinated alternatives to long chain," 92 *Archives of Toxicol.* 359 (2017); Melisa Gomis et al., "A modeling assessment of the physicochemical properties and environmental fate of emerging and novel per- and polyfluoroalkyl substances," 505 *Sci. of the Total Environ.* 981 (2014); J.M. Rae et al., "Evaluation of chronic toxicity and carcinogenicity of ammonium 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)-propanoate in SpragueDawley rats," 2 *Toxicol. Rep.* 939 (2015).

[16] The Madrid Statement at A 107.

[17] E.I. du Pont de Nemours and Company owned and operated the Fayetteville Works facility from the 1970s until the company formed Chemours Company FC, LLC, and transferred ownership to Chemours in 2015.

[18] *See* Nathaniel Rich, "The Lawyer Who Became DuPont's Worst Nightmare," *N.Y. Times*, Jan. 6, 2016, *available at* https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html (last visited Sept. 19, 2018).

[19] *Id*.

[20] *Id*.

[21] *Id*; *see also* Motion for Partial Summary Judgment, Exhibit 7, *Little Hocking Water Ass'n, Inc. v. E.I. du Pont Nemours & Co.*, 91 F. Supp. 3d 940, 962 (S.D. Ohio 2015), included as Attachment 4.

[22] Motion for Partial Summary Judgment, Exhibit 12, *Little Hocking Water Ass'n, Inc. v. E.I. du Pont Nemours & Co.*, 91 F. Supp. 3d 940, 962 (S.D. Ohio 2015), included as Attachment 5.

[23] Nathaniel Rich, "The Lawyer Who Became DuPont's Worst Nightmare," *N.Y. Times*, Jan. 6, 2016.

defects, cancer, and other severe health effects; and pressure from the public and EPA, DuPont was compelled to stop making PFOA.[24] And, it replaced it with the equally harmful GenX.

DuPont studied GenX, its new toxic PFAS substitute, beginning as early as 1963, discovering over time that GenX produced toxic effects in laboratory animals similar to that of PFOA, including cancers in the liver, pancreas, and testicles.[25] Still, the company began quietly releasing the chemical into a North Carolina drinking water supply, the Cape Fear River, in the early 1980s, as a result of its many manufacturing processes.[26] DuPont also began emitting hundreds of millions of pounds of GenX and other PFAS into the air each year, and allowing the chemicals to leak from its open pits, ditches, and pipes into the aquifers that supply the drinking water wells for hundreds of families.[27]

Three decades later, when DuPont began making GenX as a replacement for PFOA at the Fayetteville Works Facility in North Carolina,[28] the company did not disclose to the North Carolina Department of Environmental Quality or to the public that GenX has harmful health effects similar to those of PFOA, or that DuPont had already been dumping the chemical into the Cape Fear River for nearly three decades.[29]

DuPont created a new company, Chemours, to bear the weight of its hundreds of million dollars' worth of legal liabilities from its PFOA contamination. When Chemours took ownership of the Fayetteville Works Facility in 2015, it simply continued DuPont's tradition of toxic pollution.[30] Hundreds of thousands of people in North Carolina have been devastated by DuPont and Chemours' decades of PFAS contamination. Until PFAS are strictly regulated, millions more throughout the country will be harmed by these companies' blatant disregard for communities near their facilities.

C. EPA must regulate PFAS as a class of compounds.

There are over 3,000 PFAS in circulation on the global market,[31] and possibly 5,000 to 10,000 in total.[32] EPA has a proposed a regulatory process which addresses one PFAS at a time. This will not protect the health of the public and the environment.

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[24] *Id*.
[25] DuPont and Chemours' TSCA filing to EPA, "8EHQ-06- 1643 6_8EHQ-06- 16478," Jan. 8, 2013, included as Attachment 6.
[26] Amended Complaint, *N.C. Dept. of Environmental Quality v. Chemours*, 17 CVS 580, 16 (N.C. Super. 2018) (hereinafter "NC DEQ Amended Complaint"), included as Attachment 7.
[27] *See generally* Exhibit 22 of NC DEQ Amended Complaint, "Focused Feasibility Study Report – PFAS Remediation," included as Attachment 8.
[28] NC Amended Complaint at 18.
[29] *Id*. at 14, 20-21.
[30] *See* NC Amended Complaint.
[31] KEMI, Swedish Chemicals Agency, Occurrence and use of highly fluorinated substances and alternatives 6 (2015), *available at* https://www.kemi.se/en/global/rapporter/2015/report-7-15-occurrence-and-use-of-highly-fluorinated-substances-and-alternatives.pdf (last visited Sept. 19, 2018).
[32] Combined Presentations from EPA PFAS Community Engagement in Fayetteville, NC, slide 18, Aug. 14, 2018, *available at* https://www.epa.gov/sites/production/files/2018-08/documents/r4_combined_presentations_.pdf (last visited Sept. 19, 2018).

EPA made the mistake years ago of failing to address the entire class of PFAS. In 2006, EPA asked companies, including DuPont, to voluntarily phase out their use of PFOA, and gave the companies nearly a decade to do so.[33] DuPont then took advantage of the lack of regulation on PFAS and simply shifted to using GenX, a structurally similar compound, to replace PFOA. Despite DuPont's own studies of GenX showing that the chemical had health effects in laboratory animals consistent with the effects of PFOA, DuPont and later, Chemours, intentionally pumped GenX and numerous other PFAS into the drinking water for over 250,000 people in southeastern North Carolina for decades.

EPA is poised to make the same mistake. The agency's proposed response fails to address the entire class of PFAS, and will again allow companies like DuPont and Chemours to avoid regulation of their PFAS pollution. EPA has proposed:

- "evaluat[ing] the need for a maximum containment level (MCL) for PFOA and PFOS,"
- "beginning […] to propose designating PFOA and PFOS as 'hazardous substances' through one of the available statutory mechanisms,"
- "developing groundwater cleanup recommendations for PFOA and PFOS at contaminated sites," and
- "taking action […] to develop toxicity values for GenX and PFBS."[34]

Each of EPA's proposed actions is limited to *only two* PFAS out of *thousands* of existing PFAS. Moreover, EPA only proposes enforceable regulations for PFOA and PFOS—legacy PFAS that companies like DuPont and Chemours have already switched out for new PFAS alternatives, such as GenX.

In addition to holding PFAS manufacturing companies accountable for their pollution, EPA's regulation of PFAS as a class will ensure that the agency considers the cumulative effects of PFAS mixtures on humans and the environment. As evidenced by the situation in North Carolina, these compounds are not released one at a time. Dozens, if not hundreds, of different PFAS are released together into the air, water, and soil.[35] Therefore, people and the environment are exposed not only to PFOA or PFOS, but toxic mixtures that can cause greater harm than a single PFAS would.[36] Any regulatory action, therefore, must consider the cumulative effects of exposure to numerous different PFAS over an entire lifetime.

EPA cannot wait for health studies to be conducted on each individual PFAS before it acts. In May 2009, the Agency for Toxic Substances and Disease Registry released its first draft Toxicological Profile for Perfluoroalkyls for public comment.[37] Over 9 years later, EPA is still releasing draft versions of this report for public comment—the latest version of which discusses

[33] EPA, Fact Sheet: 2010/2015 PFOA Stewardship Program, *available at* https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program#what (last visited Sept. 19, 2018).
[34] EPA, PFAS National Leadership Summit, *available at* https://www.epa.gov/sites/production/files/2018-08/documents/pfas-meeting-summary_final_508.pdf (last visited Sept. 19, 2018).
[35] Combined PFAS well samples around Fayetteville Works Facility and air emission estimates, included as Attachment 9.
[36] Wang Ting et al., "Hydrophobicity-dependent QSARs to predict the toxicity of perfluorinated carboxylic acids and their mixtures," 32 *Environ Toxicol Pharmacol* 2 (2011).
[37] Draft 2018 Toxicological Profile for Perfluoroalkyls at iv.

only 14 PFAS out of the thousands of existing PFAS.[38] Still, the public has not seen any enforceable regulations on PFOA, which has been in production for over 60 years,[39] and has long been known to cause developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, lower birth weight and size, obesity, decreased immune response to vaccines, reduced hormone levels, and delayed puberty.[40]

States and other countries have recognized the need for PFAS to be regulated together. For instance, Vermont has issued a drinking water health advisory for the sum of five different PFAS. Vermont has determined that the combined levels of PFOA, PFOS, perfluorohexane sulfonic acid ("PFHxS"), perfluoroheptanoic acid ("PFHpA"), and perfluorononanoic acid ("PFNA") should not exceed 20 ppt.[41] Massachusetts has similarly issued a public health guideline for the combined levels of PFOA, PFOS, PFNA, PFHxS and PFHpA, stating that public water supplies should "take steps expeditiously" to lower the combined levels of the five PFAS "to below 70 ppt for all consumers."[42] Other states that have addressed PFAS in addition to PFOA and PFOS include Connecticut, Minnesota, and New Jersey.[43] Sweden and Germany have proposed that the European Union restrict the manufacture of about 200 PFAS.[44]

EPA must use existing environmental statutes, as discussed in Section F, to regulate the entire class of PFAS in order (1) to prevent companies from creating new PFAS to avoid regulation as they have done in the past, and (2) to account for exposure to toxic PFAS mixtures that already exist in our air soil, and water. Anything less will not protect communities like those in southeastern North Carolina from future harm.

D. EPA must prevent PFAS at the source.

EPA's current proposed actions do nothing to stop PFAS from entering the environment in the first place. Instead, EPA plans to put the burden on public water supplies, their customers, and others to filter and clean up PFAS that have been already allowed to permeate throughout drinking water supplies, rivers and lakes, and soil. EPA's strategy is not feasible. Both site remediation and drinking water treatment for PFAS are extremely costly and difficult, and

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[38] *Id*. at 1.
[39] Andrew Lindstrom, et al., "Polyfluorinated Compounds: Past, Present, and Future," 45 *Environ. Sci. Technol.* 19 (2011).
[40] The Madrid Statement at A 107; U.S. Environmental Protection Agency ("EPA"), Fact Sheet on PFOA & PFOS Drinking Water Health Advisories, 2.
[41] Vermont Department of Health, "Drinking Water Health Advisory for Five PFAS (per- and polyfluorinated alkyl substances)," July 10, 2018, *available at* http://www.healthvermont.gov/sites/default/files/documents/pdf/ENV_DW_PFAS_HealthAdvisory.pdf (last visited Sept. 19, 2018).
[42] Massachusetts DEP, "PFAS in Drinking Water," *available at* https://www.mass.gov/files/documents/2018/06/11/pfas-in-dw-fs_0.pdf (last visited Sept. 19, 2018).
[43] Interstate Technology Regulatory Council, PFAS Fact Sheets, Section 4 Tables, *available at* https://pfas-1.itrcweb.org/fact-sheets/ (last visited Sept. 19, 2018).
[44] KEMI, Swedish Chemicals Agency, Proposal to ban 200 highly fluorinated substances, Dec. 20, 2017, *available at* https://www.kemi.se/en/news-from-the-swedish-chemicals-agency/2017/proposal-to-ban-200-highly-fluorinated-substances/ (last visited Sept. 19, 2018); Public Consultation, Germany, In Collaboration With Sweden, Proposes A Restriction On C9-C14 Perfluorocarboxylic Acids (PFCAS), Their Salts And Related Substances (Precusors)," included as Attachment 10.

conventional techniques are often ineffective.[45] Because EPA does not plan to combat PFAS pollution at its source, the agency's plan will not protect human health and the environment.

As evidenced by the presentations EPA gave in its Community Engagement Event in Fayetteville, North Carolina, EPA knows what the sources of PFAS are.[46] They include PFAS-manufacturing facilities and facilities that use PFAS as part of their industrial processes, wastewater treatment plants, and landfills.[47] Once PFAS enters the environment, it moves aggressively. The chemicals "end up virtually everywhere, including air, dust, wastewater treatment plant (WWTP) effluent, biosolids, soil, inland and ocean waters, drinking water, and food, […] in the deep ocean, and in underground aquifers, in rainwater and snow, and in pristine Arctic lakes, far from any point source."[48]

The North Carolina Department of Environmental Quality has spent the last 14 months trying to determine how far DuPont and Chemours' PFAS contamination has spread from their Fayetteville Works Facility, consuming significant staff resources. GenX has now been found in over 600 private wells up to 5.5 miles away from the facility's border, in levels as high as 4,000 ppt.[49] Robeson County's health director has stated that the presence of GenX in Robeson County likely indicates that Chemours' contamination has spread into the Lumber River basin and even the Pee Dee River in South Carolina.[50] The North Carolina Department of Environmental Quality has found the chemical in rainwater at levels as high as 810 ppt five miles from the facility, and as far as 7 miles from the facility.[51] Scientists from the University of North Carolina Wilmington have measured GenX in the rainwater as far as Wilmington—nearly 80 miles from the facility—in concentrations higher than 500 ppt.[52] Last December, GenX was even found in local honey at 2,070 ppt.[53] North Carolina has witnessed the ability of PFAS to invade every facet of the world we live in.

EPA states that it will "evaluate the need for a maximum containment level (MCL) for PFOA and PFOS."[54] While the promulgation of maximum contaminant levels under the Safe Drinking Water Act is important for protecting the public's drinking water supply, it is

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[45] Combined Presentations from EPA PFAS Community Engagement in Fayetteville, NC, slide 7, 30-40, Aug. 14, 2018, *available at* https://www.epa.gov/sites/production/files/2018-08/documents/r4_combined_presentations_.pdf (last visited Sept. 19, 2018); Interstate Technology Regulatory Council, Remediation Technologies and Methods for Per- and Polyfluoroalkyl Substances (PFAS) (Mar, 2018), *available at* https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_remediation_3_15_18.pdf (last visited Sept. 19, 2018).
[46] Combined Presentations from EPA PFAS Community Engagement in Fayetteville, NC, slide 28, Aug. 14, 2018.
[47] *Id*.
[48] CDTSC 2018 Report at 19.
[49] NC DEQ Amended Complaint at 27.
[50] Steve DeVane, "Robeson County testing for GenX near St. Pauls," *the Fayetteville Observer*, Feb. 2, 2018, *available at* http://www.fayobserver.com/news/20180202/robeson-county-testing-for-genx-near-st-pauls (last visited Sept. 19, 2018).
[51] NC DEQ Amended Complaint at 2.
[52] Ralph Mead, UNCW, Presentation for the Cape Fear River Assembly, "Environmental Mass Spectrometry," slide 14, May 23, 2018, included as Attachment 11.
[53] Adam Wagner, "How did GenX end up in a jar of honey? DEQ is investigating," *StarNews Online*, Dec. 4, 2017, *available at* http://www.starnewsonline.com/news/20171204/how-did-genx-end-up-in-jar-of-honey-deq-is-investigating (last visited Sept. 19, 2018).
[54] EPA, PFAS National Leadership Summit, *available at* https://www.epa.gov/sites/production/files/2018-08/documents/pfas-meeting-summary_final_508.pdf (last visited Sept. 19, 2018).

extraordinarily difficult and expensive to remove PFAS from water. Relying exclusively on maximum containment levels to clean up drinking water puts the entire burden on local water utilities and their customers. As evidenced by the situation in North Carolina, this is not fair, feasible, or effective.

The Cape Fear Public Utility Authority, which services 200,000 customers in North Carolina, discovered in the summer of 2017 that PFAS from Chemours' Fayetteville Works Facility was in its finished water. One of the PFAS, GenX, reached levels of up to 1,100 ppt in the treated drinking water.[55] In September 2017, Chemours agreed to stop pumping its PFAS-contaminated wastewater directly into the Cape Fear River.[56] However, PFAS levels in the Cape Fear River and in the utility's finished drinking water have persisted from contamination in the soil and groundwater at the facility,[57] sediment in the Cape Fear River and its tributaries,[58] and possibly even bacteria that coat the inside of pipes which pump treated drinking water.[59]

The Cape Fear Public Utility Authority has now spent $1.8 million addressing Chemours' PFAS pollution, and is planning to install advanced treatment technology that could have a life-cycle cost of $196 million through 2055.[60] It projects that its customers, who have already been harmed by Chemours' pollution for decades, will face a 14 percent increase in their water bills because of the actions the utility must now take to combat PFAS.[61] During its presentation to the House Select Committee on North Carolina River Quality on April 26, 2018, the Cape Fear Public Utility Authority emphasized that even its upgraded treatment system will not eliminate PFAS in finished drinking water, and that the only way to effectively address the contamination is by controlling the source of the compounds.

Communities that have been injured by the intentional pollution from large chemical companies should not be the ones to bear the heavy financial burden of cleaning up their own drinking water. EPA must prevent additional PFAS from being pumped into our air, water and soil. None of EPA's current proposals will do so, and they fail to protect communities from the harm suffered by those in southeastern North Carolina.

E. <u>EPA's failure to control PFAS has resulted in longstanding contamination across the country, which EPA must now confront</u>.

The number of PFAS-contaminated sites continues to grow. Initially, PFAS pollution was thought to be somewhat limited to PFAS manufacturing facilities, but it is now understood

[55] June 19 to July 25, 2017 GenX Surface Water Sampling Results, included as Attachment 12.
[56] Partial Consent Order, *N.C. Dept. of Environmental Quality v. Chemour*s, 17 CVS 580 (N.C. Super. 2018), included as Attachment 13.
[57] Exhibit 22 of NC DEQ Amended Complaint, "Focused Feasibility Study Report – PFAS Remediation."
[58] "Report to the Environmental Review Commission from the University of North Carolina at Wilmington Regarding the Implementation of Section 20(a)(2) of House Bill 56 (S.L. 2017-209)," included as Attachment 14.
[59] Cheryl Hogue, "What's GenX still doing in the water downstream of a Chemours Plant," *c&en*, Feb. 12, 2018, *available at* https://cen.acs.org/articles/96/i7/whats-genx-still-doing-in-the-water-downstream-of-a-chemours-plant.html (last visited Sept. 19, 2018).
[60] Combined Presentations from EPA PFAS Community Engagement in Fayetteville, NC, slide 78, Aug. 14, 2018, *available at* https://www.epa.gov/sites/production/files/2018-08/documents/r4_combined_presentations_.pdf (last visited Sept. 19, 2018).
[61] *Id.*

that the contamination is widespread. PFAS contamination exists not only at PFAS manufacturing facilities and facilities that use PFAS as part of their industrial processes, but also at military bases; fire-fighting foam application, training, storage, and disposal sites; manufacturing sites of fire-retardant materials; landfills; wastewater treatment plants; airports; and many other locations.[62] PFAS contamination is a national problem, and EPA must act.

Many sites potentially contaminated with PFAS have yet to be characterized, added to the National Priorities List (the list of contaminated sites eligible for cleanup and financed under the federal Superfund program), or cleaned up. As of May 2017, EPA estimated there were over 1,000 sites potentially contaminated by PFAS (including 315 Department of Defense sites with fire training areas, 535 airports, and hundreds of PFAS manufacturing facilities).[63] Against this artificially low estimate,[64] there were less than 90 Superfund sites with known PFAS impacts.[65] Because PFAS do not degrade in the environment,[66] PFAS-contaminated sites require *active clean up* to eliminate the harm to human health and the environment. EPA must therefore identify and characterize the sources of PFAS, add any known contaminated sites to the Superfund National Priorities List, and prioritize those sites for cleanup.

So that responsible officials and parties know how best to reduce the risks of PFAS contamination and exposure, EPA must also develop and publicize PFAS test methods for all environmental media. It must evaluate and identify effective treatment technologies for remediating PFAS-contaminated soils, sediments, and waters. These must include methods for preventing PFAS-polluted groundwater from entering surface waters. And EPA must develop tools, data, and guidance for remedy selection, remedial action, and performance monitoring.

In many cases, the costs associated with environmental contamination are unfairly borne by state and federal governments, public and private utilities, and members of the public. EPA must instead hold the polluters financially responsible for these costs—including the costs for remediation on and off site, effective filtration systems at an individual and utility scale where drinking water supplies are polluted with PFAS, human health studies, environmental sampling, and ongoing monitoring. Finally, EPA should implement an aggressive enforcement strategy against companies that have knowingly and intentionally released PFAS into the environment, such as DuPont and Chemours.

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[62] *See* PFAS Environmental Occurrence, available at https://clu-in.org/contaminantfocus/default.focus/sec/Per-_and_Polyfluoroalkyl_Substances_(PFASs)/cat/Occurrence/ (last visited Sept. 19, 2018).

[63] L. Gaines, EPA, Presentation: Per and Polyfluroalkyl Substances (PFASs) at Superfund Sites, at 4 (May 2017) (hereinafter, "EPA PFAS Superfund Sites"), *available at* http://www.newmoa.org/events/docs/259_227/GainesEPA_May2017_final.pdf (last visited Sept. 19, 2018).

[64] EPA's estimate that 1,000 sites across the country are potentially contaminated by PFAS is artificially low considering Michigan alone has confirmed the state has 35 sites with PFAS contamination. *See* Michigan Department of Environmental Quality, Confirmed PFAS Sites (Sept. 12, 2018), *available at* https://www.michigan.gov/documents/deq/deq-map-confirmedPFASsites_611932_7.pdf (last visited Sept. 20, 2018).

[65] EPA PFAS Superfund Sites at 6.

[66] Interstate Technology Regulatory Council, Environmental Fate and Transport for Per- and Polyfluoroalkyl Substances Fact Sheet, at 1 (Mar. 16, 2018) (hereinafter "ITRC Fate Fact Sheet"), included as Attachment 15.

EPA has stated that it will "begin[] the necessary steps to propose designating PFOA and PFOS as 'hazardous substances,'" specifically under Section 102 of Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA").[67] While it is important for polluted sites to be cleaned up, designating PFAS as "hazardous substances" under CERCLA does not prevent industrial facilities and others from creating hazardous waste sites in the first instance. Therefore, in order for EPA to protect human health and the environment, it must utilize its entire arsenal of environmental statutes, as discussed more fully in the next Section.

F. EPA must use its statutory tools to control PFAS at the source, protect public and environmental health, and require polluters to bear the costs associated with their PFAS use.

Despite their known risks to human health and the environment, little federal regulation applies to PFAS—leaving state governments, owners and customers of public water systems, and individuals to pay for the costs associated with PFAS contamination, or to resort to post-injury legal claims against the polluting companies that have damaged their health and well-being. As discussed in Section D, the public and environmental health threat must be controlled and eliminated *before harm occurs*. EPA has a legal and moral obligation to require industry to install technology that prevents PFAS from entering the environment, ensure that the public is informed about risks of PFAS already in the environment, limit the use and distribution of PFAS, and hold polluters responsible. In order to do this, EPA must take the following actions.

1. Designate all PFAS as "hazardous air pollutants" under the Clean Air Act and promulgate national emissions standards.

PFAS are found in ambient air, with elevated concentrations observed near emission sources, such as manufacturing facilities, wastewater treatment plants, fire training facilities, and landfills.[68] Short-range atmospheric transport and deposition results in PFAS contamination in soil, sediment, surface water, groundwater (including drinking water supplies), and other media near emission points, as well as several miles away.[69] Long-range atmospheric transport processes are responsible for the widespread distribution of PFAS, including in remote areas with no direct emission sources.[70]

The Clean Air Act was enacted to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare." 42 U.S.C. § 7401(b). To fully protect against PFAS contamination from emissions sources, EPA must designate PFAS as hazardous air pollutants.

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[67] EPA, PFAS National Leadership Summit, *available at* https://www.epa.gov/sites/production/files/2018-08/documents/pfas-meeting-summary_final_508.pdf (last visited Sept. 19, 2018).
[68] ITRC Fate Fact Sheet.
[69] *See id.*
[70] *Id.*; *see also* EPA, Contaminated Site Clean-up Information, Per- and Polyfluoroalkyl Substances (PFASs), Environmental Distribution and Accumulation (2018) (hereinafter, "PFAS Environmental Occurrence"), *available at* https://clu-in.org/contaminantfocus/default.focus/sec/Per-_and_Polyfluoroalkyl_Substances_(PFASs)/cat/Occurrence/ (last visited Sept. 19, 2018).

"Hazardous air pollutants" are those pollutants that are known or suspected to cause cancer or other "adverse health effects," such as reproductive effects or birth defects, or "adverse environmental effects." 42 U.S.C. § 7412(b)(2). EPA must periodically review the list of hazardous air pollutants and add pollutants "which present, or may present" such risks. *Id.* Because PFAS are known toxins which cause serious adverse health and environmental effects,[71] EPA must (1) list all PFAS as hazardous air pollutants; and (2) promulgate national emission standards for all major sources and area sources of PFAS. 42 U.S.C. § 7412(b)(2), (d).

2. Designate all PFAS as "hazardous substances" and "toxic pollutants" under the Clean Water Act, and affirm that the Act prohibits the discharge of pollutants—including PFAS—to surface water via hydrologically connected groundwater.

PFAS are released into surface waters by industrial facilities, wastewater treatment plants, firefighting foam activities, and land application of biosolids (i.e., sewage sludge).[72] Once released into surface water, PFAS remain in the water, causing harm to people who fish and swim in—or whose drinking water comes from—polluted waters.[73] PFAS in surface water can also contaminate groundwater through groundwater recharge or be transported to the oceans where they are then transported globally by ocean currents.[74] And, PFAS discharged to groundwater can result in large plumes and discharges to surface water.[75] Because the Clean Water Act is the primary tool for restoring and maintaining the nation's waters, 33 U.S.C. § 1251(a), PFAS must be regulated as "hazardous substances" and "toxic pollutants" under the Act. EPA must also affirm that the unpermitted discharge of pollutants—including PFAS—through hydrologically connected groundwater is prohibited.

a. PFAS are hazardous substances.

Section 311 of the Clean Water Act requires EPA to designate as hazardous substances those substances which, when discharged in any quantity into surface waters, present an "imminent and substantial danger to public health or welfare, including, but not limited to, fish, shellfish, wildlife, shorelines, and beaches." 33 U.S.C. § 1321(b)(2)(A). The Clean Water Act then prohibits discharges of hazardous substances in quantities that may be "harmful to the public health or welfare or the environment." *Id.* § 1321(b)(3), (4). PFAS easily satisfies the definition of "hazardous substance" because PFAS are persistent, bioaccumulative, and toxic to both humans and animals.[76] EPA must designate them as "hazardous substances."

b. PFAS are toxic pollutants.

PFAS must similarly be designated as "toxic pollutants" under section 307 of Clean Water Act. 33 U.S.C. § 1317. "Toxic pollutants" are "those pollutants, or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism . . . , cause death, disease, behavioral abnormalities,

[71] *See* Section A, *supra*.
[72] Draft 2018 Toxicological Profile for Perfluoroalkyls at 552-554.
[73] ITRC Fate Fact Sheet at 13.
[74] *Id.*
[75] *Id.* at 12.
[76] *See* Section A, *supra*.

cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring." 33 U.S.C. § 1362.

Designation as a toxic pollutant appropriately results in enhanced measures to protect human health and the environment from the dangers posed by the pollutant, including, for example, more stringent disclosure requirements in the NPDES permitting process (40 C.F.R. § 122.21), effluent limitations in NPDES permits (33 U.S.C. § 1317(a)), pretreatment standards (33 U.S.C. § 1317(b)), water quality criteria to control concentration levels for the pollutants (33 U.S.C. § 1314), guidance to states for establishing protective water quality standards (33 U.S.C. § 1313), and prohibitions on the disposal of pollutant-containing sludge (33 U.S.C. § 1345). These enhanced protective measures should apply to all PFAS because PFAS are toxic pollutants. As EPA develops analytical test methods for specific PFAS, those compounds should also be added to the Priority Pollutant List, so that water quality criteria and effluent limitations guidelines can be developed more quickly.[77]

c. Unpermitted discharges of PFAS through hydrologically connected groundwater are prohibited under the Clean Water Act.

As explained more fully in our comments on "Clean Water Act Coverage of Discharges of Pollutants via a Direct Hydrologic Connection to Surface Water" (Docket ID No. EPA-HQ-OW-2018-0063),[78] the purpose and plain language of the Clean Water Act requires EPA to protect the nation's waters from unpermitted discharges to surface waters through hydrologically connected groundwater.[79] An overwhelming majority of federal courts have held the same.[80] Moreover, people who rely on the nation's waters for fishing, swimming and other recreation, and as sources of drinking water, benefit from these types of groundwater discharges being monitored, controlled in keeping with leading industry practices, and limited in a way that ensures water quality will not be further degraded. "Because the CWA's goal is to protect the quality of surface waters, the NPDES permit system regulates any pollutants that enter such waters either directly or through groundwater."[81] EPA should affirm that rule of law.

[77] At EPA's August 2018 PFAS National Leadership Summit in Fayetteville, NC, the agency indicated it "is beginning the necessary steps to propose designating PFOA and PFOS as 'hazardous substances' through one of the available statutory mechanisms, including potentially CERCLA Section 102." By designating PFAS as "hazardous substances" or "toxic pollutants," EPA would automatically add PFAS to CERCLA's Section 102 Hazardous Substances List, 42 U.S.C. 9601(14) (defining hazardous substance), thereby applying the more expansive cleanup and reporting requirements under that law *and* the Clean Water Act.

[78] EPA Docket Folder for "Clean Water Act Coverage of Discharges of Pollutants via a Direct Hydrologic Connection to Surface Water", Docket ID No. EPA-HQ- OW-2018-0063, *available at* https://www.regulations.gov/document?D=EPA-HQ-OW-2018-0063-0001 (last visited Sept. 19, 2018).

[79] *See generally* Ltr. from F. Holleman to S. Wilson re: Comment on "Pollution of Surface Waters by Pollution Transmitted From a Point Source through Groundwater with a Direct Hydrological Connection to the Surface Water" (Docket ID No. EPA-HQ-OW-2018-0063) (Apr. 18, 2018), included as Attachment 16.

[80] *Id.* at 9-15.

[81] *Williams Pipe Line Co. v. Bayer Corp.*, 964 F.Supp. 1300, 1320 (S.D. Iowa 1997).

3. Designate and regulate PFAS-containing waste as a "hazardous waste."

Industrial facilities may also release PFAS to the environment via on- and off-site disposal of wastes.[82] EPA must ensure that PFAS-hazardous wastes are carefully managed and disposed.

"Hazardous waste" is waste with properties that makes it dangerous or capable of having a harmful effect on human health or the environment. *See* 42 U.S.C. § 6903(5). EPA has developed a comprehensive program to ensure that hazardous waste is managed safely from the moment it is generated to its final disposal (cradle-to-grave). *See* 400 CFR parts 260 through 273. To ensure the safe management and disposal of PFAS-containing wastes, EPA must list PFAS as a "hazardous waste" under 42 U.S.C. § 6921.

4. List PFAS as toxic chemicals under the Toxic Release Inventory.

The Emergency Planning & Community Right-To-Know Act's Toxics Release Inventory requires industrial and federal facilities to disclose information to the public about toxic chemical releases and pollution prevention activities. *See* 42 U.S.C. § 11023. EPA may add chemicals to the Toxics Release Inventory list where there is sufficient evidence that a chemical causes or is "reasonably anticipated to cause" human health effects, such as cancer or serious reproductive issues. *Id.* at 11023(d)(2). EPA may also add a chemical that—because of its toxicity or toxicity and persistence, or toxicity and tendency to bioaccumulate—is known to cause or is "reasonably anticipated to cause" a "significant adverse effect on the environment." *Id.* So that the public can be informed about toxic PFAS releases in their communities, EPA must add all PFAS to the list of toxic chemicals.

5. Utilize the Toxic Substances Control Act to require disclosure of PFAS risks and limit the manufacture, processing, and use of harmful PFAS.

In enacting the Toxic Substance Control Act (TSCA), Congress found that "among the many chemical substances and mixtures which are constantly being developed and produced, there are some [that] may present an unreasonable risk of injury to health or the environment." 15 U.S.C. § 2601(a). For these chemicals, pre-manufacture data must be developed to identify the effects of the chemical substances and regulation must be implemented to protect against the risks. *Id.* § 2601(b). PFAS presents unreasonable risks to human health and the environment,[83] and EPA must utilize its authority under TSCA to protect against those risks.

As an initial matter, EPA must enforce its TSCA section 5(e) orders, including the Order the agency entered into with DuPont and Chemours.[84] For decades, the companies have violated EPA's Order, EPA has failed take enforcement actions against them, and now, Chemours

[82] ITRC Fate Fact Sheet at 3.
[83] *See* Section A, *supra*.
[84] EPA, Consent Order and Determinations Supporting Consent Order for PMN Substances P-08-509 (2009) (hereinafter "TSCA Order"), included as Attachment 17. In order for DuPont to manufacture GenX and related chemicals, the EPA issued the Order to DuPont under TSCA in 2009. When DuPont transferred ownership of the Fayetteville Works facility to Chemours in 2015, Chemours became responsible for complying with the order.

continues those violations.[85] The companies have released nearly 100,000 pounds of PFAS compounds from its stack emissions each year, including GenX compounds at a rate of 2,758 pounds per year.[86] Chemours' emissions are contaminating surface water, groundwater, and drinking water sources with PFAS, despite that Chemours was required to "recover and capture (destroy) or recycle the [PFAS] substances at an overall efficiency of 99% from all the effluent process streams and the air emissions."[87] Based on EPA's determinations that preceded the Order, EPA's issuance of the Order was mandatory, and so is its enforcement. *See* 15 U.S.C. § 2604(e).

To broadly address the manufacturing of PFAS as a class, EPA should exercise its authority under TSCA Section 4 to require PFAS manufacturers and processors to conduct toxicity testing of all PFAS and disclose the results, as well as all currently available data, to EPA. 15 U.S.C. § 2603. Similarly, EPA should require reporting of PFAS production, including PFAS byproduct production at very low thresholds under the revised Chemical Data Reporting Rule. *See* 15 U.S.C. § 2607; 40 C.F.R. Part 711.

EPA must also take action under 15 U.S.C. § 2604 to protect against the unreasonable risks posed by PFAS. Where a "chemical substance…presents an unreasonable risk of injury to health or the environment," EPA is required—"without consideration of costs or other nonrisk factors"—to protect against those unreasonable risks, including by issuing an order limiting or prohibiting the manufacture, processing, or distribution of the substance." 15 U.S.C. § 2604(a)(3)(A); 15 U.S.C. § 2604(f). It is indisputable that PFAS as a class poses serious risks to health and safety of the public and the environment; therefore, EPA should ban the development of new PFAS and strictly limit the manufacture, processing, and distribution into commerce of existing PFAS. EPA should also halt the use of all PFAS in Aqueous Film Forming Foam and firefighting gear for military and civilian use, and require industry to find safe alternatives for these and other uses.

Finally, EPA should issue a Significant New Use Rule for *all PFAS*, and should prohibit new uses of PFAS, including their use in "articles." *See* 15 U.S.C. § 2604(a); 40 C.F.R. 720.3(c). Although EPA has proposed a Significant New Use Rule for PFOA and related chemicals, the rule covers only long-chain PFAS.[88] Short-chain PFAS can, however, be even more toxic.[89] Therefore, Significant New Use Rules regarding PFAS should apply to all PFAS—short-chain and long-chain—including their use in articles (such as nonstick cookware or water resistant clothing).

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[85] Southern Environmental Law Center Notice of Intent to sue Chemours under the Toxic Substances Control Act, May 7, 2018, included as Attachment 18.

[86] *Id*; See Combined PFAS well samples around Fayetteville Works Facility and air emission estimates, included as Attachment 9.

[87] TSCA Order (Attachment 17) at 36; Southern Environmental Law Center Notice of Intent to sue Chemours under the Toxic Substances Control Act, May 7, 2018.

[88] EPA, "Risk Management for Per- and Polyfluoroalkyl Substances (PFASs) under TSCA," *available at* https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfass (last visited Sept. 119, 2018).

[89] *See* Section A, *supra*.

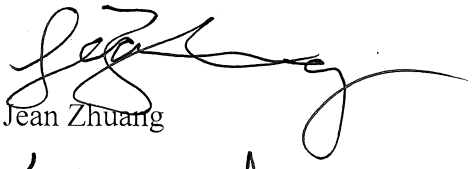
G. Conclusion

Far too many communities like those in North Carolina have been harmed by PFAS pollution throughout the country in the past century. EPA is now fully aware of the extent of destruction that PFAS can cause to our bodies and the environment. The agency must use its statutory tools to combat this class of chemicals that has infected every facet of our daily lives. Its current proposal does nothing to protect future communities, and EPA has a legal and moral obligation to do more.

Thank you for considering these comments. Please contact us at ggisler@selnc.org or 919-967-1450 if you have any questions regarding this letter.

Sincerely,

Geoffrey R. Gisler



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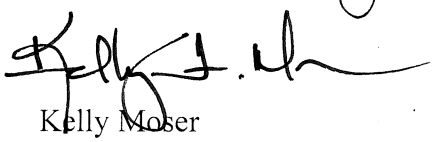

Kelly Moser