

## **Brunswick NPDES Permit (Thermal Discharge) Historical Background**

On December 31, 1974, Mr. Jack E. Raven, Regional Administrator, EPA Region IV, issued NPDES Permit Number NC0007064 for Brunswick Steam Electric Plant. Included in the 1974 permit were the summer and winter limitations on the temperature rise at the condenser outlets during the time when Brunswick was to be once-through cooling (until April 30, 1978) and monitoring requirements for cooling tower blowdown after the construction of the towers was to be completed (from May 1, 1978 until permit expiration). On January 17, 1975, CP&L petitioned for an adjudicatory hearing (in accordance with 40 CFR  $\S$  125.36, circa 1975 regulations) seeking review of many of the terms and conditions of the 1974 NPDES permit. Included in the petition was the item that the permit failed to provide for a deferred hearing (pursuant to 40 CFR  $\S$  122.10, circa 1975 regulations, and Section 316 (a) of the Federal Water Pollution Control Act Amendments of 1972), which deprived CP&L of the opportunity to demonstrate that the thermal effluent limitations were more stringent than necessary. EPA granted the request for the hearing by letter dated May 19, 1975. In a June 22, 1976 stipulation that resulted from the hearing, thermal monitoring and limitations resembling the current thermal plume monitoring conditions were agreed upon. The stipulation was effective upon approval by the Regional Administrator and required the Administrator to "immediately revise" the subject pages of the permit. The stipulation was signed by all parties, including the Regional Administrator, on June 22, 1976. The stipulation with the inclusion of the thermal plume condition to the 1974 NPDES Permit was agreed upon to allow Brunswick to continue operating in a once-through cooling mode. The Administrator did not revise the NPDES Permit pages to include the thermal plume condition until the issuance of the 1980 NPDES Permit. The 1980 NPDES Permit contained both the summer and winter limitations on the temperature rise at the condenser outlets and quarterly thermal plume monitoring (language as written in the current permit). Of note is that in the cover letter issuing the 1980 NPDES Permit, the Administrator acknowledged that "the thermal discharge does not cause significant harm to the aquatic community and the proposed effluent limitations ...do protect the population..." and that the "provisions of  $\S$  316 (a) for alternative thermal limitations are not applicable". This means the existing thermal plume condition met the requirements for thermal discharge limitations and any alternative thermal limitation was not applicable. During the 1985 NPDES Permit renewal process, CP&L requested and was granted a reduction in the frequency of thermal plume monitoring. In 1992, CP&L requested a permit modification to remove the summer and winter limitations on the temperature rise at the condenser outlets. The subsequent NPDES issued on March 1, 1993 had no temperature monitoring or limitations on the condensers.

## **Brunswick NPDES Permit Thermal Plume Monitoring and Limitations Regulatory Basis**

The numeric temperature limits identified in BNP's NPDES Permit are based on 15A NCAC 2B .0222 Tidal Salt Water Quality Standards for Class SB Waters. Class SB Waters are defined as surface waters used for primary recreation, including frequent or

organized swimming. All water quality standards that apply to Class SC waters are also applicable to Class SB waters. The temperature limits are defined in the standards for Class SC waters as:

#### **15A NCAC 2B .0220 Tidal Salt Water Quality Standards for Class SC Waters**

15A NCAC 2B .0220 (3) (k) Temperature: shall not be increased above the natural water temperature by more than 0.8 degrees C (1.44 degrees F) during the months of June, July, and August nor more than 2.2 degrees C (3.96 degrees F) during other months and in no cases to exceed 32 degrees C (89.6 degrees F) due to the discharge of heated liquids;

The BNP thermal limitations and monitoring condition includes a mixing zone. Mixing zones are provisions in water quality standards, which recognize that the standards may not be met in an area of water in the immediate vicinity of a discharge. Hence, the thermal plume condition in the Brunswick NPDES permit is based on water quality standards including the application of a mixing zone.

North Carolina deems the discharge of heated water in compliance with North Carolina regulations if such discharge is in compliance with federal rules and regulations pursuant to § 316 (a) of the Clean Water Act, hereupon referred to as the Act, (reference 15A NCAC 2B.0204 North Carolina Mixing Zone Rule). Section 316 (a) is a provision in the Act for any point source otherwise subject to the provisions of section 301 or section 306 of the Act to seek a variance from thermal limitations that are based on either "best professional judgment" for technology based limits or state water quality standards for water quality based limitations. (Section 301 is the Effluent Limitations section of the Act and Section 306 is the National Standards of Performance section of the Act) Section 316 (a) authorizes the Administrator to impose an alternative effluent limitation on the thermal component if it has been demonstrated that the proposed effluent limitation is more stringent than necessary to assure the projection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife. The existing temperature limits and monitoring condition are effluent limitations that EPA and CP&L agreed to in the 1976 stipulation. The note from the State in the 1980 NPDES permit acknowledged that an alternative limit (different from the existing limit) under § 316 (a) of the Act was not warranted.

#### **Brunswick NPDES Permit Thermal Plume Change in Monitoring and Limitations Regulatory Basis**

The plant has several approaches that can be used to request a change in the thermal plume monitoring and limitations.

- 1) Request a change in the application of the water quality based limit (i.e. ask for a change in the magnitude of the mixing zone). At first glance this would appear that CP&L would be asking for the application of a less stringent limit. The

application of a less stringent limit could be considered backsliding, which is prohibited, unless the application of such a limit meets one of the exceptions as listed under § 402 of the Act. Section 402 (o) of the Act states that "a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated ... to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit..." unless the less stringent limit is needed as a result of one of the exceptions listed in the Act. To change the limitation (i.e. the mixing zone), CP&L will have to show that the change is not backsliding (that it meets one of the exceptions) and that a different mixing zone would assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife.

- 2) Apply for a variance to the thermal plume monitoring and limitations. CP&L can seek such a variance under § 316 (a) of the Act. Seeking a variance under § 316 (a) of the Act, is seeking a variance from any effluent limitation proposed for the control of the thermal component of any discharge. Although no limit has been proposed for the plant, which correlates to the proposed changes to the plant for power uprate, we can assume that the existing condition would be the proposed condition in such a situation. Hence, we would seek a variance to the existing thermal plume monitoring and limitations. We can seek the variance by submitting application pursuant to 40 CFR 125 Subpart H. Subpart H identifies the requirements for a § 316 (a) variance request. Essentially, CP&L will need to either perform a new § 316 (a) demonstration or we could provide a supplement to the existing § 316 (a) demonstration that was performed in 1979. A § 316 (a) demonstration is a detailed study that shows that an alternative effluent limitation (different and less stringent than proposed) assures the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife.

Applying for a § 316 (a) variance is a three stage process; i) an early screening process, ii) a detailed plan of study, and iii) the full demonstration. First, an initial application for a § 316 (a) variance is submitted. This application includes: "(1) A description of the alternative effluent limitation requested; (2) A general description of the method by which the discharger proposes to demonstrate that the otherwise applicable thermal discharge effluent limitations are more stringent than necessary; (3) A general description of the type of data, studies, experiments and other information which the discharger intends to submit for the demonstration; and (4) Such data and information as may be available to assist the Director in selecting the appropriate representative important species." Then, within 30 days of the initial submittal, CP&L has to consult with the state. After the consultation and within 60 days after the application is filed, CP&L has to submit a detailed plan of study for the approval by the state. Finally, the study has to be performed and the results submitted to the state for consideration in the variance request.

Normally, a § 316 (a) variance request is submitted with a timely NPDES permit application. However, under 40 CFR 125.72 (f), CP&L can seek an early ruling on a § 316 (a) variance request.

## **NORTH CAROLINA'S MIXING ZONE RULE (15A NCAC 2B.0204)**

### **.0204 LOCATION OF SAMPLING SITES AND MIXING ZONES**

(a) **Location of Sampling Sites.** In conducting tests or making analytical determinations of classified waters to determine conformity or nonconformity with the established standards, samples shall be collected outside the limits of prescribed mixing zones. However, where appropriate, samples shall be collected within the mixing zone in order to ensure compliance with in-zone water quality requirements as outlined in Paragraph (b) of this Rule.

(b) **Mixing Zones.** A mixing zone may be established in the area of a discharge in order to provide reasonable opportunity for the mixture of the wastewater with the receiving waters. Water quality standards will not apply within regions defined as mixing zones, except that such zones will be subject to the conditions established in accordance with this Rule. The limits of such mixing zones will be defined by the division on a case-by-case basis after consideration of the magnitude and character of the waste discharge and the size and character of the receiving waters. Mixing zones will be determined such that discharges will not:

- (1) result in acute toxicity to aquatic life [as defined by Rule .0202(1) of this Section] or prevent free passage of aquatic organisms around the mixing zone;
- (2) result in offensive conditions;
- (3) produce undesirable aquatic life or result in a dominance of nuisance species outside of the assigned mixing zone;
- (4) endanger the public health or welfare.

In addition, a mixing zone will not be assigned for point source discharges of fecal coliform organisms in waters classified "WS-II," "WS-III," "B," "SB," or "SA." For the discharge of heated wastewater, compliance with federal rules and regulations pursuant to Section 316(a) of the Federal Water Pollution Control Act, as amended, shall constitute compliance with Subparagraph (b) of this Rule.

### **Clean Water Act Sections**

#### **§ 316 (a)**

With respect to any point source otherwise subject to the provisions of section 301 or section 306 of this Act, whenever the owner or operator of any such source, after opportunity for public hearing, can demonstrate to the satisfaction of the Administrator

(or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is made, the Administrator (or, if appropriate, the State) may impose an effluent limitation under such sections for such plant; with respect to the thermal component of such discharge (taking into account the interaction of such thermal component with other pollutants), that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water.

§ 402

**o) Anti-backsliding**

(1) **General prohibition** - In the case of effluent limitations established on the basis of subsection (a)(1)(B) of this section, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) of this title subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit. In the case of effluent limitations established on the basis of section 301(b)(1)(C) or section 303(d) or (e) of this title, a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with section 303(d)(4) of this title.

(2) **Exceptions** - A permit with respect to which paragraph (1) applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant if -

(A) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation;

(B) (i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or

(ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under subsection (a)(1)(B) of this section;

(C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;

(D) the permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a) of this title; or

(E) the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification). Subparagraph (B) shall not apply to any revised waste load allocations or any alternative grounds for translating water quality standards into effluent limitations, except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of this chapter or for reasons otherwise unrelated to water quality.

(3) Limitations - In no event may a permit with respect to which paragraph (1) applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 303 of this title applicable to such waters.

## **Code of Federal Regulations**

### **40PART 125--CRITERIA AND STANDARDS FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM--Table of Contents**

#### **Subpart H--Criteria for Determining Alternative Effluent Limitations Under Section 316(a) of the Act**

##### **Sec. 125.72 Early screening of applications for section 316(a) variances.**

(a) Any initial application for a section 316(a) variance shall include the following early screening information:

- (1) A description of the alternative effluent limitation requested;
- (2) A general description of the method by which the discharger proposes to demonstrate that the otherwise applicable thermal discharge effluent limitations are more stringent than necessary;
- (3) A general description of the type of data, studies, experiments and other information which the discharger intends to submit for the demonstration; and
- (4) Such data and information as may be available to assist the Director in selecting the appropriate representative important species.

(b) After submitting the early screening information under paragraph (a) of this section, the discharger shall consult with the Director at the earliest practicable time (but not later than 30 days after the application is filed) to discuss the discharger's early screening information. Within 60 days after the application is filed, the discharger shall submit for the Director's approval a detailed plan of study which the discharger will undertake to support its section 316(a) demonstration. The discharger shall specify the nature and extent of the following type of information to be included in the plan of study: Biological, hydrographical and meteorological data; physical monitoring data; engineering or diffusion models; laboratory studies; representative important species; and other relevant information. In selecting representative important species, special consideration shall be given to species mentioned in applicable water quality standards. After the discharger submits its detailed plan of study, the Director shall either approve the plan or specify any necessary revisions to the plan. The discharger shall provide any additional information or studies which the Director subsequently determines necessary to support the demonstration, including such studies or inspections as may be necessary to select representative important species. The discharger may provide any additional information or studies which the discharger feels are appropriate to support the demonstration.

(c) Any application for the renewal of a section 316(a) variance shall include only such information described in paragraphs (a) and (b) of this section as the Director requests within 60 days after receipt of the permit application.

(d) The Director shall promptly notify the Secretary of Commerce and the Secretary of the Interior, and any affected State of the filing of the request and shall consider any timely recommendations they submit.

(e) In making the demonstration the discharger shall consider any information or guidance published by EPA to assist in making such demonstrations.

(f) If an applicant desires a ruling on a section 316(a) application before the ruling on any other necessary permit terms and conditions, (as provided by Sec. 124.65), it shall so request upon filing its application under paragraph (a) of this section. This request shall be granted or denied at the discretion of the Director.

Note: At the expiration of the permit, any discharger holding a section 316(a) variance should be prepared to support the continuation of the variance with studies based on the discharger's actual operation experience.

## **Brunswick NPDES Permit History**

- CP&L files application with US AEC for permit to construct two-unit plant - 7/68
- Original design called for a river intake and a river discharge
- Concerns raised over thermal impacts to river/estuary
- Permit to construct canals with an ocean discharge issued in early 1971
- NRC's Final Env. Statement - 1/74
  - (concluded that Cooling Towers needed)
- EPA issued initial NPDES Permit - 11/74
  - (required Cooling Towers as BAT by mid '78)
- NRC Operating License - 12/74
- CP&L Adjudication - 1/75
  - Studies and Hearings
  - Political Intervention
- Final Settlement - 1980
- Once-through cooling allowed with the following requirements:
  - Diversion Structure
  - Fine Mesh Screens (2) / Fish Return
  - Flow Minimization (seasonal)
- 1987 Permit Modifications
  - Winter Flow Increased from 605 cfs to 922 cfs
  - Summer Flow Increased from 915 cfs to 1105 cfs
  - July - Sept Flow may be increased to 1230 cfs on one unit only
  - Third Fine Mesh Screen as compensation

- **2001 Permit Renewal**

- **EPUR – No increase in flow needed (only issue is thermal)**
- **Requesting 2 ½ FMS in lieu of 3 FMS**

**Moore, Philip**

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**From:** Kozyra, Jan [jan.kozyra@pgnmail.com]  
**Sent:** Monday, August 26, 2002 1:17 PM  
**To:** Moore, Philip  
**Subject:** FW: BNP Permit History Stuff

Per your command. . .

-----Original Message-----

**From:** Snead, Paul  
**Sent:** Monday, August 26, 2002 1:15 PM  
**To:** Kozyra, Jan  
**Subject:** FW: BNP Permit History Stuff

BNP NPDES Timelines and verbage for you to forward to Phil.  
Thanks;  
Paul

-----Original Message-----

**From:** Cooke, Joanie  
**Sent:** Monday, August 26, 2002 1:03 PM  
**To:** Snead, Paul  
**Subject:** BNP Permit History Stuff

Paul,  
Didn't know which of these two files you wanted to have for the license renewal, so I am sending you both.

<<Brunswick NPDES Permit History.doc>> <<Brunswick NPDES Permit rev2.doc>>

**Joanie P. Cooke**  
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