AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§1251 et seq.; the "CWA"),

Public Service of New Hampshire
Merrimack Station

is authorized to discharge from the facility located at

Bow, New Hampshire 03301

to receiving waters named:

Merrimack River

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective (30) thirty days from the date of issuance.

This permit and the authorization to discharge expires (5) five years from the effective date.

This permit supersedes the permit issued on September 30, 1985.

This permit consists of 22 **pages in Part I including effluent limitations, monitoring requirements, etc., Attachment I, Location of Sampling Stations, and 22 pages in Part II including General Conditions and Definitions.**

Signed this 25th **day of** June 1992

Director
Water Management Division
Environmental Protection Agency
Region I
Boston, MA

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Except as specified in Paragraphs 1 through 19 herein, the permittee shall not discharge to the Merrimack River, a final effluent to which it has added any pollutants.

   a. Chlorine and bromine may be used as a biocide. No other biocide shall be used without written approval from the Regional Administrator and the Director. The term chlorination will include bromination, if bromine is used. For this permit total residual oxidants (TRO) is synonymous with total residual chlorine (TRC). The chlorination cycle shall not exceed two hours in any one day for any one unit. Simultaneous multi-unit chlorination is not allowed.

   b. The discharges shall not jeopardize any Class B use of the Merrimack River and shall not violate applicable water quality standards. Pollutants which are not limited by this permit, but which have been specifically disclosed in the permit application, may be discharged at the frequency and level disclosed in the application, provided that such discharge does not violate Section 307 or 311 of the Act or applicable water quality standards.

   c. All live fish, shellfish, and other aquatic organisms collected or trapped on the intake screens shall be returned to their natural habitat. All solid materials except for naturally occurring materials such as leaves, branches, grass, and so forth, will be removed from the screens and have land disposal.

   d. This permit shall be modified, revoked or reissued to comply with any applicable effluent standard or limitation issued or approved under Section 301(b)(2)(C) and (D), 304(b)(2), and 207(a)(2) of the 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 this permit; or

      (2) controls any pollutant not limited by this permit.

If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the Act.

e. The term "Regional Administrator" means the Regional Administrator of Region I of the U. S. Environmental Protection Agency and the term "Director" means the Director of the Water Supply and Pollution Control Division, New Hampshire Department of Environmental Services.

f. It has been determined, based on engineering judgement, that the circulating water intake structure presently employs the best technology available for minimizing adverse environmental impact. Any change in the location, design or capacity of the present structure shall be approved by the Regional Administrator and the Director. The present design shall be reviewed for conformity to regulations pursuant to Section 316(b) of the Act when such are promulgated.

g. The combined thermal plumes for the station shall; (a) not block zone of fish passage, (b) not change the balanced indigenous population of the receiving water, and (c) have minimal contact with the surrounding shorelines.

h. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

i. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 CFR 122.42):

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(a) One hundred micrograms per liter (100 ug/l);

(b) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(c) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or

(d) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f) and New Hampshire regulations.

2. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(a) Five hundred micrograms per liter (500 ug/l);

(b) One milligram per liter (1 mg/l) for antimony;

(c) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or

(d) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f) and New Hampshire regulations.

j. Water drawn from fuel oil tanks shall not be discharged into the Merrimack River.

k. There are two (2) discharges which are not covered by this NPDES permit and are permitted by the following regulatory agencies: New Hampshire Department of Environmental Services - Wetlands Board and the U.S. Army Corps of Engineers. As a cautionary note, these discharges must satisfy New Hampshire Water Quality Standards (see Part I.C.1.f.).

l. Conceptual plans for the necessary construction associated with the segregation of the ash settling pond from the nearby wetlands shall be submitted to the State for approval within one month of the effective date of this permit.

m. Construction of the required facilities shall begin within 90 days after the permittee is in receipt of all requisite permits or a later date as approved by the EPA and the State. The permittee shall notify EPA and the State within 30 days of receipt of all requisite permits.

n. All construction required by the plans shall be completed and the facilities placed in operation within 12 months after receipt of all requisite permits or at a later date as may be approved by the Regional Administrator and the Director.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 001: Circulating Cooling Water from the MK-1 condenser outlet.

a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	69.1	Continuous	Calculate[b]
Total Residual Oxidants (mg/l)	----	0.20	Weekly, When in use	Grab

b. Based on pump curves, hours of pump operation, and 190 feet river levels.

c. Simultaneous multi-unit chlorination is not allowed. Samples for Total Residual Chlorine measurement shall be taken during the chlorination of circulating water.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: At a representative point prior to discharge into the cooling canal, see Part c.

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

3. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 002: Circulating Cooling Water from the MK-2 condenser outlet.

a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	187.2	Continuous	Calculate[b]
Total Residual Oxidants (mg/l)	----	0.20	Weekly, When in use	Grab

b. Based on pump curves, hours of pump operation, and 190 feet river levels.

c. Simultaneous multi-unit chlorination is not allowed. Samples for Total Residual Chlorine measurement shall be taken during the chlorination of circulating water.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: At a representative point prior to discharge into the cooling canal, see Part c.

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

5. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 003A: Ash Settling Pond Discharge during routine operation.

a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	9.0	19.1	Continuous	Continuous
Oil and Grease (mg/l)	15.0	20.0	Monthly	Grab
Suspended Solids (mg/l)	30.0	100.0	Monthly	Grab
Total Copper (mg/l)	----	0.20	Quarterly	Grab
Total Iron (mg/l)	----	1.0	Quarterly	Grab
pH (range, in s.u.)	Report		Continuous	Continuous

b. The pH shall be monitored continuously during routine operations. Report the maximum and minimum values for the month.

c. There shall be no discharge of oil sheen, floating solids, or visible foam in other than trace amounts.

d. All routine analyses for each month will be grouped and reported on a single discharge monitoring report form.

e. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Point of discharge prior to dilution with the circulating cooling water (at the weir).

f. See Part I.C.1.e. on coal pile runoff discharges to ash settling pond.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

6. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 003B: Ash settling pond discharge during chemical cleaning.

a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	----	19.1	Continuous	Continuous
Suspended Solids (mg/l)	30.0	100.0	Daily	Composite
Total Copper (mg/l)	----	0.077	Daily	Composite
Total Iron (mg/l)	1.0	1.0	Daily	Composite
Oil and Grease (mg/l)	15.0	20.0	Daily[g]	Grab
pH (range, in s.u.)	Report[b]		Continuous	Continuous

b. Report the maximum and minimum values for the month.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts.

d. Chemical cleaning operations shall occur no more than 30 days during each year. The permittee shall notify the Director or designee at least 72 hours in advance of such operations and furnish an estimate of the length of time over which the operation shall occur and the chemicals to be used. Sampling shall begin at least 3 hours after the discharge from the wastewater treatment basins begins (see Parts I.C.1.c. and I.C.1.d.).

e. The analytical results for each chemical cleaning operation shall be reported on a separate discharge monitoring report form.

f. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Point of discharge prior to dilution with the circulating cooling water (at the weir).

g. Required only when an oil sheen is observed; otherwise one grab sample per cleaning event.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 004(NB): MK-1 Screen Wash-water; MK-2 Screen Wash-water; MK-1 Screenhouse Floor Sump water; MK-2 Screenhouse Floor Sump water; MK-2 Screenhouse Roof Drain; and Fire Protection Overflow effluent subject to the following conditions:

a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Daily Maximum	Measurement Frequency	Sample Type
Flow (GPD)	----	Report	Annual	Estimate-total
Oil & Grease[b] (mg/l)	----	Report Range	Annual[d]	Grab[c,b]
pH[b,f] (range, in s.u.)	6.5 - 8.0		Annual	Grab[c,b]

NB Designated as Outfall(s) XXX and YYY in Form 2C of Application (5 separate pipes).

b. Required for State Certification.
c. Report range of results of grab samples of each of the 5 pipes.
d. Annual sample only required if oil sheen is observed; otherwise report results of daily observation.
e. All live fish, shellfish and other organisms collected or trapped on the intake screens should be returned to their habitat, sufficiently distant from the intake structures to prevent re-impingement. All solid materials except for naturally occurring materials such as leaves, branches, grass, and so forth will be removed from the screens shall have land disposal (see Part I.A.c.).
f. The pH shall not be less than 6.5 standard units (s.u.) nor greater than 8.0 s.u., or as naturally occurs in the receiving water (see Part I.C.1.a.).
g. There shall be no discharge of floating solids, oil sheen or visible foam in other than trace amounts.
h. Samples taken in compliance with the monitoring requirements specified above shall be taken at some representative point prior to discharge to the receiving water.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

8. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 005(NB): MK-1 Maintenance Sump discharge and MK-2 Maintenance Sump discharge subject to the following conditions:

a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Daily Maximum	Measurement Frequency	Sample Type
Flow (GPD)	----	Report	Once/Annual-Outage	Estimate Total
Oil & Grease[b] (mg/l)		Report Range	Once/Annual[d]-Outage	Grab[c,b]
pH[b,e] (range, in s.u.)	6.5 - 8.0		Once/Annual-Outage	Grab[c,b]

NB Designated as Outfall(s) XXX in Form 2C of Application (4 separate pipes).

b. Required for State Certification.
c. Report range of results of grab samples of each pipe for which a discharge occurs.
d. Sampling during the annual outage is only required if an oil sheen is observed; otherwise report the results of daily observation.
e. The pH shall not be less than 6.5 standard units (s.u.) nor greater than 8.0 s.u., or as naturally occurs in the receiving water (see Part I.C.1.a.).
f. There shall be no discharge of floating solids, oil sheen or visible foam in other than trace amounts.
g. Samples taken in compliance with the monitoring requirements specified above shall be taken at some representative point prior to discharge to the receiving water.
h[b]. The permittee shall report in the discharge monitoring report which of the sumps was discharging at the time of the sample collection.

numbers of upstream migrating River Herring and American Shad pass the Hooksett Dam. "Significant" numbers of upstream migrating River Herring and American Shad will be as defined in the downstream fish passage agreement (Part I.A.10.a.). Ichthyoplankton pump entrainment monitoring will be conducted at MK-1 and MK-2 for 24 continuous hours, twice per week.

11. Temperature Monitoring and Power Spray Module (PSM) Operation

a. Continuous River Surface Temperature Monitoring

Continuous river surface temperature monitoring in the vicinity of the Merrimack Generating Station shall be conducted on the following basis. Open-river surface water temperatures will be continuously monitored at control Station N-10, effluent discharge station Zero, and mixing zone Station S-4 (see ATTACHMENT I). The discharge Station Zero temperature monitoring probe will remain in place and in operation year round. Stations N-10 and S-4 temperature monitoring probes will be removed from the river and from operation in the fall when ambient river water temperatures have dropped below 40^0F (4.4^0C) and replaced when ambient river water temperatures have risen to above 50^0F in the spring. Ambient river water temperatures for removal and installation of the probes are defined as measured at Station N-10 for the fall probe removal, and at the Merrimack Station Unit II condenser inlet for the spring probe replacement.

Monitoring program data shall be reported in accordance with Paragraph 13, below.

b. Power Spray Module (PSM) Operation

The power spray module system shall be operated, as necessary, to maintain either a mixing zone (station S-4) river temperature not in excess of 69^0F, or a station N-10 to S-4 change in temperature (Delta-T) of not more than 1^0F when the N-10 ambient river temperature exceeds 68^0F. All available PSM's shall be operated when the S-4 river temperature exceeds both of the above criteria (reference: "Predictive Model and User Guide for Spring and Fall Optimization of Power Spray Modules").

12. pH Monitoring and Dissolved Oxygen

    a. The permittee shall continuously monitor the pH of both an ambient river control station and the circulating water discharge. The circulating water discharge shall be monitored at the point of cooling canal discharge into the Merrimack River (at the footbridge in the vicinity of Station Zero-west). The ambient river control station will be at a Merrimack Station inlet structure (Station N-5).

    b. The permittee shall continuously monitor the dissolved oxygen content of both an ambient river control station and the circulating water discharge. Dissolved oxygen monitoring will be suspended in the fall when ambient river water temperatures have dropped below 40^0F (4.4^0C), and reinstated when ambient river water temperatures have risen to above 50^0F in the Spring (reference the temperature monitoring requirements of Section 11.a, above). The circulating water discharge shall be monitored at the point of cooling canal discharge into the Merrimack River (at the footbridge in the vicinity of Station Zero-west). The ambient river control station will be at the Merrimack Station inlet structure (Station N-5).

13. All biological and hydrological monitoring program data shall be submitted to the NHDES, NHF&GD, USF&WS, and the Regional Administrator by December 31 of the following year.

14. The permittee has provided the State and EPA with the following agreement, entitled "A Comprehensive Plan for Provision of Anadromous Fish Passage Measures and Facilities at PSNH's Merrimack - Pemigewasset River Hydroelectric Dams, FERC Projects No. 1893, 2456, and 2457." The permittee shall also provide all technical advisory committee (TAC) members (see Part I.A.15., below) with copies of the annual March 1st update to this plan and any technical reports associated with it.

15. A technical advisory committee (TAC) shall be organized. Committee members shall be senior biologists appointed by the Administrators (or appropriate Division/Branch Directors) of the following federal and state regulatory agencies: NHDES, NHF&GD, USEPA, and USF&WS.

Please print or type in the unshaded areas only

NHD 000 791 509

Approval expires 7-31-88

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	43	08	15	71	28	15	Cooling Water Discharge Canal (to 003)
002	43	08	15	71	28	15	Cooling Water Discharge Canal (to 003)
003A	43	08	15	71	28	15	Cooling water Discharge Canal (to 003)
003B	43	08	15	71	28	15	Cooling Water Discharge Canal (to 003)
003	43	08	15	71	27	45	Merrimack River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	MK-1 once through	84.36 MGD	Chlorination	XX	
	condenser cooling water		Discharges to WTP #2		
002	MK-2 once through	197.9 MGD	Chlorination	XX	
	condenser cooling water		Discharges to WTP #2		
003A	MK-1 Slag Tank Overflow	0.5 MGD	Retention Time is approx	1-U	1-O
	MK-2 Slag Tank Overflow	1.0 MGD	4-10 Hrs		
	MK-1 Boiler Blowdown	720 GPD	Waste Treatment Plant #4,		
	MK-1 Boiler Drains	2586 GPD	Discharges to WTP #2.		
	MK-2 Boiler Drains	1736 GPD			
	MK-1 Roof Drains	1248 GPD			
	Yard Drains	8137 GPD			
	Culvert from Marsh:				
	- Stormwater Runoff	96000 GPD	Retention Time is approx	1-U	1-O
	- Slag Sluice Water	6.0 MGD	5-10 Hrs		
			Waste Treatment Plant #3,		
			Discharges to WTP #4.		
	WTP #1 Treated Effluent				
	- Demin Regeneration	11429 GPD	50000 Gallon Neutralizer	1-O	2-K
	- Polishers Regeneration	7143 GPD			
	- Chemical Drains	40000 GPD			

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

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NHD 000 791 509

Approval expires 7-31-88

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

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A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
004 ✓	Fire Main Overflow	0.72 MGD		4-A	
	Inlet Screen Washwater	1.72 MGD			
	Screenhouse Sumps	200 GPD			
	Screenhouse Roof Drains	16 GPD			
	FIRE HOSE SPRAY				
005 ✓	Screenhouse Maintenance	1000 GPD		4-A	
	Sumps				
XXX ✓	Stormwater Discharges			4-A	
	- North Yard Drain	900 GPD			
	- Rail Switch Storm Drain	250 GPD			

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

EPA I.D. NUMBER (copy from Item 1 of Form 1)
ID000791509

OMB No. 2040-0086
Approval expires 7-31-88

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding — Complete one set of tables for each outfall — Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may b discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in yo possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES *(list all such pollutants below)* ☒ NO *(go to Item VI-B)*