

October 24, 2022

Via Electronic Mail and U.S. Mail

NCDEQ/DWR/NPDES
Water Quality Permitting Section
c/o Derek Denard
1617 Mail Service Center
Raleigh, North Carolina 27699-1617
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Re: Draft NPDES Permit No. NC0090000

Dear Mr. Denard:

Please accept these comments on behalf of the Catawba Riverkeeper Foundation, Yadkin Riverkeeper and the Southern Environmental Law Center concerning DEQ's review of draft NPDES Permit No. NC0090000 for wastewater discharges from a groundwater remediation system to be operated by the Colonial Pipeline Company ("Colonial").

The Yadkin Riverkeeper is a nonprofit, membership organization whose mission is to protect and enhance the Yadkin-Pee Dee River basin through education, advocacy, and action. The organization works to ensure a healthy Yadkin-Pee Dee River that provides clean drinking water and is safe for recreational use by the basin's nearly three million residents.

The Catawba Riverkeeper Foundation is a local, community-based group of members and volunteers working primarily to protect the 8,900 miles of waterways within the Catawba-Watauga basin. The Catawba Riverkeeper Foundation is headquartered in Charlotte, NC. Many of its members reside near and use waters within the vicinity of the proposed groundwater remediation system, even though that system will be located in the Yadkin-Pee Dee River basin. Members of both the Catawba Riverkeeper Foundation and Yadkin Riverkeeper are concerned about the effects of pollution from the proposed discharge.

The Southern Environmental Law Center is a nonprofit, legal organization working to protect the basic right to clean air, clean water, and a livable climate; to preserve the South's natural treasures and rich biodiversity; and to provide a healthy environment for all.

The proposed NPDES permit would allow Colonial to extract, treat, and discharge 0.576 million gallons of contaminated groundwater per day (as a monthly average) into North Prong Clark Creek, near the site of a 2020 gasoline spill from one of its pipelines. As DEQ is aware, the spill has long been a headache for nearby residents; construction and operation of a new wastewater treatment plant will add to the cumulative burden on this community. To ensure the community is informed of this most recent development, **we respectfully request that DEQ**

hold a public hearing to allow affected residents and other stakeholders to comment on the draft permit.

We understand that time is of the essence to ensure the cleanup operation is as successful as possible: Under the ongoing remediation scheme, the removal of contaminated groundwater is limited by how much extracted groundwater can be loaded onto trucks each day. Approving this discharge permit sooner rather than later would relieve that bottleneck and allow Colonial to extract greater volumes of water before the contaminant plume radiates even farther into the water table than it already has.

We therefore urge DEQ to promptly fix the errors in the draft permit identified below and act quickly to ensure the final permit complies with the law. Many of our concerns would be mitigated or resolved through application of technology-based effluent limitations (“TBELs”). The Clean Water Act requires DEQ to impose TBELs in NPDES permits, but the agency has failed to do so for nearly every contaminant listed in the draft permit. In our experience, DEQ frequently bypasses this critical step when developing NPDES permits leading to ongoing, unnecessarily high—and illegal—pollutant loading in waterways across the state.

Application of TBELs is straightforward here. Not only is technology widely available to treat the discharges to bring contaminant levels well below those authorized in the draft permit *but Colonial has already explained that it plans to use that technology*. Yet DEQ never takes this technology into account when developing effluent limitations in the draft permit. This violates the Clean Water Act. DEQ must revise the draft permit to include TBELs as required.

Of particular importance, DEQ must require Colonial to disclose if the class of chemicals known as per- and polyfluoroalkyl substances (“PFAS”) may be present in the effluent from the proposed wastewater treatment plant—regardless of whether Colonial is the original source of those PFAS in the environment—and apply TBELs appropriately and water quality-based effluent limitations as necessary. North Carolina has recognized the numerous adverse effects associated with PFAS exposure;¹ there is no reason these compounds should be unnecessarily added to our surface waters.

I. DEQ must impose TBELs for *all* constituent pollutants.

The draft permit only imposes TBELs on three constituent pollutants (total suspended solids, oil & grease, and chloroethane),² leaving the remainder accountable only to meeting limits calculated based on numeric water quality standards (water-quality based effluent limitations or “WQBELs”) or in-stream target values (for pollutants with no numeric water quality standard). For reasons that follow, these omissions are inconsistent with DEQ’s obligations under the Clean Water Act and must be swiftly corrected.

¹ North Carolina DEQ, Action Strategy for PFAS (June 7, 2022), at 5, *available at* <https://deq.nc.gov/media/30108/open#:~:text=North%20Carolina%20is%20working%20aggressively,nonstick%20products%20and%20firefighting%20foams>.

² Draft Fact Sheet for NPDES Permit No. 0090000 (Sept. 20, 2022) (“Draft Fact Sheet”), at 8–9.

A. *The Clean Water Act requires DEQ to evaluate technologies available to treat pollutants and impose TBELs accordingly.*

Congress passed the Clean Water Act in 1972 “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. § 1251(a). To that end, Congress established an “*interim* goal of [achieving] water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation . . . by July 1, 1983” and a longer-term “goal that the discharge of pollutants into the navigable waters be *eliminated by 1985.*” *Id.* § 1251(a)(1), (2) (emphasis added). To meet those goals, Congress prohibited the discharge of pollutants³ from point sources⁴ without a permit. *See id.* § 1311(a). The Clean Water Act’s National Pollutant Discharge Elimination System (“NPDES”) permitting program is structured around progressive improvements in pollution control over time to meet Congress’s “national goal” of eliminating discharges of pollutants. *See id.* § 1251(a)(1).⁵

NPDES permits control pollution through two primary mechanisms: first, by setting limits based on technologies available to treat pollutants (using TBELs), *and* second, by setting any additional limits necessary to ensure compliance with water quality standards (using WQBELs). 33 U.S.C. §§ 1311(b), 1314(b); 40 C.F.R. § 122.44(a)(1), (d). Every NPDES permit “shall” contain TBELs, which set the *minimum level* of control required in every NPDES permit. 40 C.F.R. § 125.3(a). DEQ may issue a NPDES permit only if the permit assures compliance with all technology-based and water quality-based effluent limits. 33 U.S.C. § 1342(a)(1)(A); 40 C.F.R. § 122.43(a).

Stated differently, to comply with the Clean Water Act, a permit writer first imposes TBELs and *subsequently* evaluates the need to impose additional WQBELs if the TBELs are insufficient to ensure compliance with water quality standards. TBELs “are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and water quality based effluent limitations.” EPA, NPDES Permit Writers’ Manual at 5-1.⁶ A discharger *must* implement TBELs, even if doing so goes beyond the level necessary to meet water quality standards. *Id.*; *see* 15A NCAC 2B.0404(a) (“if the discharge is subject to both technology based and water quality based effluent limitations for a parameter, the more stringent limit shall apply”). Permit writers run afoul of the Clean Water Act by focusing exclusively on WQBELs, in part, because doing so forecloses the Congressional goal of eliminating discharges of pollutants to navigable waters—discharges would be maintained so long as they did not violate water quality standards.

³ “The term ‘pollutant’ means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.” 33 U.S.C. § 1362(6).

⁴ “The term ‘point source’ means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.” 33 U.S.C. § 1362(14).

⁵ North Carolina administers the NPDES program within its borders under delegated authority from EPA. *See* National Pollutant Discharge Elimination System Memorandum of Agreement Between The State Of North Carolina And The United States Environmental Protection Agency Region 4 (2007) *available at* <https://www.epa.gov/sites/default/files/2013-09/documents/nc-moa-mpdes.pdf>.

⁶ *Available at* https://www.epa.gov/sites/production/files/2015-09/documents/pwm_2010.pdf.

Technology-based limits are derived from one of two sources: (1) national effluent limitation guidelines issued by EPA for various industries, 33 U.S.C. § 1314(b), or (2) case-by-case determinations using permit writers’ “best professional judgment” (“BPJ”), when EPA has not issued an effluent limitation guideline for an industry. *See* 33 U.S.C. § 1342(a)(1)(B); 40 C.F.R. § 125.3(c)(2). Restated, “[w]here EPA-promulgated effluent guidelines are not applicable to a non-[publicly owned treatment works] discharge, such requirements are established on a case-by-case basis using BPJ.” EPA, NPDES Permit Writers’ Manual at 5-45. North Carolina rules likewise direct staff to calculate TBELs using “available information” in the absence of a promulgated effluent limitation guideline. 15A NCAC 02B .0406(b)(3).

B. DWR failed to include TBELs for constituent pollutants in the draft permit.

Almost all the limits the draft permit imposes on the discharge’s constituent pollutants are based only on a QBEL developed to ensure compliance with numeric water quality standards for individual pollutants or in-stream target values.⁷ The Clean Water Act requires more. As explained above, QBELs are only a backstop when TBELs alone would not provide for the attainment of water quality-based standards. The draft permit includes no indication that DEQ considered whether technology exists to achieve the further pollutant reductions the Clean Water Act requires—or even that DEQ factored into its analysis the technology that Colonial *has already committed to use*. Instead, DEQ skipped directly to applying QBELs for all but three pollutants. DEQ must take the additional step—which should have been its first step—to consider and apply TBELs before finalizing the permit.

The draft permit includes a TBEL for total suspended solids based on an EPA-issued effluent limitation guideline.⁸ But DEQ’s legal obligation to impose TBELs is not contingent on whether EPA has issued effluent limitation guidelines. In a step in the right direction, DEQ has also imposed TBELs using BPJ for oil and grease and chloroethane.⁹ Unfortunately, DEQ stops there and does not complete the necessary step of exercising BPJ to determine if it should impose TBELs for *any other pollutant*. The requirement for permit writers to use BPJ to impose a TBEL is unequivocal; DEQ must use BPJ to apply TBELs to other pollutants.

As noted above, the failure to develop and apply TBELs here is particularly striking because technologies are readily available to reduce the discharge of many of the relevant pollutants *and because Colonial has disclosed that it plans to use those technologies*. Restated, DEQ developed effluent limits without accounting for technology the permittee has already agreed to use at this site. This demonstrates a clear failure to exercise BPJ to set TBELs—in violation of the Clean Water Act—and permits Colonial to discharge unreasonably high amounts of many pollutants.

⁷ Draft Fact Sheet at 11–13.

⁸ *Id.* at 11 (citing 40 C.F.R. Part 133)

⁹ *Id.* at 11–12.

According to the draft permit, Colonial plans to utilize granular activated carbon to treat contaminated groundwater before discharging it to North Prong Clark Creek.¹⁰ As scientists and other state agencies have acknowledged, packed tower aeration and granular activated carbon are both capable of reducing benzene concentrations, for instance, below 5 parts per billion—the federal standard for drinking water, and more than *50 times lower* than the 274 parts per billion upper limit the draft permit would impose.¹¹ These technologies are also used to treat other aromatic hydrocarbons identified by DEQ’s reasonable potential analysis for this draft permit.¹² In other words, use of granular activated carbon here should result in reductions in effluent levels for multiple constituents planned to be discharged by Colonial (including, as discussed below, PFAS). Colonial has told DEQ it plans to treat the groundwater using granular activated carbon; unmistakably, this technology is available for use at this site; DEQ must factor this technology into its analysis and implement TBELs as the Clean Water Act requires.

Importantly, calculating effluent limitations accounting for the use of granular activated carbon could make a meaningful difference in the amount of pollution discharged to North Prong Clark Creek. Perhaps most obviously, it would ensure that Colonial follows through on its commitments to implement that technique. But more importantly, because the effectiveness of granular activated carbon treatment depends in large part on how the filters are maintained,¹³ using the technology to establish TBELs would hold the permittee accountable for a high standard of maintenance and diligence.

DEQ must demonstrate in the final permit that it has investigated the availability and capabilities of technologies to treat the pollutants that will be discharged from this facility. This unquestionably must include technologies Colonial has already committed to use. Where such technology exists, DEQ must require Colonial to reduce effluent pollutant concentrations to the levels achievable with such technology through application of TBELs.

II. DEQ must require Colonial to disclose whether PFAS will be present in the discharge and, if so, apply appropriate controls—including TBELs.

In response to the 2020 gasoline spill, it appears that foam containing high levels of PFAS (through cross-contamination or otherwise) was used as a suppressant. Perhaps as a result, monitoring around the spill site has detected PFAS in soil and groundwater samples—the same groundwater Colonial plans to treat and discharge through the proposed wastewater treatment

¹⁰ Draft NPDES Permit No. NC0090000 (“Draft Permit”), at 2.

¹¹ See Oregon Health Authority, Benzene and Drinking Water, at 2, available at <https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/MONITORING/Documents/health/benzene.pdf> (“Benzene can be reduced below 5 ppb in drinking water using granular activated carbon filtration or packed tower aeration.”).

¹² Draft Fact Sheet at 11–12; see also Abdulkareem I. Amhamed et al., *Optimizing the design parameters of a packed column aerator for VOC removal: A real case study on polluted ground water*, J. OF OIL, GAS, AND PETROCHEMICAL SCI. (2022) (explaining how benzene, ethyl-benzene, toluene, and xylenes are typically found and treated together in groundwater remediation after gasoline spills).

¹³ U.S. EPA, Wastewater Technology Fact Sheet: Granular Activated Carbon Adsorption and Regeneration (September 2000), at 5, available at <https://nepis.epa.gov/Exe/ZyPDF.cgi/P1001QTK.PDF?Dockkey=P1001QTK.PDF>.

plant. Accordingly, it is possible—if not likely—that the discharge from the wastewater treatment plant will contain PFAS. Colonial must disclose if PFAS will be discharged and, if so, DEQ must impose appropriate TBELs and, as discussed in Section III, WQBELs as necessary.

A. PFAS present serious threats to human health.

PFAS are a group of man-made chemicals manufactured and used broadly by industry since the 1940s.¹⁴ The human health and environmental problems associated with PFAS exposure are now widely known; PFAS pose a significant threat to human health at extremely low concentrations. Two of the most studied PFAS—perfluorooctanoic acid and perfluorooctane sulfonate—are bioaccumulative and highly persistent in humans.¹⁵ These PFAS 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.¹⁶ Studies show that exposure to mixtures of different PFAS can worsen these health effects.¹⁷

EPA recently recognized PFAS as “an urgent public health and environmental issue facing communities across the United States.”¹⁸ And EPA has called on “[e]very level of government—federal, Tribal, state, and local—[] to exercise increased and sustained leadership to accelerate progress to clean up PFAS contamination [and] prevent new contamination,” specifically calling on states to “[l]everage NPDES permitting to reduce PFAS discharges to waterways.”¹⁹

¹⁴ 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. EPA, <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.

¹⁵ 87 Fed. Reg. at 36,849; U.S. EPA, Interim Drinking Water Health Advisory: Perfluorooctanoic Acid (PFOA) CASRN 335-67-1 (June 2022), at 3–4, available at <https://www.epa.gov/system/files/documents/2022-06/interim-pfoa-2022.pdf>; U.S. Env’t Prot. Agency, Interim Drinking Water Health Advisory: Perfluorooctane Sulfonic Acid (PFOS) CASRN 1763-23-1 (June 2022), at 3–4, available at <https://www.epa.gov/system/files/documents/2022-06/interim-pfos-2022.pdf>.

¹⁶ Arlene Blum et al., *The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)*, 123 ENV’T. HEALTH PERSP. 5, A 107 (May 2015); U.S. Env’t Prot. Agency, Drinking Water Health Advisories for PFAS: Fact Sheet for Communities, at 1–2 (June 2022), available at <https://www.epa.gov/system/files/documents/2022-06/drinking-water-ha-pfas-factsheet-communities.pdf>.

¹⁷ Emma V. Preston et al., *Prenatal Exposure to Per- and Polyfluoroalkyl Substances and Maternal and Neonatal Thyroid Function in the Project Viva Cohort: A Mixtures Approach*, 139 ENV’T INT’L 1 (2020), <https://perma.cc/DJK3-87SN>.

¹⁸ EPA, PFA Strategic Roadmap: EPA’s Commitments to Action 2021–2024 at 1, available at https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf.

¹⁹ *Id.*

B. Colonial's effluent discharges will likely contain PFAS.

It appears likely that Colonial's discharges will contain PFAS. The initial response to the spill involved treating the site using 1,100 gallons of vapor- and fire-suppressing foam,²⁰ which lab results show contained dangerously high levels of dozens of PFAS compounds—some exceeding 20,000 parts per trillion.²¹ Recent health advisory levels for some PFAS compounds start as low as hundredths or thousandths of parts per trillion.²² PFAS has been detected in groundwater at the site at levels up to 154 parts per trillion.²³ Colonial's sampling to date may underestimate the amount of PFAS onsite as the company only treats concentrations from its groundwater sampling above 10 parts per trillion as significant even though levels below this threshold can negatively impact people and the environment.²⁴

PFAS released at the site—through the use of vapor- and fire-suppressing foam or otherwise—are likely to persist in the environment for a significant period of time. PFAS are also highly durable and mobile, able to easily seep into groundwater through soil and spread through the water table.²⁵ If PFAS reach Colonial's recovery wells—even if that does not happen for months or years—their persistent nature makes it highly likely they will be present in discharges through the wastewater treatment plant.

Colonial does not contest the detectable presence of PFAS at the site but suggests the source of the PFAS is unrelated to the 2020 gasoline spill and subsequent remediation efforts.²⁶ To be clear, *the origin* of any PFAS present is immaterial to Colonial's obligations here: If PFAS is or may be present in contaminated groundwater processed through Colonial's wastewater treatment plant, Colonial must account for it through the NPDES permitting process, even if Colonial is not the original source of the PFAS.

²⁰ See Technical Memorandum from TRC Environmental Corporation to Sam McEwen (Colonial), 1 (Oct. 30, 2021). North Carolina Attorney General Josh Stein announced on Oct. 18 that he was filing two new lawsuits against manufacturers of some of these foams for their role in introducing PFAS into the environment. See *Attorney General Josh Stein Files Two Additional Lawsuits Over Toxic Firefighting Foam*, N.C. DEPT. OF JUSTICE (Oct. 18, 2022), <https://ncdoj.gov/attorney-general-josh-stein-files-two-additional-lawsuits-over-toxic-firefighting-foam/>.

²¹ Monitoring Report at PDF 127 (disclosing levels of PFAS compounds found in “raw product”); see also Lisa Sorg, *Mystery Deepens Over Origin of Dangerous Chemicals Found at Massive Gasoline Spill*, N.C. POL'Y WATCH (March 30, 2021).

²² U.S. EPA, *Lifetime Drinking Water Health Advisories for Four Perfluoralkyl Substances* (June 21, 2022), 87 Fed. Reg. 36,848.

²³ See Technical Memorandum, Figure 2.

²⁴ *Id.* at 5.

²⁵ U.S. EPA, *Addressing Challenges of PFAS: Protecting Groundwater and Treating Contaminated Sources* (Sept. 20, 2021), <https://www.epa.gov/sciencematters/addressing-challenges-pfas-protecting-groundwater-and-treating-contaminated-sources>.

²⁶ See Technical Memorandum at 12 (arguing that detected “PFAS compounds are not sourced from or associated with the Huntersville release and do not warrant additional investigation”).

C. Colonial must fully disclose any PFAS that may be present in its discharges.

The Clean Water Act requires permittees to assess and disclose the pollutants in their effluent. DEQ has acknowledged this requirement applies to PFAS. In its enforcement action against The Chemours Company, LLC, for the company's discharge of GenX and other PFAS into the Cape Fear River, the agency stated:

Part of the permit applicant's burden in this regard is to disclose all relevant information, such as the presence of known constituents in a discharge that pose a potential risk to human health. The permit applicant is required to disclose "all known toxic components that can be reasonably expected to be in the discharge, including *but not limited to* those contained in a priority pollutant analysis." 15A N.C.A.C. 2H .0105(j) (emphasis added).²⁷

DEQ further acknowledged that Chemours had violated its NPDES permit and state water quality laws by "failing to fully disclose all known toxic components reasonably expected to be in [the company's] discharge."²⁸

DEQ's position in the Chemours enforcement case was correct. The Clean Water Act generally prohibits discharges to streams and rivers. *See* 33 U.S.C. § 1311(a). The NPDES permitting program is a limited exception to that prohibition, *see Nat'l Ass'n of Home Builders v. Def. of Wildlife*, 551 U.S. 644, 650 (2007), and discharges under the program cannot be approved unless they are disclosed, *see In re Ketchikan Pulp Co.*, 7 E.A.D. 605 (EPA) (1998); *Piney Run Pres. Ass'n v. Cty. Comm'rs of Carroll Cty., Maryland*, 268 F.3d 255 (4th Cir. 2001); *Southern Appalachian Mountain Stewards v. A & G Coal Corp.*, 758 F.3d 560 (4th Cir. 2014). EPA has also stressed the need for disclosure of pollutants during the permitting process:

[D]ischargers have a duty to be aware of any significant pollutant levels in their discharge. [...] Most important, [the disclosure requirements] provide the information which the permit writers need to determine what pollutants are likely to be discharged in significant amounts and to set appropriate permit limits. [...] [P]ermit writers need to know what pollutants are present in an effluent to determine approval permit limits in the absence of applicable effluent guidelines.²⁹

If a permit holder is discharging a pollutant that it did not disclose in its NPDES permit application, it is in violation of the permit and the Clean Water Act. *Piney Run*, 268 F.3d. at 268.

Despite the likely presence of PFAS in groundwater that will be treated through the proposed wastewater treatment system, we have been unable to find any information in

²⁷ Amended Complaint, N.C. Dept. of Environmental Quality v. Chemours, 17 CVS 580, 6-7 (N.C. Super. 2018) (hereinafter "N.C. DEQ Amended Complaint") (citing 33 U.S.C. § 1342(k), *Piney Run Pres. Ass'n v. Cty. Comm'rs of Carroll Cty., MD*, 268 F.3d 255, 265 (4th Cir. 2001)).

²⁸ *Id.* at 33.

²⁹ Consolidated Permit Application Forms for EPA Programs, 45 Fed. Reg. 33,526-31 (May 19, 1980).

Colonial’s permit application materials³⁰ or the draft permit related to PFAS. To be sure, other documents prepared by Colonial in connection with the 2020 gasoline spill and subsequent remedial actions (discussed above) indicate that PFAS are likely present at this site but Colonial is obligated to clearly disclose the presence of PFAS through the NPDES application process to ensure the permit writer is aware of PFAS’ potential presence here and can apply TBELs and WQBELs appropriately.

D. DEQ must set appropriate effluent limits for any discharges of PFAS through the proposed wastewater treatment plant.

Once pollutants are disclosed, DEQ must evaluate and impose TBELs on a case-by-case basis as discussed above. This includes PFAS.

Effective treatment technologies for PFAS are available that must be assessed through the TBELs process. Granular activated carbon is a cost effective and efficient technology that is capable of reducing PFAS concentrations to virtually nondetectable levels. A granular activated carbon treatment system at the Chemours’ facility, for example, has reduced PFAS concentrations as high as 345,000 parts per trillion from a creek contaminated by groundwater beneath the facility to nearly nondetectable concentrations.³¹ And DEQ has used TBELs to control PFAS in an NPDES permit. The agency issued an NPDES permit for Chemours that incorporates TBELs for PFAS to ensure that the company uses the best available technology—in that case, granular activated carbon—to treat highly contaminated groundwater.³² DEQ should likewise require Colonial to fully characterize and disclose any PFAS discharges and to assess the best level of PFAS removal its granular activated carbon system will be able to achieve. DEQ must then implement TBELs based on that level of removal.

As noted above, there is no reason DEQ should not develop TBELs for PFAS and other pollutants based on reductions achievable with granular activated carbon technology *because Colonial has already explained that it plans to use that technology at this site*. Designing effluent limits based on the technology will help ensure it is properly maintained and operated to remove pollutants. Use of granular activated carbon and development of TBELs based on its use may be sufficient to protect water quality but, if not, DEQ must impose WQBELs as discussed below.

³⁰ Colonial Pipeline Co., Application for NPDES Permit to Discharge Wastewater (Aug. 13, 2021), tbls. A–E (describing pollutants “believed present”).

³¹ See Parsons, *Engineering Report – Old Outfall 002 GAC Pilot Study Results* (Sept. 2019), available at <https://www.chemours.com/ja/-/media/files/corporate/12e-old-outfall-2-gac-pilot-report-2019-09-30.pdf?rev=6e1242091aa846f888afa895eff80e2e&hash=040CAA7522E3D64B9E5445ED6F96B0FB>; see also Chemours Outfall 003, NPDES No. NC0089915 Discharge Monitoring Reports (2020–2022), available at <https://perma.cc/8YND-XT5M>.

³² See Chemours Outfall 004, NPDES NO. NC0090042, fact sheet, <https://deq.nc.gov/media/31345/download?attachment>; Chemours Outfall 004, NPDES NO. NC0090042, final NPDES permit, <https://deq.nc.gov/media/31343/download?attachment>.

III. The draft permit's WQBELs fail to ensure compliance with water quality standards and maintenance of designated uses.

The Clean Water Act charges states with identifying “designated uses” for jurisdictional waterbodies and promulgating water quality standards to protect those uses. *See* 40 C.F.R. § 131.10(a) (“Each State must specify appropriate water uses to be achieved and protected”); 40 C.F.R. § 131.3(i) (defining water quality standards as “a designated use or uses... and water quality criteria for such waters based upon such uses.”). North Carolina implements this procedure by classifying waterbodies and assigning water quality standards for each classification. *See* N.C. Gen. Stat. § 143-214.1; 15A NCAC 2B.0101, .0301. North Prong Clark Creek is a designated class C water.³³ The “best use” of class C waters “shall be aquatic life propagation, survival, and maintenance of biological integrity (including fishing and fish); wildlife; secondary contact recreation; agriculture; and any other usage except for primary contact recreation or as a source of water supply for drinking, culinary, and food processing purposes.” 15A NCAC 2B.0211. North Carolina has promulgated water quality standards to protect this “best use.” *See id.*; *id.* 2B.0208. “Sources of water pollution that preclude any of these uses on either a short-term or long-term basis shall be deemed to violate a water quality standard.” *Id.* 2B.0211.

As discussed above, WQBELs are intended to “keep the concentration of a pollutant in a waterway at or below” the water quality standard promulgated to protect the designated use. *Am. Paper Inst., Inc. v. U.S. E.P.A.*, 996 F.2d 346, 350 (D.C. Cir. 1993). DEQ may not issue an NPDES permit “until the applicant provides sufficient evidence to ensure that the proposed system will comply with all applicable water quality standards” and “[n]o permit may be issued when the imposition of conditions cannot reasonably ensure compliance with applicable water quality standards.” 15A NCAC 2H.0112(c). The vast majority of limits imposed in the draft permit are WQBELs. Unfortunately, these limits are insufficient to ensure compliance with water quality standards and maintenance of “best uses.” DEQ’s WQBELs for carcinogens will allow North Prong Clark Creek to exceed regulatory levels for those constituents for significant portions of time. This problem can potentially be resolved by adding a daily flow limit, which is independently required under the Clean Water Act, and by appropriately developing TBELs. DEQ must also consider narrative water quality standards when developing WQBELs. This step is particularly important here given the toxic mix of chemicals in the discharge.

A. The WQBELs do not ensure compliance with numeric water quality standards for carcinogens.

The WQBELs imposed in the draft permit for carcinogens fail to ensure compliance with numeric water quality standards because they are calculated using the mean annual flow of North Prong Clark Creek. While this approach may work in some instances, it falls short here where the effluent will frequently constitute a substantial, and sometimes the majority, of water in the receiving stream.

³³ Draft Fact Sheet at 2.

North Carolina has promulgated numeric water quality standards applicable to class C waters for carcinogens. *See* 15A NCAC 2B.0208(a)(2)(B). For example, the numeric water quality standard for benzene is meant to prevent concentrations of that constituent in class C waters over 51 parts per billion. *Id.*

WQBELs for carcinogens are developed using a proportion (the in-stream waste concentration, or “IWC”) of the mean annual flow and assume zero background pollution. 15A NCAC 02B .0206(a)(4)(B). The IWC is defined by EPA as “the concentration of the effluent in the receiving water after mixing.”³⁴ The draft permit authorizes discharge of 0.576 million gallons per day as a monthly average into a stream with an average flow of 3.9 cubic feet per second.³⁵ Accordingly, the permitted discharge volume’s IWC is 18.62 percent of the mean annual flow rate of the North Prong Clark Creek, the receiving stream. To achieve the 51 parts per billion water quality standard for benzene, the draft permit divides 51 parts per billion by the mean annual IWC, otherwise expressed as 0.1862, producing an allowable concentration in the discharge of 274 parts per billion (more than five times the water quality standard). This same calculation was applied to set the discharge limit for vinyl chloride (another carcinogen) at 12.88 parts per billion—the water quality standard of 2.4 parts per billion is 18.62 percent of the WQBEL in the draft permit. *Id.* .0208(a)(2)(B)(xvii).

Use of mean annual flow to calculate IWC and subsequently WQBELs may be appropriate in some instances—such as when the effluent discharged represents a smaller portion of the total water in the receiving stream. But here, North Prong Clark Creek will frequently be overwhelmed by effluent from the proposed wastewater treatment plant. Given the small assimilative capacity of the receiving stream, DEQ’s approach to using mean annual flow does not ensure compliance with water quality standards. There are at least two common scenarios where water quality standards for carcinogens will be violated.

First, DEQ’s WQBEL is calculated to allow the maximum discharge of carcinogens without violating a water quality standard when North Prong Clark Creek is at its mean annual flow. But whenever flow is below that level—which is likely to be frequent—DEQ’s WQBEL will fail to ensure that water quality standards for benzene and other carcinogens will be maintained. Restated, the WQBEL may ensure compliance with water quality standards in North Prong Clark Creek at mean annual flow or higher but not when flow is lower.

Second, the WQBELs were developed using a discharge rate (0.576 million gallons per day) measured as a monthly average. Use of a monthly average limit *alone* allows Colonial’s discharge rate to exceed this average during certain periods of the month so long as it balances those high discharges with low discharges. On days when discharges are high, there is no guarantee that water quality standards will be maintained because DEQ’s analysis assumes no more than 0.576 million gallons will be discharged per day—yet the permit lacks any daily flow limit enforcing this restriction. This will be particularly problematic on days when the discharge flow rate is higher than average, but the flow of North Prong Clark Creek is lower than average:

³⁴ U.S. EPA, Whole Effluent Toxicity Training Course (1996), at 6 (emphasis added), *available at* <https://nepis.epa.gov/Exec/zyPDF.cgi/91025HIS.PDF?Dockey=91025HIS.PDF>.

³⁵ Draft Fact Sheet at 1, 3.

On those days, IWC and in-stream contaminant levels will be far higher than DEQ assumes in its permit analysis.

To be clear, it is irrelevant that the proposed WQBELs may ensure compliance with water quality standards *some* of the time. “Sources of water pollution that preclude [designated uses] *on either a short-term or long-term basis* shall be deemed to violate a water quality standard.” 15A NCAC 2B.0211 (emphasis added). And DEQ may not issue a permit when “imposition of conditions cannot reasonably ensure compliance with applicable water quality standards.” 15A NCAC 2H.0112(c).

However, this problem can potentially be resolved relatively easily. First, DEQ must impose a daily flow limit to match the flow assumptions used to develop WQBELs. A daily flow limit is also independently required under the Clean Water Act. *See* 40 C.F.R. § 122.45(d)(1) (requiring that “all permit effluent limitations, standards, and prohibitions ... unless impracticable be stated as a maximum daily and average monthly discharge limitations”). Second, proper application of TBELs for carcinogens should avoid the need to develop WQBELs entirely because the technology Colonial already plans to use at this site is likely to remove pollutants to a degree that numeric water quality standards for carcinogens will not be threatened. Nevertheless, as written the WQBELs in the draft permit fail to comply with the requirements of the Clean Water Act and North Carolina’s implementing regulations.

B. DEQ must consider background concentrations of contaminants when developing WQBELs.

Because WQBELs are meant to prevent exceedances of water quality standards, DEQ must factor background concentrations of constituents into its analysis when calculating effluent limits. Here, DEQ assumes a background concentration of zero for all constituents except NH₃.³⁶ But at least toluene and lead have been detected at relatively high levels in onsite surface waters.³⁷ DEQ must factor these background concentrations (and those known for other contaminants) into its WQBEL analysis to ensure the permitted discharge does not lead to a violation of water quality standards.

C. DEQ must consider narrative water quality standards when developing WQBELs.

Finally, even without the errors noted above, DEQ’s effort to develop WQBELs would fall short because it fails to take narrative water quality standards into account. Proper application of narrative water quality standards is critical here where many pollutants addressed in the permit lack numeric water quality standards, including PFAS, and where the pollutants will be released in combination.

North Carolina’s narrative water quality standard for toxic substances explains that “the concentration of toxic substances, either alone or in combination with other wastes, in surface waters shall not render waters injurious to aquatic life or wildlife, recreational activities, or

³⁶ *See* NPDES Implementation of Instream Dissolved Metals Criteria at 3 (attached to Draft Fact Sheet).

³⁷ Draft Fact Sheet at 3.

public health, nor shall it impair the waters for any designated uses.” 15A NCAC 2B.0208(a). Toxic substances are defined as:

any substance or combination of substances (including disease-causing agents) that, after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, has the potential to cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions or suppression in reproduction or growth), or physical deformities in such organisms or their offspring.

15A NCAC 2B.0202(57).

Many of the pollutants released constitute “toxic substances” under this definition. DEQ has recognized that PFAS also constitute a “toxic substance,”³⁸ and has included limits for PFAS referencing the toxic substances narrative water quality standard and EPA’s health advisory for GenX in at least one NPDES permit.³⁹ DEQ must assess the combined effect on North Prong Clark Creek of the numerous pollutants proposed to be discharged from Colonial’s wastewater treatment plant to ensure compliance with North Carolina’s narrative water quality standards. DEQ’s siloed approach to developing WQBELs pollutant-by-pollutant using numeric water quality standards or in-stream target values fails to ensure compliance with this standard. In other words, even if DEQ had appropriately developed a WQBEL for benzene, it has still failed to consider the effect on water quality of authorizing the discharge of high amounts of benzene, lead, naphthalene, toluene, xylenes, methyl tert-butyl ether and many other constituents *in combination* and whether that discharge is consistent with North Carolina’s narrative water quality standard for toxic substances.

Proper application of the narrative water quality standard for toxic substances should also lead to a zero or near-zero discharge limit for PFAS which, as noted throughout, are highly toxic.

Like its approach to developing WQBELs for numeric water quality standards and in-stream target values, DEQ can potentially show compliance with the toxic substances narrative water quality standard by appropriately applying TBELs which should lead to significant reductions in permit limits for many pollutants.

³⁸ N.C. DEQ Amended Complaint at 32 (stating that “the process wastewater from [Chemours’] Fluoromonomers/Nafion® Membrane Manufacturing Area contains and has contained substances or combinations of substances which meet the definition of “toxic substance” set forth in 15A N.C.A.C. 2B .0202,” referring to GenX and other PFAS).

³⁹ See Chemours Outfall 004, NPDES NO. NC0090042, fact sheet, at 11–12, <https://deq.nc.gov/media/31345/download?attachment>; Chemours Outfall 004, NPDES NO. NC0090042, final NPDES permit, <https://deq.nc.gov/media/31343/download?attachment>.

IV. Conclusion

The solution to many of the problems highlighted in this comment letter is straightforward: DEQ must properly impose TBELs as required under the Clean Water Act. At the most basic level, this requires DEQ to consider technology *Colonial has already explained it intends to use* when developing effluent limits. We respectfully request that DEQ make the foregoing changes to the draft permit before finalization. We additionally request that DEQ hold a public hearing on the draft permit to help community members better understand and provide feedback on this important and complex process.

Please inform Patrick Hunter (phunter@selcnc.org) of issuance of any final permit.

Sincerely,



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