State of Vermont

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Wastewater Management Division
103 South Main Street - Sewing Bldg.
Waterbury, Vermont 05671-0405

Telephone: (802) 241-3822
Fax: (802) 241-2596
www.anr.state.vt.us/dec/ww/wwmd.cfm

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

June 9, 2003

cc. E. Zoli - Goodwin Procter LLP

50-271

Lynn DeWald
Entergy Nuclear Vermont Yankee
320 Governor Hunt Road
Vernon, VT 05354

Re: Final Amended Discharge Permit #3-1199

Dear Ms DeWald :

Enclosed is your copy of the above referenced permit, which has been signed by the Director of the Wastewater Management Division for the Commissioner of the Department of Environmental Conservation. Please read the permit carefully and familiarize yourself with all its terms and conditions. Your attention is particularly directed to those conditions which may require written responses by certain dates.

One comment relative to this permit was received during the public notice period. The commenter asked that the toxicity of the replacement chemical be considered. As discussed in the fact sheet accompanying the draft permit, prior to noticing the proposed permit the chemical was evaluated by the Department for toxicity to aquatic biota in the Connecticut River and was approved for usage at the level indicated in the permit.

If you have any questions concerning your permit, please contact Carol Carpenter at 241-3828.

Sincerely,

Brian D. Kooiker
Chief, Discharge Permits Section

Enclosure
cc: EAC members

A001

Westminster/Springfield/St. Johnsbury

Permit No. 3-1199
File No. 13-17
NPDES No. VT0000264
Project ID No. NS75-0006

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WASTEWATER MANAGEMENT DIVISION
103 SOUTH MAIN STREET
WATERBURY, VERMONT 05671-0405

AMENDED DISCHARGE PERMIT

In compliance with the provisions of the Vermont Water Pollution Control Act, as amended, (10 V.S.A. Chap. 47 1251 et. seq;) and the Federal Clean Water Act, as amended (33 U.S.C. §1251 et seq),

Entergy Nuclear Vermont Yankee, LLC
185 Old Ferry Road
Brattleboro, VT 05302

(hereinafter referred to as the "permittee") is authorized, by the Secretary, Agency of Natural Resources, to discharge from a facility located at:

320 Governor Hunt Road
Vernon, Vermont

to the Connecticut River, Class B at the point of discharge

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III hereof.

This permit shall become effective on the date of signing

This permit and the authorization to discharge shall expire on March 31, 2006.

Signed this 9th day of June, 2003.

Jeffrey Wennberg, Commissioner
Department of Environmental Conservation

By Brian D. Kooiker
Brian D Kooiker, Chief
Direct Discharge Section

Part I

A. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS, AND SPECIAL CONDITIONS

1. Through March 31, 2006, the permittee is authorized to discharge from outlet serial number S/N 001: Circulating water discharge - main condenser cooling water and service water. Such discharges shall be limited by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS lbs/day Monthly Avg.	lbs/day Daily Max.	Other units Monthly Avg.	Other units Daily Max.	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow: Open/Hybrid-Cycle				543 MGD	Daily	Calculated Flow
Closed Cycle				12.1 MGD	Daily	Calculated Flow
Temperature	see Part 1.6.a-e, pp.4-5					
Free Residual Chlorine	(b)		0.2 mg/l		(c)	Grab
Total Residual Oxidant	(a)(b)		Monitor Only		(c)	Grab
pH	6.5 to 8.5 Standard Units				1 x daily	Grab (d)

The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the water quality standards of the receiving water.

Samples taken in compliance with the monitoring requirements specified above shall be collected at locations which are representative of the effluents discharged.

(a) Where "Total Oxidant" is chlorine, chlorine plus bromine, or bromine.
(b) Oxidant or chlorine injection is limited to discharge during closed cycle only and detectable residuals are not to exceed 2 hours/day with the exception that the service water system may be treated during open/hybrid cycle provided that treatment does not exceed 2 hours/day with no detectable oxidant being measured at the discharge structure.
(c) Monitoring is required during the period that oxidant, or chlorine, treatment is occurring. The duration of the treatment shall be reported for each treatment day in the monthly discharge monitoring report.
(d) A daily grab represents the minimum monitoring frequency. Continuous pH monitoring is acceptable and if utilized will require reporting daily minimum and maximum values on the monthly monitoring report.

2. Through March 31, 2006, the permittee is authorized to discharge from outfall serial number S/N 002: Radioactive liquid. Such discharges shall be limited by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow		0.01 MGD	(a)	Estimate
Radioactivity	see Part 1.10.a-f., pp.6-7		(a)	see Part 1.10.a-f.
pH	6.5 to 8.5 Standard Units		(a)	Grab

The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the water quality standards of the receiving water.

Samples taken in compliance with the monitoring requirements specified above shall be collected at locations that are representative of the radioactive effluent discharge.

(a) Shall be monitored daily when the discharge occurs. When it is determined that a discharge of radioactive liquid wastewater is necessary, the permittee shall notify the Wastewater Management Division prior to the discharge or, if necessary, within 24 hours following the discharge.

3. Through March 31, 2006, the permittee is authorized to discharge from outfall serial number S/N 003: Plant Heating Boiler Blowdown. Such discharges shall be limited by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow		0.001 MGD (a)	Each discharge	Estimate
BetzDearborn Cortrol OS7700	(b)		No Monitoring Required	

The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the water quality standards of the receiving water.

Samples taken in compliance with the monitoring requirements specified above shall be collected before combining with other waste streams.

(a) Each of the two boilers may be drained of 0.002 MGD at the end of the heating season.
(b) See Part I.15.

4. Through March 31, 2006, the permittee is authorized to discharge from outfall serial number S/N 004: Water treatment carbon filter backwash. Such discharges shall be limited by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow		0.010 MGD	(a)	Estimate
Total Suspended Solids		8.3 lbs.	No Monitoring Required	

The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the water quality standards of the receiving water.

(a) Shall be monitored daily when the discharge occurs.

5. Through March 31, 2006, the permittee is authorized to discharge from outfall serial number S/N 005: Cooling water discharge from the four RHR-Service Water pumps.

The permittee may discharge up to 14,000 gpd. No effluent limits or monitoring is required for this waste stream.

6. The permittee is required to operate its circulating water cooling facilities whether closed, open, or in a hybrid mode as follows:

a. During the period **October 15 through May 15**:

(1). The temperature at Station 3 shall not exceed 65°F.

(2). The rate of change of temperature at Station 3 shall not exceed 5°F per hour. The rate of change of temperature shall mean the difference between consecutive hourly average temperatures.

(3). The increase in temperature above ambient at Station 3 shall not exceed 13.4°F. The increase in temperature above ambient shall mean plant induced temperature increase as shown by equation 1.1 (defined on page 1-8 of Vermont Yankee's 316 Demonstration: Engineering, Hydrological and Biological Information and Environmental Impact Assessment (March 1978).

b. During the period **May 16 through October 14**, the increase in temperature above ambient at Station 3 shall not exceed the limits set forth in the following table:

Station 7 Temperature	Increase in Temperature Above Ambient at Station 3
Above 63°F	2°F
>59°F, ≤63°F	3°F
≥55°F, ≤59°F	4°F
Below 55°F	5°F

The increase in temperature above ambient shall mean plant induced temperature

increase as shown by equation 1.1 (defined on page 1-8 of Vermont Yankee's 316 Demonstration: Engineering, Hydrological and Biological Information and Environmental Impact Assessment (March 1978).

c. Experimental open/hybrid cycle test programs with alternative thermal limits (to 6a. and 6b. above) may be administered as approved by the Vermont Yankee Environmental Advisory Committee (defined in Part I.12) and which receive written authorization from the Secretary of the Agency of Natural Resources.

d. During power operation, if an unexpected failure results in a complete loss of the cooling tower system, the above restrictions may be modified for a period not to exceed 24 hours to allow an orderly shutdown by utilizing the main condenser as a heat sink and operating in an open-cycle mode. The cooling tower system includes all auxiliary components required for cooling tower operation.

e. Notwithstanding the above, the Secretary may reopen and modify the permit to incorporate more stringent effluent limitations for control of the thermal component of Entergy Nuclear Vermont Yankee's discharge, including the requirements of closed-cycle operation, if the Secretary determines that open-cycle operation is having an adverse effect in resident or anadromous fish species in the river. Entergy Nuclear Vermont Yankee will be given notice and opportunity for a hearing prior to the imposition of such more stringent effluent limitations.

7. Through March 31, 2006, the permittee is authorized to discharge from outfall serial numbers S/N 006, 007, 008, 010, 011: Stormwater runoff; and demineralized trailer rinse down water (S/N 006 only).

006 - North Storm System Discharge Point: to the north of the intake structure.
007 - South Storm System Discharge Point: to the forebay of the discharge structure; includes discharges from S/N 003, S/N 004 and S/N 005.
008 - Southeast Storm System Discharge Point: to the southeast of the east cooling tower.
010 - 345 kV Switchyard Storm System Discharge Point: about 300 yards north of the intake structure.
011 - 115kV Switchyard Storm System Discharge Point: about 350 yards north of the intake structure.

Effluent limits and monitoring are not required for the stormwater discharges; however, future storm drain and manhole construction shall conform to the Agency's policy for stormwater treatment.

The permittee is authorized to discharge demineralized trailer rinse down water to the stormdrain system (S/N 006). The permittee may discharge up to 10,000 gpd. No effluent limits or monitoring is required for this waste stream.

8. Through March 31, 2006, the permittee is authorized to discharge from outfall serial number S/N 009: Strainer and traveling screen backwash.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS Monthly Avg.	Daily Max.	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow		0.050 MGD	(a)	Estimate
Bulab 8006	(b)		No Monitoring Required	

The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the water quality standards of the receiving water.

Samples taken in compliance with the monitoring requirements specified above shall be collected before combining with other waste streams.

(a) Shall be monitored daily when the discharge occurs.
(b) See Part I.15.

9. The permittee will conduct an environmental monitoring program to measure and record physical, chemical, and biological data to assure compliance with the requirements of this permit in accord with Part IV of this permit: Environmental Monitoring Studies, Connecticut River. The permittee shall submit an annual report by May 31 of each year to the Secretary of the Agency of Natural Resources and the Environmental Advisory Committee.

10. All radioactive liquid waste collected in the plant will be processed through a treatment system, including filtering and/or demineralization, and the liquid will be processed and disposed of in accordance with the Nuclear Regulatory Commission Regulations. Low level radioactive wastes may be released to the Connecticut River after treatment pursuant to Final Safety Analysis Report, Volume 111, Section 9.2; Station Radioactive Liquid Waste System, Vermont Yankee Nuclear Power Station, as amended, subject to the following restrictions:

a. The maximum instantaneous concentration of radionuclides in liquid effluents released to the unrestricted environment shall not exceed the limits specified in 10 CFR Part 20.1001 - 20.2401, Appendix B, Table 2, including applicable notes thereto.

b. The maximum annual quantity of radionuclides, except tritium, in liquid effluents released to the unrestricted environment shall not exceed five (5) curies.

c. The maximum annual quantity of tritium in liquid effluents released to the unrestricted environment shall not exceed five (5) curies.

d. The dose or dose commitment to a member of the public from radionuclides in liquid effluents released to the unrestricted environment shall be limited to the following:

i. During any calendar quarter: less than or equal to 1.5 millirems to the total body, and less than or equal to 5 millirems to any organ.

ii. During any calendar year: less than or equal to 3 millirems to the total body, and less than or equal to 10 millirems to any organ.

e. The permittee shall report to the Agency of Natural Resources any abnormal releases of radioactivity in liquid effluents in a manner and timeframe consistent with Nuclear Regulatory Commission requirements.

f. The permittee shall monitor and report concentrations, quantities, and calculated doses of gamma radionuclides and tritium in liquid effluents released to the Connecticut River and report such data to the Agency of Natural Resources. Other radionuclides shall be reported to the Agency of Natural Resources in a manner consistent with the reports submitted to the Nuclear Regulatory Commission.

11. An Environmental Advisory Committee (EAC) is comprised of one individual each representing (1) Vermont Department of Environmental Conservation; (2) Vermont Department of Fish and Wildlife; (3) New Hampshire Fish and Game Department; (4) New Hampshire Department of Environmental Services; (5) Massachusetts Office of Watershed Management; (6) Massachusetts Division of Fisheries and Wildlife; and, (7) Coordinator of the Connecticut River Anadromous Fish Program, U.S. Fish and Wildlife Service. The EAC shall be advisory in function and Entergy Nuclear Vermont Yankee, LLC shall meet with the EAC as often as necessary, but at least annually, to review and evaluate the aquatic environmental monitoring and studies program. The Entergy Nuclear Vermont Yankee, LLC Chemistry Manager or designee will serve as the administrative coordinator and Secretary for the EAC.

12. The temperature probe in the Vernon fishway shall be compatible with the temperature monitoring system utilized at Stations 3 and 7 in the Connecticut River.

13. Racks and screens preventing fish and other wildlife from entering the condenser water intake must be operated and maintained in a manner as previously approved by the Vermont Water Resources Board. Solids collected on the traveling screen shall not be returned to the Connecticut River.

14. The permittee is authorized to pump river silt, as necessary, that deposits in the intake structure and cooling tower basins, in the form of a silt-water slurry to be deposited on land on the plant site in the sedimentation area. Slurry volumes to be pumped shall not exceed 0.500 MGD or 350 gpm. River sediment/silt will be pumped from the West Cooling Tower into the existing spray pond where it will be passively filtered to reduce turbidity before the water portion is routed to the discharge structure. The remaining sediment will be removed form the spray pond and disposed of properly in accordance with state and federal statutes and regulations.

15. The permittee is authorized to use either the following chemicals, or chemicals which are similar in composition, concentration, and toxicity, to the maximum concentrations indicated below. An increase in dosage rate or a substantial change in the chemicals identified must be reviewed and approved by the Department to assure that no adverse impact will occur. A substantial change in chemicals shall be defined as chemicals that are not similar in composition, concentration, and toxicity to those identified. A change of chemical vendors will require, as a minimum, a submittal of the appropriate MSDS, prior to use of the chemical, to the Wastewater Management Division of the Department.

Bulab 8006: penetrant/biodispersant for use in minimizing and removing fouling within the Service Water System; maximum concentration 20 ppm.

Bulab 7034 or Depositrol BL5303: general corrosion inhibitors for use in service water or circulating water; maximum concentration 30 ppm.

Bulab 9027 or Inhibitor AZ8103: copper corrosion inhibitors for use in the circulating water for condenser corrosion control. Maximum concentration for Bulab 9027 is 10 ppm. Maximum concentration for Inhibitor AZ8103 is 50 ppm (used monthly for a 10 minute period).

Dianodic DN2301: a dispersant for use in the circulating and service water systems; maximum concentration 20 ppm.

Ondeo Nalco H-550 or Spectrus NX-1104: a biocide for use in service waters as an alternative or in addition to bromine/chlorine. The use of these chemicals must be controlled such that the discharge concentration to the Connecticut River of either chemical is maintained at less than 2.0 ppm.

Cortrol OS7700: an oxygen scavenger and pH control agent containing hydroquinone as the oxygen scavenger. Use concentration varies from approximately 100 ppm to 2,000 ppm. Boiler discharges are limited to 15 ppm as hydroquinone.

Ferroquest FQ7101: a chemical for use in the service water system to correct biological/corrosion fouling with the service water pumps. The maximum concentration is 96 ppm for one minute approximately eight times per year.

Ferroquest FQ7102: a pH control agent. Less than two gallons are used to maintain a neutral pH when using FQ 7101. The maximum concentration is 7 ppm for one minute approximately eight times per year.

Oxidizing biocides (chlorine or chlorine with bromine) for treatment of the Service Water System (SWS)

a. Open/hybrid cycle, treatment of the SWS shall not exceed 2 hours per day with no detectable free residual oxidant being measured at the discharge structure (S/N 001).

b. Closed cycle, free residual oxidant as measured at the discharge structure (S/N 001) is limited to 0.2 mg/l and detectable residual oxidant shall not exceed 2 hours per day.

16. There shall be no discharge of polychlorinated biphenyl compounds, such as those commonly used for transformer fluids.

17. There shall be no discharges of metal cleaning waste including wastewater from chemical cleaning of boiler tubes, air preheater washwater, and boiler fireside washwater. .

B. REAPPLICATION

If the permittee desires to continue to discharge after the expiration date of this permit, the permittee shall apply on the application forms then in use at least 180 days before the permit

expires.

Reapply for a Discharge Permit by **September 30, 2005.**

C. OPERATING FEES

This discharge is subject to operating fees. The permittee shall submit the operating fees in accordance with the procedures provided by the Secretary.

D. MONITORING AND REPORTING

1. Sampling and Analysis

The sampling, preservation, handling, and analytical methods used shall conform to regulations published pursuant to Section 304(g) of the Clean Water Act, under which such procedures may be required. Guidelines establishing these test procedures have been published in the Code of Federal Regulations, Title 40, Part 136 (Federal Register, Vol. 56, No. 195, July 1, 1999 or as amended).

Samples shall be representative of the volume and quality of effluent discharged over the sampling and reporting period. All samples are to be taken during normal operating hours. The permittee shall identify the effluent sampling location used for each discharge.

2. Reporting

The permittee is required to submit monitoring results as specified on a Discharge Monitoring Report (Form WR-43). Reports are due on the 15th day of each month, beginning with the month following the effective date of this permit.

If, in any reporting period, there has been no discharge, the permittee must submit that information by the report due date.

Signed copies of these, and all other reports required herein, shall be submitted to the Secretary at the following address:

Agency of Natural Resources
Department of Environmental Conservation
Wastewater Management Division
103 South Main Street
Waterbury, Vermont 05671-0405

All reports shall be signed:

a. In the case of corporations, by a principal executive officer of at least the level of vice president, or his/her duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the permit form originates;

b. In the case of a partnership, by the general partner;

c. In the case of a sole proprietorship, by the proprietor;

d. In the case of a municipal, state, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

3. **Recording of Results**

The permittee shall maintain records of all information resulting from any monitoring activities required including:

a. The exact place, date, and time of sampling;
b. The dates and times the analyses were performed;
c. The person(s) who performed the analyses;
d. The analytical techniques and methods used including sample collection, handling, and preservation techniques;
e. The results of all required analyses;
f. The records of monitoring activities and results, including all instrumentation and calibration and maintenance records;
g. The original calculation and data bench sheets of the operator who performed analysis of the influent or effluent pursuant to requirements of Section I.A of this permit.

The results of monitoring requirements shall be reported (in the units specified) on the Vermont reporting form WR-43 or other forms approved by the Secretary.

4. **Additional Monitoring**

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

PART II

A. MANAGEMENT REQUIREMENTS

1. **Facility Modification / Change in Discharge**

All discharges authorized herein shall be consistent with the terms and conditions of this permit. Such a violation may result in the imposition of civil and/or criminal penalties as provided for in Section 1274 and 1275 of the Vermont Water Pollution Control Act. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new permit application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. **Noncompliance Notification**

In the event the permittee is unable to comply with any of the conditions of this permit due among other reasons, to:

a. breakdown or maintenance of waste treatment equipment (biological and physical-chemical systems including, but not limited to, all pipes, transfer pumps, compressors, collection ponds or tanks for the segregation of treated or untreated wastes, ion exchange columns, or carbon absorption units),

b. accidents caused by human error or negligence, or

c. other causes such as acts of nature,

the permittee shall notify the Secretary within 24 hours of becoming aware of such condition or by the next business day and shall provide the Secretary with the following information, in writing, within five (5) days:

i. cause of non-compliance

ii. a description of the non-complying discharge including its impact upon the receiving water;

iii. anticipated time the condition of non-compliance is expected to continue or, if such condition has been corrected, the duration of the period of non-compliance;

iv. steps taken by the permittee to reduce and eliminate the non-complying discharge; and

v. steps to be taken by the permittee to prevent recurrence of the condition of non-compliance.

3. **Operation and Maintenance**

All waste collection, control, treatment. And disposal facilities shall be operated in a manner consistent with the following:

a. The permittee shall, at all times, maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit; and

b. The permittee shall provide an adequate operating staff which is duly qualified to carry out the operation, maintenance, and testing functions required to insure compliance with the conditions of this permit.

4. **Quality Control**

The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at regular intervals to ensure accuracy of measurements or shall ensure that both activities will be conducted.

The permittee shall keep records of these activities and shall provide such records upon request of the Secretary.

The permittee shall analyze any additional samples as may be required by the Agency of Natural Resources to ensure analytical quality control.

5. **Bypass**

The diversion or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except where authorized under terms and conditions of an emergency pollution permit issued pursuant to 10 V.S.A. Section 1268.

6. **Duty to Mitigate**

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to waters of the State resulting from non-compliance with any condition specified in this permit, including accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

7. **Records Retention**

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, and shall be submitted to Department representatives upon request. This period shall be extended during the course of unresolved litigation regarding the discharge of pollutants or when requested by the Secretary.

8. **Solids Management**

Collected screenings, sludges, and other solids removed from liquid wastes shall be stored, treated and disposed of in accord with the terms and conditions of any certification, interim or final, transitional operation authorization or order issued pursuant to 10 V.S.A., Chapter 159 that is in effect on the effective date of this permit or is issued during the term of this permit.

9. **Emergency Pollution Permits**

Maintenance activities, or emergencies resulting from equipment failure or malfunction, including power outages, which result in an effluent which exceeds the effluent limitations specified herein, shall be considered a violation of the conditions of this permit, unless the permittee immediately applies for, and obtains, an emergency pollution permit under the provisions of 10 V.S.A., Chapter 47, Section 1268. The permittee shall notify the Department of the emergency situation within 24 hours.

10 V.S.A., Chapter 47, Section 1268 reads as follows:

"When a discharge permit holder finds that pollution abatement facilities require repairs, replacement, or other corrective action in order for them to continue to meet standards specified in the permit, he may apply in the manner specified by the Secretary for an

emergency pollution permit for a term sufficient to effect repairs, replacements or other corrective action. The permit may be issued without prior public notice if the nature of the emergency will not provide sufficient time to give notice; provided that the Secretary shall give public notice as soon as possible but in any event no later than five days after the effective date of the emergency pollution permit. No emergency pollution permit shall be issued unless the applicant certifies and the Secretary finds that:

(1) there is no present, reasonable alternative means of disposing of the waste other than by discharging it into the waters of the State during the limited period of time of the emergency;

(2) the denial of an emergency pollution permit would work an extreme hardship upon the applicant;

(3) the granting of an emergency pollution permit will result in some public benefit;

(4) the discharge will not be unreasonably harmful to the quality of the receiving waters;

(5) the cause or reason for the emergency is not due to willful or intended acts or omissions of the applicant."

Application shall be made to the Secretary of the Agency of Natural Resources, Department of Environmental Conservation, Wastewater Management Division, 103 South Main Street, Waterbury, Vermont 05671-0405.

10. **Power Failure**

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. Provide an alternative power source sufficient to operate the wastewater control facilities; or, if such alternative power source is not in existence,

b. Halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

B. RESPONSIBILITIES

1. **Right of Entry**

The permittee shall permit the Secretary or authorized representative, upon presentation of proper credentials:

a. to enter upon the permittee's premises where an effluent source or any records required to be kept under the terms and conditions of this permit are located; and

b. to have access to and copy any records required to be kept under the terms and conditions of this permit;

c. to inspect any monitoring equipment or method required in this permit; or

d. to sample any discharge of pollutants.

2. Transfer of Ownership or Control

This permit is not transferable without prior written approval of the Secretary. All application and operating fees must be paid in full prior to transfer of this permit. In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall provide a copy of this permit to the succeeding owner or controller and shall send written notification of the change in ownership or control to the Secretary. The permittee shall also inform the prospective owner or operator of their responsibility to make an application for transfer of this permit. This application must include as a minimum; a written statement from the prospective owner or operator certifying:

a. The conditions of the operation that contribute to, or affect, the discharge will not be materially different under the new ownership.

b. The prospective owner or operator has read and is familiar with the terms of the permit and agrees to comply with all terms and conditions of the permit.

c. The prospective owner or operator has adequate funding to operate and maintain the treatment system and remain in compliance with the terms and conditions of the permit.

d. The date of the sale or transfer of the business.

The Department may require additional information dependent upon the current status of the facility operation, maintenance, and permit compliance.

3. Confidentiality

Pursuant to 10 V.S.A. 1259(b):

"Any records, reports or information obtained obtained under this permit program shall be available to the public for inspection and copying. However, upon a showing satisfactory to the secretary that any records, reports or information or part thereof, other than effluent data, would, if made public, divulge methods or processes entitled to protection as trade secrets, the secretary shall treat and protest those records, reports or information as confidential. Any records, reports or information accorded confidential treatment will be disclosed to authorized representatives of the state and the United States when relevant to any proceedings under this chapter."

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. **Toxic Effluent Standards**

If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307 (a) of the Federal Clean Water Act for a toxic pollutant which is present in the discharge, and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, the secretary shall revise or modify the permit in accordance with the toxic effluent standard or prohibition and so notify the permittee.

6. **Oil and Hazardous Substance Liability**

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under 10 V.S.A. Section 1281.

7. **Civil and Criminal Liability**

Except as provided in permit conditions on Bypass (Part II, A. 5.), Power Failure (Part II, A. 10.), and Emergency Pollution Permits (Part II, A. 9.), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Civil penalties as authorized under 10 V.S.A. §1274 and 10 V.S.A. §8010, shall not exceed $10,000 a day for each day of violation. Criminal penalties, as authorized under 10 V.S.A. §1275, shall not exceed $25,000 for each day of violation, imprisonment for up to six months, or both.

8. **State Laws**

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

9. **Property Rights**

Issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

10. **Severability**

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall

not be affected thereby.

11. **Authority**

This permit is issued under authority of 10 V.S.A. Section 1259 which states that: "No person shall discharge any waste, substance, or material into waters of the State, nor shall any person discharge any waste, substance, or material into an injection well or discharge into a publicly owned treatment works any waste which interferes with, passes through without treatment, or is otherwise incompatible with those works or would have a substantial adverse effect on those works or on water quality, without first obtaining a permit for that discharge from the Secretary", and under the authority of Section 402 of the Clean Water Act, as amended.

PART III

A. OTHER REQUIREMENTS

This permit shall be modified, suspended or revoked to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Vermont Water Pollution Control Act then applicable.

B. DEFINITIONS

For purposes of this permit, the following definitions shall apply:

The Act - The Vermont Water Pollution Control Act, 10 V.S.A. Chapter 47.

Average - The arithmetic mean of values taken at the frequency required for each parameter over the specific period.

The Clean Water Act - The federal Clean Water Act, as amended.

Composite Sample - A sample consisting of a minimum of one grab sample per hour collected over a normal operating day and combined proportional to flow, or a sample continuously collected proportional to flow over a normal operating day.

Daily Discharge - The discharge of a pollutant measured during a calendar day or any 24 hour period that reasonably represents the calendar day for purposes of sampling.

For pollutants with limitations expressed in pounds, the daily discharge is calculated as the total pounds of pollutants discharged over the day.

For pollutants with limitations expressed in mg/l, the daily discharge is calculated as the average measurement of the pollutant over the day.

Grab Sample - An individual sample collected in a period of less than 15 minutes.

Maximum Day (maximum daily discharge limitation) - The highest allowable "daily discharge" (mg/l, lbs., or gallons).

Mean - The mean value is the arithmetic mean.

Monthly Average (average monthly discharge limitation) - The highest allowable average of daily discharges (mg/l, lbs., or gallons) over a calendar month, calculated as the sum of all daily discharges (mg/l, lbs.,or gallons) measured during a calendar month, divided by the number of daily discharges measured during that month.

NPDES - The National Pollutant Discharge Elimination System.

Secretary - The Secretary of the Agency of Natural Resources

Closed-Cycle Operation and Blowdown - The circulating water system mode in which water is circulated through the cooling towers to dissipate condenser heat. The only water discharged to the River during closed-cycle operation is the blowdown from the cooling towers except for minor leakage through the intake gates which is less than 1% of the circulating water flow. Blowdown refers to the water continuously removed from the cool side of the cooling tower collection basins to rid cooling towers of dissolved solids.

Instantaneous Maximum - A value not to be exceeded in any grab sample.

PART IV

ENVIRONMENTAL MONITORING STUDIES, CONNECTICUT RIVER

The environmental monitoring and studies specified in Part IV are intended to assure that the discharges authorized by this permit do not violate applicable Vermont Water Quality Standards and are not adverse to fish and other wildlife that inhabit the Connecticut River in and around the vicinity of Vernon.

In the event the US Fish and Wildlife Service determines that the field sampling activities as required in the **Larval Fish, Fish, Anadromous Fish,** and **Fish Impingement** sections of this permit may violate the applicable provisions of Endangered Species Act of 1973 as amended (16 USC 1531-43) the Agency, after consultation with other appropriate governing agencies, may direct the permittee to make changes and/or substitutions in the sampling protocol as required in this permit.

CONNECTICUT RIVER MONITORING

River Flow Rate

Frequency/Date: Once per hour - All months
Location: Vernon Dam
River flow data shall be tabulated based on data supplied by the Wilder Station.

Temperature

Frequency/Date: Once per hour - All months
Location: Stations 3 and 7
Water temperature shall be measured to within 0.1 °F.

Frequency/Date: Once per hour - During fishway operation
Location: Vernon Fishway
Water temperature shall be measured to within 0.1 °F. These data shall be collected only when the fishway is officially operating. Data shall be reported as hourly, daily, monthly means.

Water Quality Parameters

Frequency/Date: Once per month - All months
Location: Stations 3 and 7, and the Plant discharge
Water quality parameters shall be grab samples collected via monitor pumps or directly from the River for the following:

	Location		
Parameter	**Station 7**	**Discharge**	**Station 3**
Copper	*	*	*
Iron	*	*	*
Zinc	*	*	*

* Monitoring required only if Entergy Nuclear Vermont Yankee is operating during the specified sample period.

Macroinvertebrates

Macroinvertebrates shall be collected according to the following schedule:

Frequency/Date: June, August, and October (once each month)
Locations: Stations 2 and 3

Cage samplers shall be deployed in June, August, and October. Multiple samplers (minimum of three) should be set at each deployment. Physical characteristics at deployment sites should be standardized between stations to the greatest extent possible. Final sampling plan to be approved by the DEC.

Larval Fish

Larval fish shall be collected when the plant cooling water intake is operating in open/hybrid cycle according to the following schedule and methods:

Frequency/Date: Weekly - May through July 15
Location: Connecticut River adjacent to the plant intake

Collect three plankton net samples on the same day in each week. The net shall be deployed as close as possible to the intake allowing each sample to be representative of the water column, bottom to surface. The volume sampled shall be measured with a flow meter mounted near the net mouth and used to calculate the density of larval fish in each tow. Larval fish shall be identified to the lowest distinguishable taxonomic level and enumerated.

With the written concurrence of the Agency, the sampling method may be modified or replaced.

Fish

Fish shall be collected according to the following schedule and methods:

Frequency/Date: Monthly - May, June, September, and October
Locations: Connecticut River at Rum Point; Station 5; Station 4; N.H. Setback; 0.1 mile south of the Vernon Dam; Station 3; Stebbin Island; and, Station 2

Fish shall be collected at each location with boat mounted electrofishing gear. All fish caught shall be identified, enumerated to the lowest distinguishable taxonomic level, and measured for length and weight. A representative sample of American Shad and Atlantic Salmon shall be scaled for annuli determination of age. Catch-per-unit-of-effort (CPUE) shall be calculated for each species sampled.

Anadromous Fish

Juvenile and adult American shad shall be monitored according to the following schedule:

Frequency/Date: Twice monthly - July through October
Locations: Connecticut River 0.1 mile south of Vernon Dam; Station 3; and Stebbin Island

Juvenile shad shall be collected at each location with boat mounted electrofishing gear. All captured juvenile American shad shall be identified, enumerated, and measured for length and weight. Catch-per-unit-of-effort shall be calculated.

Frequency/Date: Twice monthly - July through October
Location: Connecticut River between Vernon Dam and the confluence of the West River

Collect 20 beach seine hauls and 12 surface trawl tows (utilizing midwater trawl tow gear) per sampling event. All fish caught shall be identified, enumerated to the lowest distinguishable taxonomic level, and measured for length and weight. Catch-per-unit-of-effort shall be calculated for American shad.

Frequency/Date: Weekly - May 15 through June
Location: Vernon Fish Ladder

Adult American shad shall be sampled in the fish trap and enumerated, measured for length and weight and evaluated for sex and sexual condition. Scale samples shall be taken from each fish and used for annuli determination of age.

All sampling activities at the Vernon Fish Ladder are under the direction of the Vermont Department of Fish & Wildlife.

Fish Impingement

Impingement samples shall be collected when the plant cooling water intake is operating in open/hybrid cycle according to the following schedule and methods:

Frequency/Date: Weekly - April 1 through June 15; August 1 through October 31
Locations: Circulating water traveling screens

Prior to the start of each weekly sample, the three circulating water screens shall be backwashed and the debris removed. Debris shall be examined for American shad and Atlantic salmon. On the following day, the three circulating water screens shall be backwashed and the debris shall be sorted to remove all impinged fish. Fish shall be identified to the lowest distinguishable taxonomic level, enumerated, measured for total length and weighed.

(When air temperatures are at freezing the permittee may be unable to rotate the traveling screens until the air temperature rises above freezing. In such cases, the scheduled sample may be collected once air temperatures have risen above freezing.)

Standard Operating Procedures

Field sampling required as specified in the **Macroinvertebrates, Larval Fish, Fish, Anadromous Fish,** and **Fish Impingement** sections shall be performed according to approved Standard Operating Procedures. A Standard Operating Procedures Manual describing the field sampling activities shall be provided to the Agency for review and approval prior to the start of field sampling.

Atlantic salmon: The plant shall revert to closed cycle if the annual Atlantic salmon impingement limit as determined by the U.S. Fish and Wildlife Service, is exceeded and shall remain on closed cycle until June 15 of the current calendar year. If any anadromous Atlantic salmon are impinged, the Vermont Department of Fish and Wildlife shall be notified.

1. If Atlantic salmon are impinged, the frequency of impingement sampling shall increase to daily sampling when either of the following criteria are met:

   a. when any daily impingement of Atlantic salmon exceeds 10% of the annual impingement limit or,

   b. when 50% or more of the annual limit have been exceeded during the current year.

   Daily impingement sampling shall continue until three consecutive daily samples have been collected and no Atlantic salmon obtained. Sampling frequency shall then revert to weekly sampling.

2. If the criteria listed above are not met, impingement sampling will remain on a weekly schedule.

The maximum number of Atlantic salmon which can be impinged by Entergy Nuclear Vermont Yankee, LLC during a calendar year is determined by:

Impinged Atlantic salmon limit = 0.001 x (smolt equivalents)

Smolt equivalents (SE) are defined as:

$$SE = SE_F + SE_P + SE_S + SE_N$$

where:

SE_F is defined as the total number of smolt equivalents available from fry plants upstream of Vernon Dam. This number is calculated by:

$$SE_F = 0.0675 \times \text{(two year previous fry)}$$

Two year previous fry is defined as the total number of fry stocked upstream of the Vernon Dam two years previous.

SE_P is defined as the total number of smolt equivalents available from parr plants upstream of the Vernon Dam. This number is calculated by:

$SE_P = [(0.25 \times (\text{yearling parr})) + (0.11 \times (\text{two-year previous under yearling})]$

Yearling parr is defined as the total number of 1+ parr stocked upstream of the Vernon Dam during the previous calendar year.

Two-year previous under yearling parr is defined as the total number of 0+ parr stocked two years previous.

SE_S is defined as the total number of smolt equivalents available from smolt stocked upstream of Vernon Dam. This number is calculated by:

$SE_S = 1 \times (\text{smolts stocked})$

Smolts stocked is defined as the total number of smolts stocked upstream during the current monitoring year.

SE_N is defined as the total number of smolt equivalents available from natural reproduction upstream of Vernon Dam. This number is calculated by:

$SE_N = 0.58 \times 7000 \times 0.01 \times (\text{adult salmon})$

0.58 represents 58% of the run as female.
7000 represents the average number of eggs per female.
0.01 represents a 1% survival of eggs to the smolt stage.
Adult salmon is defined as the number of adult salmon passed through the Vernon Fishway three years previous.

American shad: The plant shall revert to closed cycle if the annual American shad impingement limit, as determined by the U.S. Fish and Wildlife Service, is exceeded and shall remain on closed cycle until November 15 of the current calendar year. If any anadromous American shad are impinged, the Vermont Department of Fish and Wildlife shall be notified.

1. If 50% or more of the annual limit have been exceeded during the current year, impingement sampling frequency shall increase to daily sampling upon the impingement of any American shad and continue until three consecutive daily samples not containing these fishes are obtained. Sampling would then revert back to weekly sampling.

2. If the above criterion is not met, impingement sampling shall remain on a weekly schedule.

The maximum number of American shad which can be impinged by Entergy Nuclear Vermont Yankee, LLC during a calendar year is determined by:

Impinged American shad limit = 1 x number of American shad

The number of American shad is defined as the number of American shad passed at the Vernon fish ladder or otherwise introduced above Vernon Dam during the calendar year.

No Adverse Impact on Biota Evaluation:

The above task-oriented monitoring program defines a minimal data collection study on the water quality and biota adjacent to the plant. In order to demonstrate that the operation of the plant does not result in an adverse effect on fish and other wildlife, including their value as fish and game and their habitat and ecology, additional objective specific studies and data evaluation may be required. These additional study topics would be as a result of changes observed during the task-oriented program and/or Environmental Advisory Committee (EAC) concerns raised for fish or other biota.

The EAC (in conjunction with the Vermont Department of Fish and Wildlife) may modify the fish sampling protocol if it has been determined that the impact on biota adjacent to the plant may be adversely affected. The modifications shall be made in writing and submitted to the DEC and Entergy Nuclear Vermont Yankee, LLC.

Objective specific investigations would be defined and reviewed by the EAC annually. A draft proposal for the following years studies, if any, would be submitted by Entergy Nuclear Vermont Yankee, LLC to the EAC for review by October 1 of the current year. A progress report on studies conducted during the current year would be submitted by Entergy Nuclear Vermont Yankee, LLC to the EAC by February 1. Proposed changes to the draft proposal would by submitted by March 1.

Macroinvertebrate Investigation - During 2002-03 Entergy Nuclear Vermont Yankee, LLC shall complete a study on the macroinvertebrate populations in the Vernon Pool. Specifics of the study shall be coordinated between the Department of Environmental Conservation and Entergy Nuclear Vermont Yankee, LLC prior to commencement of the study.

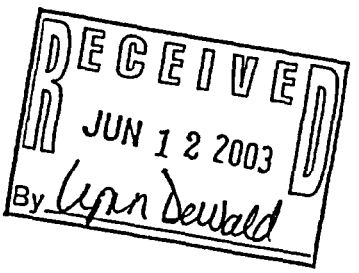
The Department may amend this permit to include other specific EAC investigations.

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WASTEWATER MANAGEMENT DIVISION
103 SOUTH MAIN STREET
WATERBURY, VERMONT 05671-0405

FACT SHEET

(May 2001, amended July 2001, **amended May 2003***)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES



FILE NO: 13-17
PERMIT NO: 3-1199
NPDES NO: VT0000264
PROJECT ID NO: NS75-0006

NAME AND ADDRESS OF APPLICANT:

Entergy Nuclear Vermont Yankee
322 Governor Hunt Road
Vernon, Vermont 05354

cc: Elise Zoli
Goodwin Proctor/LLP

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Entergy Nuclear Vermont Yankee
322 Governor Hunt Road
Vernon, Vermont 05354

RECEIVING WATER: Connecticut River

CLASSIFICATION: Class B

I. Proposed Action, Type of Facility, and Discharge Location

The above named applicant has applied to the Vermont Department of Environmental Conservation for a permit to discharge into the designated receiving water. The facility is engaged in the operation of a nuclear electrical generating station. The discharge is combined effluent from condenser cooling water and service water, boiler blowdown, water treatment process and carbon filter backwash, radioactive waste treatment system, demineralized trailer rinsedown water and stormwater runoff.

* **This is a permit amendment. Proposed changes to the permit are addressed on page 7 of this fact sheet.**

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters is based upon the permit application and supporting documents including the final 316 Demonstration Report and a summary of the self-monitoring data.

III. Limitations and Conditions

The effluent limitations, monitoring requirements, and special conditions may be found on the following pages of the draft permit:

Effluent Limitations and Monitoring Requirements	Pages 2 through 9
Special Conditions	Pages 2 through 9

IV. Facility Description and Background

Entergy Nuclear Vermont Yankee owns and operates a nuclear power station in Vernon, Vermont. The facility is located on the west shore of Vernon Pool, an impoundment of the Connecticut River created by Vernon Dam. The dam and Vernon Station, a hydroelectric facility, are located approximately 0.5 miles downstream from Vermont Yankee. The Vermont Yankee Nuclear Power Station (VYNPS), which began operation in 1972, is classified as a Boiling Water Reactor (BWR) with a rated core thermal power level of 1593 MW, providing a gross electrical output of 537 MW. The remainder of the energy, 1056 MW, is removed as heat by the circulating water system as it passes by the condenser and discharges to the Connecticut River (S/N 001), or to the atmosphere via mechanical draft cooling towers. There are several other processes associated with the electro-generation and facility operations, which may result in a discharge. Typically these discharges are not continuous and occur infrequently. These include radioactive liquid (S/N 002), plant-heating boiler blowdown (S/N 003), water treatment and carbon filter backwash (S/N 004), cooling water discharge from the four RHR-SW pumps (S/N 005), site stormwater runoff (S/N 006, 007, and 008), demineralized trailer rinse down water (S/N 006), and strainer and traveling screen backwash (S/N 009). A schematic of the design maximum capacity wastewater flows is attached.

Currently, VYNPS has a State of Vermont NPDES Discharge Permit (Permit No. 3-1199, NPDES No. VT0000264). Vermont Yankee has applied for a renewal of this permit. The Department intends to issue a draft discharge permit with effluent limitations, monitoring requirements, and other special conditions based on Titles III and IV of the Clean Water Act in accordance with 40 CFR Parts 122-125 and 423, The Vermont Water Pollution Control Act 10 VSA Chapter 47, Vermont Water Pollution Control Permit Regulations, the Vermont Water Quality Standards, and the Final 316 Demonstration Report: Biological, Hydrological, & Engineering Information and Environmental Impact Assessment (For the period 16 May to 14 October), June 1990.

V. Permit Basis and Explanation of Effluent Limitation Derivation

The following is a description of each of the authorized discharges including background and highlighting modifications from the previously issued permit that are proposed in the draft permit.

S/N 001 - Condenser Cooling Water and Service Water

Condenser cooling water is the secondary coolant in the nuclear reactor system. In the BWR, primary coolant water (pumped from the Connecticut River) is converted to high purity steam which passes through the high-pressure and low-pressure turbine generator for electrical generation. Exhaust steam enters a water cooled condenser, where it is cooled back to water and recirculated in the process. The condenser cooling water removes unused heat energy from the primary system and as a non-contact cooling system, is not a source of plant related radioactivity released as a liquid effluent.

Vermont Yankee has various modes of condenser cooling operation which determines the volumes of water and amounts of heat discharged to the river. In order to comply with the thermal criteria for discharge (dependent on river conditions and plant operations), condenser cooling water may be discharged directly to the Connecticut River ('open-cycle, or once through cooling'), or may be directed to the mechanical draft cooling towers. These discharges may wholly, or in part, be returned to the river and/or the plant's circulating water system ('hybrid or closed cycle').

Excess service waters (up to 10,000 gpd) discharge through the circulating water system prior to combining with the condenser cooling water. Vermont Yankee upgraded its service water system in 1994 to include the ability to chemically treat (chlorine or chlorine with bromine) for biofouling. These oxidizing biocides were included under Condition I.A.15.

The dilution of the service waters (for cooling of plant equipment) prior to discharge is approximately 36:1. The discharge limitations for free residual chlorine and total residual oxidant will remain unchanged from the previous permit.

The proposed permit includes the addition of two new chemicals for use in the RHR service water system to correct biological/corrosion fouling of the four service water pumps. Each pump will be serviced approximately twice a year and each discharge containing Ferroquest FQ7101(treatment chemical) and FQ7102 (for maintaining a neutral pH) will last only one minute. The maximum concentration for FQ7101 is 96 ppm for one minute and for FQ7102 the maximum concentration is 7 ppm for one minute. The effluent from the cleaning (approximately 300 gallons of 10% Ferroquest 7101) will discharge to the service water system (5,000 gpm flow) then enter the circulating water system (240,000 gpm flow) to the discharge structure via S/N 001.

During the winter months all of the service water is routed to a deep basin under the West Cooling Tower which contains 1.6 million gallons of water prior to entering the discharge structure (S/N 001). This is used to prevent icing and is in place when the river temperature drops below 45 degrees F. During this time additional dilution is available.

Other Limits for Discharge S/N 001

Maximum discharge occurs during 'open/hybrid-cycle' and will remain as previously permitted at 543 MGD. Closed cycle operation maximum flow rate will remain at 12.1 MGD. These are calculated values, determined through the use of pump curves.

The permit continues to require continuous ambient temperature monitoring in the Connecticut River. This monitoring will ensure that temperature limits in the Vermont Water Quality Standards are met under all operating conditions.

Under the provisions of both the Clean Water Act, Section 316 and the Vermont Water Quality Standards, Section 3-01, alternative thermal limitations may be granted where a demonstration is made that such alternative limits will not result in an adverse effect on biota or beneficial values or uses associated with the classification of the receiving waters. The results of the 316 demonstration (Final 316 Demonstration Report: Biological, Hydrological, & Engineering Information and Environmental Impact Assessment (For the period 16 May to 14 October), June 1990, and the Summary Report of the 1986 - 1997 Ecological Studies of the Connecticut River, Vernon, Vermont indicated that the plant operations had not altered the distribution, abundance, or diversity of aquatic biota of the Connecticut River near Vernon.

Based upon this demonstration and the annual ecological monitoring studies, the existing thermal limits remain unchanged from the previous permit.

S/N 002 - Radioactive Liquid

The discharge of low level radioactive liquids may occur from the radwaste building after treatment. This discharge is intermittent and occurs on a very infrequent basis. According to self-monitoring data, the last discharge occurred in December, 1981. The restrictions on radioactive discharges, Condition I.10. a-f, have not been modified. The previously permitted discharge limit of 0.01 MGD is unchanged.

S/N 003 - Plant Heating Boiler Blowdown

The plant-heating boilers discharge relatively small volumes of blowdown on an intermittent basis most months. The maximum daily flow rate is 0.0010 MGD except that each of the two boilers may be drained of 0.0020 MGD at the end of the heating season. (Each boiler has a capacity of 2000 gallons.) This is unchanged from the previous permit. This waste stream discharges through S/N 007 to the outlet structure forebay.

The name, but not the chemical itself, of the corrosion control chemical has been changed from Betz Layup-1 to BetzDearborn Cortrol OS7700.

S/N 004 - Carbon Filter Backwash

This system is part of the river water purification system and generates river solids. This discharge is defined by 40 CFR 423.12 as a 'low volume waste stream' which has established total suspended solids (TSS) limits calculated using the flow rate and a concentration of 100 mg/l. The flow rate and total suspended solids limit remains unchanged from the previous permit. This waste stream discharges through S/N 007 to the outlet structure forebay.
Data from the past five years indicate that the discharge of total suspended solids is less than 3%

of the existing pounds limit of 8.3. As a result this permit proposes to delete the requirement for TSS monitoring.

S/N 005 - Minor Cooling Water from Residual Heat Removal-Service Water Pumps

S/N 005 is a minor cooling water (service water motor coolers) discharge from the four RHR-SW pumps, typically operated only during plant shutdown at a maximum flow of 0.014 MGD. There are no additives and the discharges are only slightly thermally enhanced. No effluent limits or monitoring is required for this waste stream which discharges through S/N 007 to the outlet structure forebay. This is unchanged from the previous permit.

S/N 006, 007, 008, 010, 011 - Stormwater Discharges and Demineralized Trailer Rinse Down Water (S/N 006 only)

Authorization to discharge stormwater runoff from discharge points S/N 006, 007, and 008 will be retained in this permit. Vermont Yankee has applied for a permit amendment to add two existing stormwater discharge points (a part of the original plant design) which were previously not identified in the permit. These are S/N 010, stormwater from the 345 kV switchyard discharging about 300 yards north of the intake and S/N 011, stormwater from the 115kV switchyard discharging about 350 yards north of the intake.

In addition to the stormwater discharges, the permit proposes to add 'demineralized trailer rinse downs' to discharge point S/N 006. Approximately four times a year a trailer truck with six ion exchange resin tanks enters the facility in order to make demineralized make-up water for the reactor. The proposed flow would be up to 0.01 MGD. Due to the high quality of this discharge no monitoring is proposed.

S/N 009 - Strainer and Traveling Screen Backwash Water

S/N 009 is a minor discharge of river water from the backwash of the Circulating and Service Water Traveling Screens and the Service Water Strainers. It is located a few feet north of the service water intake bay at the intake structure. Operation of the traveling screens and strainers is intermittent based upon differential pressure resulting in 0.014 to 0.050 MGD being discharged through S/N 009. The previous permit limited the flow to 0.035 mgd; the proposed permit limits the flow to 0.050 mgd. Data from spring 2000 indicated that high river flows containing debris may cause the circulating water traveling screens to backwash more often than three times per day, which was the basis for the original 0.035 mgd limit. The maximum period of time the traveling screens and the strainers would backwash in a 24-hour period is approximately three hours. Prior to being discharged, the backwash water flows into a trash pit where debris is removed from the effluent stream. Due to its location, much of the backwash water would in fact enter the service water intake structure.

A service water treatment chemical, Bulab 8006, (a penetrant/biodispersant) is added at a concentration of up to 20 ppm. Because of the intermittent nature of the discharge, the fact that much of this discharge enters the service water intake structure, and the dilution ratio of the receiving water, there should be no adverse impact to the Connecticut River. Monitoring of this discharge is not required. This is unchanged from the previous permit.

Part IV - Environmental Monitoring Studies, Connecticut River

Several changes have been proposed for Part IV of the permit as a result of discussions between members of the Environmental Advisory Committee with input from Vermont Yankee and their consultant Normandeau Associates.

Macroinvertebrates

The section on dredge samples is proposed to be deleted from the permit. The Section on cage samples has been modified slightly. To compensate for the loss of dredge samples Vermont Yankee will begin an objective specific study (2002-03) involving macroinvertebrate populations in Vernon Pool. Specifics of the study will be worked out between the Department of Environmental Conservation and Vermont Yankee.

Larval Fish and Fish

The ichthyoplankton field sampling procedures will remain as in the previous permit with some minor changes. The procedure may be modified with the written approval of the Agency. (Larval Fish)

The section on trap nets is proposed to be deleted in order to protect the nesting pair of bald eagles on the island below Vernon Dam. Electrofishing will remain a requirement. (Fish)

Anadromous Fish

This section has been enhanced to include both juvenile and adult shad. The previous permit only included juvenile shad. Other stations including the Vernon Fish Ladder are proposed to be included in the permit.

Atlantic Salmon

A change in the formula for estimating the annual Atlantic salmon impingement limit is proposed to be corrected. In the existing permit's "smolt equivalent" formula, the variable SE_n is based on the following:
"Adult salmon is defined as the number of adult salmon passed through the Vernon Fishway two years previous."
Three, instead of two, years is proposed in the draft permit.

Standard Operating Procedures Manual

Proposed language requires the development of a manual to be submitted to the Agency for review and approval prior to the start of field sampling.

* Proposed Permit Changes (May 2003)

Part I.A.15. - The chemical Nalco H-550 is proposed to replace Bulab 6002. A review of the information submitted including MSDS indicated that the chemical at a concentration of less than 2.0 ppm (which assumes no demand) will not have an adverse impact on the biota in the receiving water.

Part I.A. - The previous language in Part I.A. addressing floating and foaming solids has been changed to "The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the water quality standards of the receiving water." This language is identical to language used in the Department's municipal discharge permits.

Part IV. Fish Impingement - The Department understands that collecting fish samples off the traveling screens may be problematic during freezing weather. The section has therefore been modified to include the following language: "When air temperatures are at freezing the permittee may be unable to rotate the traveling screens until the air temperature rises above freezing. In such cases, the scheduled sample may be collected once air temperatures have risen above freezing." This still ensures that the sample will be collected as required.

Part IV. Fish - The Station 4 monitoring location has been added to this section of the permit. It was inadvertently left out of the existing permit.

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