IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
SOUTHERN DIVISION
7:23-CV-897

IN RE:	)	
	)	
CAMP LEJEUNE WATER LITIGATION	)	
	)	**ORDER**
THIS DOCUMENT RELATES TO:	)	
	)	
ALL CASES	)	

On April 29, 2025, the parties collectively filed seven motions under Federal Rule of Evidence 702. These are: (1) Defendant's motion to exclude certain opinions and testimony of Dr. Norman L. Jones and Mr. R. Jeffrey Davis [D.E. 356]; (2) Defendant's motion to exclude certain opinions and testimony of Dr. Mustafa M. Aral [D.E. 358]; (3) Defendant's motion to exclude the opinions and testimony of Dr. Rodney Kyle Longley [D.E. 360]; (4) Defendant's motion to exclude certain expert testimony in support of using the Agency for Toxic Substances and Disease Registry's ("ATSDR") water models to determine individual plaintiff exposure [D.E. 367]; (5) Defendant's motion to exclude opinions and testimony about vapor intrusion [D.E. 361]; (6) the Plaintiffs' Leadership Group's ("PLG") motion to exclude certain opinions and testimony of Dr. Remy J.-C. Hennet [D.E. 373]; and (7) the PLG's motions to exclude certain opinions and testimony of Dr. Alexandros Spiliotopoulos [D.E. 376[1]].

The court referred Defendant's motion to exclude opinions and testimony about vapor intrusion to Magistrate Judge Jones for a memorandum and recommendation ("M&R") [D.E. 439]. On December 1, 2025, the court adopted Judge Jones's M&R concerning vapor intrusion [D.E.

[1] The PLG filed a duplicative motion to exclude. *See* [D.E. 375]. The PLG references docket entry 376 in its memorandum in support. *See* [D.E. 377]. Accordingly, the court disregards the duplicative motion [D.E. 375].

729]. This order concerns the remaining six Phase 1 motions, all made under Rule 702 [D.E. 356, 358, 360, 367, 373, 376]. *See* Fed R. Evid. 702.

For the following reasons, the court grants in part and denies in part the motions.

I. Background

A. Camp Lejeune Litigation

In August 2022, Congress enacted the Camp Lejeune Justice Act of 2022 ("CLJA") as part of the larger Honoring our PACT Act of 2022 ("PACT Act"). *See* Pub. L. No. 117-168, § 804, 136 Stat. 1759, 1802–04. On August 10, 2022, the CLJA became effective. The CLJA provides a cause of action for "individual[s], . . . who resided, worked, or [were] otherwise exposed (including in utero exposure) for not less than 30 days during the period beginning on August 1, 1953, and ending on December 31, 1987, to water at Camp Lejeune, North Carolina, that was supplied by, or on behalf of, the United States." *Id.* § 804(b). The United States District Court for the Eastern District of North Carolina has "exclusive jurisdiction" and is the "exclusive venue" for claims brought under subsection 804(b). *Id.* § 804(d); *see id.* § 804(b). The chemicals at issue in the water are tetrachloroethylene ("PCE"), trichloroethylene ("TCE"), dichloroethylene ("DCE"), vinyl chloride ("VC"), and benzene (collectively, "Contaminants").[2] *See* [D.E. 25] 9.

Plaintiffs have collectively filed more than 3,709 civil actions in this district seeking relief under subsection 804(b).[3] *See* CLJA § 804(b); [D.E. 31] 1; [D.E. 728] 1. When Congress enacted the CLJA, the Congressional Budget Office estimated the costs of settlement payouts and legal expenses to be $6.1 billion. *See* Congressional Budget Office, *Estimated Budgetary Effects of Rules Committee Print 117-33 for H.R. 3967, Honoring our Pact Act of 2021* (Feb. 18, 2022).

[2] Over time, certain contaminants decay into "byproducts." For example, PCE degrades into TCE. TCE degrades into 1,2-tDCE. 1,2-tDCE degrades into vinyl chloride.

[3] Of these 3,709 CLJA civil actions, 147 have been dismissed. *See* [D.E. 728] 1.

Collectively, Department of Navy administrative claims concerning Camp Lejeune water demand trillions of dollars in damages. *See* [D.E. 34] 15; [D.E. 648] 1.

In general, the court has structured proceedings to efficiently litigate pretrial threshold issues and conduct bellwether trials to help the parties value cases for a global settlement. *See* [D.E. 23] 11; *see also* [D.E. 81-14] 10:16–24. The court separated these pretrial threshold issues into three "Phases": (1) "Water Contamination" ("Phase 1"); (2) general causation ("Phase 2"); and (3) residual issues, including specific causation and damages ("Phase 3"). *See* [D.E. 23] 11; [D.E. 81-14] 10:16–24; *see generally* [D.E. 270]; [D.E. 414]; [D.E. 630].

The court explained that for Phase 1, Plaintiffs must "establish the alleged chemicals in the water at Camp Lejeune from 1953 to 1987. For example, what were the levels of [Contaminants] present at the Hadnot Point, Holcomb Boulevard, and Tarawa Terrace water distribution systems in 1977?"[4] [D.E. 247] 2. Phase 1 expert discovery closed on March 15, 2025. *See* [D.E. 414] 3. Opening, response, and reply briefs for Phase 1 motions were due on April 29, June 4, and July 3, 2025, respectively. *See id.*

The court held a hearing regarding Phase 1, and Track 1 more generally, on March 25, 2025. *See* [D.E. 341] 1. Before that hearing, the court solicited a joint notice from the parties, requesting in part: (1) language describing the nature of expert evidence to be presented for Phase 1 and (2) the parties' respective positions on a potential Phase 1 live evidentiary hearing ("Evidentiary Hearing"). *See* [D.E. 329] 2–4.

The parties met and conferred regarding the proof required for Phase 1 and agreed to the following language:

> In Phase 1, the Court will be presented with evidence pertaining to the concentration levels for the chemicals in drinking (finished)

[4] Before establishing the Phases, the court learned that the parties would not stipulate to Contaminant levels at Camp Lejeune for the operative period. *See* [D.E. 247] 1–2; [D.E. 207] 7:10–22, 7:24–8:8; [D.E. 50] 1–2.

> water at Camp Lejeune from 1953 to 1987. To help the Court "understand the chemicals in the water at Camp Lejeune during the operative period," [D.E. 247] 2, the Parties may present evidence from experts in fields such as history, engineering, hydrology, environmental sciences and mathematical modeling pertinent to the fate and transport of contaminants in groundwater and in drinking (finished) water for family housing areas and other facilities at Camp Lejeune from 1953 to 1987. The evidence will include the contamination sources, the fate and transport of the contaminants within the groundwater underlying Camp Lejeune, the supply of water through wells to the various treatment plants at Camp Lejeune, and the distribution of the water from the treatment plant to relevant areas of Camp Lejeune during this time frame.

Id. at 2 (cleaned up). The parties also provided their respective positions on a Phase 1 Evidentiary Hearing. *See id.* at 2–4. The PLG argues that a "time-consuming" and "resource-intensive" Evidentiary Hearing is unnecessary, and the court can decide these motions on the papers. *Id.* at 2. The PLG states this "approach is particularly fitting here, where [the PLG is] relying on the federal government's own water model of the flow and transport of contaminated water on Camp Lejeune, which was developed by the [ATSDR]." *Id.*

In contrast, Defendant argues that an Evidentiary Hearing on common Phase 1 issues for Track 1 cases would avoid presentation of duplicative evidence and potential inconsistent findings at trial. *See id.* at 3–4. In Defendant's view, such an Evidentiary Hearing would help the parties assess case strength "by establishing early how the Court determines the chemical exposure levels present during the [40-year] statutory period" and "provid[ing] a framework for deciding issues of general causation and specific causation for . . . global resolution." *Id.* at 4.

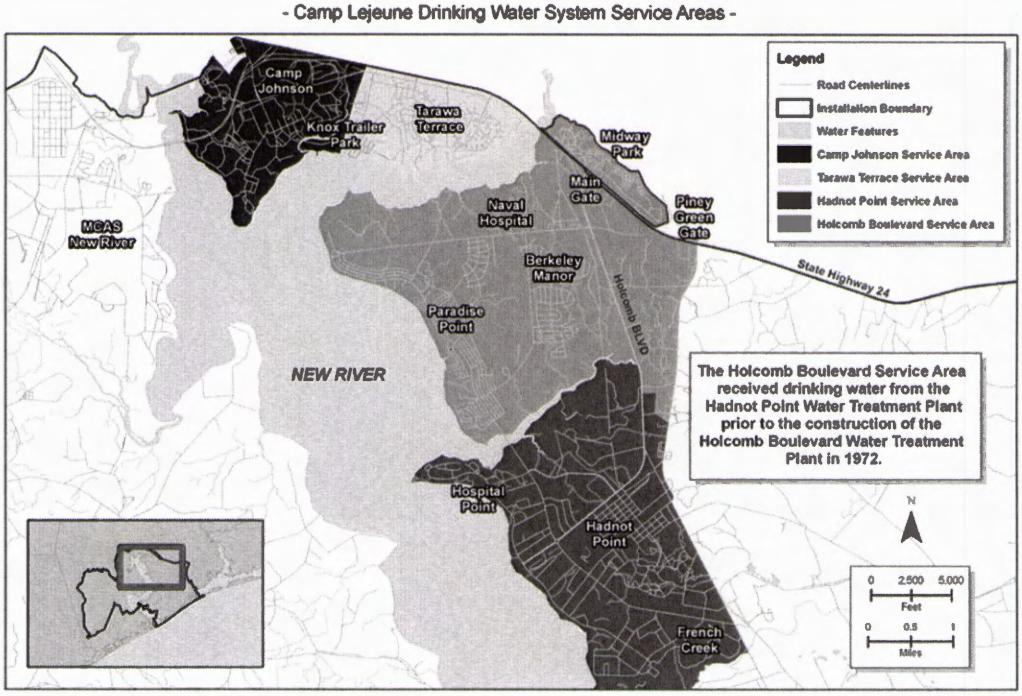
The court has issued several rulings on CLJA statutory interpretation affecting all present and future litigants. *See In re Camp Lejeune Water Litig.*, 715 F. Supp. 3d 761, 763 (E.D.N.C. 2024) (per curiam) (striking Plaintiffs' jury trial demands), *motion to certify appeal denied*, No. 7:23-CV-897, 2024 WL 2198651 (E.D.N.C. May 13, 2024) (unpublished); *In re Camp Lejeune Water Litig.*, 736 F. Supp. 3d 311, 317 (E.D.N.C. 2024) (per curiam) (finding that the CLJA

requires claimants to show causation); *In re Camp Lejeune Water Litig.*, No. 7:23-CV-897, 2024 WL 4142748, at *4 (E.D.N.C. Sept. 10, 2024) (per curiam) (unpublished) (considering legal representative and statute of limitation issues).

B. ATSDR and Camp Lejeune[5]

Marine Corps Base Camp Lejeune ("Camp Lejeune") is a United States military base in North Carolina. The base occupies approximately 156,000 acres (244 square miles) and supports a current population of approximately 170,000 people. *See* [D.E. 25] 1.

During the relevant period (1953 to 1987), Camp Lejeune was divided into various water-distribution systems. *See* [D.E. 25] 6. Three are at issue: Hadnot Point, Holcomb Boulevard, and Tarawa Terrace. *See id.* These water-distribution systems are identified on the map below.



Id. at 6 n.4. Each water-distribution system received water from a corresponding water treatment

[5] Some factual background is necessary to contextualize the motions. The court is not making any findings of fact. *Cf. In re Celotex Corp.*, 487 F.3d 1320, 1328 (11th Cir. 2007).

plant. *See id.* at 8. At times, demand from one water-distribution system exceeded its supply and water from another water-distribution system was pumped in to meet the shortfall. *See id.* at 9.

In 1982, Defendant retained Grainger Laboratories ("Grainger") to analyze water at Camp Lejeune. *See id.* at 13. That same year, Grainger reported detecting certain Contaminants in water at Hadnot Point. From 1982 through 1985, Defendant and its retained firms conducted more water testing on base, which revealed additional Contaminant concentrations. *See id.* at 13–21; *see also* ATSDR, *Public Health Assessment: Camp Lejeune Drinking Water*, x (Jan. 20, 2017) ("2017 Public Health Assessment").

In 1989, the United States Environmental Protection Agency ("EPA") listed Camp Lejeune on the National Priority List under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA" or "Superfund"), 42 U.S.C. § 9602. *See* EPA, *Camp Lejeune Military Res. (USNAVY) Cleanup Activities*, https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0403185. Congress created the ATSDR (Agency for Toxic Substances and Disease Registry)—a non-regulatory environmental public health agency—to assist with CERCLA enforcement by assessing the presence and nature of toxic hazards at National Priority Site locations.[6] *See* ATSDR, *About the Agency for Toxic Substances and Diseases Registry* (Nov. 2024), https://www.atsdr.cdc.gov/about/index.html.

In 1997, the ATSDR prepared an initial "Public Health Assessment," pursuant to CERCLA, to determine whether individuals at Camp Lejeune had been harmfully exposed to hazardous substances. *See* 42 U.S.C. § 9604(i)(6); 2017 Public Health Assessment at i.

The 1997 Public Health Assessment, based on the limited information available, concluded

[6] The U.S. Department of Health and Human Services oversees the ATSDR.

that "people were exposed to contaminants of concern" on base. 2017 Public Health Assessment at ix. It also determined that exposure to Contaminants in on-base drinking water was "unlikely to result in cancer and noncancer health effects in adults," but recommended undertaking an epidemiological study to assess the risks to infants in utero exposure. *Id.*

After the 1997 Public Health Assessment and as more information came to light, the ATSDR undertook several additional epidemiological studies related to on-base Contaminant exposures. *See, e.g.*, [D.E. 370-3] 16 (ATSDR, *Analyses of Groundwater Flow, Contaminant Fate and Transport, and Distribution of Drinking Water at Tarawa Terrace and Vicinity, U.S. Marine Corps Base Camp Lejeune, North Carolina: Historical Reconstruction and Present-Day Conditions Chapter A: Summary of Findings* (July 2007)) ("ATSDR Tarawa Terrace Summary").

For example, one study "evaluate[s] potential associations between in utero and infant . . . exposures to [Contaminants] in contaminated drinking water at Camp Lejeune and specific birth defects and childhood cancers." *Id.* However, "[b]ecause limited measurements of [C]ontaminant and exposure data are available to support the[se] stud[ies]," the ATSDR published two models[7] that "reconstruct historical conditions of groundwater flow, [C]ontaminant fate and transport, and the distribution of [Contaminated] drinking water . . . delivered to family housing areas." *Id.*; *see also* [D.E. 371-3] 26 (ATSDR, *Analyses and Historical Reconstruction of Groundwater Flow, Contaminant Fate and Transport, and Distribution of Drinking Water Within the Service Areas of the Hadnot Point and Holcomb Boulevard Water Treatment Plants and Vicinities, U.S. Marine Corps Base Camp Lejeune, North Carolina Chapter A: Summary and Findings* (March 2013)) ("ATSDR Hadnot Point/Holcomb Boulevard[8] Summary").

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[7] While recognizing that the ATSDR's historical reconstruction efforts include much more than just hydrological models, the court will shorthand these projects to "Model" or "Models" where appropriate.

[8] Because the ATSDR considered contamination for Hadnot Point and Holcomb Boulevard vicinities together, the court will use "Hadnot Point/Holcomb Boulevard" to refer to both locations simultaneously where appropriate.

Contaminant presence differed across the Tarawa Terrace, Hadnot Point, and Holcomb Boulevard wells. In general, contamination at Tarawa Terrace was associated mostly with PCE. *See* ATSDR Tarawa Terrace Summary at 16. Contamination at Hadnot Point and Holcomb Boulevard was associated mostly with TCE. *See id.* Sources of contamination also varied for each water-distribution system. At Tarawa Terrace, the sole source of contamination was a dry cleaner ("ABC One-Hour Cleaners" or "ABC") located across the street.[9] *See* [D.E. 25] 19–20; ATSDR Tarawa Terrace Summary at 19; 2017 Public Health Assessment at x; *see also* **Figure 1**. The Tarawa Terrace water-distribution system operated independently of the Hadnot Point and Holcomb Boulevard water treatment plants. *See* ATSDR Tarawa Terrace Summary at 19. Hadnot Point had two primary sources of contamination—the Hadnot Point Industrial Area and a landfill. *See* [D.E. 25] 12; ATSDR Hadnot Point/Holcomb Boulevard Summary at 42; *see also* **Figure 1**.

[9] ABC began operating in or around 1953 or 1954. The parties dispute the exact start date.

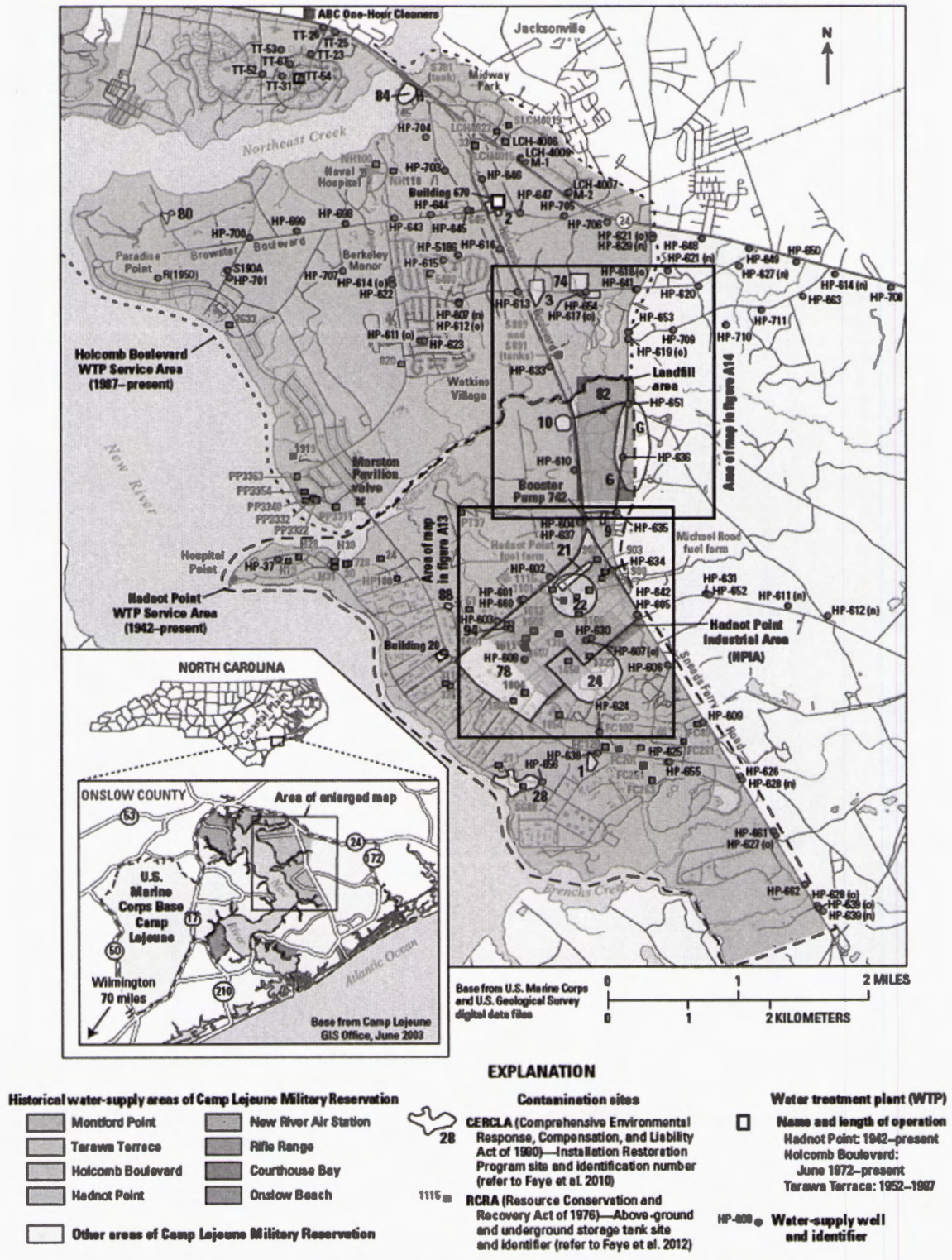

Figure A1. The Hadnot Point–Holcomb Boulevard study area, U.S. Marine Corps Base Camp Lejeune, North Carolina.

Figure 1. ATSDR Hadnot Point/Holcomb Boulevard Summary at 28.

The first Camp Lejeune water model, which the ATSDR released incrementally from 2007 to 2009, analyzed Contaminants in finished water for the Tarawa Terrace water treatment plant and water-distribution system. *See id.* The Tarawa Terrace Model used a multifaceted historical reconstruction methodology for estimating "monthly concentrations of PCE in groundwater and in finished water distributed from the Tarawa Terrace water treatment plant to residents of Tarawa Terrace," including:

> (1) MODFLOW-96, used for simulating steady-state (predevelopment) and transient groundwater flow;
>
> (2) MT3DMS, used for simulating three-dimensional, single-specie contaminant fate and transport;
>
> (3) Materials mass balance model (simple mixing) used to compute the flow-weighted average concentration of PCE assigned to the finished water at the Tarawa Terrace water treatment plant;
>
> (4) TechFlowMP, used for simulating three-dimensional, multispecies, multiphase mass transport;
>
> (5) PSOpS, used for simulating the impacts of unknown and uncertain well operations;
>
> (6) Monte Carlo and Sequential Gaussian simulations used to conduct probabilistic analyses and to assess uncertainty and variability concentrations of PCE-contaminated water; and
>
> (7) EPANET 2, used to conduct extended-period hydraulic and water-quality simulations of the Tarawa Terrace water-distribution system.

ATSDR Tarawa Terrace Summary at 16–17. The ATSDR released nine chapters of the Tarawa Terrace Model (Chapters A–I[10]). *See id.* at 21. It also published simulated monthly TCE levels in finished water (from January 1951 to March 1987) at the Tarawa Terrace water treatment plant. *See id.* at 96–108.

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[10] At one point, the ATSDR planned to publish 11 chapters (including Chapters J and K) for the Tarawa Terrace Model. *See* ATSDR Tarawa Terrace Summary at 21.

ATSDR scientists conducted two peer-review panels seeking feedback on its historical modeling efforts at Camp Lejeune. In 2005, the ATSDR first held an external peer-review panel to critique its historical reconstruction efforts for Tarawa Terrace. It incorporated that feedback into its final Tarawa Terrace Model reports. *See* ATSDR Tarawa Terrace Summary at 20–23. Upon recommendation of the 2005 panel, ATSDR scientists performed additional modeling of the Tarawa Terrace vicinity using the more complex TechFlowMP tool. *See id.* at 112. A second panel was convened in 2009 seeking input on the ATSDR's modeling efforts for Hadnot Point and Holcomb Boulevard drinking water and its related Public Health Study. *See* [D.E. 369-5] 19.

In 2013, the ATSDR published its Model for the Holcomb Boulevard and Hadnot Point water treatment plants and water-distribution systems. *See* ATSDR Hadnot Point/Holcomb Boulevard Summary at 4. Analyzing Hadnot Point/Holcomb Boulevard water involves different challenges from Tarawa Terrace. First, the contaminated Hadnot Point water-distribution system was intermittently connected to the Holcomb Boulevard water-distribution system, transferring TCE-contaminated water to other parts of the base. *See id.* at 27, 38, 89–94. Second, because "raw water from all groundwater wells was mixed at the Hadnot Point [water treatment plant]" before distribution, and some wells were more contaminated than others, "the start-up and shut-down dates of specific water-supply wells are critical to accurately determining [Contaminant] concentration[s]." *Id.* at 38. Third, less is known about the timing of contamination at the Hadnot Point Industrial Area and landfill. *See, e.g.*, *id.* at 53. For example, "[s]pecific data pertinent to the timing of initial deposition of [C]ontaminants to the ground or subsurface, chronologies of waste-disposal operations, such as dates and times when [C]ontaminants were deposited in the [Hadnot Point landfill] . . . generally are not available." *Id.* To address these challenges, the methodology for the Hadnot Point/Holcomb Boulevard Model shares similarities with the Tarawa

Terrace Model but also includes several additional methodologies:

> (1) Information discovery and data mining;
>
> (2) TechWellOp, used to determine historical water-supply well scheduling and operations;
>
> (3) TechNAPLVol, used to estimate the volume of LNAPL released to the subsurface at Hadnot Point Industrial Area;
>
> (4) TechControl, used to reconstruct water-supply well concentrations at the Hadnot Point landfill using linear control theory model;
>
> (5) Sensitivity analysis of hydraulic, fate and transport, and numerical-model parameter values; and
>
> (6) TechMarkos-Chain model, used for probabilistic analysis of intermittent connections of the Hadnot Point and Holcomb Boulevard water-distribution.

See id. at 26–27. The Hadnot Point/Holcomb Boulevard Model has four chapters (Chapters A–D). *See id.* at 29–30. It also contains estimated mean monthly Contaminant concentrations for certain wells in the Hadnot Point/Holcomb Boulevard area (from January 1942 to June 2008). *See id.* at 150–65.

In both Models, the ATSDR acknowledges informational shortcomings that would potentially impact its results. For example, the ATSDR remarks that "[i]deally, these analyses require monthly groundwater [well] pumpage data for the historical period. However, pumpage data [was] limited and [was] available on a monthly basis solely for 1978 and intermittently during the period of 1981-1985." ATSDR Tarawa Terrace Summary at 32; *see also* ATSDR Hadnot Point/Holcomb Boulevard Summary at 38. There is also no Contaminant-specific concentration data for drinking water before 1982—everything before 1982 is a historical reconstruction. *See, e.g.*, ATSDR Hadnot Point/Holcomb Boulevard Summary at 117.

Both Models include disclaiming language on the limits of the ATSDR Models in

appendices titled "Questions and Answers?" *See* ATSDR Tarawa Terrace Summary at 110–17; ATSDR Hadnot Point/Holcomb Boulevard Summary at 204–11. For example, one question asks, "Can ATSDR water modeling results be used to determine the concentration of [Contaminants] that my family and I were exposed to on a daily basis?" ATSDR Tarawa Terrace Summary at 112. The ATSDR responds:

> No. The available data [is] not specific enough to accurately estimate daily levels of [Contaminants] in the [Tarawa Terrace/Hadnot Point/Holcomb Boulevard] water system[s]. The modeling approach used by ATSDR provides a high level of detail and accuracy to estimate monthly [Contaminant] exposure concentrations in finished water at the [Tarawa Terrace/Hadnot Point/Holcomb Boulevard] water treatment plant[s]. It is assumed that simulated monthly concentrations of PCE represent a typical day during a month.[11]

Id. The ATSDR also states that its "exposure assessment[s] cannot be used to determine whether you, or your family, suffered any health effects as a result of past exposure to [Contaminated] drinking water at Camp Lejeune . . . . Many factors determine whether people will suffer adverse health effects because of chemical exposures."[12] ATSDR Tarawa Terrace Summary at 113; ATSDR Hadnot Point/Holcomb Boulevard Summary at 207.

The Models had concurrent detractors from other federally-funded scientific organizations. In 2009, the National Academy of Science's National Research Council ("NRC") released its own report on Camp Lejeune water contamination "in response to a request from the Navy." *See* [D.E. 372-3] (NRC, *Contaminated Water Supplies at Camp Lejeune: Assessing Potential Health Effects* (Nat'l Academies Press 2009)) ("NRC Report") 1. That request had "several elements,"

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[11] The Hadnot Point/Holcomb Boulevard Model appendix contains the additional line: "The actual level that a person may have been exposed to could have been lower or higher than the estimated average." ATSDR Hadnot Point/Holcomb Boulevard Summary at 206.

[12] The ATSDR Hadnot Point/Holcomb Boulevard Summary included the word "alone" in the first sentence. *See* ATSDR Hadnot Point/Holcomb Boulevard Summary at 207. ("ATSDR's exposure estimates cannot be used *alone* to determine . . . .") (emphasis added).

specifically:

> One was to review the scientific evidence about the kinds of adverse health effects that could occur after exposure to TCE, PCE, and other contaminants. The second was to evaluate studies that were performed or that are under way on former residents of the base and to consider how useful it will be to conduct additional studies. The third element was to identify scientific considerations that could help the Navy set priorities on future activities.

Id. at 1. The NRC Report questioned the utility of the ATSDR Model in several ways. For example, the NRC opined that "[s]ome of the modeling approaches used by ATSDR were 'cutting-edge,' meaning that they used . . . modeling techniques that are still in the research stage and have yet to be validated," "[t]he absence of measurement data for the first 30 years of the contamination period means the predictions . . . cannot be evaluated for accuracy," and "[o]ther uncertainties were introduced into the models because assumptions had to be made about how the water system was operating." *Id.* at 4. The NRC Report concludes that "[g]iven the multiple uncertainties and likely variation in [C]ontaminant concentrations . . . the Tarawa Terrace modeling predictions should only be used to provide a general estimate of the timeframe and magnitude of exposure," and "should not be used to characterize exposure of individual people." *Id.* at 4–5.

The ATSDR continues to work on various epidemiological studies related to Camp Lejeune. *See, e.g.*, ATSDR, *Evaluation of cancer incidence among Marines and Navy personnel and civilian workers exposed to contaminated drinking water at USMC Base Camp Lejeune: a cohort study* (Jan. 24, 2024), https://doi.org/10.1101/2024.01.27.24301873.

C. Challenged Expert Testimony

The parties collectively disclosed ten experts for Phase 1. The PLG disclosed six water modeling experts and one historian, and Defendant disclosed two water modeling experts and one historian. *See* [D.E. 329] 4.

1. Jeffrey Davis and Norman Jones

Mr. R. Jeffrey Davis and Dr. Norman L. Jones are retained PLG engineering experts who performed a "post-audit" on the ATSDR's Tarawa Terrace Water Model. *See* [D.E. 357-4]. Mr. Davis and Dr. Jones conclude that the ATSDR's Tarawa Terrace Water Model was "developed using sound methodology and continue[s] to provide reliable insights into the migration of [Contaminants]." *Id.* at 7–8. Specifically, they opine that the Tarawa Terrace Water Model "perform[s] well in simulating [Contaminant] concentrations at monitoring wells across the study area," and that there is a "good overall fit between simulated and observed [Contaminant] concentrations." *Id.* at 7; *see also* [357-5] 10–22.

Defendant has moved to exclude Mr. Davis's and Dr. Jones's opinions regarding the scientific soundness of the ATSDR's Tarawa Terrace Water Model. *See* [D.E. 356].

2. Mustafa Aral

Dr. Mustafa M. Aral is a Professor Emeritus from the School of Civil and Environmental Engineering at the Georgia Institute of Technology, with more than 50 years of experience developing environmental models and conducting environmental forensic analyses. *See* [D.E. 359-2] 3. Dr. Aral personally contributed to the ATSDR Water Models and is credited as a co-author on numerous chapters and supplements. *See* Tarawa Terrace Model Summary at 20 (crediting Dr. Aral as a co-author for Tarawa Terrace Model chapters A ("Summary of technical findings"), G (describing "development and application of a model capable of simulating three-dimensional, multispecies, and multiphase transport of [Contaminants]"), H (describing "[a]nalysis of groundwater pumping schedule variation" on Contaminant flow), and K (containing "[a]dditional information)); Hadnot Point/Holcomb Boulevard Model Summary at 29 (crediting Dr. Aral as a co-author for Hadnot Point/Holcomb Boulevard supplements); *id.* at 2 (describing

methodology for "synthesiz[ing] monthly water-supply well operations"); *id.* at 5 (describing "model developed . . . capable of reconstructing historical contaminant concentrations"); *id.* at 7 (describing "development and application of . . . [C]ontaminant fate and transport model"); *id.* at 8 (describing "field tests conducted" and "simulations of the intermittent supply of Hadnot Point finished water to . . . Holcomb Boulevard").

The PLG retained Dr. Aral to:

- Provide a high-level explanation of the ATSDR's historical reconstruction process for both the Tarawa Terrace and Hadnot Point/Holcomb Boulevard study sites, including his involvement.
- Provide an explanation of the reported concentrations of Contaminants in finished water at Camp Lejeune from 1953 to 1987.
- Provide an explanation of the calibration, sensitivity analysis, uncertainty analysis, and validation techniques used in the ATSDR Models.
- Summarize the conclusions and opinions included in the published ATSDR reports.
- Provide additional opinions beyond those already included in the ATSDR Model reports.

See [D.E. 359-2] 4.

Defendant has moved to exclude Dr. Aral's opinions regarding the overall reliability, accuracy, and correctness of the ATSDR Water Models. *See* [D.E. 358].

3. Rodney Kyle Longley

Dr. Rodney Kyle Longley is a professor and director of the War, Diplomacy, and Society Program at Chapman University. *See* [D.E. 362-2] 5–7. He has dedicated the majority of his academic career to military history. *See id.* The PLG originally designated Dr. Longley as a historical expert for both Phase 1 and Phase 2. *See* [D.E. 398] 4. The parties later agreed, however, that all historical experts are part of Phase 1. *See id.* at 4–5. The PLG disclosed three total reports

from Dr. Longley (the latter two in rebuttal to Defendant's retained historians). *See* [D.E. 362-2]; [D.E. 362-3]; [D.E. 362-4]. In his initial report, Dr. Longley seeks to "provide historical information informed by [his] expertise that may be [relevant to] understanding the historical use of . . . Camp Lejeune" as it relates to water consumption. [D.E. 362-2] 3.

Defendant has moved to exclude the expert reports of Dr. Longley in their entirety for using unreliable historiographical methodologies. *See* [D.E. 360].

4. Remy Hennet

Dr. Remy J.-C. Hennet is a senior principal at S.S. Papadopulos & Associates, Inc. (SSP&A) with more than 30 years of experience evaluating the timing of chemical releases, developing geochemical models, and conducting environmental forensics. *See* [D.E. 374-3] 11, 80. Defendant retained Dr. Hennet to evaluate groundwater contamination at Camp Lejeune and review the ATSDR's reports. *See id.* at 10. Generally, Dr. Hennet offers opinions about when Tarawa Terrace became contaminated, if well HP-634 was contaminated with TCE, and if Contaminant concentrations decreased after the water reached the treatment plant. *See id.* at 12–14, 65–66.

The PLG has moved to exclude four opinions of Dr. Hennet as unreliable. *See* [D.E. 373].

5. Alexandros Spiliotopoulos

Dr. Alexandros Spiliotopoulos is a senior associate and senior hydrogeologist at SSP&A with more than 20 years of experience evaluating contamination in aquifers, developing groundwater flow and contaminant transport models, and conducting environmental assessments. *See* [D.E. 377-3] 10. Defendant retained Dr. Spiliotopoulos to evaluate ATSDR's water modeling related to Camp Lejeune. *See id.* Dr. Spiliotopoulos opines that due to "the absence of sufficient historically observed data and site-specific parameters," the ATSDR's calculations are "highly

uncertain and cannot be used for determining dose reconstructions at the level of detail that [the] ATSDR presented in their analyses." *Id.* at 11.

The PLG has moved to exclude certain opinions of Dr. Spiliotopoulos. *See* [D.E. 376].

6. Models and Model Testimony

Defendant separately challenges the ATSDR Models and the Model testimony of five PLG Phase 1 experts: (1) Morris Maslia; (2) Dr. Mustafa M. Aral; (3) Dr. Leonard Konikow; and (4) Mr. Jeffrey R. Davis and Dr. Norman L. Jones[13]. *See* [D.E. 368] 12. These experts opine:

- **Maslia**: "The models and techniques used by the ATSDR to determine the mean monthly concentrations of contaminants in finished water at Camp Lejeune were state of the art, consistent with standard practices in the field, and subject to peer review." [D.E. 368-6] 18. "[T]he [ATSDR Models]. . . should be . . . robust, meaning anyone, not just the epidemiologists, anyone should be able to take the results of [the] [M]odel[s] and apply them as they see fit given the [limitations]." [D.E. 369-10] 170; *see also* [D.E. 369-2] 50.

- **Aral**: "The analyses published in all ATSDR [Model] chapter reports . . . , including the conclusions and monthly concentration data, were all done applying proper scientific and engineering methodologies and remain to this day to be mathematically reliable, statistically accurate and correct." [D.E. 369-7] 14.

- **Konikow**: "Careful review of [the ATSDR's] comprehensive documentation indicates that [the ATSDR Models] used scientifically acceptable tools and followed correct scientific methodology in performing its historical reconstruction . . . ." [D.E. 369-11] 7. "In my opinion, ATSDR followed generally accepted methods that yielded reasonably accurate results for the mean monthly concentration of [C]ontaminants." *Id.* at 33. "The uncertainty [in the Models] is not so large or unexpected as to preclude the use of the [M]odel results . . . or for providing monthly mean concentrations for use by health professionals to estimate past exposure of residents on an 'as likely as not' or 'more likely than not' basis." *Id.* at 34.

- **Davis/Jones**: "[T]he extended model demonstrates that the original [Tarawa Terrace Model] was developed using sound methods, and .

[13] Mr. Davis and Dr. Jones co-authored an expert report and are considered together.

> . . remains a reliable tool for understanding the general trends of contaminant migration in the Tarawa Terrace region." [D.E. 369-12] 20. "The [M]odel effectively simulates long-term trends in contaminant migration, and we can find no significant evidence that would invalidate the analyses performed by ATSDR with the original [M]odel." [D.E. 369-13] 22.

Defendant has moved to exclude these opinions on the efficacy of the Models and preclude the Models' use for individual exposure determinations. *See* [D.E. 367] 1.

II. Standard

Federal Rule of Evidence 702 governs the admission of expert testimony. *See* Fed. R. Evid. 702; *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141–42 (1999); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 142–43 (1997); *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 588 (1993); *Engilis v. Monsanto Co.*, 151 F.4th 1040, 1046–50 (9th Cir. 2025); *United States v. Forrest*, 429 F.3d 73, 80–81 (4th Cir. 2005); *Silicon Knights, Inc. v. Epic Games, Inc.*, No. 5:07-CV-275, 2011 WL 6748518, at *5–6 (E.D.N.C. Dec. 22, 2011) (unpublished). Rule 702 provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if the proponent demonstrates to the court that it is more likely than not that:
>
> > (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
> >
> > (b) the testimony is based on sufficient facts or data;
> >
> > (c) the testimony is the product of reliable principles and methods; and
> >
> > (d) the expert's opinion reflects a reliable application of the principles and methods to the facts of the case.

Fed. R. Evid. 702. "In 2023, Rule 702 was amended to clarify that the proponent of expert testimony bears the burden of establishing its admissibility and to emphasize that an expert's opinion must stay within the bounds of a reliable application of the expert's basis and methodology." *EcoFactor, Inc. v. Google LLC*, 137 F.4th 1333, 1339 (Fed. Cir. 2025); *see also*

Fed. R. Evid. 702 advisory committee's note to 2023 amendment (stating that the 2023 amendment is intended "to emphasize that each expert opinion must stay within the bounds of what can be concluded from a reliable application of the expert's basis and methodology").

Rule 702 "assign[s] to the trial judge the task of ensuring that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand." *Daubert*, 509 U.S. at 597; *see Engilis*, 151 F.4th at 1046–50; *Cooper v. Smith & Nephew, Inc.*, 259 F.3d 194, 199–203 (4th Cir. 2001). In other words, Rule 702 requires that a trial judge "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *EcoFactor*, 137 F.4th at 1339 (cleaned up); *see Daubert*, 509 U.S. at 597–98; *Engilis*, 151 F.4th at 1046–50. Determining admissibility, which falls within the gatekeeping role of the court, is separate from determining "weight and credibility, which are within the province of the jury in a jury case." *EcoFactor*, 137 F.4th at 1339.

The proponent of expert testimony must establish its admissibility by a preponderance of the evidence. *See* Fed. R. Evid. 702; Fed. R. Evid. 104(a); *Daubert*, 509 U.S. at 592 n.10; *Engilis*, 151 F.4th at 1048–50; *Cooper*, 259 F.3d at 199; *see also Huddleston v. United States*, 485 U.S. 681, 687 n.5 (1988); *Bourjaily v. United States*, 483 U.S. 171, 175 (1987). Expert testimony is appropriate when it "will help the trier of fact to understand the evidence or to determine a fact in issue." Fed. R. Evid. 702(a). A district court may permit a witness qualified by knowledge, skill, experience, training, or education to testify and state an opinion where the testimony will help the trier of fact understand the evidence or determine a fact in issue and "([1]) the testimony is based on sufficient facts or data, ([2]) the testimony is the product of reliable principles and methods; and ([3]) the expert's opinion reflects a reliable application of the principles and methods to the facts of the case." Fed. R. Evid. 702(b)–(d). Courts have distilled Rule 702's requirements into

three crucial inquiries: (1) whether the proposed expert witness is qualified; (2) whether the proposed testimony is relevant; and (3) whether the proposed testimony is reliable. *See Kumho Tire Co.*, 526 U.S. at 141; *Daubert*, 509 U.S. at 589; *Engilis*, 151 F.4th at 1048–50; *Forrest*, 429 F.3d at 80. The trial court must perform its special gatekeeping obligation concerning these three requirements. *See, e.g.*, Fed. R. Evid. 702; *Kumho Tire Co.*, 526 U.S. at 147; *Engilis*, 151 F.4th at 1048–50.

When a party challenges an expert's testimony, the court must "satisfy itself that the proffered testimony meets the relevant standard as a precondition to admissibility." *Snell v. Reid*, No. 22-1869, 2024 WL 2815061, at *3 (4th Cir. June 3, 2024) (per curiam) (unpublished) (quotations and citation omitted); *see Engilis*, 151 F.4th at 1048–50; *Sardis v. Overhead Door Corp.*, 10 F.4th 268, 282 (4th Cir. 2021). The court must make explicit findings concerning the challenged preconditions of admissibility either by written order or orally on the record. *See Snell*, 2024 WL 2815061 at *3; *Sardis*, 10 F.4th at 283; *United States v. Smith*, 919 F.3d 825, 835–36 (4th Cir. 2019).

As for qualification, an expert may be qualified based on "knowledge, skill, experience, training, or education." Fed. R. Evid. 702. A court assesses qualifications in reference to the matter to which the witness seeks to testify. *See Daubert*, 509 U.S. at 591–93; *Gladhill v. Gen. Motors Corp.*, 743 F.2d 1049, 1052 (4th Cir. 1984). The witness need not be the most well-known or well-qualified witness. *See Gladhill*, 743 F.2d at 1052. Nonetheless, a witness does not become an expert simply by claiming to be an expert or because some other court permitted the witness to testify as an expert. *See, e.g.*, *Thomas J. Kline, Inc. v. Lorillard, Inc.*, 878 F.2d 791, 799–800 (4th Cir. 1989) (holding that a witness with an MBA was not qualified to provide expert opinion testimony on complex economic antitrust matters about which the witness was not qualified by

training, experience, or education); *United States v. Bahena*, 223 F.3d 797, 809–10 (8th Cir. 2000) (holding that a witness who held himself out to be an expert on voice spectrography lacked the required training, experience, or education). Moreover, expertise in one topic does not qualify a witness to testify about another topic. *See, e.g.*, *Engilis*, 151 F.4th at 1050–54 (affirming exclusion of oncologist's opinion on specific causation because the oncologist failed to follow the differential etiology methodology his report purported to employ and failed to reliably rule out obesity as a potential cause of plaintiff's cancer); *Brainchild Surgical Devices, LLC v. CPA Glob. Ltd.*, 144 F.4th 238, 254 (4th Cir. 2025) (affirming exclusion of expert with experience in international business and contracts to opine on patent renewal services where the expert lacked training or experience with patent renewal services); *Kadel v. Folwell*, 100 F.4th 122, 158 (4th Cir. 2025) (en banc) (affirming exclusion of medical doctors' testimony where doctors failed to demonstrate expertise in treating the medical condition at issue in the case), *vacated on other grounds by Folwell v. Kadel*, 145 S. Ct. 2838 (2025) (mem.); *Sardis*, 10 F.4th at 288–90, 295 (affirming exclusion of testimony about an industry standard not sufficiently related to the product at issue and excluding testimony that contradicts standards imposed by governing law); *Zellers v. NexTech Ne., LLC*, 533 F. App'x 192, 197 (4th Cir. 2013) (per curiam) (unpublished) (affirming exclusion of a neurologist's testimony about the toxicity of certain chemicals used for refrigeration because the neurologist had no training in toxicology); *Cooper*, 259 F.3d at 200–04 (affirming exclusion of a medical doctor's testimony where the medical doctor based an opinion on a medical device without conducting tests or studying the medical device); *Ancho v. Pentek Corp.*, 157 F.3d 512, 519 (7th Cir. 1998) (affirming exclusion of testimony when the expert failed to visit the site of the accident or otherwise familiarize himself with the specific details of the accident at issue).

To be relevant, the proposed expert testimony must be helpful to the trier of fact concerning

the evidence or a fact at issue in the case. *See* Fed. R. Evid. 702(a); *Daubert*, 509 U.S. at 591–92; *United States v. Lespier*, 725 F.3d 437, 449 (4th Cir. 2013); *Kopf v. Skyrm*, 993 F.2d 374, 377 (4th Cir. 1993); *Persinger v. Norfolk & W. Ry.*, 920 F.2d 1185, 1188 (4th Cir. 1990); *Scott v. Sears, Roebuck & Co.*, 789 F.2d 1052, 1055 (4th Cir. 1986). To be helpful, the proposed expert testimony must fit the facts of the case. *See* Fed. R. Evid. 702; *Silicon Knights, Inc.*, 2011 WL 6748518, at *6–17. "Fit is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes." *Daubert*, 509 U.S. at 591 (quotation and citation omitted). To be helpful to the trier of fact, the proposed expert testimony must be outside the common knowledge or function of the fact finder. *See, e.g.*, *Lespier*, 725 F.3d at 449 (affirming exclusion of expert testimony on how sleep deprivation affects the reliability of an eye witness to a crime); *Persinger*, 920 F.2d at 1188 (affirming exclusion of expert testimony about the weight an individual could safely lift based on an easily-applied industry formula); *Gladhill*, 743 F.2d at 1052 (affirming decision that a police officer who had investigated 600 car accidents and arrived at the car accident scene immediately after the car accident was qualified to opine on the cause of the car accident based on his review of the car accident scene); *cf. United States v. Hill*, 749 F.3d 1250, 1260 (10th Cir. 2014) (holding that an expert witness cannot testify about whether another witness is credible); *Nimely v. City of New York*, 414 F.3d 381, 398 (2d Cir. 2005) (same).

"[T]he test of reliability is flexible and the law grants a district court" discretion when it decides reliability. *United States v. Wilson*, 484 F.3d 267, 274 (4th Cir. 2007) (quotations and citation omitted); *see Kumho Tire Co.*, 526 U.S. at 141–42; *Belville v. Ford Motor Co.*, 919 F.3d 224, 233 (4th Cir. 2019). Reliability focuses on the fit between the expert opinion and the facts of the case. There is not a fit when a large analytical gap exists between the facts of the case and the opinion. *See, e.g.*, *Joiner*, 522 U.S. at 146–47 (affirming exclusion of testimony where the expert's

opinion was based on irrelevant testing on animals unrelated to the case at issue); *Engilis*, 151 F.4th at 1050–54 (affirming exclusion of oncologist's opinion on specific causation because the oncologist failed to follow the differential etiology methodology his report purported to employ and failed to reliably rule out obesity as a potential cause of plaintiff's cancer); *In re Lipitor (Atorvastatin Calcium) Mktg., Sales Pracs. & Prods. Liab. Litig.*, 892 F.3d 624, 634–35, 644 (4th Cir. 2018) (affirming exclusion of testimony when the expert's testing contradicted his opinion); *Nease v. Ford Motor Co.*, 848 F.3d 219, 232–33 (4th Cir. 2017) (affirming exclusion of testimony when expert on vehicle safety failed to test his own hypothesis); *Cooper*, 259 F.3d at 200–01 (affirming exclusion of testimony on what caused a medical injury when the expert's testing did not provide evidence of causation); *Silicon Knights, Inc.*, 2011 WL 6748518, at *6–17 (excluding expert on damages where the opinions did not fit the facts of the case). Rule 702 does not permit or require "a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert." *Joiner*, 522 U.S. at 146; *see Small v. WellDyne, Inc.*, 927 F.3d 169, 177 (4th Cir. 2019) ("Without testing, supporting literature in the pertinent field, peer reviewed publications[,] or some basis to assess the level of reliability, expert opinion testimony can easily, but improperly, devolve into nothing more than proclaiming an opinion is true 'because I say so.'"); *In re Roundup Prods. Liab. Litig.*, MDL No. 2741, 2023 WL 7928751, at *2–6 (N.D. Cal. Nov. 15, 2023) (unpublished) ("For an expert to express an opinion that Roundup cause[d] [Non-Hodgkins Lymphoma], that expert must have engaged with the relevant literature enough to assess whether a study is credible, to explain why [he] relied on one study more than another, and to articulate how [he] reached [his] conclusion in the face of conflicting evidence. [The expert in this case] did not do that, so his general causation opinion is excluded."), *aff'd sub nom.*, *Engilis*, 151 F.4th 1040.

In determining "whether proffered testimony is sufficiently reliable, the court has broad latitude to consider whatever factors bearing on validity that the court finds to be useful; the particular factors will depend upon the unique circumstances of the expert testimony involved." *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 261 & n.1 (4th Cir. 1999). Factors that may bear on the reliability of the expert's testimony include (1) whether a theory or technique can be (and has been) tested, (2) whether the theory or technique has been subjected to peer review and publication, (3) whether a technique has a high known or potential rate of error and whether there are standards controlling its application, and (4) whether the theory or technique enjoys general acceptance within the relevant community. *See Kumho Tire Co.*, 526 U.S. at 149–50; *Daubert*, 509 U.S. at 593–94; *see, e.g.*, *Engilis*, 151 F.4th at 1050–54 (affirming exclusion of oncologist's opinion on specific causation because the oncologist failed to follow the differential etiology methodology his report purported to employ and failed to reliably rule out obesity as a potential cause of plaintiff's cancer); *Sardis*, 10 F.4th at 288–90 (holding testimony about product safety unreliable when expert did not test the product); *McKiver v. Murphy-Brown, LLC*, 980 F.3d 937, 960 (4th Cir. 2020) (holding that a witness's method for analyzing the origin of swine fecal material was widely used and applied reliably enough to be admitted despite not being subject to peer review); *In re Lipitor*, 892 F.3d at 644–45 (holding that a medical doctor testifying that Lipitor caused certain diseases was excludable for not factoring in other risk factors, such as age, body mass index, and family history); *Baxter v. Comm'r of Internal Revenue Serv.*, 910 F.3d 150, 157–58 (4th Cir. 2018) (holding that mere disagreement with an expert's otherwise reliable economic methodology is not grounds for exclusion); *United States v. Crisp*, 324 F.3d 261, 265–70 (4th Cir. 2003) (holding that expert fingerprint analysis was admissible despite defendant's objections to its general scientific accuracy). "Result-driven analysis, or cherry-picking, undermines principles of

the scientific method and is a quintessential example of applying methodologies (valid or otherwise) in an unreliable fashion." *In re Lipitor*, 892 F.3d at 634; *see E.E.O.C. v. Freeman*, 778 F.3d 463, 468–70 (4th Cir. 2015) (Agee, J., concurring) (collecting cases).

III. Discussion

The Fourth Circuit has recently cautioned courts considering Rule 702 motions in toxic tort cases from making "veiled credibility determination[s] based on [experts'] choice of which data to input into [their] model[s]." *Sommerville v. Union Carbide Corp.*, 149 F.4th 408, 423 (4th Cir. 2025); *see* Fed. R. Evid. 702. Nor should a court "attempt[] to make scientific findings to justify its exclusion" of certain expert opinions. *Sommerville*, 149 F.4th at 425. Here, many of the parties' arguments for excluding certain opinions improperly frame "credibility determinations" as questions of "reliability." *Id.* at 423.

In a bench trial, there is no risk of jury confusion from expert testimony. *See* Charles Alan Wright & Arthur R. Miller, Fed. Prac. & Proc. Evid. § 6270, at 29 (2d ed. 2025). Thus, in a bench trial, courts have "greater discretion regarding procedure and even the stringency of gatekeeping." *Id.* at 29 & n.26 (citing *United States v. Brown*, 415 F.3d 1257, 1268 (11th Cir. 2005) ("There is less need for the gatekeeper to keep the gate when the gatekeeper is keeping the gate only for himself.")); *Gibbs v. Gibbs*, 210 F.3d 491, 500 (5th Cir. 2000) ("Most of the safeguards provided for in *Daubert* are not as essential in a case such as this where a district judge sits as the trier of fact in place of a jury."); *see also Honeywell Int'l Inc. v. Opto Elecs. Co.*, No. 3:21-CV-506, 2023 WL 3029264, at *15 (W.D.N.C. Apr. 20, 2023) (unpublished), *reconsideration denied*, 2023 WL 3802003 (W.D.N.C. June 2, 2023) (unpublished), *appeal dismissed*, 135 F.4th 170 (4th Cir. 2025), and *appeal dismissed*, No. 2024-1109, 2025 WL 2795274 (Fed. Cir. Oct. 1, 2025) (unpublished). Nonetheless, Rule 702 does apply in bench trials. *See* Fed. R. Evid. 702. After all, the Federal

Rules of Evidence are promulgated under the Rules Enabling Act, 28 U.S.C. §§ 2071–77, and are "in every pertinent respect, as binding as any statute duly enacted by Congress . . . ." *Bank of Nova Scotia v. United States*, 487 U.S. 250, 255 (1988); *see In re Nat. Prescription Opiate Litig.*, 956 F.3d 838, 844 (6th Cir. 2020).

The court considers each motion in turn.

A. Davis and Jones

Defendant moves to exclude Mr. Davis's and Dr. Jones's opinions regarding the soundness of the methodology used in the ATSDR's Tarawa Terrace Water Model. *See* [D.E. 356]. Specifically, Defendant argues that these opinions are unreliable because they "had not read the majority of the [ATSDR] reports containing the [modeling] analysis they opined upon," and "failed to address criticisms of [the Models] put forward by the Navy or NRC." [D.E. 357] 7.

Mr. Davis and Dr. Jones are qualified with more than 60 years of combined experience in civil and environmental engineering. *See* [D.E. 357-4] 23. They were retained to perform a "post-audit" of the ATSDR's "groundwater flow and transport models" for Tarawa Terrace ("Post-Audit"). *Id.* at 9. The objective of the "[P]ost-[A]udit is to extend the range of the [ATSDR's Tarawa Terrace Model] from 1995 to 2008 and compare the output of the [Model] with concentrations sampled at monitoring wells during [the same period] to assess the performance of the model as an interpretive and predictive tool." *Id.* at 10.

Defendant does not claim that post-audit model analyses are unhelpful or inherently unreliable. Instead, Defendant argues that this Post-Audit is unreliable because Mr. Davis and Dr. Jones did not read all of the ATSDR Tarawa Terrace Model chapter reports and did not adequately interrogate the original Model's "input parameters" and "assumptions." [D.E. 357] 11.

The latter argument addresses Mr. Davis's and Dr. Jones's "choice of data" when

performing the Post-Audit, which goes to weight, not reliability under Rule 702. *See Sommerville*, 149 F.4th at 424; *Baxter*, 910 F.3d at 158 (affirming admission of expert and rejecting challenge to his selection of certain data finding that "to the extent that Taxpayers[] disagree with Kolbe's estimates of the costs of obtaining a 'good' or 'normal' loan, 'such challenges . . . affect the weight and credibility of [Kolbe's] assessment, not its admissibility'"); Fed. R. Evid. 702. Moreover, changing the original Model's inputs, even if flawed, would seemingly contradict the purpose of the Post-Audit—to compare the Model's results with actual measured Contaminant levels at Tarawa Terrace. *See* [D.E. 357-4] 10.

This situation differs from the expert in *Freeman*, where the Fourth Circuit affirmed the district court's exclusion of an expert report containing "an alarming number of errors and analytical fallacies" of the expert and not "present in the original data." 778 F.3d at 467. Unlike in *Freeman*, Defendant argues that the Post-Audit is unreliable because the ATSDR's Tarawa Terrace Model being post-audited is faulty. To accept this argument would require the court to impermissibly weigh the experts' methodological inputs rather than the methodology itself. *See Sommerville*, 149 F.4th at 424; *Bresler v. Wilmington Tr. Co.*, 855 F.3d 178, 195–96 (4th Cir. 2017) (affirming rejection of Rule 702 motion where challenged opinions "amount[ed] to a disagreement with the values [the expert] chose to assign to certain variables"); *Hetrick v. IINK, Corp.*, No. 1:23-CV-961, 2024 WL 4206788, at *4 (E.D. Va. Sept. 16, 2024) (unpublished) ("Although Defendant may question the [expert's] assumption . . . , the Court's purpose here is not to decide the right calculation, but rather to determine whether the expert uses sufficient facts and data.").

Likewise, the court is not persuaded that Mr. Davis's and Dr. Jones's purported failure to read all of the ATSDR's published reports or consider critiques of other federal agencies renders

their Post-Audit and related materials sufficiently unreliable. *See* [D.E. 357] 8. Defendant does not explain what relationship, if any, this information bears on the accuracy of the Post-Audit. Moreover, the court will not decide what information is or is not necessary for Mr. Davis and Dr. Jones to complete their Post-Audit and render their opinions. *See SAS Inst., Inc. v. World Programming Ltd.*, 125 F. Supp. 3d 579, 590 (E.D.N.C. 2015) (stating that "even if the complete universe of evidence could have impacted [the expert]'s opinion, the court cannot substitute its judgment for that of the expert as to what is sufficient evidence to inform his experiential conclusion"; "the court only can review holistically the data relied upon by the expert and determine whether it is so incomplete as to render his methodology unreliable"; "it is not the court's place to close the gate" based on the contention that the expert "should have looked at a larger universe of data"; "any failure to consider additional evidence . . . must be the subject of cross examination"), *aff'd*, 874 F.3d 370 (4th Cir. 2017).

Ultimately, Defendant's critiques of Mr. Davis's and Dr. Jones's opinions go to the weight of the ATSDR's Tarawa Terrace Model. *See generally* [D.E. 357]. In other words, Defendant challenges the inputs of the Post-Audit, not the methodology of the Post-Audit itself. Defendant will have the opportunity to cross examine Mr. Davis and Dr. Jones on these issues at the appropriate time. *See Sommerville*, 149 F.4th at 423 ("[Q]uestions regarding the factual underpinnings of the [expert witness's] opinion affect the weight and credibility of the witness'[s] assessment, not its admissibility." (citations omitted)). Accordingly, the court denies Defendant's motion [D.E. 356].

B. Mustafa Aral

Defendant moves to exclude Dr. Aral's opinions relating to the overall reliability and accuracy of the ATSDR Water Models. *See* [D.E. 358]. Defendant argues that his "broad"

opinions are fundamentally unreliable because he only worked on "limited aspects" of the Water Models and failed to consider the Models' intended purpose. [D.E. 359] 1–2.

The court is not persuaded that Dr. Aral cannot opine on the Models' efficacy because he did not work on every aspect of the ATSDR's water modeling project. Dr. Aral specifically opined that "the models and techniques used by the ATSDR for historical reconstruction . . . were and remain reliable, scientifically valid and state of the art procedures," and that "[t]he simulated monthly mean [Contaminant] concentrations . . . at Tarawa Terrace, Hadnot Point and Holcomb Boulevard included in ATSDR reports are reliable . . . ." [D.E. 359-2] 12–13 (cleaned up). His qualified opinions are based on his 50 years of experience developing environmental models and conducting environmental forensic analyses, his 15 years of "Camp Lejeune related work providing technical assistance to the ATSDR," and his review of relevant materials. *Id.* at 13.

An expert need not be all-knowing to opine on a given subject. As the Fourth Circuit has explained, "[o]ne knowledgeable about a particular subject need not be precisely informed about all details of the issues raised in order to offer an [expert] opinion." *Kline*, 878 F.2d at 799 (citation omitted). An expert may rely on facts or data of which the expert has been made aware "[i]f experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion." Fed. R. Evid. 703; *see also Ward v. Dixie Nat'l Life Ins. Co.*, 595 F.3d 164, 182 (4th Cir. 2010); *Gussack Realty Co. v. Xerox Corp.*, 224 F.3d 85, 94–95 (2d Cir. 2000) (per curiam) (holding that "an expert may rely on data that she did not personally collect" and "need not have conducted her own tests" (citations omitted)). Restated, an expert does not need to take the measurements to opine on them, so long as the methodology for doing so accords with Rule 702's reliability requirement. *See* Fed. R. Evid. 702–03.

Dr. Aral does not "unblinking[ly] rel[y]" on other experts when rendering his opinions.

Funderburk v. S.C. Elec. & Gas Co., 395 F. Supp. 3d 695, 717 (D.S.C. 2019) (citation omitted). The expert at issue in *Funderburk* opined about the adequacy of culverts based on a single document from a pipe manufacturer that had not been subject to any peer review. *See id.* at 718–20. That expert then simply "recit[ed], verbatim, a blanket statement from [the manufacturer]." *Id.* at 719. In contrast, Dr. Aral had firsthand knowledge of much of the ATSDR's modeling methodologies because he helped create them. *See* Tarawa Terrace Model Summary at 20 (crediting Dr. Aral as a co-author for Tarawa Terrace Model chapters A ("Summary of technical findings"), G (describing "development and application of a model capable of simulating three-dimensional, multispecies, and multiphase transport of [Contaminants]"), H (describing "[a]nalysis of groundwater pumping schedule variation" on Contaminant flow), and K (containing "[a]dditional information")); Hadnot Point/Holcomb Boulevard Model Summary at 29 (crediting Dr. Aral as a co-author for Hadnot Point/Holcomb Boulevard supplements); *id.* at 2 (describing methodology for "synthesiz[ing] monthly water-supply well operations"); *id.* at 5 (describing "model developed . . . capable of reconstructing historical contaminant concentrations"); *id.* at 7 (describing "development and application of . . . [C]ontaminant fate and transport model"); *id.* at 8 (describing "field tests conducted" and "simulations of the intermittent supply of Hadnot Point finished water to . . . Holcomb Boulevard").

Taking Defendant's argument to its logical conclusion, no expert could ever opine on the reliability of multifaceted environmental models unless the expert singlehandedly performed each step. That is not the law. *See* Fed. R. Evid. 703. Of course, whether Dr. Aral will ultimately persuade the court of the Models' reliability is an issue for another day. Today, however, Dr. Aral has cleared the Rule 702 bar and may opine on the Models based on his firsthand work creating them and 50 years of relevant modeling experience. *See Nix v. Chemours Co. FC*, No. 7:17-CV-

189, 2023 WL 6471690, at *12 (E.D.N.C. Oct. 4, 2023) (unpublished) (finding expert did not merely "parrot" other experts when he relied on "the opinions of several experts" to arrive at his ultimate opinions); *United States v. Vandivere*, No. 5:15-HC-2017, 2015 WL 13689051, at *1–2 (E.D.N.C. Dec. 14, 2015) (unpublished) (declining to strike expert basing opinions on secondhand knowledge where information was the type on which a similar expert would rely).

Defendant also questions the relevance of Dr. Aral's opinions for failing to account for the epidemiological purpose of the Water Models. *See* [D.E. 359] 16–17. Such a relevancy determination is premature at Phase 1, and instead concerns causation, which the court will address in Phases 2 and 3. Thus, the court denies Defendant's motion [D.E. 358].

C. Kyle Longley

Defendant has moved to exclude all three reports of PLG historian Dr. Longley as fundamentally unreliable and unhelpful. *See* [D.E. 360]. Specifically, Defendant posits that Dr. Longley's "oral histories" are inherently flawed, that he did not consider potential bias, and that his reports are replete with unsourced opinions. *See* [D.E. 362] 2–3.

Some courts have commented that when considering challenges to "soft sciences," such as historiography, courts should account for the "necessarily diminished methodological precision" when compared to other scientific disciplines like math or engineering. *See, e.g.*, *United States v. Simmons*, 470 F.3d 1115, 1122–23 (5th Cir. 2006) (admitting expert testimony regarding rape-victim behavior notwithstanding "inherent limitations for such research" (citing *Jenson v. Eveleth Taconite Co.*, 130 F.3d 1287, 1297–98 (8th Cir. 1997)); *Carrizosa v. Chiquita Brands Int'l, Inc.*, 47 F.4th 1278, 1318 (11th Cir. 2022) ("[S]ocial science research, theories, and opinions cannot have the exactness of hard science methodologies . . . ." (citation omitted)). Moreover, "historical analysis can be difficult; it sometimes requires resolving threshold questions, and making nuanced

judgments about which evidence to consult and how to interpret it." *New York State Rifle & Pistol Ass'n, Inc. v. Bruen*, 597 U.S. 1, 25 (2022) (quoting *McDonald v. Chicago*, 561 U.S. 742, 803–04 (2010) (Scalia, J., concurring)); *see* Jonathan D. Martin, *Historians at the Gate: Accommodating Expert Historical Testimony in Federal Courts*, 78 N.Y.U. L. REV. 1518, 1535 (2003) ("The complexity of the past, the indeterminacy of the historical record, and the contingency of human experience push historians toward a method that produces knowledge that is necessarily multivalent, subtle, and revisable.").

Dr. Longley's "oral histories" are sufficiently reliable to satisfy Rule 702. *See* Fed. R. Evid. 702. In his initial report, Dr. Longley describes that after he had considered relevant historical documents,

> [M]y focus shifted to other forms of first-hand accounts, principally depositions and oral histories, but also memoirs of people who served there. These materials provided background information and also a form of oral history from those who testified in front of various congressional hearings, military commissions, and other governmental groups, including the Environmental Protection Agency.

[D.E. 362-2] 48. His initial report contains several citations to several "Oral Histor[ies]," sometimes standing alone or cited alongside secondary source support. *See, e.g.*, *id.* at 11, 20, 33. The court need not resolve what constitutes an "oral history." Dr. Longley considered a mix of primary and secondary sources, as documented in his reports and corresponding lists of reliance materials. *See, e.g.*, *id.*; [D.E. 398-2] 58–70 (disclosing 198 materials relied upon, including two "Oral Histor[ies]" of Allan Howard and Retired Master Sergeant Jerry Ensminger). Courts have consistently found that "historians may reasonably rely on a combination of primary and secondary sources while maintaining sound methodology." *Fair Fight Action, Inc. v. Raffensperger*, No. 1:18-CV-5391, 2020 WL 13561776, at *6 (N.D. Ga. Dec. 4, 2020) (unpublished) (collecting cases); *see, e.g.*, *Allen v. Am. Cyanamid*, No. 11-CV-55, 2021 WL 1086245, at *15 (E.D. Wis.

Mar. 22, 2021) (unpublished) ("Proper historical work involves surveying the full array of available sources, evaluating the reliability of the sources, and thus providing a basis for a reliable narrative about the past." (quotations and citations omitted)); *New Mexico ex rel. State Eng'r v. Aragon*, No. CV 69-7941, 2013 WL 12329894, at *4 n.3 (D.N.M. Aug. 2, 2013) (unpublished).

Indeed, primary sources—for instance, interviews with individuals who were present at the time and place of interest—are often more coveted than secondary sources, which are inherently more removed. *See, e.g.*, *Exxon Mobil Corp. v. United States*, No. CV H-10-2386, 2020 WL 5573048, at *9 (S.D. Tex. Sept. 16, 2020) (unpublished) (finding historian convincing in toxic waste case where that historian "had a superior mastery of the original source documents"). Thus, whether they are referred to as "oral histories" or otherwise, Dr. Longley properly relies on a mix of primary and secondary sources, including his interviews with active CLJA plaintiffs.

Likewise, Dr. Longley's reports are not tainted by bias as Defendant suggests. *See* [D.E. 362] 6–9. Undoubtedly, interviewing active CLJA claimants to gather information about on-base life raises potential issues of bias. That does not make these individuals any less "primary sources," or inherently unhelpful. At bottom, Defendant disputes which sources, or "inputs," Dr. Longley used in forming his opinions—not his methodology. The dispute is best addressed via cross examination at the appropriate time. *See Sommerville*, 149 F.4th at 424; *Baxter*, 910 F.3d at 158; *United States v. 14.38 Acres of Land*, 80 F.3d 1074, 1077 (5th Cir. 1996).

Lastly, the court is not convinced that the few instances of incorrectly cited source material that Defendant identified (and that Dr. Langley thereafter corrected) are so egregious as to warrant excluding all three reports. *See* [D.E. 398-2] 71 (Dr. Longley's errata sheet dated April 3, 2025). Dr. Longley's initial report lists 198 reliance materials and contains 132 footnotes, some of which cite multiple sources. Taking the breadth of Dr. Longley's work into account, three incorrect

citations do not constitute a "mind-boggling number of errors and unexplained discrepancies." *Freeman*, 778 F.3d at 467 (quotations omitted); *compare id.* (finding "sheer number of mistakes and omissions in [expert's] analysis render[ed] it outside the range where experts might reasonably differ" (quotations and citation omitted)), *with Gautier v. Tams Mgmt., Inc.*, 659 F. Supp. 3d 714, 719 (S.D.W. Va. 2023) (finding that "two [erroneous] calculations out of a total of 164" in expert's report "hardly warrants the exclusion of an entire report").

Ultimately, Dr. Longley is a qualified historian with decades of experience researching and writing about U.S. military history. He relies on a mix of sources generally accepted in the practice of historiography. Defendant's concerns about interviewee bias or the quality of certain reliance materials are best saved for cross-examination at the appropriate time. Thus, the court denies Defendant's motion [D.E. 360].

D. Remy Hennet

The PLG moves to exclude Dr. Hennet's opinions about (1) contaminant volatilization when filling water buffaloes by manholes; (2) contaminant loss through spent spiractor solids, sand filter backwash water and suspended solids; (3) "representative" flow paths and travel time at well TT-26; and (4) HP-634 contaminant concentration data. *See* [D.E. 373] 1.

Dr. Hennet holds a Doctorate in Geochemistry from Princeton University, a license as a professional geoscientist from the Texas Board of Professional Geoscientists, and a certification as a professional geological scientist from the American Institute of Professional Geologists. *See* [D.E. 374-3] 80. He has more than 30 years of research and experience in evaluating the origin, fate, and transport of organic and inorganic chemicals in the environment. *See id.* (listing benzene and chlorinated hydrocarbons).

1. Water Buffaloes

The PLG moves to exclude as unreliable Dr. Hennet's opinion about "the amount of volatilization of the [Contaminants] when water buffaloes are filled via the manhole at the top of the water tank." [D.E. 374] 4; *see* [D.E. 373]. Dr. Hennet opines that if contaminated water was used to fill a water buffalo, the Contaminants would volatilize into the air and be removed from the water tank, lowering the concentration of Contaminants in the water. *See* [D.E. 374-3] 74. More specifically, "a substantial portion of [Contaminants, 41% to 61%,] that may have been present in water used to fill a water buffalo would have unavoidably been lost to evaporation during filling, use, and variations of temperature." *Id.* at 14. Dr. Hennet's opinion is relevant because it will help determine contaminant concentrations in certain drinking water. Dr. Hennet is qualified to provide this opinion based on his experience with evaluating volatile organic chemicals. *See id.* at 80.

Dr. Hennet explains that the Contaminants are "highly volatile chemicals that preferentially partition to the air rather than remaining dissolved in the water." *Id.* at 36. When conditions allow for air-water exchanges, the Contaminants volatilize from the water into the air, reducing the water contaminant concentration. *See id.* How much a contaminant volatilizes depends on the contaminant's air-water diffusion rate and Henry's Law constant[14] as well as temperature and pressure conditions. *See id.* at 36–37.

Water buffaloes are mobile tanks used to store and transport drinking water to areas of the base not served by a water supply. *See id.* at 73. Water buffaloes were filled at base filling stations. *See id.* Dr. Hennet opines that when the water buffaloes are being filled, the conditions are ripe

[14] The Henry's Law constant for a contaminant is the ratio of the contaminant's affinity to volatilize to the air and its solubility in water. *See* [D.E. 374-3] 36. "The Henry's Law constant is used to calculate the concentrations of a contaminant in air and water at equilibrium." *Id.*

for volatilization because of increased contact between the air and water. *See id.* at 74. His report describes filling a water buffalo using a filler pipe with a strainer screen. *See id.* The water is "forc[ed] . . . through a strainer that generates water jets and droplets that greatly increase the surface area of the water/air interface for [Contaminant] exchange to the tank air." *Id.* The filling itself "would involve spraying, splashing, and turbulent flow." *Id.* "The air containing [Contaminants] is expelled from the tank during filling." *Id.* Dr. Hennet estimated contaminant losses using a method developed for showers. *See id.* (citing multiple published sources); [D.E. 401] 24. Using this method, Dr. Hennet calculated contaminant losses from using the filler pipe ("filler loss calculations"). *See* [D.E. 374-3] 74.

Water buffaloes also may be filled through a manhole. *See* [D.E. 374-5] 19–20. To confirm if the filler loss calculations were equally applicable, Dr. Hennet observed a water buffalo filled through a manhole in February 2025. *See* [D.E. 401] 24. He claims that he observed a "lot of aeration" when the water buffalo was being filled with about 400 gallons in approximately 3 minutes and 23 seconds. [D.E. 374-2] 262:12–263:3; [D.E. 401] 25. Based on the observed aeration, Dr. Hennet concluded that his filler loss calculations applied to contaminant losses when filling a water buffalo by a manhole cover. *See id.*

Dr. Hennet's manhole fill opinion hinges on his aeration observation, but he does not derive his calculations or volatilization phenomena solely from this observation. As discussed, Dr. Hennet supports his manhole fill opinion by describing fundamental geochemistry principles, using a shower model from published literature, and observing the aeration from the manhole fill technique. *See* [D.E. 374-3] 73–74. His report sufficiently describes the methods, inferences, and rationale of his manhole fill opinion.

The PLG argues that Dr. Hennet used "no methodology . . . other than his" subjective

method—a visual inspection—to support his opinions about "volatilization via manhole filling." [D.E. 374] 6. The PLG also argues that it is unreliable to use a subjective visual observation method. *See* [D.E. 374] 6–7 (citing *Kumho Tire Co.*, 526 U.S. at 155, 157; *Precision Fabrics Grp., Inc. v. Tietex Int'l, Ltd.*, No. 1:13-CV-645, 2016 WL 6839394, at *8, (M.D.N.C. Nov. 21, 2016) (unpublished)).

The court rejects the PLG's arguments. The proper inquiry is not whether, in general, visual observations are reliable or not. *See* Fed. R. Evid. 702(c); *Kumho Tire Co.,* 526 U.S. at 153–54, 156. Rather, the proper inquiry is whether the method, subjective or not, is reasonable "to draw a conclusion regarding *the particular matter to which the expert testimony [is] directly relevant*." *Kumho Tire Co.*, 526 U.S. at 154. In *Kumho Tire Co.*, the Court found that the expert's method could not reliably determine the cause of the tire tread separation at issue. *See id.* at 153–58. As the Court explained, it was not merely because the method was based on visual observations or subjective opinion. *See id.* at 156 (stating "[n]or does anyone deny that, as a general matter, tire abuse may often be identified by qualified experts through visual or tactile inspection of the tire"); *id.* at 155 (explaining the expert's repeated reliance on the "subjectiveness" of his opinions when questioned supported the trial courts conclusion that his opinion was unreliable). Likewise, in *Precision Fabrics Group*, an expert claimed that there was no swelling of a 45-micron-sized film based on his unaided visual observation and claimed capacity to observe swelling of 5 to 10 microns. 2016 WL 6839394, at *8 (explaining that 5 to 10 microns is significantly smaller than the width of a human hair). The court found that the expert's observation method was not proven to produce reliable results. *See id.*

Here, Dr. Hennet does not claim to measure the degree of contaminant loss solely from his February 2025 visual observations. Rather, he based those opinions on published literature and

basic geochemistry principles. *See* [D.E. 374-3] 73–74. Dr. Hennet used his observations to help determine whether there was sufficient aeration to apply his filler loss calculations to filling through a manhole. The court declines to exclude Dr. Hennet's opinion. *See In re Salem*, 465 F.3d 767, 777 (7th Cir. 2006), *disapproved of on other grounds by Matter of Anderson*, 917 F.3d 566 (7th Cir. 2019); *Andrews v. Autoliv Japan, Ltd.*, No. 1:14-CV-3432, 2020 WL 10965912, at *3 (N.D. Ga. Mar. 11, 2020) (unpublished).

2. Sorption Contaminant Loss

The PLG challenges Dr. Hennet's opinion on "contaminant losses from disposal of spent spiractor solids, sand filter backwash water and suspended solids." [D.E. 373] 1. The PLG argues that Dr. Hennet's method is unreliable and that he is unqualified to provide this opinion. *See* [D.E. 374] 7–9. Dr. Hennet offers a qualitative opinion that the Contaminants sorbed onto the spiractor and suspended solids. *See* [D.E. 374-3] 46–48 (opining the losses are "likely to be significant"). His opinion is relevant because it concerns potential contaminant decrease in finished water.

Dr. Hennet cites literature and supporting materials that the Contaminants can sorb onto minerals and suspended solids which, when removed, could reduce water contaminant concentrations. *See id.* (citing, among other sources, [D.E. 401-4] (Schwarzenbach, *Environmental Organic Chemistry*, Chapter 11 at 284–85 (1993)); [D.E. 401] 27 (clarifying the contaminants also sorb onto the catalyst sand). The PLG's rebuttal report reviewed Dr. Hennet's cited materials and did not challenge the phenomena offered. *See* [D.E. 374-5] 15–16 (concluding that the losses would be "negligible" based on contaminant hydrophobicity, mineral surface area, and detention time).

Dr. Hennet has extensive experience concerning the fate and transport of organic chemicals. *See* [D.E. 374-3] 80. There is sufficient overlap between the nature of the opinion, sorption of organic compounds, and his experience. In *SMD Software, Inc. v. EMove, Inc.*, 945 F.

Supp. 2d 628, 646 (E.D.N.C. 2013), the court found that there was no match between the expert's experience and his conclusions. *See id.* (comparing the expert's self-storage industry experience with opinions related to the software industry). The match is closer here. Defendant has established that Dr. Hennet's opinion is admissible by a preponderance of the evidence. *See* Fed. R. Evid. 702.

3. Flow Path and Travel Time

The PLG moves to exclude Dr. Hennet's opinion about the "representative" flow paths and corresponding travel times at well TT-26. *See* [D.E. 373] 1. Dr. Hennet opines that elevated PCE concentrations likely arrived at supply well TT-26 in the 1970s. *See* [D.E. 374-3] 49; [D.E. 401] 3. Dr. Hennet's opinion is relevant because it concerns when a Contaminant arrived at well TT-26, a key issue of Phase 1. Dr. Hennet is qualified based on his experience evaluating the fate and transport of organic molecules. *See* [D.E. 374-3] 80.

The ATSDR modeled PCE plume geometry and migration. *See id.* at 110–11. Dr. Hennet selected three flow paths based on the PCE plume geometry and migration of the Tarawa Terrace Model. *See id.* at 49–50, 110–11; [D.E. 401] 15–17 (citing [D.E. 374-2] 263:20–265:23, 267:13–268:25). Dr. Hennet chose these pathways because, absent data for the period, "between the source, which is the ABC Cleaner, all the way to the well, you have basically many ways for the groundwater to get there. You don't go there through one single pathway." [D.E. 374-2] 267:13–17. These flow paths are representative of different horizontal distances PCE could travel in the shallow and pumped aquifer.[15] *See* [D.E. 374-3] 49–50, 105–08; [D.E. 401] 14–15. Using these flow paths, Dr. Hennet's calculated PCE travel times using "fundamental equations of formulas of

[15] Dr. Hennet provided travel times for three flow paths through the shallow (L1) and pumped aquifer (L3) where PCE traveled primarily in the pumped aquifer (L1=200ft, L3=800ft), equally in both the shallow and pumped aquifer (L1=500ft, L3-500ft), and primarily in the shallow aquifer (L1=800ft, L3=200ft). *See* [D.E. 374-3] 48–49, 105–08.

evaluating fate and transport," with a "simplified setup [of] . . . the ATSDR model." [D.E. 374-2] 263:20–265:23; *see* [D.E.374-3] 49 (describing the simplified parameters used). Dr. Hennet's opinion is reliable because the flow paths are based on an objective source—the ATSDR's published reports. *See Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1318–19 (9th Cir. 1995); [D.E. 374-3] 49–50, 110–11.

The PLG criticizes Dr. Hennet's analysis because it does not account for the "critical flow path in the shallow aquifer" or "estimated" variations in hydraulic gradients. [D.E. 374] 13 (citing [D.E. 374-6]). The PLG also criticizes Dr. Hennet's opinion as a poor substitute for not opining on the amount of PCE to reach the Tarawa Terrace water treatment plant or the "fastest pathways that yield the earliest breakthrough at the nearest downgradient water-supply well." [D.E. 423] 4–5.

The PLG's criticisms go to the conclusions and inputs of Dr. Hennet's methodology—not the methodology itself. *See Sommerville*, 149 F.4th at 423–24. The court finds that Defendant has established, by a preponderance of the evidence, that Dr. Hennet's opinion is admissible. *See* Fed. R. Evid. 702.

4. Well HP-634 Sample

The PLG moves to exclude Dr. Hennet's opinion about a sample from well HP-634 because it is unreliable. *See* [D.E. 373]. Dr. Hennet concludes that supply well HP-634 was not contaminated with TCE because the sample that detected TCE was unreliable. *See* [D.E. 374-3] 65; [D.E. 401] 6–9. Dr. Hennet's conclusion is relevant because it concerns whether a well at issue was contaminated. Based on Dr. Hennet's experience, he is qualified to provide this opinion. Dr. Hennet's method to support this opinion was to review sampling records, consider the geohydrology of Camp Lejeune, and apply geochemistry principles to the information he

reviewed. *See* [D.E. 401] 6 (citing [D.E. 374-3] 15–34, 56–57, 64–66). Dr. Hennet excluded the sample because of the combination of potential contamination, comparisons with other sample readings, and conflicting documents. *See id.* Dr. Hennet's testimony is based on sufficient data and is the product of reliable principles and methods. *See* Fed. R. Evid. 702.

The PLG disagrees with the data Dr. Hennet used and the conclusion of his methodology. *See* [D.E. 374] 10–12 (noting a laboratory report, PCE concentration changes at well TT-26, TCE plume model proximity, and high levels of DCE and VC in the sample at issue). These criticisms, however, concern the factual underpinnings of Dr. Hennet's methodology, and the court will not resolve contested factual issues at the admissibility stage. *See Sommerville*, 149 F.4th at 424; *Mountain Valley Pipeline, LLC v. 0.32 Acres of Land*, 127 F.4th 427, 435–36 (4th Cir. 2025); *Bresler*, 855 F.3d at 195. Thus, the court denies the PLG's motion [D.E. 373].[16]

E. Alexandros Spiliotopoulos

Dr. Spiliotopoulos opines that "(1) ATSDR lacked sufficient data to reconstruct historical concentrations of contaminants at the level of detail presented in its analyses; (2) ATSDR's

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[16] The PLG also moves to exclude Dr. Hennet's opinion as a discovery sanction. *See* [D.E. 374] 5–6 (citing Fed. R. Civ. P. 26(a)(2)(B); *United States v. 685.76 Acres of Land, More or Less in Bethel Township, County of N.C.*, No. 2:07-CV-2, 2008 WL 11429304, at *2 (E.D.N.C. Mar. 21, 2008) (unpublished) (granting a motion to compel expert reports pursuant to Federal Rules of Civil Procedure 26(a)(2)(B) and 37)). The PLG argues that Dr. Hennet's manhole fill opinion was not stated in his expert report. Previously, the PLG moved to exclude "all observations, opinions, measurements, experiments, notes, videos and photographs related to Dr. Remy Hennet's February 2025 site visit." [D.E. 349] 1; *see* [D.E. 348]. Magistrate Judge Jones granted in part the PLG's motion, but declined to exclude. *See* [D.E. 380] (filed May 08, 2025). Magistrate Judge Jones's order explained that "the measurements and materials stemming from the February Site Visit were disclosed to bolster [Dr. Hennet's] previous opinions regarding Contaminant volatilization at Camp Lejeune spiractors and water buffaloes." *Id.* at 7. The PLG did not appeal Magistrate Judge Jones's order under the local rules. *See* Local Civ. R. 72.4(a)(1) (appeals from a magistrate judge's order, of a nondispositive matter, must be filed within 14 days of service). Accordingly, the court denies the PLG's motion to exclude [D.E. 373].

Despite an unambiguous order from Judge Jones denying the PLG's request to file a supplemental Rule 702 motion, Text Order June 13, 2025, the PLG challenges—in its reply brief—Dr. Hennet using a 39% pumping rate and a TCE concentration of 582 µg/L under Rule 702. *See* [D.E. 423] 7–11; Fed. R. Evid. 702. The PLG's challenges aim at the factual underpinnings of Dr. Hennet's opinion, which go to weight not admissibility. *See Sommerville*, 149 F.4th at 424; *Bresler*, 855 F.3d at 195. The court denies the PLG's motion [D.E. 423] and denies as moot Defendant's motion to strike or file a sur-reply [D.E. 443].

groundwater models were constructed using model inputs that were both incorrect and unrepresentative of the real-world conditions at Camp Lejeune; and (3) ATSDR's groundwater models produced biased-high estimates of monthly contaminant concentrations." [D.E. 396] 2–3 (citing [D.E. 377-3] 3–4).

Dr. Spiliotopoulos holds a Doctorate in Civil and Environmental Engineering and has worked at S.S. Papadopulos & Associates, Inc., an environmental consulting firm, for over 20 years. *See* [D.E. 377-3] 10, 135; [D.E. 396] 1. In his career, he has performed groundwater modeling and evaluated the fate and transport of contaminants. *See* [D.E. 377-3] 134–39. He served as a technical lead and lead modeler that involved constructing and calibrating groundwater flow and fate and transport models. *See id.*

The PLG moves to exclude eight purported opinions of Dr. Spiliotopoulos. *See* [D.E. 376].

1. Uncertainty and Sensitivity Analyses

The PLG moves to exclude Dr. Spiliotopoulos's opinions about the parameter ranges used in Tarawa Terrace's uncertainty and Hadnot Point's sensitivity and uncertainty analysis. *See* [D.E. 376]. The PLG argues that Dr. Spiliotopoulos's opinions are unreliable. *See* [D.E. 377] 4–10; [D.E. 424] 2. His opinion criticizes the parameter ranges used for each analysis. *See* [D.E. 377-3] 57–64, 96–98. The ATSDR developed a groundwater and contaminant transport model for Tarawa Terrace and Hadnot Point/Holcomb Boulevard which have different calibrated parameter values and assumptions built into the respective models. *See id.* Dr. Spiliotopoulos's opinions are relevant because they concern the accuracy and reliability of the Tarawa Terrace Model. He is qualified to offer these opinions based on his experience evaluating the origin, distribution, fate, and transport of contaminants in the environment, as well as his familiarity with model programming. *See id.* at 10, 135.

When evaluating a model, Dr. Spiliotopoulos compares the parameter ranges and values used by the ATSDR against site data available. *See id.* at 17–18, 54, 59–64 (citing Nicasio Sepulveda & John E. Doherty, *Uncertainty Analysis of a Groundwater Flow Model in East-Central Florida Groundwater* 464–74 (2015), for the proposition that it is important for a model to "replicate observed system behavior"); *id.* (citing Mary Hill & Claire Tiedeman, *Effective Groundwater Model Calibration with Analysis of Data, Sensitivities, Predictions, and Uncertainty* 12 (2007), for the proposition that an accurate groundwater reconstruction model has results close to observed data); [D.E. 396] 16 (stating Dr. Spiliotopoulos's opinions "critiqued ATSDR's failure to match site-specific conditions."). For potential bias, Dr. Spiliotopoulos compared the Models' outputs to the uncertainty band generated from an uncertainty analysis. *See* [D.E. 377-3] 17, 59 (citing John Doherty, *Calibration and Uncertainty Analysis for Complex Environmental Models* 52 (2015)).

Dr. Spiliotopoulos opines that the parameters used are narrow and biased. *See id.* at 47. He selected the retardation factor to support his opinion.[17] *See id.* at 58. From the ATSDR's uncertainty analysis and the Model's calibrated values, Dr. Spiliotopoulos analyzed the retardation factor range and the contaminant distribution coefficient (K_d) subcomponent. *See id.* at 58–61. Then, Dr. Spiliotopoulos calculated a site-specific retardation factor[18] of 4.3. *See id.* at 61. Dr. Spiliotopoulos also used that site-specific retardation factor in the Tarawa Terrace Model. *See id.* (Figure 14). Finally, Dr. Spiliotopoulos compared the site-specific data against the retardation factor analysis from the Model. *See id.* at 61–63. Based on this comparison analysis, Dr. Spiliotopoulos concluded that the parameter ranges used were narrow because the site-specific

[17] The retardation factor relates to how easily a contaminant will migrate in the aquifer; as the retardation factor increases, the contaminant migrates slower through the aquifer. *See id.* at 58.

[18] The retardation rate used site data collected from Tarawa Terrace. *See id.* at 37–38, 48 (detailing site-specific data, modifications, and method to arrive at the site-specific retardation factor).

data was, or was on average, outside the range of values the ATSDR considered. *See id.* at 58–64.

To show potential bias, Dr. Spiliotopoulos deconstructed the ATSDR's uncertainty range and focused on the retardation factor range. *See id.* at 59. Then he compared the Tarawa Terrace Model with the retardation factor uncertainty range analysis. *See id.* at 60 (Figure 13). Dr. Spiliotopoulos opined that this comparison indicated "bias, as the calibrated model should be generally in the middle of the uncertainty range." *Id.* at 59 (referencing Doherty, *supra*, at 52). The PLG does not challenge his deconstruction analysis of the ATSDR's data. *See generally* [D.E. 377]. Dr. Spiliotopoulos's opinions about Tarawa Terrace's uncertainty analysis are the product of reliable principles and methods reliably applied to sufficient data. *See* Fed. R. Evid. 702.

Dr. Spiliotopoulos criticizes the parameter ranges used for the Hadnot Point sensitivity and uncertainty analysis. *See* [D.E. 377-3] 96–102. For the sensitivity analysis, the ATSDR created three scenarios that varied hydraulic, fate, and transport parameters. *See id.* at 96. For each parameter, the ATSDR selected two extremes of a parameter range and ran the Hadnot Point Model twice, using the minimum and maximum values. *See id.* Hadnot Point's uncertainty analysis focused on the uncertainty from the water supply well pumping schedules. *See id.* at 100.

Dr. Spiliotopoulos criticizes the ATSDR's sensitivity analysis for Hadnot Point because the ATSDR used the sensitivity analysis as a probabilistic analysis. *See id.* at 17–18, 93, 96. Based on his report, "ATSDR conducted a sensitivity analysis to evaluate the effect of variation of model input parameter values on model outputs. According to the ATSDR, '*the results from all sensitivity analyses were used to define a range of finished-water concentrations at the HPWTP.*'" *Id.* at 93.[19] Dr. Spiliotopoulos opines that the sensitivity analysis does not indicate potential Contaminant concentrations because minimum and maximum parameter values were outside the

[19] Dr. Spiliotopoulos opines that it is not correct to use Hadnot Point's sensitivity analysis for this purpose. *See id.* at 96–98.

range of values used for the Tarawa Terrace analysis. *See* [D.E. 396] 17; [D.E. 377-3] 98. Therefore, the Hadnot Point analysis was not representative of site conditions. *See* [D.E. 396] 17; [D.E. 377-3] 98.

Dr. Spiliotopoulos analyzed the calibrated Hadnot Point Model values against the parameter range used for its sensitivity analysis. *See* [D.E. 377-3] 96–98. He highlights the hydraulic conductivity values used. *See id.* For hydraulic conductivity, he explains that the calibrated value varied from 1 to 50 ft/d, while the minimum and maximum used for the sensitivity analysis was 0.1 and 500 ft/d, respectively. The Hadnot Point Model was based on the parameter ranges the ATSDR defined as reasonable for Tarawa Terrace. *See* [D.E. 396] 16–17. Dr. Spiliotopoulos opines that the hydraulic conductivity sensitivity values are outside the range that the ATSDR considered reasonable. *See id.*; [D.E. 377-3] 96–98. Thus, when the minimum and maximum hydraulic conductivity values are combined with parameter values that are 50% higher and lower than how the ATSDR calibrated the Model, Dr. Spiliotopoulos opines that concentration ranges calculated do not indicate "the potential variability of [influent water] contaminant concentrations." [D.E. 377-3] 97–98. Also, he explains that Tarawa Terrace's uncertainty analysis excluded realizations "with hydraulic conductivity values that would exceed an acceptable range of model calibration." *Id.* at 96. Dr. Spiliotopoulos highlights that the ATSDR did not apply this criterion to Hadnot Point. *See id.* The court finds that Dr. Spiliotopoulos's opinion about Hadnot Point's sensitivity analysis is based on sufficient data, the product of reliable principles and methods, and reflects a reliable application of those principles and methods to the data. *See* Fed. R. Evid. 702.

The PLG argues that Dr. Spiliotopoulos's opinions about Tarawa Terrace's uncertainty analysis and Hadnot Point's sensitivity analysis are contradictory. *See* [D.E. 377] 5–7. The court

disagrees. For Tarawa Terrace's uncertainty analysis, Dr. Spiliotopoulos criticized the uncertainty range used because it did not have realizations that used a retardation factor that was supported by site-specific data. *See* [D.E. 377-3] 58–64 (using a retardation factor calculated from recorded site-specific K_d values). In contrast, for Hadnot Point, he criticized the sensitivity analysis for using hydraulic conductivity values that were not supported by either site-specific data or the calibrated range the ATSDR considered appropriate. *See id.* at 96–98. These opinions are consistent when comparing the details of each model and analysis used.

For Hadnot Point's uncertainty analysis, Dr. Spiliotopoulos's criticism was based on highlighting that the uncertainty analysis focused on the historical pumping variability. *See id.* at 100–01; [D.E. 396] 18. Dr. Spiliotopoulos does not appear to criticize the pumping variability range used. *See* [D.E. 377-3] 100. Rather, he highlights how many parameters were considered and then opines that the analysis only partially addressed the Model's uncertainty. *See id.* at 100–01; [D.E. 396] 18. For potential bias, Dr. Spiliotopoulos compared the calibrated Model's output to the uncertainty band generated from Hadnot Point's uncertainty analysis. *See* [D.E. 377-3] 101 (citing Doherty, *supra*, at 52). Through his comparison, he opines "that the calibrated model fails to conform with this rule at two critical times: (a) in the early 1950s, when the model estimates the arrival of TCE at the pumping wells and, thus, the influent to the WTP, and (b) after 1972, when pumping well HP-651 was put in service." *Id.* at 100–01 (Figure 36). He explained that the calibrated model was at or above the upper bound of the uncertainty range, which resulted in a bias toward higher concentrations and an earlier arrival time. *See id.*

The PLG argues that Dr. Spiliotopoulos did not apply the same standards he used in his non-litigation work when criticizing Hadnot Point's uncertainty analysis. *See* [D.E. 377] 7–8 (referencing chromium 6 contamination plume modeling at Hanford, Washington) (citing [D.E.

377-3] 100–01)). His criticism of Hadnot Point's uncertainty analysis is that it only partially addresses the uncertainty because it focused on pumping variability. *See* [D.E. 377-3] 101.

In his deposition, Dr. Spiliotopoulos testified that his Hanford uncertainty analysis focused on the hydraulic conductivity parameter values. *See* [D.E. 377-2] 85:11–87:23. He appears to acknowledge that this approach would also be a limitation for his uncertainty analysis and, therefore, applies the same standard. The PLG's remaining arguments about the Hanford parameter range are largely irrelevant because Dr. Spiliotopoulos does not criticize the parameter range used in Hadnot Point's uncertainty analysis. *See* [D.E. 377] 8. Thus, the court denies the PLG's motion [D.E. 376].

2. Miscellaneous Statements and Quotations

The PLG argues that Dr. Spiliotopoulos offers his own opinion about "ATSDR's intent and purpose with respect to conducting its water modeling;" "[h]ow ATSDR's modeling results can or should be used by epidemiologists, doctors, or public health professionals;" and that the ATSDR's modeling approach was "cutting-edge" or still in the research stages. [D.E. 376] 1; *see* [D.E. 377] 2, 12–13. The court disagrees.

Dr. Spiliotopoulos does not offer his own opinion about any of these topics. *See* [D.E. 377-2] 154:12–25; [D.E. 377-3] 25; [D.E. 396] 6 (stating "Dr. Spiliotopoulos is not offering any opinion inferring the intent or purpose of ATSDR's studies"); *id.* at 9 ("Dr. Spiliotopoulos is not offering an independent opinion about cutting-edge techniques . . . ."); *id.* at 10 ("Dr. Spiliotopoulos does not opine whether or how a health professional should use ATSDR's modeling results."). Dr. Spiliotopoulos's method to evaluate the ATSDR Model includes considering a model's purpose and data available. *See* [D.E. 377-3] 15, 19; *see also* [D.E. 396] 5 (citing PLG expert opinion that it is important to consider a model's purpose when evaluating it). Dr.

Spiliotopoulos does not opine on ATSDR's intent and purpose. Rather, he considered ATSDR's statements as data for his methodology to evaluate the ATSDR Model. *See* [D.E. 377-2] 154:12–25. The court declines to preclude opinions an expert does not offer.

3. HP-634 concentration data

The PLG moves to exclude as unreliable Dr. Spiliotopoulos's opinions about TCE contamination at well HP-634. *See* [D.E. 376]; [D.E. 377] 14–16. Like Dr. Hennet, Dr. Spiliotopoulos opines that the sample collected on January 16, 1984, was erroneous. *See* [D.E. 377-3] 89. Dr. Spiliotopoulos's analysis follows Dr. Hennet's but adds that "well HP-634 is located upgradient of [the Contaminant] source locations and, therefore, contamination could not have reached that well when it was not operational." *Id.*

Qualified experts "may review scientific literature and other expert reports to form their opinions." *In re Davol, Inc./C.R. Bard, Inc., Polypropylene Hernia Mesh Prods. Liab. Litig.*, 546 F. Supp. 3d 666, 676 (S.D. Ohio 2021); *In re: E. I. Du Pont De Nemours & Co. C-8 Pers. Inj. Litig.*, 337 F. Supp. 3d 728, 743–74 (S.D. Ohio 2015). Here, Dr. Spiliotopoulos has the expertise to review Dr. Hennet's report to form his own opinion. Additionally, he has added to that analysis by noting the upgradient location of well HP-634. *See* [D.E. 377-3] 89. The PLG disagrees with Dr. Spiliotopoulos's choice of data and his conclusion. *See* [D.E. 377] 14–16 (citing rebuttal report [D.E. 377-6] 21–23). As discussed, these challenges go to weight, not admissibility. *See Sommerville*, 149 F.4th at 423. Defendant has shown by a preponderance of the evidence that Dr. Spiliotopoulos's testimony is admissible. *See* Fed. R. Evid. 702.

4. Contaminant losses during treatment

The PLG challenges Dr. Spiliotopoulos's opinion that "ATSDR ignored any contaminant losses that would occur during treatment." [D.E. 377] 13; *see* [D.E. 376]. Dr. Spiliotopoulos

opines that "treatment of the influent [water] to the treatment plant resulted in evaporative and other losses, reducing contaminant concentrations in the 'finished' water," [D.E. 377-3] 77–78, but does not offer an opinion about how much concentrations decreased. *See* [D.E. 396] 22.

Dr. Spiliotopoulos's opinion is relevant because it concerns contaminant concentrations in the water at Camp Lejeune. He is qualified to provide this opinion based on his experience. Dr. Spiliotopoulos bases his opinion on the ATSDR's report and Dr. Hennet's expert report. *See* [D.E. 377-3] 39–40. Dr. Spiliotopoulos's opinion is admissible. *See* Fed. R. Evid. 702. The court cautions, however, that he may not later opine about the amount of volatilization quantitatively or qualitatively.

5. PCE source release start date at ABC One-Hour Cleaners

The PLG moves to preclude Dr. Spiliotopoulos from offering his opinion about the ABC One-Hour Cleaners source release start date. *See* [D.E. 376]; *see also* [D.E. 377] 13–14 & n.4. Dr. Spiliotopoulos opines on the source release start date based on Dr. Bingham's report and Dr. Spiliotopoulos's review of Dr. Bingham's cited documents. *See* [D.E. 396] 22.

Dr. Spiliotopoulos does not sufficiently explain his qualifications, credentials, or methodology to interpret the historical record of ABC One-Hour Cleaners's start date. *See generally* [D.E. 377-3]. Dr. Spiliotopoulos may incorporate Dr. Bingham's opinion into his own when opining on how an earlier contamination start date impacted the Model. *See* Fed. R. Evid. 703; [D.E. 396] 23 (citing [D.E. 377-3] 45, 48–50). Dr. Spiliotopoulos cannot, however, offer his own opinion on ABC One Hour Cleaners's start date.

6. Section 3.3 of Dr. Spiliotopoulos's Report

The PLG moves to exclude Section 3.3 of Dr. Spiliotopoulos's report, titled "Timeline and Scientific Discourse on ATSDR's Camp Lejeune Water Modeling." [D.E. 376] 1. Section 3.3

details summaries and quotations from, among other sources, the ATSDR, the Government Accountability Office, the Navy, the NRC, and other experts. *See* [D.E. 377-3] 25–33.

"The distinction between inadmissible narration of . . . documents and admissible expert testimony is the expert's actual reliance on the . . . documents in forming his expert opinions." *In re Davol,* 546 F. Supp. at 679; *In re C. R. Bard, Inc.*, 2018 WL 4220602, at *4 (S.D.W. Va. Sept. 5, 2018) (unpublished) (excluding narrative when the expert did not explain how the expert actually relied on the documents to form the opinion). Dr. Spiliotopoulos's methodology to evaluate whether a model is properly calibrated includes considering the model's purpose. *See* [D.E. 377-2] 98:25–99:7; [D.E. 377-3] 19. In his report, Dr. Spiliotopoulos examines some of these documents to discuss how they support his opinions. *See* [D.E. 377-3] 40–41, 45, 55, 77, 79, 87; [D.E. 396] 7. Defendant has shown that Dr. Spiliotopoulos actually relies on statements made in Section 3.3 to form his opinions. Accordingly, the court declines to exclude Section 3.3 from Dr. Spiliotopoulos's report.

For these reasons, the court grants in part and denies in part the PLG's motion [D.E. 376].

F. Models and Model Testimony

Five of the PLG's Phase 1 experts—Mr. Maslia, Dr. Aral, Dr. Konikow, Mr. Davis, and Dr. Jones—opine explicitly on the ATSDR models. *See* [D.E. 368] 12; [D.E. 368-6] 18; [D.E. 369-2] 50; [D.E. 369-7] 14; [D.E. 369-10] 170; [D.E. 369-11] 7, 33–34; [D.E. 369-12] 20; [D.E. 369-13] 22. They discuss whether the Models can establish "concentration levels for the chemicals in [the] drinking (finished) water at Camp Lejeune from 1953 to 1987" to a reasonable degree of scientific certainty and whether the court can use those "levels" to establish individual exposure. [D.E. 329] 2. Defendant moves to exclude these opinions and preclude the Models' use for individual exposure determinations in this litigation. *See* [D.E. 367]. Specifically, Defendant

argues that the Models are not accurate enough to make quantitative determinations about an individual plaintiff's exposure. *See* [D.E. 368] 16; *cf. In re Camp Lejeune Water Litig.*, 736 F. Supp. 3d at 321 (finding "[i]ndividual exposure is essential to the CLJA's causation requirement").

Defendant's request for relief is significant and premature. The court set out three Phases for efficiently resolving certain global pretrial issues. This motion concerns Phase 1 (Water Contamination), where the parties must "establish the alleged chemicals in the [drinking] water at Camp Lejeune [during the relevant time] from 1953 to 1987." [D.E. 247] 2; *see* [D.E. 270]; Fed. R. Civ. P. 1; Fed. R. Civ. P. 16(c)(2)(L); Fed. R. Civ. P. 42(a)(3); [D.E. 329] 2. Phases 2 and 3, which concern causation (including individual exposure), have their own briefing schedules. *See* [D.E. 414]. Defendant asks the court to jump ahead and rule now that the PLG cannot use the ATSDR Models *at all* in an individual plaintiff's attempt to prove exposure. *See* [D.E. 367] 1. The court declines to do so at this stage.

Defendant also fails to distinguish between any cited PLG expert opinion in its supporting memorandum. *See* [D.E. 368] 12. For instance, Dr. Konikow opines that the Models are not so uncertain "as to preclude [their] use . . . for providing monthly mean concentrations for use by health professionals to estimate past exposure of residents on an 'as likely as not' or 'more likely than not' basis." [D.E. 369-11] 34. Conversely, Mr. Davis and Dr. Jones offer a much narrower opinion, that the Tarawa Terrace Model "remains a reliable tool for understanding the general trends of contaminant migration in the Tarawa Terrace region." [D.E. 369-12] 20. These opinions are not the same, but Defendant asks the court to consider them so.

Defendant presents one example of a PLG Phase 3 specific causation expert attempting to prove individual exposure by referencing simulated water contamination in the Models. *See* [D.E. 425] 4–5; [D.E. 425-1] 6 (describing individual exposure chart that sets out "cumulative monthly

total contamination" using "the ATSDR's . . . [Contaminant concentration] values for each applicable month"). That concern is inapt in Phase 1, where the Models bear without challenge on the disputed issue—"concentration levels for the chemicals in [the] drinking (finished) water at Camp Lejeune from 1953 to 1987." *See* [D.E. 329] 2.

The ATSDR Models have outsized potential significance to this litigation.[20] Indeed, the PLG represented at the court's March 25, 2025, Phase 1 status conference that it "will ask the [c]ourt at the appropriate time . . . to use [the ATSDR Models] as the baseline, as the cornerstone and foundation, to resolve these cases." [D.E. 343] 16:13–19. But the PLG has not yet posed this question to the court.

Dozens of individuals at the ATSDR and elsewhere worked for years—at the outset, because they were mandated to by CERCLA—to study the water at Camp Lejeune, generating thousands of pages of published work product. *See* 42 U.S.C. § 9604(i)(6); 2017 Public Health Assessment at i; *see, e.g.*, ATSDR Tarawa Terrace Summary; ATSDR Hadnot Point/Holcomb Boulevard Summary. The Models' fit will vary depending on the time frame that claimants seek to account for and the data available. *See Daubert*, 509 U.S. at 591; *see, e.g.*, *AquAlliance v. U.S. Bureau of Reclamation*, 287 F. Supp. 3d 969, 1022 (E.D. Cal. 2018) ("However sophisticated and well-designed a model is, its product carries the inherent uncertainty of every long-term prediction, uncertainty that tends to increase with the period of projection." (citation omitted)). At present, the court declines to find that the Models are irrelevant to determining individual exposure in all CLJA actions or that they suffice to determine exposure in any individual case.

The court as factfinder will soon determine the Models' outer bounds for this litigation.

[20] The court has resolved numerous discovery disputes concerning the Models themselves and personnel who worked on them. *See, e.g.*, [D.E. 380] (order resolving motion to strike certain expert's opinions critiquing ATSDR Models); [D.E. 158] (order granting motion to compel production of ATSDR Model files in part).

After considering evidence presented by the parties at the appropriate time, there may be Contaminant levels estimated by the Models that are presumptively unreliable, some that are sufficiently reliable, and some in between. This motion, however, is not the proper vehicle for those determinations. *See* Fed. R. Evid. 702. Thus, the court denies without prejudice Defendant's motion [D.E. 367] and denies as moot the PLG's motion to file a sur-reply [D.E. 428].[21]

The court is aware of the PLG's motion to reserve admissibility determinations and expedite Track 1 bellwether trials [D.E. 721] and Defendant's response [D.E. 733]. When the court resolves that dispute, the court will address the need for further proceedings in Phase 1.

IV. Conclusion

In sum, the court DENIES several of the parties' Rule 702 motions [D.E. 356, 358, 360, 373]. The court DENIES WITHOUT PREJUDICE Defendant's Rule 702 motion [D.E. 367] and DENIES AS MOOT the PLG's motion to file a sur-reply [D.E. 428]. The court GRANTS IN PART and DENIES IN PART the PLG's Rule 702 motion [D.E. 376]. The court DENIES the PLG's motion to file a supplemental Rule 702 motion [D.E. 423] and DENIES AS MOOT Defendant's motion to strike or file a sur-reply [D.E. 443].

[21] Courts have denied Rule 702 motions without prejudice in similar contexts. *See, e.g.*, *Purdue Pharma L.P. v. Amneal Pharms., LLC*, No. 151152, 2018 WL 11169583, at *2 (D. Del. July 6, 2018) (unpublished) (denying Rule 702 motion without prejudice where court could not "determine whether [expert's] approach involves scientifically-unimportant quibbles or genuine issues without hearing from him . . . at trial."); *Casey v. Coventry Health Care of Kansas, Inc.*, No. 08-201, 2010 WL 4226391, at *5 (W.D. Mo. Oct. 21, 2010) (unpublished) (denying Rule 702 motion without prejudice where court was holding bench trial and "reliability would be best decided after hearing [expert's] testimony in full."); *Furman v. AETC II Privatized Hous.*, LLC, No. 5-20-CV-1138, 2023 WL 11916815, at *1 (W.D. Tex. Oct. 13, 2023) (unpublished) (denying Rule 702 motion without prejudice where movant did not "take issue" with expert's qualifications and challenge to "sampling methodology" was better raised in a motion in limine or during cross-examination); *Heritage Handoff Holdings, LLC v. Fontanella*, No. CV 16-691, 2018 WL 11513421, at *1–2 (D. Del. Aug. 10, 2018) (unpublished).

SO ORDERED. This 12th day of December, 2025.

RICHARD E. MYERS II
Chief United States District Judge

TERRENCE W. BOYLE
United States District Judge

LOUISE W. FLANAGAN
United States District Judge

JAMES C. DEVER III
United States District Judge