From: "David L. Deen River Steward" <crwc@sover.net>
To: <rxe@nrc.gov>
Date: 12/9/05 4:46PM
Subject: comments on Docket 50-271

Mr Ennis

Pasted below and attached are the comments of the Connecticut River Watershed Council on the proposed EPU for the Entergy nuclear plant at Vernon, VT.

David Deen River Steward

COMMENTS OF THE CONNECTCUT RIVER WATERSHED COUNCIL

RE: Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.; Vermont Yankee Nuclear Power Station Draft Environmental Assessment and Finding of No Significant Impact Related to the Proposed License Amendment To Increase the Maximum Reactor Power Level [Docket No. 50-271]

Introduction
The Environmental and Natural Resources Law Clinic at Vermont Law School on behalf of the Connecticut River Watershed Council (CRWC) prepared these comments. The comments are submitted in response to the public notice of the referenced permit.
Founded in 1952, the CRWC is a broad based citizen organization advocating for responsible stewardship of the entire Connecticut River Watershed. The mission of CRWC is to promote improvement of water quality and the restoration, conservation and sustainable use of the natural resources of the Connecticut River. Members of CRWC regularly use and enjoy the Connecticut River for a variety of recreational activities including fishing, swimming, boating and nature appreciation. The proposed permit amendment allowing a further increase in the temperature of the river, on top of two previous increases that have already caused demonstrable harm to the aquatic ecosystem, would directly and adversely affect the use and enjoyment of the Connecticut River by CRWC and its members.

The CRWC comments follow:

At page 68106 re:Discharge Impacts the NRC draft EA states:

"VYNPS has been operating within the current NPDES limits; therefore, these thermal limits represent an upper bound of the current impact on the river water temperatures in the vicinity of the discharge."

Crwc finds that the existing NPDES discharge permit places no upper bound on the temperature of the river at which Entergy must stop adding waste heat through its cooling water discharge. The draft amended permit fails to address this shortcoming.

CRWC submits that Entergy should not raise the ambient water temperature beyond 85 degrees Fahrenheit at any point within the Connecticut River. If and when such limit is reached, Entergy should be required to take all necessary steps including reducing power output to avoid raising the ambient water temperature any further.

Significantly, according to Entergy's own study as part of their 316(a) demonstration of temperature impacts on fish, water temperatures above 88 degrees Fahrenheit are the avoidance temperatures for all "Representative Important Species" (RIS) found in the Vernon Pool except one.

At page 68109 re:Impacts on Aquatic Biota the NRC Draft EA states:

"The NPDES permit limits the amount of heat discharged to the Connecticut River from the operation of VYNPS. An analysis conducted in accordance with the NPDES permit on fish and aquatic species in 2002 concluded that there is no significant negative relationship between these species and the thermal discharge. Actually, a larger community of aquatic species was found to colonize near the VYNPS discharge. This thermal limit specified in the NPDES permit will not change with the EPU. Because Entergy will continue to meet the thermal discharge limit set by the NPDES permit following the EPU, there should be no additional thermal discharge effects on aquatic species for the proposed action."

CRWC has found that if ENVY does increase their discharge the following impacts are expected:

Summary of Harmful Thermal Effects
A. Summary of Harm to American Shad
1. There was a significant negative (decreasing) trend in American shad in the lower Vernon Pool since VYNPS received its 1991 316(a) variance. (Demonstration Report, 155).

2. The optimal water temperature for adult American shad is 65°F. During average river conditions (50% chance of occurring), the coolest parts of the lower Vernon Pool will not be less than 73°F. (See Figure 5-26, Demonstration Report, 160). These above-optimal temperatures increase stress on American shad populations, for example by increasing disease rates.

3. During average river conditions (50% chance of occurring), the entire lower Vernon Pool will exceed optimal growth temperatures for American shad. (Demonstration Report, Figure 5-26, 160).

4. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperature for American shad growth and larval temperature will be exceeded 4.5% or 162.7 hours more. (Demonstration Report, 157).

5. During 1982-1989, American shad icthyoplankton was collected in both Vernon Pool and Turners Falls Pool, an area less than one mile downstream from VYNPS's discharge (1990 Demonstration Report, page 38), but since 1991 "[e]ggs and larvae of American shad have not been collected in the nearfield ichthyoplankton sampling performed annually in lower Vernon Pool..." (Demonstration Report, 157).

6. Peak spawning times for American shad occur during the period that VYNPS is requesting an increased thermal discharge. Due to VYNPS's proposed discharge, the stretch of river below Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream from VYNPS's discharge) will meet or exceed the preferred spawning temperature for American Shad an additional 167.4

hours or 4.6%. (Demonstration Report, Table 5-25, 163).

B. Summary of Harm to Atlantic Salmon

1. Under existing discharge limits, there is no habitat in the Vernon Pool for salmon during low flows because water temperatures are already too warm. (Demonstration Report, Figure 5-29, 167).

2. Under proposed discharge limits, temperatures will meet or exceed those needed for salmon survival at Monitoring Station 3 (1.4 miles downstream from VYNPS) for an additional 121.8 hours or 3.3%. (Demonstration Report, Table 5-26, 168).

3. Under proposed discharge limits, young salmon (parr) will be excluded from an additional 5.5 acres of habitat under average river conditions (50% chance of occurring). (Demonstration Report, 165).

4. Increased river temperatures place stress on Atlantic salmon, including increased rates of bacterial diseases, such as furunculosis. Furunculosis can lead to increased salmon mortality. (See http://library.fws.gov/salmon/asalmon73.html). Entergy's Demonstration Report does not assess disease rates for any fish species.

5. Under proposed discharge limits, the upper temperature limit for feeding (72.5°F) will be exceeded for up to 81 hours in the stretch of river beneath Vernon Dam to at least Monitoring Station 3. (Supplement to Demonstration Report, ENRLC Document #30).

C. Summary of Harm to Spottail Shiner

1. Under proposed discharge limits, the River beneath Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream from VYNPS), will be at or above temperatures optimal for spottail shiner spawning and incubation an additional 197 hours or 5.4%. (Demonstration Report, 171). The proposed thermal discharge increase may cause spottail shiner to spawn earlier. (Demonstration Report, 171).

2. Under proposed discharge limits, the River beneath Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream from VYNPS), will be at or above temperatures optimal for spottail shiner early development an additional 163 hours or 4.5%. (Demonstration Report, 171).

3. The lower Vernon Pool, into which VYNPS is discharging, provides preferred spawning habitat for the spottail shiner. (Supplement to Demonstration Report, ENRLC Document #30).

D. Summary of Harm to Smallmouth Bass

1. Under average river conditions (50% chance of occurring), VYNPS's discharge currently bars the use of 6.4 acres of smallmouth bass spawning and nursery habitat. (Supplement to Demonstration Report, ENRLC Document #30).

2. Under proposed discharge limits, the River beneath Vernon Dam to Monitoring Station 3 (1.4 miles downstream from VYNPS), will be at or above

the preferred temperature for smallmouth bass an additional 5.1% or 188 hours. (Demonstration Report, 178).

3. Under proposed discharge limits, the predicted increase in time the River beneath Vernon Dam to Monitoring Station 3 (1.4 miles downstream from VYNPS), will be at or above the optimal spawning temperature an additional 178 hours or 4.9%. (Demonstration Report, 178).

4. Under proposed discharge limits, the River beneath Vernon Dam to Monitoring Station 3 will be at or above the optimal incubation and larval development temperature for smallmouth bass an additional 167 hours or 4.5%. (Demonstration Report, 179).

E. Summary of Harm to Yellow Perch

1. Under current permit limits, the entire Vernon Pool already exceeds optimal temperatures for Yellow Perch development during low flows. (See Demonstration Report, Figure 5-38, page 190).

2. During average flows (50% chance of occurring), an additional 16 acres of habitat will exceed optimal growth temperatures for Yellow Perch in the Vernon Pool. (Demonstration Report, 186). This is particularly critical because Yellow Perch spawn in the Vernon Pool.

3. During extreme low flows when riverine species are more stressed due to higher water temperatures, Yellow Perch will be barred from an additional 9 acres of habitat because the water temperature is predicted to exceed to their upper thermal avoidance temperature. (Demonstration Report, 185).

4. Yellow Perch numbers, as reflected by the number of specimens collected in Table 5-14 of Entergy's Demonstration Report, declined by 44% downstream of Vernon Dam from the monitoring period 1981-1990 to monitoring period 1991-2002. In addition to this steep decline following Entergy's 1991 316(a) variance, the proposed thermal discharge limit will cause River water to exceed the upper thermal avoidance temperature for Yellow Perch 65 more hours or 1.8% more of the time. These temperatures are anticipated to cause Yellow Perch (and the fish Yellow Perch represent) to leave the waters beneath the Vernon Dam. (Demonstration Report, 186).

5. Below Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream from VYNPS), the optimum temperature for Yellow Perch growth is predicted to be exceeded for an additional 241 hours or 6.6%.. (Demonstration Report, 186).

6. Below Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream from VYNPS), the preferred temperature for adult Yellow Perch is predicted to be exceeded for an additional 398 hours or 10.9%. (Demonstration Report, 186).

7. Below Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream from VYNPS), the preferred temperature for incubation and larval development temperatures will be exceeded an additional 4.6% or 167 hours under proposed discharge limits. This is critical because Yellow Perch spawn here. (Demonstration Report, 186).

F. Summary of Harm to Walleye

1. During average river conditions (50% chance of occurring), walleye will be excluded from an additional 10.7 acres of habitat in the Vernon Pool. (Demonstration Report, 194).

2. Under proposed permit limits, walleye will have no habitat in the river below Vernon Dam to at least Monitoring Station 3 (1.4 miles away from VYNPS's discharge) for an additional 11.5% or 420 hours. (Demonstration Report, 195).

3. Under current permit limits, walleye are barred from habitat directly below the Vernon Dam for over 1/4 of the summer permit period. The proposed discharge increase is anticipated to cause walleye to leave the waters beneath Vernon Dam earlier in the summer period. (Demonstration Report, 195).

4. Under proposed permit conditions, an additional 15.5 acres of habitat in the Vernon Pool will exceed optimal growth temperatures for the walleye. (Demonstration Report, 195).

5. Under current permit limits, most of the lower Vernon Pool already exceeds preferred temperatures for walleye. (Figure 5-40, Demonstration Report, 198).

6. Under current permit limits there is no habitat anywhere in the Vernon Pool for walleye during low flows. (Figure 5-41, Demonstration Report, 199).

7. At Monitoring Station 3, 1.4 miles downstream from VYNPS's discharge, the preferred temperature for walleye will be exceeded an additional 9.4% or 344 hours. (Demonstration Report, 195).

8. At Monitoring Station 3, 1.4 miles downstream from VYNPS's discharge, the optimal temperature for walleye growth will be exceeded an additional 6.6% or 241 hours. (Demonstration Report, 195).

G. Summary of Harm to Largemouth Bass

1. During average flows (50% chance of occurring), 11 acres of the Vernon Pool will exceed optimal temperatures for largemouth bass incubation and early development. (Demonstration Report, 203).

2. Under average flow conditions (50% chance of occurring), VYNPS's discharge currently bars the use of 6.4 acres of smallmouth bass spawning and nursery habitat. (Supplement to Demonstration Report, ENRLC Document #30).

3. Under proposed permit conditions, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperature for smallmouth bass growth will be met or exceeded an additional 65 hours or 1.8%. (Demonstration Report, 203).

4. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperature for smallmouth bass spawning will be met or exceeded for an additional 163 hours or 4.5%. (Demonstration Report, 203).

5. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperature for smallmouth bass incubation and larval development will be met or exceeded for an additional 9.2% or 335 hours. (Demonstration Report, 203-204).

H. Summary of Harm to Fallfish

1. Under proposed discharge limits, Fallfish will at times be barred from an additional 25 acres of habitat in the lower Vernon Pool. (Demonstration Report, 210).

2. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the avoidance temperature for fallfish and the optimum temperatures for growth will be exceeded an additional 121.8 hours or 3.3%. (Demonstration Report, 211).

3. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperatures for fallfish larval development will be exceeded an additional 167.4 hours or 4.6%. (Demonstration Report, 211).

4. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge) the optimum temperatures for fallfish spawning will be exceeded an additional 82.8 hours or 2.3%. (Demonstration Report, 211).

I. Summary of Harm to White Sucker

1. Since VYNPS received its last thermal discharge variance, there has been a significant negative (decreasing) trend in the white sucker population. There was no decrease in white sucker populations 4 miles downstream of VYNPS's discharge. (Demonstration Report, 217).

2. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperatures for growth and preference will be exceeded an additional 188 hours or 5.1%. (Demonstration Report, 219).

3. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the optimum temperatures for spawning will be met and exceeded an additional 83 hours or 2.3%. (Demonstration Report, 219).

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J. Summary of Harm to White Perch

1. The lower Vernon Pool provides preferred spawning habitat for white perch. White perch larvae are common in ichthyoplankton collections and will be exposed to the hottest areas of the thermal plume. (Supplement to Demonstration Report, ENRLC Document #30).

At page 68110 re:Impacts on Threatened and Endangered Species the NRC draft EA says:

"There are no threatened and endangered aquatic species in the Connecticut River. Ecological Studies of the Connecticut River Vernon, Vermont Report 32, dated May 2003, describes how Entergy meets the requirements of the NPDES permit through impingement sampling. An analysis of this report determined that no Federally listed threatened or endangered species were collected."

CRWC found that in 1990 the dwarf wedge mussel was listed as endangered under the Endangered Species Act. 16 U.S.C. § 1533. Historically, the dwarf wedge mussel was distributed widely, but discontinuously, in river drainages in eastern North American from New Brunswick to North Carolina. Currently there only about 20 known small populations; including one in the Connecticut River from the Ottauquechee River to the Weathersfield Bow (near Claremont, NH).

The wedge mussel depends on host fish species for its survival. They are species-specific and will only live if they find the correct host. In its larval stage the wedge mussel will attach to its host species and metamorphose into the juvenile stage. This particular wedge mussel depends on 2 host species, the tessellated darter and the mottled sculpin.

In 1993 the U.S. Fish and Wildlife Service approved a recovery plan for the wedge mussel that calls for the attempt to reestablish populations throughout its historical range including the Connecticut River. Reestablishing a population in or near Vernon Pool would require the presence of one of the host species. The tessellated darter is a fish species that has consistently been collected from the lower Vernon Pool. Although the nearest population of the wedge mussel is relatively far north of the VYNPS, the fact that the species is endangered and depends on the tessellated darter for its survival reveals that the tessellated darter should have been and should now be included in the threatened and endangered review of the ENVY uprate.

CC: "PPARENTEAU-vermontlaw.edu" <PPARENTEAU@vermontlaw.edu>, <cgwyther@ctriver.org>

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COMMENTS OF THE CONNECTCUT RIVER WATERSHED COUNCIL RE: Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc.; Vermont Yankee Nuclear Power Station Draft Environmental Assessment and Finding of No Significant Impact Related to the Proposed License Amendment To Increase the Maximum Reactor Power Level [Docket No. 50-271]

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I. Summary of Harm to White Sucker

1. ***Since VYNPS received its last thermal discharge variance, there has been a significant negative (decreasing) trend in the white sucker population.*** There was *no* decrease in white sucker populations 4 miles downstream of VYNPS's discharge. (Demonstration Report, 217).

2. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the ***optimum temperatures for growth and preference will be exceeded an additional 188 hours or 5.1%.*** (Demonstration Report, 219).

3. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the ***optimum temperatures for spawning will***

be met and exceeded an additional 83 hours or 2.3%. (Demonstration Report, 219).

4. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge), the ***optimum temperatures for spawning will be met and exceeded an additional 83 hours or 2.3%.*** (Demonstration Report, 219).

5. Under proposed discharge limits, in the stretch of River between the Vernon Dam to at least Monitoring Station 3 (1.4 miles downstream of the VYNPS discharge) the ***optimum temperatures for incubation and larval development will be met and exceeded an additional 167 hours or 4.6%.*** (Demonstration Report, 219).

J. Summary of Harm to White Perch

1. ***The lower Vernon Pool provides preferred spawning habitat for white perch. White perch larvae are common in ichthyoplankton collections and will be exposed to the hottest areas of the thermal plume.*** (Supplement to Demonstration Report, ENRLC Document #30).

At page 68110 Impacts on Threatened and Endangered Species the NRC draft EA says:

"There are no threatened and endangered aquatic species in the Connecticut River. Ecological Studies of the Connecticut River Vernon, Vermont Report 32, dated May 2003, describes how Entergy meets the requirements of the NPDES permit through impingement sampling. An analysis of this report determined that no Federally listed threatened or endangered species were collected."

CRWC found that in 1990 the dwarf wedge mussel was listed as endangered under the Endangered Species Act. 16 U.S.C. § 1533. Historically, the dwarf wedge mussel was distributed widely, but discontinuously, in river drainages in eastern North American from New Brunswick to North Carolina. Currently there only about 20 known small populations; including one in the Connecticut River from the Ottauquechee River to the Weathersfield Bow (near Claremont, NH).

The wedge mussel depends on host fish species for its survival. They are species-specific and will only live if they find the correct host. In its larval stage the wedge mussel will attach to its host species and metamorphose into the juvenile stage. This particular wedge mussel depends on 2 host species, the tessellated darter and the mottled sculpin.

In 1993 the U.S. Fish and Wildlife Service approved a recovery plan for the wedge mussel that calls for the attempt to reestablish populations throughout its historical range

including the Connecticut River. Reestablishing a population in or near Vernon Pool would require the presence of one of the host species. The tessellated darter is a fish species that has consistently been collected from the lower Vernon Pool. Although the nearest population of the wedge mussel is relatively far north of the VYNPS, the fact that the species is endangered and depends on the tessellated darter for its survival reveals that the tessellated darter should have been and should now be included in the threatened and endangered review of the ENVY uprate.