

**STATE OF CONNECTICUT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
TO THE COMMISSIONER:**

PETITION FOR DECLARATORY RULING

**In re Dominion Nuclear Connecticut, Inc., Permit CT 0003263
Millstone Nuclear Power Station
OCTOBER 1, 2014**

The Connecticut Coalition Against Millstone and its director, Nancy Burton, herewith petition the Commissioner ("Commissioner") of the Connecticut Department of Energy and Environmental Protection ("DEEP") for a declaratory ruling that the July 30, 2013 notification of Dominion Nuclear Connecticut, Inc. ("Dominion") to DEEP of its intent to release hotter water to the Long Island Sound is a request to modify NPDES Permit CT0003263 and should have been deemed as such by DEEP and, accordingly, the Commissioner should (1) revoke its determination on July 23, 2014 that a permit modification is unnecessary and (2) require Dominion to submit to DEEP an application to modify NPDES Permit CT0003263 in accordance with applicable provisions of law.

This petition is submitted in accordance with the provisions of Connecticut General Statutes §4-176 and Regulations of Connecticut State Agencies Sec. 22a-3a-4.

Facts and Circumstances Giving Rise to the Petition

In support of this petition, the petitioners represent as follows:

1. Section 22a-430-3(i) of the Regulations of Connecticut State Agencies requires *inter alia* that a permittee provide prior written notification to DEEP of any proposed process change that may result in the discharge of a new water, substance or material, or increase the quantity or concentration of an existing pollutant beyond permit conditions. No such process change shall be undertaken until either the permittee is notified that a permit modification is unnecessary or the permittee obtains a permit modification.
2. Dominion Nuclear Connecticut, Inc. ("Dominion"), the "permittee" operates two electric power generating units, Units 2 and 3, which draw 2.2 billion gallons of water per day from Long Island Sound for cooling water and service water needs. The water is withdrawn through two separate intake structures located on the shoreline of Niantic Bay, a large estuary of Long Island Sound. Temperature of the intake water is measured at a point identified as Monitoring Site No. 001-7 in the National Pollution Discharge Elimination System ("NPDES") Permit CT0003263 issued by DEEP on September 1, 2010 pursuant to the U.S. Clean Water Act, pursuant to

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which DEEP is a delegated state agency authorized to implement the federal NPDES program. The legality of the permit is at issue in Burton v. Department of Environmental Protection pending in the Superior Court, Judicial District of Hartford, CV10-5015209 S.

3. Monitoring Site No. 001-7 is located in front of the Unit 2 intake structure on Niantic Bay where condenser cooling water is withdrawn. Pursuant to the Millstone U.S. Nuclear Regulatory Commission ("NRC") operating license, the temperature of the intake water - Ultimate Heat Sink ("UHS") in NRC jargon - is measured at two separate locations in the Units 2 and 3 service water piping systems.
4. Pursuant to Section 22a-430-3(i) of the Regulations of Connecticut State Agencies, Dominion notified DEEP on July 30, 2013 of a proposed change to the operations of Millstone relating to a license amendment request to the NRC which would modify the Technical Specifications in Millstone's NRC operating license by allowing for Millstone to withdraw water from the Long Island Sound at a maximum temperature of 80 degrees F. from the 75 degrees F. allowed under the existing NRC license.
5. DEEP determined that the increase in the temperature as stated is a process modification that may result in an increase of an existing pollutant beyond permit conditions requiring a Section 22a-430-3(i) notification to DEEP.
6. More particularly, DEEP determined that the proposed process change has the potential to affect (a) the maximum temperature differential limits allowed under the existing DEEP NPDES permit for two discharge points from Millstone Units 2 and 3 to the onsite Quarry identified as Discharge Serial Number ("DSN") 001B for Unit 2 and DSN 001C for Unit 3 and (b) the temperature-related limits and conditions associated with Millstone's direct discharge to the Long Island Sound (DSN 001-1).
7. For DSN 001B (Unit 2), the potentially affected permit parameter is "Maximum Temperature Differential," designated ΔT , which is calculated by subtracting simultaneous temperature measures taken at Monitoring Site No. 001-7 and DSN 001B. Several different ΔT s are authorized for DSN 001B based on Millstone Nuclear Station operating conditions.
8. Dominion utilized a software program to evaluate the impact that the increased temperature of the intake water will have on the cooling water component at DSN001B. Based on this analysis, Dominion projected the ΔT for the cooling water component of DSN001B would be increased by 0.1 degree F. if the intake water temperatures were increased from 75 to 80 degrees F. at the modeled conditions.

9. For DSN001C (Unit 3), the potentially affected permit parameter is also the MTD, designated ΔT , which is calculated by subtracting simultaneous temperature measures taken at Monitoring Site No. 001-7 and DSN 001C. Several different ΔT s are authorized for DSN 001B based on Millstone Nuclear Power Station operating conditions.
10. Using the same software program as applied to Unit 2, Dominion projected the ΔT for the cooling water component of DSN001C would be increased by 0.2 degree F. if the intake water temperature were increased from 75 to 80 degrees F. at the modeled conditions.
11. For DSN 001-1, located where the Quarry exits to the Long Island Sound, the potentially affected permit parameter is "Maximum Temperature Differential," designated ΔT . Maximum temperature is measured at the west outlet of the Quarry. The ΔT is calculated by subtracting simultaneous temperature measures taken at Monitoring Site No. 001-7 and DSN 001-1. Several different ΔT s are authorized for DSN 001B based on Millstone Nuclear Station operating conditions.
12. Using the same software program as applied to Units 2 and 3, Dominion projected Maximum Temperature of DSN 001-1 would be 101.57 degrees F. if the intake water temperatures were increased from 75 to 80 degrees F. at the modeled conditions. Dominion projected that the projected ΔT would be within Condition 1 of Permit CT 0003263.
13. Permit CT 0003263 also requires that the temperature of the Millstone discharge to the Long Island Sound shall not increase the temperature of the receiving waters above 83 degrees F. or in any case raise the temperature of the receiving waters by more than 4 degrees F. beyond the area that extends 8,000 feet in radius from the discharge outlet at the Quarry Cuts.
14. Permit CT 0003263 allows for an 8,000-foot -1.51-mile - "mixing zone" for DSN 001-1. Thus, at the edge of the mixing zone, the temperature shall not be greater than 83 degrees F. or in any case raise the ambient temperature of the receiving waters by more than 4 degrees F. The dimensions for the mixing zone authorized in CT 0003263 Permit were based on a predictive model developed for Millstone's then-owners in 1979, 35 years ago.
15. With respect to the absolute temperature limit of 83 degrees F., Dominion's consultant's report indicates that for intake water temperatures of up to 79 degrees F., the absolute standard would be met, but beyond that, compliance would be contingent on the relationship between the ambient temperature and the intake temperature. Nevertheless, the report

ultimately concludes that the absolute temperature limit would also be met at 80 degrees F.

16. Dominion's consultant conducted an analysis designed to determine if the thermal mixing zone requirements above stated will be met if the temperature of the intake water increases from 75 to 80 degrees F. The consultant concluded that there will be an insignificant impact on the dynamics and the shape of the thermal plume. The consultant also concluded that for intake water temperatures up to 79 degrees F., the permit conditions concerning excess temperature would be met. However, at an intake temperature of 80 degrees F., the consultant report implies that operational controls may be necessary since "Above an intake temperature of 79 degrees F., there is some ambiguity depending on how the ambient temperature is defined."
17. Permit CT 0003263 does not require Dominion to carry out temperature monitoring at the edge of the mixing zone. DEEP does not carry out independent temperature monitoring at the edge of the mixing zone.
18. On September 12, 2012, Dominion conducted a thermal plume field study, as required by Permit CT 0003263 Section 10(V), to delineate the areal extent of the thermal plume and summarized the results in the "April 2013 Report for a Combined Field and Analytical Thermal Plume Study." (Thermal Plume Report") The Thermal Plume Report noted that the 4.0 degree F. ΔT isotherm crosses the 8,000-foot mixing zone at maximum flood tide - seemingly a violation of Permit CT 0003263. Dominion apparently attempted to distance itself from this conclusion by stating that its own field study does not accurately represent the thermal plume. Subsequently, Dominion revised its mapping of the thermal plume field using Millstone's intake temperature as the ambient temperature.
19. DEEP evaluated the information Dominion submitted to persuade DEEP that increasing the temperature of the intake water to 80 degrees F. complies with Permit CT 0003263 and issued a letter dated July 23, 2014 setting forth its conclusions ("DEEP Letter"). DEEP did not engage an independent consultant to evaluate the Dominion submission.
20. In DEEP Letter, DEEP rejected Dominion's use as an ambient reference point a location within the boundary of the mixing zone and which is potentially impacted by the thermal plume itself under certain tidal conditions. Moreover, DEEP stated that it is entirely possible that Dominion's initial mapping accurately represents Millstone's thermal plume and thus increasing the temperature of the intake water to 80 degrees F. violates Permit CT 0003263.

21. DEEP determined that the information Dominion submitted delineating the degree and extent of the thermal plume was inadequate and DEEP could not conclusively determine the degree and extent of the thermal plume and that additional mapping was required before DEEP could conclude permit compliance.
22. Permit CT 0003263 requires that the thermal plume shall not block zones of passage of marine life. Analysis of whether zones of passage will be blocked if the temperature of the intake water is increased to 80 degrees F. requires accurate delineation of the thermal plume. Since DEEP deemed Dominion's delineation of the thermal plume inadequate, the information submitted by Dominion does not establish whether zones of passage of marine life would be blocked if the temperature of the intake water is increased to 80 degrees F. Thus, Dominion failed to submit adequate information by which DEEP could properly assess whether Permit CT 0003263 would be violated if the temperature of the intake water increases to 80 degrees F. with regard to the zone of passage issue. Accordingly, DEEP lacked an adequate basis to find that Millstone use of 80 degree F. intake water would not result in violation Permit CT 0003263.
23. Permit CT 0003263 requires that the level of dissolved oxygen in the receiving water shall not fall below 6.0 mg/L as a result of the Millstone discharge. Increases in temperature of the Long Island Sound can have the effect of lowering dissolved oxygen. Despite this condition, Permit CT 0003263 does not require in-stream dissolved oxygen monitoring. The most recent information Dominion provided to DEEP on this issue was dated October 2010. The DEEP Letter states that from historical data Dominion projected that the dissolved oxygen level would not violate Permit CT 0003263 if the temperature of the intake water increases to 80 degrees F. The DEEP Letter does not contain information documenting any DEEP analysis of the Dominion projections.
24. Permit CT 0003263 requires that during the period including July, August and September, the temperature of the receiving water shall not be raised more than 1.5 degrees F. unless it can be shown that spawning and growth of indigenous organisms will not be significantly affected. In support of its argument that increasing the temperature of the intake water to 80 degrees F. will not significantly affect spawning and growth of indigenous organisms, Dominion relied on its historical ecological studies, which *inter alia* document the virtual collapse of the indigenous Niantic River winter flounder from larval entrainment at the Millstone intakes. DEEP conducted no independent investigation of this claim. DEEP also implicitly assumed that there is no threshold beyond which marine organisms may not continue to "adapt" to continuing increases in the water temperature in the ecosystem which they inhabit without investigating this possibility.

25. In DEEP letter, DEEP concluded:

"While Millstone [sic] has provided documentation in support of its position that it will maintain compliance with all terms and conditions of its NPDES permit and with the Connecticut Water Quality Standards should the temperature of the [intake water] increase to 80 degrees F., Millstone [sic] will need to undertake additional monitoring and studies designed to conclusively demonstrate permit compliance, including studies designed to evaluate the impact of natural, seasonal warming described by Millstone [sic]. The [DEEP] is hereby requiring that the following additional studies and collection of additional monitoring data described in Attachment 1 be performed:

"Millstone [sic] has provided documentation in support of its position that it will maintain compliance with all terms and conditions of its NPDES permit and with the Connecticut Water Quality Standards should the temperature of the [intake water] increase to 80 degrees F. However, to conclusively demonstrate compliance with its NPDES permit, Millstone [sic] will need to undertake more detailed studies and perform additional monitoring to conclusively demonstrate compliance. In particular, the Department will need additional information to more clearly determine the degree and extent of the [Millstone] thermal plume, including the effect that any "natural warming" may have on the degree and extent of the thermal plume.

"ITEM 1: Thermal Plume Field Study. The most recent thermal plume study conducted in September 2012 has a number of issues associated with it: the study was conducted under less than critical conditions; a portion of the 4 degree F. plume appeared to be mapped beyond the 8,000 foot mixing zone limit; the isotherm maps developed from the study do not include portions of the 4 degree F. ΔT isotherm (at maximum flood) and the 1.5 degree F. ΔT isotherms (at maximum flood, maximum ebb, and low slack). The next recent thermal plume study was conducted twenty-five years prior to this in August 1987. This study investigated the thermal plume associated with the then, three-unit Station operation. It used dye (a conservative tracer) to measure a non-conservative pollutant. While this study may be useful from a historical perspective, it is limited in what it can offer in terms of defining existing plume size. Based on the above, an additional thermal plume study should be undertaken.

"[Dominion] shall submit a Scope of Study for the review and written approval of the Commissioner by November 1, 2014 which shall provide a plan and schedule for conducting a thermal plume study that will clearly delineate, at a minimum, complete 4 degree F. ΔT and 1.5 degree F. ΔT isotherms associated with the [Millstone] thermal plume. The Scope of Study shall also provide a plan and schedule to undertake a thorough and

complete investigation of the effect that "natural warming" contributes to the [Millstone] thermal plume.

"ITEM 2: Predictive Modeling. [DEEP] has noted that there are some issues with the predictive modeling that may be resolved through the use of another model with expanded capabilities. This could lead to some resolution about the isotherm length discrepancy and could provide some clarity as to the expected impacts at ambient temperatures of 80 degrees F.

"[Dominion] shall submit a Scope of Study for the review and written approval of the Commissioner by December 1, 2014 which shall include an identification and evaluation of six peer-reviewed, public domain hydrothermal models for use in modeling the extent of the thermal plume at ambient temperatures of up to 80 degrees F. The Scope of Study shall also identify at least one model from the six models evaluated that is proposed for use in modeling the thermal plume. A plan and schedule to perform the modeling shall also be included in the Scope of Study.

"Quarterly status reports shall be provided to the [DEEP] summarizing the progress made concerning the modeling requirement. These reports shall be due on: March 1, June 1, September 1, and December 1 until submission of a thorough and complete modeling report is provided to the [DEEP].

"ITEM 3: Measuring temperature at the edge of the thermal mixing zone. Unless otherwise approved in writing by the Commissioner: (1) On or before August 29, 2014, [Dominion] shall develop a plan and schedule for the Commissioner's review and written approval to conduct temperature monitoring at the edge of the thermal mixing zone ("Thermal Mixing Zone Monitoring"). (2) In the interim, on or before August 15, 2014, and until the Commissioner's written approval of the plan for Thermal Mixing Zone Monitoring, [Dominion] shall conduct in-stream temperature monitoring to determine compliance with Remark 3 in Table A. The monitoring shall be conducted as follows: At two locations at the edge of the thermal mixing zone: 41.2979 degrees, -72.1355 degrees (Location 1) and 41.2892 degrees, -72.183 degrees (Location 2), at a depth of 1 foot; at a time coincident with maximum ebb (for Location 1) and maximum flood (for Location 2). The duration of measurement shall be for a two-hour continuous time frame extending one hour prior to maximum ebb/flood and one hour after maximum ebb/flood. Reference ambient temperature measurements shall be taken at a one foot depth at the Bartlett Reef daymark (Location 3) at times coincident with the monitoring at the edge of the thermal mixing zone.

"[Dominion] shall provide all temperature monitoring data for Locations 1, 2 and 3 and it shall provide the Maximum Temperature Differential for Location 1 & 3 and Location 2 & 3. This data shall be submitted as an attachment to the monthly DMRs.

"ITEM 4: In-stream dissolved oxygen monitoring. Unless otherwise approved by the Commissioner: 1) On or before August 29, 2014, [Dominion] shall develop a plan to conduct in-stream dissolved oxygen monitoring in the area of the receiving water influenced by the thermal plume. 2) During August 2014, [Dominion] shall monitor dissolved oxygen content of the receiving water in the vicinity of the Quarry outlets at a minimum of twice per week. The monitoring locations shall not exceed a distance 500 feet from the outlets. The monitoring shall be conducted at the surface and at the bottom of the receiving water and shall be undertaken at times so that diurnal variation can be measured. Temperature shall also be measured concurrent with dissolved oxygen.

"[Dominion] shall provide all dissolved oxygen and temperature data as well as the coordinates for the monitoring locations. This data shall be submitted as an attachment to the monthly DMRs [Discharge Monitoring Report].

"ITEM 5: Table A, Remark 8 of the permit requires that certain data associated with DSN 001-1 be maintained onsite. Starting with the next DMR filing after the date of this letter, [Dominion] shall provide the following DSN 001-1 data to the [DEEP] with its monthly DMRs: 1) Daily flow (gpd); 2) Daily Maximum Temperature (degrees F.); 3) Daily Average Temperature (degrees F.); 4) Daily Maximum Temperature Increase (degrees F.); 5) Daily Average Temperature Increase (degrees F.)"

The Statute, Regulation and Final Decision of the Department at Issue

Statute at Issue: Connecticut Environmental Protection Act, §22a-14 et seq.

Regulation at Issue: Sec. 22a-430-3(i) of the Regulations of Connecticut State Agencies requires *inter alia* that a permittee provide prior written notification to DEEP of any proposed process change that may result in the discharge of a new water, substance or material, or increase the quantity or concentration of an existing pollutant beyond permit conditions. No such process change shall be undertaken until either the permittee is notified that a permit modification is unnecessary or the permittee obtains a permit modification

Final Decision of DEEP at Issue: July 23, 2014 notification letter from the Commissioner by Oswald Inglesse to Dominion Resources Services, Inc.

The Questions as to Which the Declaratory Ruling Is Sought

1. Does Millstone's projected use of intake water withdrawn from the Long Island Sound hotter than 75 degrees F. and as high as 80 degrees F. constitute a process change resulting in an increase of an existing pollutant – the thermal plume – beyond conditions defined in Permit CT 0003263 and therefore require Dominion to submit an application for modification of the permit?
2. Was DEEP required to reject the Dominion notification based on its lack of sufficient information, as evidenced by DEEP's order to Dominion to conduct studies and gather data to establish that a modification to Permit CT0003263 was not legally required.
3. Did DEEP fail to carry out the monitoring and scientific analysis required to establish the degree to which Millstone's thermal plume is causing irreparable and irreversible harm to the marine ecosystem of the Long Island Sound?
4. Did DEEP fail to carry out the monitoring and scientific analysis required to establish whether the thermal plume involves conduct which has or which is reasonably likely to have the effect of unreasonably polluting, impairing or destroying the public trust in the air, water or other natural waters of the state, in violation of the Connecticut Environmental Protection Act?
5. In light of specific findings set forth in DEEP Letter, including the following:
 - (a) "The most recent thermal plume study conducted in September 2012 has a number of issues associated with it: the study was conducted under less than critical conditions";
 - (b) "a portion of the 4 degree F. plume appeared to be mapped beyond the 8,000 foot mixing zone limit";
 - (c) "the isotherm maps developed from the study do not include portions of the 4 degree F. ΔT isotherm (at maximum flood) and the 1.5 degree F. ΔT isotherms (at maximum flood, maximum ebb, and low slack)";
 - (d) "the next recent thermal plume study was conducted twenty-five years prior to this in August 1987";
 - (e) "this study investigated the thermal plume associated with the then, three-unit Station operation";

- (f) "it used dye (a conservative tracer) to measure a non-conservative pollutant";
- (g) "While this study may be useful from a historical perspective, it is limited in what it can offer in terms of defining existing plume size. Based on the above, an additional thermal plume study should be undertaken";
- (h) "there are some issues with the predictive modeling that may be resolved through the use of another model with expanded capabilities. This could lead to some resolution about the isotherm length discrepancy and could provide some clarity as to the expected impacts at ambient temperatures of 80 degrees F"

did DEEP knowingly and deliberately rubber-stamp Dominion's notification when DEEP knew critical aspects of Dominion's notification were based on inaccurate, misleading and insufficient information and thereby did DEEP violate the public trust in the environment, contrary to the provisions of the Connecticut Environmental Protection Act, Connecticut General Statutes § 22a-14 *et seq.*?

**THE PETITIONER
CONNECTICUT COALITION AGAINST
MILLSTONE**

By: _____

**THE PETITIONER
NANCY BURTON**


STATE OF CONNECTICUT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

TO THE COMMISSIONER:

AFFIDAVIT

I, Nancy Burton, having been sworn, do hereby depose as follows:

1. I am over the age of eighteen (18) years and I believe in the obligation of an oath.
2. Since 1998, I have served as director of the Connecticut Coalition Against Millstone, a grassroots organization devoted to serving as a watchdog over the operations of the Millstone Nuclear Power Plant in Waterford, Connecticut.
3. This affidavit is submitted in accordance with the provisions of Sec. 22a-3a-4(a) of the Regulations of Connecticut State Agencies.
4. I affirm that I have provided notice of the substance of the foregoing Petition for Declaratory Ruling and of the opportunity to file comments and to request intervenor or party status under Sec. 22a-3a-4(c)(1) of the Regulations of Connecticut State Agencies to: Dominion Nuclear Connecticut, Inc. ("DNC"), Rope Ferry Road, Waterford CT 06385, by mailing a copy of the foregoing Petition for Declaratory Ruling and of this Affidavit to DNC at said location on this date.



Nancy Burton

STATE OF CONNECTICUT

ss: REDDING

COUNTY OF FAIRFIELD

Sworn to and subscribed before me this 1st day of October, 2014



Notary Public

MICHELE R. GRANDE
NOTARY PUBLIC
MY COMMISSION EXPIRES AUG. 31, 2016

My commission expires: _____