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Electronic Submission via Email

Veronica Craw, Chief
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Environmental Protection Division
Georgia Department of Natural Resources
EPDComments@dnr.ga.gov

Re: PFOA & PFOS Drinking Water Rule Updates

Dear Chief Craw:

Thank you for the opportunity to submit comments on EPD's proposed drinking water updates to finalize drinking water regulations for two specific PFAS: perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). While we appreciate EPD's work to protect our drinking water supplies from these two harmful compounds, the rule should be—and must be—more stringent. As discussed in more detail below, EPD is obligated to adopt drinking water regulations that are just as stringent as federal law; the proposed rule falls short. Moreover, EPD has sampling data showing that public drinking water systems are contaminated with other federally regulated PFAS compounds that pose significant threats to human health and the environment. By choosing not to regulate these other PFAS compounds, EPD is putting the health of Georgians at serious risk.

These comments are submitted on behalf of Altamaha Riverkeeper, Chattahoochee Riverkeeper, Coosa River Basin Initiative, Environment Georgia, Flint Riverkeeper, Georgia Interfaith Power & Light, Ogeechee Riverkeeper, One Hundred Miles, Satilla Riverkeeper, Savannah Riverkeeper, Science for Georgia, Sierra Club Georgia Chapter, Suwannee Riverkeeper, and Southern Environmental Law Center.

I. Introduction

As EPD is aware, PFAS are a group of man-made chemicals manufactured and used broadly by industry since the 1940s.[1] Seemingly every day, new data confirms that PFAS pose a significant threat to human health at extremely low concentrations. Two of the most studied PFAS—PFOA and PFOS—are bioaccumulative and highly persistent in humans.[2] These

[1] *Lifetime Drinking Water Health Advisories for Four Perfluoroalkyl Substances*, 87 Fed. Reg. 36,848, 36,849 (June 21, 2022); *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, U.S. ENV'T PROT. AGENCY, https://perma.cc/V6PX-2PNK (page saved Mar. 8, 2023).

[2] 87 Fed. Reg. at 36,849; U.S. Env't Prot. Agency, Interim Drinking Water Health Advisory: Perfluorooctanoic Acid (PFOA) CASRN 335-67-1 (June 2022), at 3–4, https://perma.cc/F89R-PJUV; U.S. Env't Prot. Agency, Interim

chemicals build up in the human body, and have been shown to cause developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, obesity, decreased immune response to vaccines, reduced hormone levels, delayed puberty, and lower birth weight and size.[3] Recent literature also suggests PFAS exposure can result in decreased fertility in women.[4] And because of their impacts on the immune system, PFAS may also exacerbate the effects of Covid-19.[5]

Exposure to other PFAS, such as perfluorobutyric acid (PFBA),[6] perfluorohexanoic acid (PFHxA),[7] perfluorononanoic acid (PFNA),[8] perfluorodecanoic acid (PFDA),[9]

Drinking Water Health Advisory: Perfluorooctane Sulfonic Acid (PFOS) CASRN 1763-23-1 (June 2022), at 3–4, https://perma.cc/TQM6-57PZ.

[3] U.S. Env't Prot. Agency, Drinking Water Health Advisories for PFAS: Fact Sheet for Communities at 1–2 (June 2022), *available at* https://perma.cc/T7FQ-EKD6; Agency for Toxic Substances and Disease Registry, Toxicological Profile for Perfluoroalkyls (May 2021); PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18,638, 18,642 (Mar. 29, 2023) (discussing developmental effects).

[4] Nathan J. Cohen, *Exposure to Perfluoroalkyl Substances and Women's Fertility Outcomes in a Singaporean Population-Based Preconception Cohort*, 873 SCI. TOTAL ENV'T 162267 (May 15, 2023).

[5] *See* Philippe Grandjean et al., *Severity of COVID-19 at elevated exposure to perfluorinated alkylates*, 15(12) PLoS ONE 1–2 (Dec. 31, 2020), https://perma.cc/Z5S3-LFWR.

[6] U.S. Env't Prot. Agency, IRIS Toxicological Review of Perfluorobutanoic Acid (PFBA, CASRN 375-22-4) and Related Salts at xii (Dec. 2022), https://perma.cc/7N53-6K2M (explaining that "available evidence indicates that developmental, thyroid, and liver effects in humans are likely caused by PFBA exposure in utero or during adulthood").

[7] U.S. Env't Prot. Agency, IRIS Toxicological Review of Perfluorohexanoic Acid [PFHxA, CASRN 307-24-4] and Related Salts at xiv, 14 (Apr. 2023), https://perma.cc/6562-8JA5 (concluding exposure to PFHxA "likely causes" liver, fetal development, and immune system complications, as well as decreased red blood cell counts).

[8] U.S. Env't Prot. Agency, IRIS Toxicological Review of Perfluorononanoic Acid (PFNA) and Related Salts (Public Comment and External Review Draft) (Mar. 2024), https://perma.cc/S6KK-EBVV; Cheryl E. Rockwell et al., *Acute Immunotoxic Effects of Perfluorononanoic Acid (PFNA) in C57BL/6 Mice*, J. OF CLINICAL AND EXPERIMENTAL PHARMACOLOGY S4-002 7 (2013), https://perma.cc/GH27-BHL9 (concluding that PFNA can disrupt blood cell functions and alter immune system responses); Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Perfluoroalkyls* at 7–21 (May 2021) [hereinafter "ATSDR, Toxicological Profile for PFAS"], https://perma.cc/L8PY-DYKN (noting decreased pup survival in rodents as well as developmental delays, decreases in birth weight, decreased sperm motility, and altered immune responses); Francesca Coperchini et al., *Thyroid Disrupting Effects of Old and New Generation PFAS*, FRONTIERS IN ENDOCRINOLOGY (Jan. 2021), https://perma.cc/VSK9-KBHR; Natalie M. Crawford et al., *Effects of Perfluorinated Chemicals on Thyroid Function, Markers of Ovarian Reserve, and Natural Fertility*, 69 REPRODUCTIVE TOXICOLOGY 53–59 (2017); Ryan C. Lewis et al., *Serum Biomarkers of Exposure to Perfluoroalkyl Substance in Relation to Serum Testosterone and Measures of Thyroid Function Among Adults and Adolescents from NHANES 2011-2012*, 12 INT'L J. ENV'T RES. PUBLIC HEALTH 6098–6114 (2015).

[9] U.S. Env't Prot. Agency, Draft IRIS Toxicological Review of Perfluorodecanoic Acid (PFDA) and Related Salts (Public Comment and External Review Draft) (Apr. 2023), https://perma.cc/D75M-AWHN.

perfluoropentanoic acid (PFPeA),[10] and perfluoroheptanoic acid (PFHpA),[11] is associated with many of the same health outcomes as exposure to PFOA and PFOS.

Given the recognized harms posed by PFAS compounds, on April 10, 2024, EPA made the historic announcement that it has finalized enforceable national drinking water standards for six PFAS compounds.[12] EPA is limiting concentrations of PFOA and PFOS to 4.0 ppt, with a maximum contaminant level goal of 0 ppt.[13] This maximum contaminant level goal recognizes that *no* level of PFOA or PFOS in drinking water is considered safe. Additionally, PFHxS, PFNA, and HFPO-DA (commonly known as GenX chemicals) have a maximum contaminant level (MCL) of 10 ppt each.[14] EPA also finalized a Hazard Index MCL to account for dose-additive health effects for mixtures that could include two or more of PFHxS, HFPO-DA, PFNA, and PFBS, recognizing that mixtures of PFAS can be harmful.[15]

While the harms to human health are extreme, PFAS are also detrimental to wildlife and the environment. The chemicals have been shown to cause damaging effects in fish,[16]

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[10] Xin Liu et al., *Structure-Based Investigation on the Association Between Perfluoroalkyl Acids Exposure and Both Gestational Diabetes Mellitus and Glucose Homeostasis in Pregnant Women*, 127 ENV'T INT'L 85–93 (2019), https://perma.cc/V86G-BP4R; Surabhi Shah-Kulkarni et al., *Prenatal Exposure to Perfluorinated Compounds Affects Thyroid Hormone Levels in Newborn Girls*, 94 ENV'T INT'L 607–13 (2016), https://perma.cc/VDR2-XAL6; Xiaofei Song et al., *Biomonitoring PFAAs in Blood and Semen Samples: Investigation of a Potential Link Between PFAAs Exposure and Semen Mobility in China*, 113 ENV'T INT'L 50–54 (2018).

[11] European Chemicals Agency, Committee for Risk Assessment RAC Opinion: Proposing Harmonised Classification and Labelling at EU Level of Perfluoroheptanoic Acid; Tridecafluoroheptanoic Acid (Dec. 10, 2020), https://perma.cc/3N4G-S4Q9 (finding PFHpA may cause liver and thyroid damage as well as a myriad of fertility and fetal development concerns including lower birth weight, delayed mammary gland development, low sperm count and mobility, and increased risk of miscarriage).

[12] 89 Fed. Reg. at 32,532, *supra* note 2.

[13] *Id.* at 2, 4–5.

[14] *Id.* at 4–5.

[15] *Id.* at 5.

[16] Chen et al., *Perfluorobutanesulfonate Exposure Causes Durable and Transgenerational Dysbiosis of Gut Microbiota in Marine Medaka*, 5 ENV'T SCI. & TECH LETTERS 731–38 (2018); Chen et al., *Accumulation of Perfluorobutane Sulfonate (PFBS) and Impairment of Visual Function in the Eyes of Marine Medaka After a LifeCycle Exposure*, 201 AQUATIC TOXICOLOGY 1–10 (2018); Du et al., *Chronic Effects of Water-Borne PFOS Exposure on Growth, Survival and Hepatotoxicity in Zebrafish: A Partial Life-Cycle Test*, 74 CHEMOSPHERE 723–29 (2009); Hagenaars et al., *Structure–Activity Relationship Assessment of Four Perfluorinated Chemicals Using a Prolonged Zebrafish Early Life Stage Test*, 82 CHEMOSPHERE 764–72 (2011); Huang et al., *Toxicity, Uptake Kinetics and Behavior Assessment in Zebrafish Embryos Following Exposure to Perfluorooctanesulphonicacid (PFOS)*, 98 AQUATIC TOXICOLOGY 139–47 (2010); Jantzen et al., *PFOS, PFNA, and PFOA Sub-Lethal Exposure to Embryonic Zebrafish Have Different Toxicity Profiles in terms of Morphometrics, Behavior and Gene Expression*, 175 AQUATIC TOXICOLOGY 160–70 (2016); Liu et al., *The Thyroid-Disrupting Effects of Long-Term Perfluorononanoate Exposure on Zebrafish (Danio rerio)*, 20 ECOTOXICOLOGY 47–55 (2011); Chen et al., *Multigenerational Disruption of the Thyroid Endocrine System in Marine Medaka after a Life-Cycle Exposure to Perfluorobutanesulfonate*, 52 ENV'T SCI. & TECH. 4432–39 (2018); Rotondo et al., *Environmental Doses of Perfluorooctanoic Acid Change the Expression of Genes in Target Tissues of Common Carp*, 37 ENV'T TOXICOLOGY & CHEM. 942–48 (2018).

amphibians,[17] reptiles,[18] mollusks,[19] and other aquatic invertebrates[20]—resulting in developmental and reproductive impacts, behavioral changes, adverse effects to livers, disruption to endocrine systems, and weakened immune systems.[21]

PFAS are extremely resistant to breaking down in the environment.[22] Once released, the chemicals can travel long distances and bio-accumulate in organisms.[23] PFAS have been found in fish tissue across all 48 continental states,[24] and PFOS—a particularly harmful PFAS compound—is one of the most prominent PFAS found in freshwater fish.[25] As a result, communities that rely heavily on subsistence fishing—many of which are low-income and minority communities[26]—are at higher risk of PFAS exposure and associated health effects.[27] In fact, researchers conclude that "[w]idespread PFAS contamination of freshwater fish in surface

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[17] Ankley et al., *Partial Life-Cycle Toxicity and Bioconcentration Modeling of Perfluorooctanesulfonate in the Northern Leopard Frog (Rana Pipiens)*, 23 ENV'T TOXICOLOGY & CHEM. 2745 (2004); Cheng et al., *Thyroid Disruption Effects of Environmental Level Perfluorooctane Sulfonates (PFOS) in Xenopus Laevis*, 20 ECOTOXICOLOGY 2069–78 (2011); Lou et al., *Effects of Perfluorooctanesulfonate and Perfluorobutanesulfonate on the Growth and Sexual Development of Xenopus Laevis*, 22 ECOTOXICOLOGY 1133–44 (2013).

[18] Guillette et al., *Blood Concentrations of Per- and Polyfluoroalkyl Substances are Associated with Autoimmune-like Effects in American Alligators from Wilmington, North Carolina*, FRONTIER TOXICOLOGY 4:1010185 (Oct. 20, 2022).

[19] Liu et al., *Oxidative Toxicity of Perfluorinated Chemicals in Green Mussel and Bioaccumulation Factor Dependent Quantitative Structure-Activity Relationship*, 33 ENV'T TOXICOLOGY & CHEM. 2323–32 (2014); Liu et al., *Immunotoxicity in Green Mussels under Perfluoroalkyl Substance (PFAS) Exposure: Reversible Response and Response Model Development*, 37 ENV'T TOXICOLOGY & CHEM. 1138–45 (2018).

[20] Houde et al., *Endocrine-Disruption Potential of Perfluoroethylcyclohexane Sulfonate (PFECHS) in Chronically Exposed Daphnia Magna*, 218 ENV'T POLLUTION 950–56 (2016); Liang et al., *Effects of Perfluorooctane Sulfonate on Immobilization, Heartbeat, Reproductive and Biochemical Performance of Daphnia Magna*, 168 CHEMOSPHERE 1613–18 (2017); Ji et al., *Oxicity of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid on Freshwater Macroinvertebrates (Daphnia Magna and Moina Macrocopa) and Fish (Oryzias Latipes)*, 27 ENV'T TOXICOLOGY & CHEM. 2159 (2008); MacDonald et al., *Toxicity of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid to Chironomus Tentans*, 23 ENV'T TOXICOLOGY & CHEM. 2116 (2004).

[21] *See supra* notes 16–20.

[22] Carol F. Kwiatkowski, et al., *Scientific Basis for Managing PFAS as a Chemical Class*, ENV'T SCI. & TECH. LETTERS 8–9 (2020).

[23] *See What are PFAS?*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, https://perma.cc/DXL3-XDAT; *see also Our Current Understanding of the Human Health and Environmental Risks of PFAS*, *supra* note 1.

[24] Nadia Barbo, et al., *Locally Caught Freshwater Fish Across the United States are Likely a Significant Source of Exposure to PFOS and Other Perfluorinated Compounds*, 220 ENV'T RES. 115165 3 (2023), https://perma.cc/SB8F-C3Y6.

[25] *Id.* at 4.

[26] Nat'l Env't Justice Advisory Council, *Fish Consumption and Environmental Justice* 2–10, EPA (2002), https://perma.cc/PA66-ABA9.

[27] Patricia A. Fair et al., *Perfluoralkyl Substances (PFASs) in Edible Fish Species from Charleston Harbor and Tributaries, South Carolina, United States: Exposure and Risk Assessment*, 171 ENV'T. RES. 266, 273–75 (April 2019), https://perma.cc/7976-XAVU; Chloe Johnson, *Industrial chemicals in Charleston Harbor taint fish – and those who eat them*, POST & COURIER (June 4, 2022), https://perma.cc/Z5TM-MB83.

waters in the U.S. is likely a significant source of exposure to PFOS and potentially other perfluorinated compounds for all persons who consume freshwater fish, but especially for high frequency freshwater fish consumers."[28] And communities of color and low income are more likely to bear the burden of PFAS pollution in their rivers, creeks, streams, and drinking water.[29]

With this context in mind, the proposed update to the drinking water rules for just two PFAS compounds—PFOA and PFOS—is insufficient to protect human health and the environment, both legally and factually.

II. The proposed drinking water rules would violate federal law and jeopardize Georgia's continued primary enforcement responsibility.

As an initial matter, the proposed rules are not legally sufficient under the Safe Drinking Water Act and its implementing regulations. As EPD recognized in the public announcement for the rule update, "The U.S. Environmental Protection Agency (EPA) finalized the National Primary Drinking Water Regulations (NPDWR) for 6 Per- and Polyfluoroalkyl Substances (PFAS) on April 10, 2024. States have two years from the promulgation of such regulations to adopt the standards into their state programs and rules." (emphasis added). That is a correct statement of EPA's 2024 rulemaking action and of the law pursuant to which EPA has granted Georgia primary enforcement responsibility. 42 U.S.C. § 300g-2(a)(1) (establishing primary enforcement responsibility for public water systems where a state has adopted drinking water regulations that are no less stringent than the national primary drinking water regulations within two years of the date when the federal regulations were promulgated).

As mentioned, on April 10, 2024, EPA set limits for five individual PFAS: PFOA, PFOS, PFNA, PFHxS, and HFPO-DA, and it set as a sixth limit a Hazard Index MCL for mixtures of PFHxS, PFNA, HFPO-DA, and PFBS. 40 C.F.R. § 141.50(a)(24)–(25) and (b)(34)–(37). Georgia must adopt the same regulations, or it cannot legally retain primary enforcement responsibility. "To retain primary enforcement responsibility, States must adopt all new and revised national primary drinking water regulations promulgated in part 141 of this chapter and any other requirements specified in this part." 40 C.F.R. § 142.12(a)(emphasis added); *see also id.* § 142.10(a) ("A State has primary enforcement responsibility for public water systems in the State during any period for which the Administrator determines, based upon a . . . submission under § 142.12, that such State . . . [h]as adopted drinking water regulations which are no less stringent than the national primary drinking water regulations (NPDWRs) in effect under part 141 of this chapter") (emphasis added).

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[28] Barbo, *supra* note 24, at 9.

[29] *See* Jahred M. Liddie et al., *Sociodemographic Factors Are Associated with the Abundance of PFAS Sources and Detection in U.S. Community Water Systems*, 57 ENV'T SCI. & TECH. 7902 (2023), https://perma.cc/74YL-5EPM; Susan Lee, Dirty Water: Toxic 'Forever' PFAS Chemicals Are Prevalent in the Drinking Water of Environmental Justice Communities (Aug. 2021), https://perma.cc/HPM9-ULDX; Genna Reed, *PFAS Contamination Is an Equity Issue, and President Trump's EPA Is Failing to Fix It*, Union of Concerned Scientists (Oct. 30, 2019), https://perma.cc/9JVE-QSQ4;

In other words, EPD cannot simply choose to adopt regulations for just two of the federally regulated PFAS chemicals. True, EPA under the current administration has expressed its intention to rescind the PFAS limits other than on PFOA and PFOS, but an intention is not a regulation, and Georgia's rules must be as stringent as EPA's regulations, not its intentions. Indeed, EPA currently is litigating in the United States Court of Appeals whether the court can vacate EPA's regulatory determinations and regulations for PFNA, PFHxS, HFPO-DA, and the Hazard Index.[30] It is unclear whether EPA will take other, intervening action, such as a rulemaking, to rescind those limits pending a ruling in that case. EPD therefore is left with the choice between adopting all six duly enacted PFAS limits or violating federal law.

Because EPD's proposed update to the safe drinking water rules is not as stringent as the federal PFAS regulations, the proposed rule is unlawful. Accordingly, we urge EPD to propose a new draft of the rule update that includes requirements for all six PFAS that are currently regulated under the federal safe drinking water rules.

III. Proposing a new draft that adopts MCLs for all six PFAS is necessary to protect Georgia residents, especially where PFBS and PFHxS are the prevailing PFAS contaminants.

Adopting all six of the PFAS limits in the April 10, 2024 EPA rule is not just required by law; it's good for all Georgians. As EPA explained in its press release announcing the six PFAS limits, "By reducing exposure to PFAS, this final rule will prevent thousands of premature deaths, tens of thousands of serious illnesses, including certain cancers and liver and heart impacts in adults, and immune and developmental impacts to infants and children."[31]

Notably, EPD's own data show that public drinking water systems in Georgia are contaminated with the very PFAS chemicals EPD now wants to omit from the safe drinking water rules. For instance, UCMR5 data and EPD's PFAS Story Map show that drinking water systems serving hundreds of thousands of people in Augusta-Richmond County, Calhoun, Centerville, Chatsworth, Chickamauga, Dalton, Griffin, Lafayette, Lyerly, Ringgold, Rome, Spalding County, Summerville, Trion, Walker County, and Woodstock have all reported exceedances of the federal MCLs for PFHxS, PFBS, or the Hazard Index at various times between 2021 and 2024.[32] In some of these drinking water systems, drinking water meets the MCLs for PFOA and PFOS but exceeds the MCLs for other PFAS like PFBS.

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[30] *American Water Works Assoc., et al. v. United States Environmental Protection Agency, et al.*, No. 24-1188, United States Court of Appeals for the D.C. Circuit (Doc. 2134523, Respondents' Mot. for Partial Vacatur).

[31] *See* Press Release, EPA, *Biden-Harris Administration Finalizes First-Ever National Drinking Water Standard to Protect 100M People from PFAS Pollution* (Apr. 10, 2024) https://www.epa.gov/newsreleases/biden-harris-administration-finalizes-first-ever-national-drinking-water-standard [https://perma.cc/HW29-DQNP].

[32] Georgia Environmental Protection Division, PFAS Information & Interactive Story Map, https://gaepd.maps.arcgis.com/apps/MapSeries/index.html?appid=e8f2c6a51c1c41088002350f1eabe598.

Critically, numerous public drinking water systems have yet to be tested for PFAS, so the true scope of the problem is unclear. By adopting a rule that regulates more than just two types of PFAS, EPD will ensure that the public knows whether their drinking water systems are contaminated with the most commonly used PFAS chemicals. EPD does a disservice to the people it serves if it allows drinking water systems to turn a blind eye and refrain from monitoring broadly for all six PFAS contaminants.

Furthermore, the proposed rule does nothing to incentivize industry to stop using harmful PFAS compounds like PFHxS, PFBS, PFNA, and HFPO-DA. The best way to stop PFAS contamination is to stop it at the source, but if industrial users know that drinking water utilities will not have to meet MCLs for these chemicals, they will continue to discharge PFAS-contaminated wastewater to publicly owned treatment works, emit PFAS into the air, and otherwise send these chemicals into our homes in household products. Stringent drinking water regulations would send a strong signal to industries operating in Georgia that they too need to play a role in fixing the problem they helped create.

In sum, why should Georgia residents be left with no choice but to drink contaminated water just because their drinking water did not have the "correct" type of PFAS contamination? We don't believe they should. Accordingly, we urge EPD to promulgate MCLs for all six of the federally regulated PFAS compounds that are at least as stringent as the April 10, 2024 federal regulations.

If you have any questions or wish to discuss these comments further, please reach out to the undersigned at 404-521-9900 or jdegaetano@selc.org or alipscomb@selc.org.

Sincerely,

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Joe DeGaetano
Senior Attorney

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