

UNITED STATES DISTRICT COURT  
DISTRICT OF NEW HAMPSHIRE

Sierra Club, Inc. and Conservation  
Law Foundation, Inc.

v.

Civil No. 19-cv-216-JL  
Opinion No. 2021 DNH 189P

Granite Shore Power LLC; GSP Merrimack  
LLC; and Public Service Company of New  
Hampshire d/b/a Eversource Energy

**MEMORANDUM ORDER**

This case concerns the environmental impact of Merrimack Station, a steam-electric power plant located on the banks of the Merrimack River. When operating, Merrimack Station draws water from the river in order to cool and condense the steam it produces, and then releases heated water back into the river. In 1992, the Environmental Protection Agency issued a National Pollutant Discharge Elimination System permit (“the Permit”) for Merrimack Station, which continues to regulate the plant’s discharges into the river. The defendants, Granite Shore Power LLC and GSP Merrimack LLC, assumed ownership of the plant and inherited the Permit in January 2018. The following year, the plaintiffs, Sierra Club, Inc. and Conservation Law Foundation, Inc., filed this suit against the defendants, alleging multiple, ongoing violations of the Permit.

Now, the defendants move for summary judgment on Counts 1-3 of the complaint. In Counts 1-3, the plaintiffs claim that the defendants violated the Permit’s three-part thermal discharge limitation provision, which prohibits Merrimack Station’s “combined thermal plumes” from “block[ing] the zone of fish passage,” “chang[ing] the balanced indigenous population,” and having more than “minimal contact with the surrounding shorelines.” The defendants argue

that the plaintiffs have failed to provide any evidence supporting their allegations in Counts 1 and 2, and that the minimal contact requirement at issue in Count 3 is void for vagueness as applied to the defendants' actions.

The defendants also move for partial summary judgment on two portions of Count 4 of the complaint, which alleges violations of "applicable water quality standards." First, the defendants challenge the claim that they violated a New Hampshire statute governing waste and sewage disposal into the state's surface waters, arguing that the heated water Merrimack Station discharges is not waste or sewage and is thus not governed by the statute. Second, the defendants argue that the plaintiffs have not provided any evidence to support their allegation that the defendants violated a New Hampshire regulation prescribing minimum dissolved oxygen criteria for the state's Class B waters, including the Merrimack River.

The court has subject-matter jurisdiction under [28 U.S.C. § 1331](#) (federal question). The court denies the motion on Counts 1 and 2, finding that the plaintiffs provided evidence establishing genuine disputes of material fact as to the meaning of the relevant Permit requirements and/or the defendants' compliance with them. Next, the court denies summary judgment on Count 3 because the defendants' void-for-vagueness argument is misplaced. The defendants' argument--that the Permit's minimal contact requirement is impermissibly vague as applied to them because they lacked fair notice of the plaintiffs' expert's definition of the requirement's prohibitions--is baseless under the void-for-vagueness doctrine. Finally, the court grants the motion for partial summary judgment on Count 4, after finding that the waste and sewage statute does not regulate the plant's discharge of heated water, and the plaintiffs failed to provide evidence to support their allegations of violations of the state's numeric dissolved oxygen criteria.

**I. Applicable legal standard**

“The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” [Fed. R. Civ. P. 56\(a\)](#). “A genuine issue is one that could be resolved in favor of either party, and a material fact is one that has the potential of affecting the outcome of the case.” [Vera v. McHugh](#), 622 F.3d 17, 26 (1st Cir. 2010) (internal quotation omitted).

At the summary judgment stage, the moving party must “assert the absence of a genuine issue of material fact and then support that assertion by affidavits, admissions, or other materials of evidentiary quality.” [Mulvihill v. Top-Flite Golf Co.](#), 335 F.3d 15, 19 (1st Cir. 2003) (citing [Quintero de Quintero v. Aponte-Roque](#), 974 F.2d 226, 227-28 (1st Cir. 1992)). Where, as here, the nonmovants (the plaintiffs) bear the ultimate burden of proof, once the movant has made the requisite showing, the nonmovants can no longer “rely on an absence of competent evidence, but must affirmatively point to specific facts that demonstrate the existence of an authentic dispute.” [Torres-Martínez v. P.R. Dep’t of Corr.](#), 485 F.3d 19, 22 (1st Cir. 2007). The “party opposing summary judgment must ‘present definite, competent evidence to rebut the motion.’” [Maldonado-Denis v. Castillo-Rodríguez](#), 23 F.3d 576, 581 (1st Cir. 1994) (quoting [Mesnick v. Gen. Elec. Co.](#), 950 F.2d 816, 822 (1st Cir. 1991)). “Mere allegations, or conjecture unsupported in the record, are insufficient to raise a genuine issue of material fact.” [August v. Offices Unlimited, Inc.](#), 981 F.2d 576, 580 (1st Cir. 1992). In other words, if the nonmovant’s evidence is “merely colorable” or “not significantly probative, . . . summary judgment may be granted.” [Anderson v. Liberty Lobby, Inc.](#), 477 U.S. 242, 249-50 (1986) (internal citations omitted).

As it is obligated to do in the summary judgment context, the court “rehearse[s] the facts in the light most favorable to the nonmoving party (here, the plaintiff[s]), consistent with record

support,” and gives them “the benefit of all reasonable inferences that those facts will bear.” [Noviello v. City of Boston](#), 398 F.3d 76, 82 (1st Cir. 2005) (internal citation omitted).

## **II. Background**

Merrimack Station is a steam-electric power plant located in Bow, New Hampshire, on the banks of the Merrimack River. The plant has two electrical generating units; Unit 1 has a net output, or rating, of 108 megawatts, and Unit 2 has a rating of 330 megawatts.<sup>1</sup> It used to generate electricity continuously, but at some point between 2010 and 2014, the plant became a “peak producer,” operating periodically when electricity demands are elevated, including during the coldest and warmest times of year.<sup>2</sup> As a peak producer, the plant generates electricity upon receiving a “day ahead award” from ISO-New England, the organization that oversees New England’s electric power system. The day ahead award specifies the amount of electricity that each of the plant’s Units must generate during each hour of the following day.<sup>3</sup>

When in operation, Merrimack Station draws water from the Merrimack River, which it uses to cool and condense the steam it produces while generating electricity. The plant then discharges heated water back into the Hooksett Pool—a roughly 5.8-mile long section of the river where Merrimack Station sits.<sup>4</sup> The Hooksett Pool is bordered by the Garvin Falls Dam in the north and the Hooksett Dam downriver, in the south.<sup>5</sup> The water traveling out of the

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<sup>1</sup> See doc. no. 68-2 at 20:2-21:19.

<sup>2</sup> See doc. no. 68-4 at 7; doc. no. 68-9 at 16.

<sup>3</sup> See doc. no. 68-2 at 32:1-34:1.

<sup>4</sup> See doc. no. 68-4 at 7; doc. no. 69-9 at 4-5.

<sup>5</sup> Doc. no. 69-9 at 4.

discharge point is warmer and lighter than the ambient river water, and it mixes with the river water as it flows downstream towards the Hooksett Dam.<sup>6</sup> The discharged water can cause the Hooksett Pool's temperature to rise, which can, in turn, affect the fish population and ecosystem within the Pool.

The Clean Water Act grants the EPA the authority to issue NPDES permits to regulate the discharge of pollutants into the nation's water. See 33 U.S.C. § 1342. In 1992, the EPA issued an NPDES permit that regulates the plant's discharges into the river. The Permit remains in effect today and was transferred to the defendants in January 2018, when they assumed ownership of Merrimack Station.

In March 2019, the plaintiffs filed this suit against the defendants, alleging violations of conditions in the Permit relating to thermal discharge limitations and reporting requirements, and seeking injunctive and declaratory relief as well as penalties. In Counts 1-3 of the complaint, the plaintiffs allege ongoing violations of each of the three elements of Part I.A.1.g of the Permit. Part I.A.1.g sets forth the following narrative thermal discharge limitations: "The combined thermal plumes for [Merrimack] [S]tation shall (a) not block the zone of fish passage, (b) not change the balanced indigenous population of the receiving water, and (c) have minimal contact with the surrounding shorelines." In Count 4, the plaintiffs allege ongoing violations of Part I.A.1.b of the Permit, which provides, "[t]he discharges shall not jeopardize any Class B use of the Merrimack River and shall not violate applicable water quality standards." Finally, in Count 5 of the complaint, the plaintiffs allege ongoing violations by the defendants of the annual reporting requirements in Part 1.A.13 of the 1992 Permit: "All biological and hydrological

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<sup>6</sup> See doc. no. 68-4 at 7-8.

monitoring program data shall be submitted to the NHDES, NHF&GD, USG&WS, and the Regional Administrator by December 31 of the following year.”

The defendants move for summary judgment on Count 1-3 and partial summary judgment on Count 4. Many of the defendants’ summary judgment arguments turn on the opinions of the plaintiffs’ experts: Matthew Hodge, a Professional Engineer with expertise in “water-resources engineering,”<sup>7</sup> and Adrian Jordaan, PhD, an Associate Professor of Fish Population Ecology and Conservation at the University of Massachusetts Amherst.<sup>8</sup> The experts’ opinions are detailed in part and in brief below.

#### **A. Expert opinion of Matthew Hodge**

In his report, Hodge opined on Merrimack Station’s compliance with the portion of Part I A.1.g that prohibits the plant’s “[c]ombined thermal plumes” from having more than “minimal contact with the surrounding shorelines.” Hodge acknowledged that the Permit does not define “thermal plume” or provide quantitative parameters for the minimal contact requirement. Thus, Hodge developed the concept of an extensive thermal plume, which he considered to be the “opposite” of “minimal contact with the surrounding shorelines,” and consequently a violation of the Permit requirement.<sup>9</sup> Hodge also explained that his analysis was “conservative,” in that, “by only identifying extensive thermal plumes,” he uncovered Permit violations about which he was “certain,” and he did not necessarily identify “all thermal plumes that may have more than ‘minimal’ contact with the surrounding shorelines.”<sup>10</sup>

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<sup>7</sup> Doc. no. 68-9 at 4.

<sup>8</sup> Doc. no. 68-4 at 3.

<sup>9</sup> Doc. no. 68-9 at 6.

<sup>10</sup> Doc. no. 68-9 at 5-6; see also doc. no. 68-11 at 171:6-172:14.

Hodge defined an extensive thermal plume by its temperature and size. First, the plume is at least 1° C (1.8° F) warmer than the ambient river water, which is measured at a monitoring station approximately one mile upstream from the plant’s point of discharge.<sup>11</sup> Second, the plume “contacts the shoreline from bank to bank” at least for the distance between two monitoring stations located .4 miles and 1.6 miles downstream from the discharge point.<sup>12</sup> Third, the plume “extends below the surface to the bottom of the river” at a monitoring station that is more than 2.5 miles downstream from the discharge point, at the Hooksett Dam.<sup>13</sup>

In order to determine the presence of an extensive thermal plume in 2018 and afterwards, the relevant period for this litigation, Hodge needed to determine the water temperature at various locations in the Hooksett Pool during that period. First, he used data on water temperature (gathered in large part from extensive temperature monitoring completed in 2009) and on river flow to develop a linear regression model that can predict the downstream river temperatures during “periods when there is no temperature monitoring” at those locations.<sup>14</sup> Then, Hodge applied the linear regression model to predict downstream river temperatures during seven of the thirteen periods when Merrimack Station was operating in the summer and fall of 2018 and 2019. Hodge determined that these seven periods lent themselves to such evaluation based on the length and nature of the plant’s operation and the reliability of the

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<sup>11</sup> Doc. no. 68-9 at 5.

<sup>12</sup> [Id.](#)

<sup>13</sup> [Id.](#)

<sup>14</sup> [Id.](#) at 32.

surrounding data.<sup>15</sup> Of these seven periods, Hodge identified four periods during which the plant’s discharge created an extensive thermal plume: August 27-30, 2018; July 18-22, 2019; August 27-30, 2019; and September 2-4, 2019.<sup>16</sup>

By observing the water temperature data from 2009, Hodge also found that “[t]he thermal plume is responsive to river flow.”<sup>17</sup> Hodge observed that “under low-flow conditions the thermal plume from the discharge [was] extensive,” but when the flow was faster, the size and temperature of the plumes was more limited.<sup>18</sup> Consistent with this, Hodge calculated that, if Unit 2 (the higher-wattage Unit) operates four or more times from June to October, the driest months of the year when “low-flow conditions” (defined as less than 2,000 cubic feet per second) are most likely, there is a 90% chance that an extensive thermal plume will develop and the minimal contact condition will be violated that year.<sup>19</sup> Extrapolating from the fact that Unit 2 operated at least four times during those months in 2016, 2018, and 2019, Hodge projected that “it is very likely that Merrimack Station will cause extensive thermal plumes and violate the minimal contact condition . . . in 2020 and future years.”<sup>20</sup>

#### **B. Expert opinion of Adrian Jordaan, Ph.D.**

Dr. Jordaan opined, in part, on the defendants’ compliance with two portions of Part I.A.1.g of the Permit, which provide that Merrimack Station’s combined thermal plume shall not

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<sup>15</sup> See [id.](#)

<sup>16</sup> See [id.](#) at 38-40.

<sup>17</sup> [Id.](#) at 23.

<sup>18</sup> [Id.](#) at 23-24.

<sup>19</sup> See [id.](#) at 4, 12.

<sup>20</sup> [Id.](#) at 6.



block the zone of fish passage or change the balanced indigenous population. Dr. Jordaan began his report by explaining that temperature is a “master variable” that influences the biological processes of fish and their interactions with their surroundings, thereby affecting their growth and survival.<sup>21</sup> For example, as water temperatures rise, the metabolic rates of fish also increase, and the fish require more food to meet their energy needs. Further, while fish can adjust to varying temperatures, they have a “zone of tolerance,” beyond which they cannot survive. Accordingly, fish “tend to be found within a range of temperatures that avoid both lower and upper thermal limits, a sweet spot where growth is maximized and the species are most likely to persist . . . .”<sup>22</sup> Dr. Jordaan added that fish populations are not just affected by absolute temperatures, but also by the speed of temperature variations in water, as some fish are more capable of coping with quicker fluctuations than others.<sup>23</sup>

Dr. Jordaan developed four case studies in his report. He used Hodge’s temperature calculations from 2018 and 2019, as well as other available and relevant data, to map the maximum temperatures “experienced by every fish within the downstream section of the Hooksett Pool” during four time periods: June 28 to July 8, 2018; August 27 to September 7, 2018; July 18 to July 23, 2019; and August 27 to September 7, 2019.<sup>24</sup> Dr. Jordaan concluded that the lethal thermal limit for “key coldwater species,” including brook trout, juvenile alewives, adult alewives, and yellow perch, were exceeded at some point during each time period.<sup>25</sup> He

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<sup>21</sup> See doc. no. 68-4 at 5-7.

<sup>22</sup> Id. at 7.

<sup>23</sup> See id.

<sup>24</sup> See id. at 15.

<sup>25</sup> See id. at 6-9, 27.

also found that fish in the Hooksett Pool experienced “periodic but extreme temperature spikes” which affect the survival capacity of certain fish species.<sup>26</sup> Dr. Jordaan went on to provide more specific opinions on the defendants’ compliance with Part I A.1.g of the Permit.

**i. Blockage of the zone of fish passage**

Dr. Jordaan concluded that Merrimack Station’s combined thermal plumes blocked the zone of fish passage during portions of 2018 and 2019. His discussion of this finding predominantly focused on alewives. According to Dr. Jordaan, juvenile alewives migrate from June through the fall each year, “in pulses that move down rivers to the ocean.”<sup>27</sup> Dr. Jordaan determined that the alewives’ zone of passage was blocked each time there was an extensive thermal plume, which, according to Hodge’s report, occurred four times during the alewives’ general migration period in the summer and fall of 2018 and 2019. Dr. Jordaan found that the alewives’ zone of passage was also “effectively limited during other periods by blocking access to surface waters, the primary nighttime habitat of alewives.”<sup>28</sup>

Dr. Jordaan described some mechanisms through which Merrimack Station’s thermal plumes block the zone of fish passage. For example, at times, the plumes directly affect survival by reaching the lethal thermal limit for alewives. At other times, the plumes reach avoidance temperatures, which “would suggest [the alewives’] avoidance of [the] plumes,” causing delays in their passage.<sup>29</sup> Such delays “have been demonstrated to reduce survival,” in part because of

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<sup>26</sup> [Id.](#) at 20.

<sup>27</sup> [Id.](#)

<sup>28</sup> [Id.](#) at 20-21.

<sup>29</sup> [Id.](#) at 20.

the effect of warm water on the metabolic rates of fish.<sup>30</sup> Specifically, the warmer temperatures can increase predators' consumption of food (alewives) and reduce the energy levels of alewives, making it more difficult for them to evade their predators.<sup>31</sup>

**ii. Balanced indigenous population**

Dr. Jordaan testified that he defines a balanced indigenous population as “the collection of fish that could be present in the [Hooksett] [P]ool and, more specifically, those that would be able to complete their life cycles and maintain populations over longer time periods in this region.”<sup>32</sup> To analyze the effects of Merrimack Station’s thermal plumes on the population in the Hooksett Pool, Dr. Jordaan observed fish population data gathered periodically by the New Hampshire Department of Fish and Game, as well as a number of long-term Hooksett Pool population surveys summarized in a 2011 paper by Normandeau Associates, Inc., environmental consultants hired by the plant to assist with Permit compliance.

Based on this data, Dr. Jordaan found that the Hooksett Pool has seen a “continued shift away from the native population in recent decades.”<sup>33</sup> For example, he noted that Normandeau’s 2011 study identified a greater “abundance of pumpkinseed and yellow perch,” fish that are native to New England, in “samples collected during the 1970s,” and a greater abundance of “non-native largemouth bass and bluegill,” fish introduced to New England in the 1800s, in samples collected in the 2000s.<sup>34</sup> Largemouth bass and bluegill “are particularly resistant to

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<sup>30</sup> [Id.](#)

<sup>31</sup> [See id.](#)

<sup>32</sup> Doc. no. [68-3](#) at 122:11-16.

<sup>33</sup> Doc. no. [68-4](#) at 9-10.

<sup>34</sup> [Id.](#) at 9.

landscape level impairment.”<sup>35</sup> Dr. Jordaan further opined that the Pool is home to “low species diversity” when compared with the Merrimack River at large, and “warm-water fish . . . are the suite of fish present in the [P]ool in the highest numbers in all years of sampling.”<sup>36</sup> Dr. Jordaan determined, based on these and other observations, that “the fish community present in Hooksett Pool . . . [is] not representative of a balanced indigenous population.”<sup>37</sup>

Dr. Jordaan did not have the benefit of fish population studies from 2018 and beyond to inform his opinion of the defendants’ compliance with this Permit requirement. But he opined that Merrimack Station’s discharges cause temperature increases that “harm the native fish and shellfish population, shifting it towards warmer water species that are tolerant of thermal pollution.”<sup>38</sup> He pointed to his case studies to assert that the plant’s operations in 2018 and 2019 put fish “at risk of experiencing thermal conditions exceeding their thermal limits.”<sup>39</sup> Dr. Jordaan also noted that, since Merrimack Station is a peak producer, the “thermal plumes are most likely during the summer when the conditions in the [P]ool are already warm,” thereby exacerbating the plumes’ thermal impact.<sup>40</sup> He added that the Hooksett Pool experiences rapid “swings” or “fluctuations” in thermal conditions due to the plant’s discharges, which “can lead to heat shock and cold shock in certain species at times” and “affect[] fish negatively.”<sup>41</sup> Further,

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<sup>35</sup> [Id.](#)

<sup>36</sup> [Id.](#) at 8, 22.

<sup>37</sup> [Id.](#) at 28.

<sup>38</sup> [Id.](#)

<sup>39</sup> [Id.](#) at 23.

<sup>40</sup> [Id.](#)

<sup>41</sup> [Id.](#)

“the thermal plume impacts are not localized, and will have consequences for all species regardless of their positions in the water [Pool].”<sup>42</sup>

### **III. Analysis**

#### **A. Blocking the zone of fish passage (Count 1)**

The defendants move for summary judgment on the claim that the defendants’ operation of Merrimack Station has caused and continues to cause combined thermal plumes that block the zone of fish passage. The defendants assert that the plaintiffs fail to provide any evidence supporting this claim, aside from their expert’s speculation.

Dr. Jordaan opined, in relevant part, that the plant’s plumes blocked the zone of fish passage for migrating alewives each time the plumes were extensive, as identified by Hodge, and “effectively limited” the zone when the plumes blocked access to “surface waters, the primary nighttime habitat of alewives.”<sup>43</sup> According to Dr. Jordaan, the plumes blocked the zone of fish passage not just when their temperature exceeded the alewives’ lethal thermal limit, but also when they reached avoidance levels, forcing the alewives to swim around the plumes. In the latter scenario, the delays in passage could be accompanied by greater predation threats, which would diminish the alewives’ chance of survival.

The defendants correctly point out that Dr. Jordaan does not provide evidence or data showing that fish were, in fact, migrating when the extensive thermal plumes were purportedly present, nor does he provide data on predation rates or predators’ interactions with migrating fish during these time periods. The defendants contend that this data is necessary, because without it,

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<sup>42</sup> [Id.](#)

<sup>43</sup> [Id.](#) at 20-21.

Dr. Jordaan is merely speculating that the thermal plumes blocked alewives or other fish from migrating. The plaintiffs argue, on the other hand, that the defendants' argument rests on a faulty interpretation of the Permit. The plaintiffs assert that the Permit prohibits blockage of the zone through which fish migrate, and not blockage of the migrating fish themselves. According to the plaintiffs, Dr. Jordaan provides sufficient evidence of zone blockage to preclude summary judgment on this count.

Resolution of this dispute turns on the meaning of this portion of the Permit. NPDES permits are interpreted as contracts. See [Piney Run Pres. Ass'n v. Cty. Comm'rs of Carroll Cty.](#), 268 F.3d 255, 269 (4th Cir. 2001) (citing cases in which courts applied the principles of contract interpretation to NPDES permits). Core contract interpretation principles provide that "contracts containing unambiguous language must be construed according to their plain and natural meaning." [Smart v. Gillette Co. Long-Term Disability Plan](#), 70 F.3d 173, 178 (1st Cir. 1995). In interpreting the plain language of a contract, "[w]here possible, words should be given their natural meaning, consistent with the tenor of contractual terms." [Fashion House, Inc. v. K mart Corp.](#), 892 F.2d 1076, 1084 (1st Cir. 1989) (internal citation omitted). Further, "each term [of a contract] is to be given meaning where possible . . . ." [Gillentine v. McKeand](#), 426 F.2d 717, 722 (1st Cir. 1970). If ambiguities remain after analyzing the contract's plain language, "the ultimate resolution of [the meaning] typically will turn on the parties' intent," which may require analysis of extrinsic evidence. [Smart](#), 70 F.3d at 178.

The court's analysis begins and ends with the plain meaning of this Permit requirement. The defendants' interpretation, and thus their argument, falls short because it does not give effect to the term "zone" within the Permit. By arguing that the plaintiffs must provide direct evidence of fish blockage to rebut the motion for summary judgment on this claim, the defendants suggest

that the Permit prohibits the thermal plumes from obstructing migrating fish. The Permit, in fact, provides that the thermal plumes shall “not block the zone of fish passage.” The Oxford English Dictionary lists several definitions for the word zone, which confirm that the term refers to a location, region, or area. The definitions include “any region extending around the earth and comprised between definite limits”; “[a] region or trace of the world”; and “[a] definite region or area of the earth, or of any place or space, distinguished from adjacent regions by some special quality or condition.”

Accordingly, the Permit seeks to bar Merrimack Station’s thermal plumes from encroaching upon the region or area through which fish passage occurs. While Dr. Jordaan does not provide direct evidence that the plant’s thermal plumes blocked fish from migrating through the Pool, he does provide evidence from which the court can reasonably infer that, each time that an extensive thermal plume was present, it blocked the area through which the fish pass by raising the temperature of a considerable portion of the Hooksett Pool, sometimes including the surface water, where the alewives prefer to reside at night. Further, according to Hodge, extensive thermal plumes were present in the summer and fall of 2018 and 2019, the time of year in which alewives migrate downstream. Thus, contrary to the defendants’ argument, Dr. Jordaan opinion is not merely conjectural. Rather, he provides “specific facts that demonstrate the existence of an authentic dispute” as to whether the plant’s thermal plumes blocked the zone of fish passage, thereby precluding summary judgment on this Count. [Torres-Martínez, 485 F.3d at 22.](#)

The defendants’ remaining summary judgment arguments on this claim are unavailing largely because they begin with a misstatement of Dr. Jordaan’s opinion. The defendants suggest that Dr. Jordaan opined that “blockage occurs if any area of the [r]iver is unsuitable” to

fish passage.<sup>44</sup> The defendants then point to evidence that contradicts this notion, including the EPA’s own findings that there are periods when the water underneath or around the plant’s thermal plumes provides “adequate” or “suitable” conditions for fish passage. Specifically, in a 2020 report, the EPA stated that “certain anadromous species, such as American shad” are “likely” to have an “adequate zone of passage . . . beneath the surface-oriented plume and on the eastern side of the [Merrimack] [R]iver” during the spring, due to a combination of “low ambient temperatures and higher river flows[.]”<sup>45</sup> In the same report, the EPA noted that “under current operations, the thermal plume is unlikely to impact juvenile alewives because juveniles can avoid the plume and will not be excluded from potentially suitable habitat for extended periods of time.”<sup>46</sup>

The EPA’s statements do not render Dr. Jordaan’s theory meritless, as the defendants contend. Dr. Jordaan opinion, properly construed, is that, even when migrating fish can avoid the plant’s thermal plumes, the surrounding waters do not constitute a zone of fish passage because they present perils, including predators, that impair the chance of survival for migrating fish. By pointing to the EPA’s statements, the defendants highlight a material dispute of fact as to the defendants’ compliance with this Permit requirement—specifically, whether the waters surrounding Merrimack Station’s thermal plumes are adequate or suitable for the passage of migrating fish. This material dispute of fact precludes the grant of summary judgment to the defendants on this Count.

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<sup>44</sup> Doc. no. [68-1](#) at 25 (emphasis in original).

<sup>45</sup> Doc. no. [68-5](#) at 95.

<sup>46</sup> [Id.](#) at 61.



**B. Balanced indigenous population (Count 2)**

Next, the defendants move for summary judgment on the claim that the defendants' operation of Merrimack Station has caused, and continues to cause, a "change [in] the balanced indigenous population of the receiving water." As with Count 1, the defendants argue that the plaintiffs have not provided any evidence supporting this claim.

In support of their argument, the defendants identify a number of "shortcomings" in Dr. Jordaan's expert opinion, some of which overlook or misstate the evidence on the record and/or are not dispositive. The defendants' most salient critique is that Dr. Jordaan's opinion lacks any evidence that the fish population was different in 2018 and 2019 than in earlier time periods. The plaintiffs are correct that Dr. Jordaan based his opinion on fish population studies that predate the 2018-2019 period, and he lacks population studies from 2018 or afterwards, from which he can draw direct comparisons with the past.

Instead, Dr. Jordaan relied on historical studies to determine that the Hooksett Pool's population exhibited less diversity over time than the rest of the Merrimack River, as well as a higher prevalence of warm-water fish. Then, Dr. Jordaan explained that the Pool's increased and fluctuating temperatures in 2018 and 2019, as modeled by Hodge, perpetuate conditions that favor warm-water fish, instead of a balanced indigenous population.

While Dr. Jordaan's opinion requires the court to draw some inferences in order to connect the defendants' operation of Merrimack Station with a change in the balanced indigenous population, his opinion does provide "definite, competent evidence" supporting the proposition that the plant produced, and continues to produce, conditions that favor warm-water fish over a more balanced fish population in 2018 and beyond. [Maldonado-Denis](#), 23 F.3d at 581 (quoting [Mesnick](#), 950 F.2d at 822). On this record, the court concludes that a material dispute of fact

remains as to the defendants' compliance with this Permit requirement. Summary judgment on this Count is denied.

**C. Minimal contact with the shorelines (Count 3)**

The defendants also move for summary judgment on Count 3 of the complaint, in which the plaintiffs allege ongoing violations of the requirement that Merrimack Station's combined thermal plumes "have minimal contact with the surrounding shorelines." The parties agree that the Permit does not define the phrase "minimal contact." In light of this, Hodge, the plaintiffs' expert, developed and defined the concept of an extensive thermal plume, which he characterized as the "opposite of 'minimal contact with the surrounding shorelines,'" and thus a clear violation of the requirement. He then determined that the station created an extensive thermal plume four times during 2018 and 2019. In their summary judgment motion, the defendants argue that the minimal contact requirement is void for vagueness as applied to them, because they lacked notice of the Hodge's definition of an extensive thermal plume at the time that the purported violations took place.<sup>47</sup>

"It is a basic principle of due process that an enactment is void for vagueness if its prohibitions are not clearly defined." [Grayned v. City of Rockford, 408 U.S. 104, 108 \(1972\)](#). "[T]he void for vagueness doctrine addresses at least two connected but discrete due process concerns: first, that regulated parties should know what is required of them so they may act accordingly; second, precision and guidance are necessary so that those enforcing the law do not act in an arbitrary or discriminatory way." [F.C.C. v. Fox Television Stations, Inc., 567 U.S. 239, 253 \(2012\)](#) (internal citation omitted). Courts recognize that "words are rough-hewn tools";

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<sup>47</sup> On October 19, 2021, the court ordered further briefing on the precedent for this argument. The parties responded as ordered in November 2021.

thus, “some degree of inexactitude is acceptable in statutory language[,]” and “the fact that a statute requires some interpretation does not perforce render it unconstitutionally vague.” [URI Student Senate v. Town of Narragansett](#), 631 F.3d 1, 14 (1st Cir. 2011) (internal citations omitted). In the context of an as-applied challenge, as here, an enactment “may be void for vagueness . . . if in the circumstances it ‘fails to provide a person of ordinary intelligence fair notice of what is prohibited.’” [Draper v. Healey](#), 827 F.3d 1, 3-4 (1st Cir. 2016) (quoting [Fox Television Stations](#), 567 U.S. at 253).

The defendants’ void-for-vagueness argument misses the mark because, rather than arguing that they lacked fair notice of the conduct prohibited by the Permit’s minimal contact requirement (based on, for example, the language of the requirement), the defendants assert that they lacked fair notice of Hodge’s novel concept of an extensive thermal plume. The extensive thermal plume is a construct, however, that Hodge developed to measure and opine on the defendants’ compliance with the Permit’s narrative minimal contact requirement; it does not, as the defendants contend, supplant the requirement itself.<sup>48</sup> Thus, the defendants’ lack of notice of

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<sup>48</sup> The defendants repeatedly, and erroneously, equate Hodge’s concept of an extensive thermal plume with the minimal contact requirement itself. The defendants state, for example, that “[s]ummary judgment should be granted on Count 3 because [the defendants] did not have fair notice that Hodge’s ‘extensive thermal plume’--which he made up for this case--would determine violations of the ‘minimal contact’ provision in Part I.A.1.g of the Permit.” Doc. no. [68-1](#) at 19. The defendants also state that “it is clear that Defendants did not--and do not--have fair notice that Hodge’s ‘extensive thermal plume’ is the regulatory standard when neither the EPA nor the [NHDES] has provided any express guidance on the meaning of ‘minimal contact,’ much less of Hodge’s interpretation.” Doc. no. [78](#) at 7 (emphasis in original). Elsewhere, the defendants insist that the plaintiffs’ “newly-minted theory of liability under the ‘minimal contact’ provision”--the extensive thermal plume--“cannot be enforced in this case, and summary judgment should be entered.” Doc. no. [68-1](#) at 23. As discussed above, with this ruling and in this procedural posture, the court need not, and does not, embrace Hodge’s ‘extensive thermal plume’ as the standard set forth by the minimal contact requirement. Nor does the court make a finding at this time that the defendants violated the minimal contact requirement, based on Hodge’s report or otherwise.

Hodge's definition of an extensive thermal plume at the time of the purported violations does not trigger the due process concerns animating the void-for-vagueness doctrine.

The defendants' argument is best understood as a challenge to Hodge's conception of what constitutes a violation of the minimal contact requirement.<sup>49</sup> It follows that a material, factual dispute remains as to the meaning of the minimal contact requirement and whether Merrimack Station's thermal plumes exceed or exceeded this threshold. Accordingly, summary judgment is denied on this Count.

#### **D. New Hampshire Water Quality Standards (Count 4)**

Finally, the defendants move for partial summary judgment on two portions of Count 4, in which the plaintiffs allege ongoing violations of various "applicable water quality standards." First, the defendants contend that a state statute governing the discharge of waste and sewage into the state's surface waters is not applicable to Merrimack Station's activities. Second, they argue that the plaintiffs failed to provide any evidence to support their claim that the defendants violated, and continue to violate, the state's numeric dissolved oxygen content requirements. The court grants summary judgment to the defendants on both portions of Count 4.

##### **i. Waste and sewage disposal**

First, the defendants move for summary judgment on the plaintiffs' allegation that they violated a part of a New Hampshire statute entitled "Standards for Classification of Surface Waters of the State." The pertinent portion of the statute provides that "[t]here shall be no disposal of sewage or waste into said waters . . . [that is] inimical to aquatic life or to the

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<sup>49</sup> Along with their void-for-vagueness argument, the defendants dispute certain parameters that Hodge incorporated into his definition of an extensive thermal plume, as well as some aspects of his treatment of data. These critiques, which largely go to Hodge's methodology and the basis of his opinion, are not sufficiently developed to be resolved on summary judgment, and are better addressed in Daubert motions and/or at trial.

maintenance of aquatic life in said receiving waters.” [N.H. Rev. Stat. Ann. § 485-A:8\(II\)](#). The defendants contend that this statutory requirement does not apply to Merrimack Station’s activities because the heated water that the plant discharges into the Hooksett Pool is not “waste” or “sewage.” This dispute requires the court to interpret the meaning of these two words in the subject statute.

“When construing statutes[,]” New Hampshire courts “first examine the language used, and, where possible, [] ascribe the plain and ordinary meanings to words used.” [New Hampshire Resident Ltd. Partners of Lyme Timber Co. v. New Hampshire Dep’t of Revenue Admin.](#), 162 N.H. 98, 101 (2011) (internal citation omitted). “Additionally, [courts] interpret disputed language of a statute or regulation in the context of the overall statutory or regulatory scheme and not in isolation.” [Id.](#)

To begin, the statute uses the term “cooling water” just three sentences after (and in the same subsection as) the above-quoted waste and sewage provision. The statute provides that “[a]ny stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class.” [RSA § 485-A:8\(II\)](#) (emphasis added). The term “cooling water,” particularly when used in association with temperature increases in the receiving waters, necessarily includes water used as a cooling device in plant operation, and then released back into the water body at a higher temperature. Thus, the court finds that “cooling water” is the statute’s term for the thermal discharge that Merrimack Station releases into the Merrimack River.

Importantly, the term “cooling water” is not included in the waste and sewage provision of the statute. Nor is “cooling water” (or heat, heated water, thermal discharge, or something

similar) listed in the statute’s definitions of waste or sewage. The statute defines sewage as “water-carried waste products from buildings . . . together with such groundwater infiltration and surface water as may be present.” [RSA § 485-A:2](#). It defines waste as “industrial waste and other wastes.” [Id.](#) And it defines “other wastes” as “garbage, municipal refuse, decayed wood, sawdust, shavings, bark, lime, ashes, offal, oil, tar, chemicals and other substances other than sewage or industrial wastes, and any other substance harmful to human, animal, fish or aquatic life.” [Id.](#)

The court agrees with the defendants that, under the statutory canon that “the expression of one thing in a statute implies the exclusion of another,” the absence of any reference to “cooling water” in the waste and sewage provision, or the statute’s definitions of waste and sewage, signifies that the provision does not regulate this type of discharge. [State v. Etienne, 163 N.H. 57, 73 \(2011\)](#) (internal citation omitted). The plaintiffs dispute this interpretation by noting that the EPA previously analyzed the statutory language at issue here and concluded that waste includes “thermal effluent (i.e., wastewater containing waste heat).”<sup>50</sup> The plaintiffs’ argument is unavailing, as “extraneous sources . . . cannot be used to contradict the plain language of a piece of legislation.” [Bradley v. City of Manchester, 141 N.H. 329, 336 \(1996\)](#) (citing [Appeal of Hickey, 139 N.H. 586, 587 \(1995\)](#)). Since the waste and sewage portion of the statute does not regulate the type of discharge that Merrimack Station disposes of in the river, it is not applicable to the plant, and the defendants are entitled to judgment as a matter of law on this portion of Count 4.

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<sup>50</sup> Doc. no. [69-1](#) at 30 (quoting doc. no. [69-9](#) at 210 n.60).

**ii. Dissolved oxygen content**

Finally, the defendants seek summary judgment on the plaintiffs' claim that they violated, and continue to violate, New Hampshire's numeric dissolved oxygen criteria. Under New Hampshire regulations, Class B waters, like the Merrimack River, must "have a dissolved oxygen content of [a]t least 75% of saturation . . . based on a daily average[] and an instantaneous minimum dissolved oxygen concentration of at least 5 mg/L." [N.H. Code Admin. R. Env-Wq § 1703.07\(b\)](#).

The defendants argue that the plaintiffs fail to provide any evidence or data to support the claim that they violated this requirement. In response, the plaintiffs direct the court's attention to a few pieces of evidence. The plaintiffs point to Dr. Jordaan's expert report, in which he notes that "warm water holds less dissolved oxygen" than cold water,<sup>51</sup> as well as the EPA's finding that "[d]issolved oxygen . . . studies revealed low [dissolved oxygen] conditions immediately above Hooksett Dam," which can be attributed, at least in part, to Merrimack Station's plumes.<sup>52</sup> These statements are not probative of the defendants' compliance with the dissolved oxygen criteria, as they do not demonstrate the quantity of dissolved oxygen in the Class B waters surrounding Merrimack Station.

Finally, the plaintiffs cite the defendants' own monitoring data, which records the dissolved oxygen content of the water exiting the plant's discharge canal on the days that Merrimack Station operated in 2018. According to this data, the discharged water had dissolved oxygen concentrations below the 5 mg/L requirement on three occasions in August and

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<sup>51</sup> [Id.](#) at 31 (quoting doc. no. [68-4](#) at 6 n.2).

<sup>52</sup> [Id.](#) (quoting doc. no. [69-9](#) at 153).

September 2018.<sup>53</sup> Again, this data is not probative of the defendants' compliance with New Hampshire's dissolved oxygen criteria, as the quality of the water discharged from the plant is not equivalent to the quality of the river water, which is the subject of the regulation. Thus, the plaintiffs provided evidence that is "not significantly probative," [Anderson](#), 477 U.S. at 249, and they failed to "point to specific facts that demonstrate the existence of an authentic dispute" with respect to the defendants' compliance with the state's dissolved oxygen criteria. [Torres-Martínez](#), 485 F.3d at 22. The defendants' motion for summary judgment on this portion of Count 4 is granted.

## II. Conclusion

For the foregoing reasons, the defendants' motion for summary judgment<sup>54</sup> as to Counts 1-3 is DENIED, and their motion for partial summary judgment as to Count 4 is GRANTED.

**SO ORDERED.**

  
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Joseph N. Laplante  
United States District Judge

Dated: December 30, 2021

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<sup>53</sup> See doc. no. [69-28](#) at 6-7.

<sup>54</sup> Doc. no. [68](#).