ATTACHMENT 12

State Pollutant Discharge Elimination System (SPDES) for Indian Point Unit Nos. 1, 2, and 3 (June 10, 1982) (ML12212A387)

John D O'Toole

PD82 110

June 10, 1982

Re: Indian Point Units 1 and 2
Docket Nos. 50-3 & 50-247

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

Please find enclosed a copy of the approved State Pollutant Discharge Elimination System permit renewal with conditions effective May 14, 1981 for Indian Point Unit Nos. 1, 2 and 3. This submittal is in accordance with the requirements of Section 3.2 of the Part I, Non-Radiological Environmental Protection Plan of Appendix B Environmental Technical Specification Requirements for the Indian Point Units.

Very truly yours,

enclosure

C002

tachments: GENERAL CONDITIONS PART II (8/81), COST OF BIOLOGICAL MONITORING, SUMMARY OF MONITORING PROGRAM STUDIES, & THE HUDSON RIVER SETTLEMENT AGREEMENT

"NW-P" RENEWAL SIC 4911

Facility ID No. : NY-0004472

Effective Date (EDP) : May 14, 1981

Expiration Date (ExDP) : May 13, 1986

pies: SPDES FILE, BWFD-ADAMCZYK, BWFD-PULASKI, EPA-BAKER, EPA-SPEAR, DEC REGION #3 SUBOFFICE, WESTCHESTER CO. H.D., ISC, NYCDCOE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Special Conditions
(Part I)

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as "the Act").

Permittee Name: CONSOLIDATED EDISON CO. OF NEW YORK, INC.
4 Irving Place
New York, New York 10003
Attn: Robert Keegan, Director
Room #1026

&

POWER AUTHORITY OF THE STATE OF NEW YORK
10 Columbus Circle
New York, New York 10019
Attn: John W. Blake, Director

is authorized to discharge from the facility described below:

Facility Name: INDIAN POINT GENERATING STATION (UNITS 1 & 2 (ConEd) & 3 (PASNY))

Facility Location (C,T,V): Buchanan (V) County: Westchester

Facility Mailing Address (Street): Broadway and Bleakley Avenue

Facility Mailing Address (City): Buchanan State: New York Zip Code: 10511

into receiving waters known as:
Hudson River (Class SB)

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal as prescribed by Sections 17-0803 and 17-0804 of the Environmental Conservation Law and Parts 621, 752, and 755 of the Departments' rules and regulations.

By Authority of William L. Garvey, P.E., Chief, Permit Administration Section
Designated Representative of Commissioner of the
Department of Environmental Conservation

Date

Signature

20-276/80(R)-1

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 14, 1981
and lasting until April 26, 1982
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations		Units	Monitoring Reqmts.	
	Daily Avg.	Daily Max.		Measurement Frequency	Sample Type

Except for the limits on condenser cooling water listed in paragraphs 10a and 10g of NPDES permits NY 002 7065 and NY 000 4472 all provisions of those permits shall apply to this facility.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 26, 1982
and lasting until May 13, 1986
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Monitoring Reqmts. Measurement Frequency	Sample Type
001* Discharge Canal (a, b)					

The Permittee shall discharge condenser cooling water so that the following conditions are satisfied:

1. At no time shall the maximum discharge temperature at Station DSNC01 exceed 43.3°C (110°F).

2. Between April 15 and June 30, the daily average discharge temperature at Station DSN001 shall not exceed 34°C (93.2°F) for an average of more than ten days per year during the term of this permit beginning with 1981; provided that in no event shall the daily average discharge temperature at Station DSN 001 exceed 34°C (93.2°F) on more than 15 days between April 15 and June 30 in any year.

3. Whenever, due to forced outage or other technical problem, e.g. equipment failure, it is necessary to remove one or more circulating water pumps from service at an operating unit (or units) pumps at any non-operating unit (or units), including Unit 1, may be used to augment flow in the discharge canal as necessary to meet temperature limits, and will not be considered a violation of settlement outage requirements at the non-operating unit provided that in no event shall total Station flow, as so augmented, exceed the equivalent of full circulator flow at each unit which is then operating.

4. If the discharge temperature limits in clauses 1 and 2 above are exceeded as a result of reduced flow required by Section 2.D of the Settlement Agreement, corrective action, which may include increasing cooling water flow as necessary up to the equivalent of full circulator flow for each unit then operating, shall be taken as quickly as practical and will not be considered a violation of outage requirements at the non-operating unit. During the period required for corrective action (which shall not exceed 2 hours), the discharge will not be considered to be in excess of the foregoing temperature limits. To the extent practical the Permittee shall anticipate when the ambient river temperature will rise to such level that the prevailing reduced cooling water flow rate specified in the Settlement will fail to maintain discharge temperature below 34°C, and may, upon consultation with DEC, increase flow to the next rate scheduled in the Settlement prior to the discharge temperature exceeding 34°C.

5. Nothing contained herein shall be construed to change or otherwise affect the provisions of the Settlement Agreement.

6. Except as set forth above, there shall be no thermal effluent limitations which govern or otherwise affect the operation of the Station or discharges therefrom.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 26, 1982
and lasting until May 13, 1986
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Internal Waste Stream Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Monitoring Reqmts. Measurement Frequency	Sample Type
001* Discharge Canal (a, b)					
Total Residual Chlorine (c)		0.5	mg/l	Continuous during periods of chlorination	
Total Chromium		30[d]	lbs/dy	Weekly	Calculation
Total Chromium		200[d]	lbs/yr	Annual	Calculation
Lithium Hydroxide		0.01[d]	mg/l	Weekly	Calculation
Boron		1.0[e]	mg/l	Weekly	Calculation
Boron		525[e]	lbs/dy	Weekly	Calculation
pH (Range)		6.0 - 9.0	S.U.	Weekly	Grab
Biocides					

* Outfall 001 is the point prior to confluence of the discharge from the common discharge canal and the Hudson River.

Internal Waste Streams Effluent Limitations

001A - Sewage Treatment Plant

Flow		20,000[h]	GPD	Continuous	Recorder
BOD_5	30[g]	45[h]	mg/l	Monthly	6-hr composi
Total Suspended Solids	30[g]	45[h]	mg/l	Monthly	6-hr composi
Settleable Solids		0.3	ml/l	Weekly	Grab
Fecal Coliform	200[i]	400[j]	MPN/100 ml	Weekly	Grab
pH (Range)	6.0 - 9.0		S.U.	Weekly	Grab
Free Available Chlorine	0.5	2.0	mg/l	Weekly	Grab

Sum of 001B, 001C, 001D, 001E, 001F*, 001G, & 001H

Flow	Monitoring Only		MGD	Weekly	Instantaneous
Total Suspended Solids	30	50	mg/l	Weekly	Grab[k]

Sum of 001C & 001D

Flow	Monitoring Only		MGD	Weekly	Instantaneous
Hexavalent Chromium	0.05	0.1	mg/l	Weekly	Grab[l]
Total Chromium	0.5	1.0	mg/l	Weekly	Grab[l]
Surfactants	3	6	lbs/dy	Weekly	Calculated[m]
Oil & Grease		15	mg/l	Weekly	Grab[n]

001F**

Total Suspended Solids	30	50	mg/l	Weekly	Grab

**If river water is used in the Flash Evaporator, internal waste stream 001F must be sampled separately, and not included in the composite, the limits for 001F using river water are Net Limits.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 26, 1982
and lasting until May 13, 1986
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Internal Wastes Streams Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Monitoring Reqmts. Measurement Frequency	Sample Type
Sum of 001B, 001C, & 001D					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Boron	Monitoring Only		mg/l	Weekly	Grab[o]
001C					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001E					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
pH (Range)	6.0 - 9.0		SU	Weekly	Grab
001F					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001G					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Phosphates as P	16	38	lbs/day	Weekly	Grab
001H					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001I					
Flow	Monitoring Only		MGD	P	P
001J ***					
Flow	Monitoring Only		MGD	Weekly	Estimate
Oil & Grease		No visible oil or sheen	mg/l	Weekly	Visual Observation.

***Because this outfall cannot be monitored, the following shall apply:
1. All oil spills shall be handled under the SPCC plan.
2. Flow tributary to the floor drains shall not contain more than 15 mg/l of oil and grease nor any visible sheen.

Footnotes

a. Discharge 001 shall occur only through the subsurface ports of the outfall structure.

b. When the temperature in the discharge canal exceeds 90°F or the site gross electric output equals or exceeds 600MW the head differential across the outfall structure shall be maintained at a minimum of 1.75 feet. When required adjustment of the ports shall be made within 4 (four) hours of any change in the flow rate of the circulating water pumps. If compliance is not achieved, further adjustments of the ports shall be made to achieve compliance. The requirements of the Settlement Agreement flow schedules shall take priority over the requirements of this footnote.

c. Condenser Chlorination

Total residual chlorine at DSN 001 shall not exceed 0.5 mg/l. Should the circulating water system be chlorinated, the maximum frequency of chlorination for the condensers of each unit shall be limited to 3 (three) times per week. The duration of any chlorination period shall not exceed one hour, with a maximum of 2 (two) chlorination periods occurring in a 24 hour period. The total time for chlorination of the three units for which this permit is issued shall not exceed 9 (nine) hours per week. Chlorination shall take place during daylight hours and shall not occur at more then one unit at a time.

d. The calculated quantity of these substances in the discharge shall be determined by using the analytical results obtained from sampling that is to be performed on interr waste streams 001C and 001D.

e. The calculated quantity of this substance in this discharge shall be determined by using the analytical results obtained from sampling that is to be performed on internal waste streams 001B, 001C and 001D.

f. No biocides, corrosion control chemicals, or other water treatment chemicals are authorized for use by the permittee except those listed below or limited as a parameter in the permit.

Morpholine
Cyclohexylamine
Hydrazine

Drewgard 100 may be added so the calculated concentration shall not exceed 11 mg/l the active ingredient E.D.T.A. shall not exceed .28 mg/l in the discharge canal.

g. Arithmetic mean of the values for effluent samples collected over a 30-day period.

h. Arithmetic mean of the values for effluent samples collected over a 7-day period.

i. 30 day geometric mean.

j. 7 day geometric mean.

k. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001B, 001C, 001D, 001E, 001F, 001G, and 001H.

l. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001C and 001D, during periods when chromium is being used.

m. The calculated quantity of these substances in the discharge shall be based on the quantity of the substances consumed at the facility.

n. One grab sample shall be obtained from each of the internal waste streams 001C and 001D and the samples shall be analyzed separately. The results of the two analyses shall be averaged and reported.

o. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001B, 001C, and 001D.

p. The flow of condenser cooling water discharges shall be monitored and recorded by hourly recording of the operating mode of the circulating water pumps. Any changes in the flow rate of each circulating water pump shall be recorded, including the date and time, and reported monthly together with the Discharge Reporting Form. The permittee shall indicate whether any circulating pumps were not in operation due to pump breakdown or required pump maintenance and the period(s) (dates and times) the discharge temperature limitation was exceeded, if at all. For all other discharges or internal waste streams (only those which are limited), the flow shall be measured and recorded at a frequency coinciding with the most frequently sampled parameter. Methods, equipment, installation, and procedures shall conform to those prescribed in the Water Measurement Manual, U.S. Department of the Interior, Bureau of Reclamation, Washington, D.C.: 1967 or equivalent approved by the permit issuing authority.

Additional Requirements:

1. There shall be no discharge of PCB's from this facility.

2. All collected solids from the washing of intake screens shall be disposed of by a New York State licensed contractor or by the permittee at a NYSDEC approved landfill.

3. The permittee shall submit on a quarterly basis to the NYSDEC at its offices in White Plains and Albany a monthly report of daily operating data, by the 28th of the month following the end of the quarter, that includes the following:

   a. Daily minimum, maximum, and average station electrical output shall be determined and logged.

   b. Daily minimum, maximum and average water use shall be directly or indirectly measured or calculated and logged.

   c. Temperature of the intake and discharges shall be measured and recorded continuously. Daily minimum, maximum and average intake and discharge temperatures shall be logged.

4. The use of chlorine for condenser cleaning shall be kept to the minimum amount which will maintain plant operating efficiency. By issuance date + 6 months the applicant shall submit for NYSDEC approval, a plan of study for a chlorine minimization program. This program shall be conducted in accordance with the requirements of Appendix A of the proposed Steam Electric Effluent Limitations (Part 423) as shown on pages 60354 and 60355 of the Federal Register published on October 14, 1980.

   EPA has proposed draft limitations that would prohibit the discharge of chlorine from this facility. This permit contains water quality limitations on the discharge of chlorine. Following the promulgation of EPA BAT limitations on the discharge of chlorine, this permit may be revised to reflect these limitations.

5. Biological Monitoring and Reporting

   The permittee shall comply with biological monitoring requirements which shall be embodied in a Memorandum of Agreement (MOA) to be entered into between the NYSDEC and the Permittee for the permits issued to Indian Point operating Station Unit 2 and Indian Point Generating Station Unit 3. Monitoring requirements **shall be consistant with the Hudson River Settlement Agreement and Attachment V thereto.**

   Live sturgeon collected during scheduled biological monitoring studies will be counted, measured, and examined for tags, then carefully returned to the river as quickly as possible. Dead sturgeon collected during scheduled biological monitoring studies shall be counted, weighed, measured, examined for tags and frozen for salvage for the Department of Environmental Conservation for up to one year, at which time the sturgeon will be disposed of in a sanitary landfill. Each sturgeon shall be individually labeled indicating date of capture and appropriate measurements.

6. Notwithstanding any other requirements in this permit, the permittee shall also comply with all of the Water Quality Regulations promulgated by the Interstate Sanitation Commission on October 15, 1977 including Sections 1:01 and 2.05 (f) as they relate to oil and grease.

7. It is recognized that influent quality changes, equipment malfunction, acts of God, or other circumstances beyond the control of the Permittees may, at times, result in effluent concentrations exceeding the permit limitations despite the exercise of appropriate care and maintenance measures, and corrective measures by the permittees. The permittees, either individually or jointly, may come forward to demonstrate to the DEC that such circumstances exist in any case where effluent concentrations exceed those set forth in this permit. The DEC, however, is not obligated to wait for, or solicit, such demonstrations prior to the initiation of any enforcement proceedings, nor must it accept as valid on its face the statements made in any such demonstration.

In the event of non-compliance attributable to only one facility, DEC will initiate enforcement proceedings against the permittee responsible for such facility.

DEC shall not initiate enforcement proceedings concurrently against both the Permittees, unless DEC has been unable to identify the non-complying facility. If DEC seeks to enforce in an administrative or judicial proceeding any provision of this permit, the Permittees may raise at that time the issue of whether, under the United States Constitution, statute, or decisional law, they are entitled to a defense that their conduct was caused by circumstances beyond their control.

8. The Hudson River Settlement Agreement, dated December 19, 1980, is annexed to this permit as Appendix 2 and is incorporated herein as a condition to this permit. The Settlement Agreement satisfies New York State Criteria Governing Thermal Discharges.

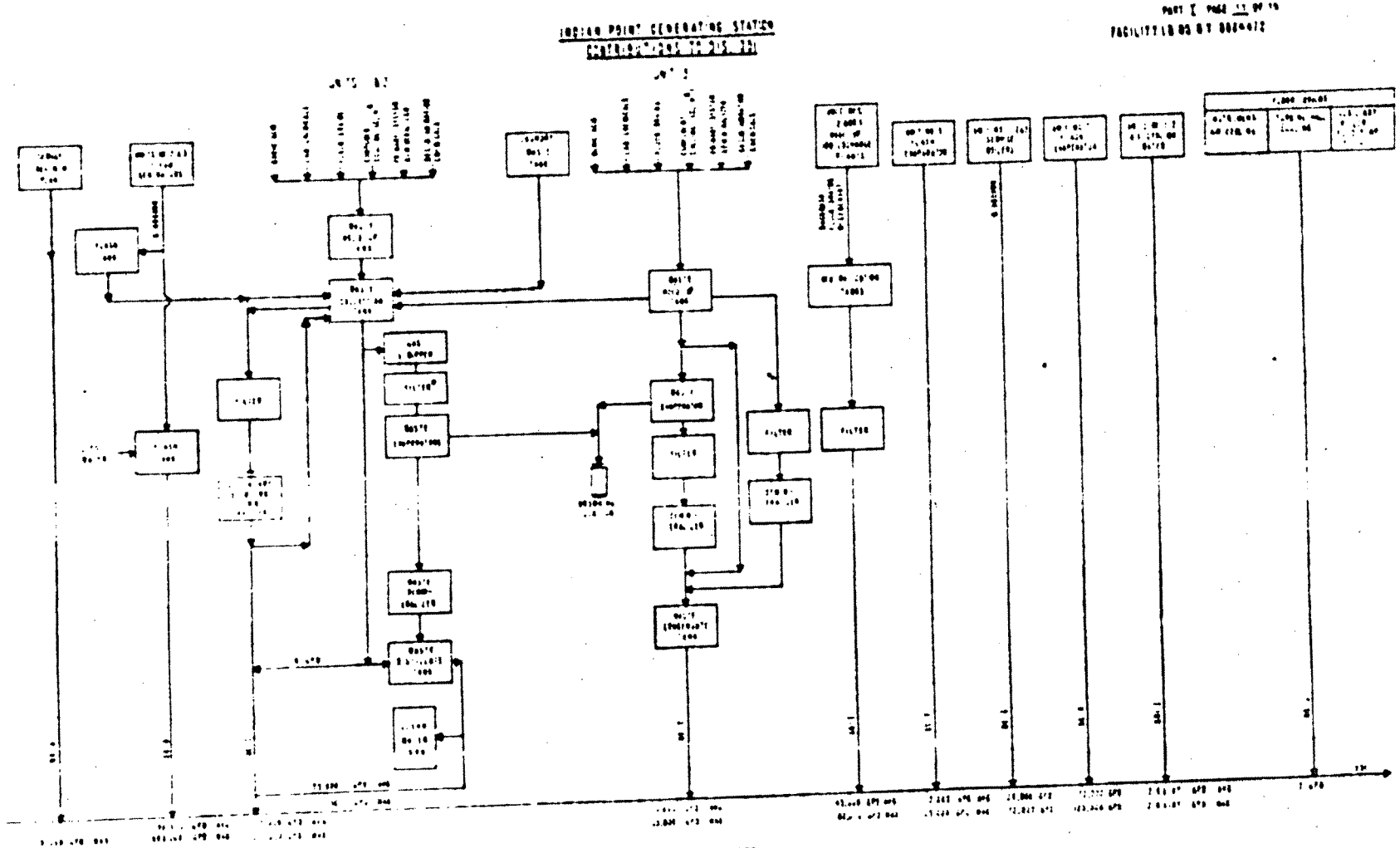
Definition of Daily Average and Daily Maximum

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

Monitoring Locations

Permittee shall take samples and measurements to meet the monitoring requirements at the location(s) indicated below: (Show locations of outfalls with sketch or flow diagram as appropriate). The sampling for the internal waste streams 001A thru 001J shall be taken in the internal waste streams before entering the river.



AVERAGE AND MAXIMUM FLOWS
DISCHARGE BOX CANAL

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

The permittee shall submit copies of the written notice of compliance or noncompliance required herein to the following offices:

Chief, Compliance Section
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Regional Engineer
New York State Department of Environmental Conservation
Region 3
202 Mamaroneck Avenue
White Plains, New York 10601

Westchester County Health Department
150 Grand Street
White Plains, New York 10601

Dr. Richard Baker, Chief
Permits Administration Branch
Planning and Management Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

The permittee shall submit copies of any engineering reports, plans of study, final plans, as-built plans, infiltration-inflow studies, etc. required herein to the New York State Department of Environmental Conservation Regional Office specified above unless otherwise specified in this permit or in writing by the Department or its designated field office.

MONITORING, RECORDING AND REPORTING

a) The permittee shall also refer to the General Conditions (Part II) of this permit additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized and reported by submitting a completed and signed Discharge Monitoring Report form once every 1 month to the Department of Environmental Conservation and other appropriate regulatory agencies at the offices specified below. The first report will be due no later than April 28, 1982 Thereafter, reports shall be submitted no later than the 28th of the following month(s): Each Mont

Water Division
New York State Department of Environmental Conservation
50 Wolf Road - Albany, New York 12233

New York State Department of Environmental Conservation
Regional Engineer - Region #3
202 Mamaroneck Avenue, White Plains, NY 10601

Westchester County Health Department, 150 Grand St , White Plains, NY 10601
Interstate Sanitation Commission, Attn: Mr. Thomas R. Glenn, Jr.
Director and Chief Engineer, 10 Columbus Circle, New York, NY 10019

☒ (Applicable only if checked):,

Dr. Richard Baker, Chief - Permits Administration Branch
Planning & Management Division
USEPA Region II
26 Federal Plaza
New York, New York 10278

c) If so directed by this permit or by previous request, Monthly Wastewater Treatment Plant Operator's Reports shall be submitted to the DEC Regional Office and county health department or county environmental control agency specified above.

d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Reports.

f) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

g) Unless otherwise specified, all information submitted on the Discharge Monitoring Form shall be based upon measurements and sampling carried out during the most recently completed reporting period.

h) Blank Discharge Monitoring Report Forms are available at the above addresses.

Memorandum of Agreement
Between
New York State Department of Environmental Conservation
and
the Hudson River Utilities

1. This Memorandum of Agreement (MOA) is entered into by the New York State Department of Environmental Conservation (Department) with Consolidated Edison of New York, Inc. (Consolidated Edison), the Power Authority of the State of New York (Power Authority), Orange and Rockland Utilities, Inc. (O and R), and Central Hudson Gas and Electric Corp. (CH) in accordance with the Department's certification pursuant to Section 401 of the Clean Water Act and to supply the appropriate conditions "Biological Monitoring and Reporting" of the SPDES discharge permit numbers:

NY 000 4472 Consolidated Edison's Indian Point Station Units 1 & 2

NY 002 7065 The Power Authority's Indian Point Station Unit 3

NY 000 8010 Orange and Rockland Utilities' Bowline Point Station

NY 000 8231 Central Hudson's Roseton Station,

and in accordance with the "Biological Monitoring Program" as provided for in Section 2.J and Attachment V to the Hudson River Settlement Agreement entered into December 19, 1980 (Settlement Agreement).

2. This MOA is to embody the agreement of the Utilities to conduct monitoring program studies as described in Attachment 1. The Department is of the view that the biological monitoring program described in Attachment 1 is consistent with program objectives and the funding level to which the Utilities have committed as identified in the Settlement Agreement. Nothing contained in this MOA shall cause the Utilities to perform activities or incur expenses in excess of or less than the amount specified in Attachment 2. Any further studies necessary to fulfill the dollar value of the Utilities' monitoring obligations will be conducted only with the prior written approval of DEC.

3. The Utilities agree to use their best efforts to conduct fully the biological monitoring program as specified in the Settlement Agreement and as identified in Attachment 1 hereto. The Department acknowledges that the Utilities will not be deemed to be in non-compliance with the Settlement Agreement or any Condition of any applicable discharge permit or Section 401 Certification if the full complement of all biomonitoring cannot be completed within the original calendar year for reasons beyond the reasonable control of the Utilities. However, should the full complement of biomonitoring not be completed within the original year, at the sole discretion of DEC, either the time to complete such studies shall be extended or the unexpended funds shall be used to supplement the biomonitoring program in the subsequent year.

4. The Department and the Utilities hereby agree that the study programs may be modified at any time by written agreement of the Department and the Utilities to fulfill the objectives of the study, provided that any cost savings which accrue through such modifications be redirected to other studies as appropriate.

5. Reports based on these studies and an accounting of funds expended will be submitted within six months of the completion of component studies and no later than June 30 of the subsequent year unless an extended schedule is mutually agreed upon by the Department and the Utilities.

6. The term of this MOA shall be from the date of the last signature hereto until December 31, 1985, after which time this MOA shall be of no further force or effect except for completion of reports, accountings, or studies identified in paragraphs 3 to 5.

7. The term of Attachment 1 shall be until December 31, 1981 and each subsequent Attachment 1 shall expire at the end of its calendar year.

Signatures

_____/_____
Con Edison Date

_____/_____
Orange & Rockland Date

_____/_____
Central Hudson Date

_____/_____
Power Authority Date

_____/_____
Niagara Mohawk Date

_____/_____
NYSDEC Date

Summary Description of Monitoring Program Studies Mutually Agreed Upon by New York State Department of Environmetal Conservation and the Hudson River Utilities

A. Impingement - Indian Point, Bowline Point, Roseton

Impingement collections will be made at each plant from January 1981 through December 1981. Sampling frequency at Indian Point Unit Nos. 2 and 3 will be daily at water intakes at which circulating water pumps are in operation until such time as relief from this requirement is granted. Thereafter, collections will be made as specified by DEC. Impingement collections will be made once per week at Bowline Point and Roseton over a continuous 24-hour sampling period. At each plant, fish will be identified and enumerated to determine total number, total weights and length/frequency distributions of the collected species, utilizing appropriate subsumpling methodologies. Water quality data and plant operating conditions will be recorded as appropriate.

B. Entrainment - Indian Point, Bowline Point, Roseton

Entrainment abundance sampling will be conducted approximately twice each week over a continuous 24-hour period weekly from mid-April at Roseton and early May at Bowline and Indian Point through August, 1981. Fish eggs and larvae will be identified and enumerated by species to the lowest taxonomic level practicable. Length of larvae will be determined from subsamples. Water quality data and plant operating conditions will be recorded as appropriate.

C. Fall Juvenile Survey

Beach seine, Tucker trawl and epibenthic sled samples will be collected between river miles 14 and 153 from August 1981 through October 1981. Approximately 100 randomly selected beaches will be seined biweekly. An aggregate of approximately 200 samples will be collected with the Tucker trawl and epibenthic sled during each biweekly sampling period.

Length and weight measurements of subsampled young-of-the-year and older striped bass, white perch and other selected fish species will be made. Striped bass and white perch will be examined for marks and suspected recaptures preserved for later verification. Appropriate water quality measurements will be taken with each sample.

D. River Ichthyoplankton

From early May through June 1981 approximately 200 samples will be collected weekly between river miles 14 and 140. At each sample [illegible] water quality will be determined. From the samples collected, [illegible] will be analyzed for determination of the distribution and abundance of the eggs, larvae and juveniles of striped bass, white perch, Atlantic tomcod and other fish species within the Hudson River estuary.

E. BARRIER NET EVALUATION - BOWLINE POINT

Studies will be conducted at Bowline Point in the spring (periods of no river ice) of 1981 to further evaluate the efficiency of using a barrier net to reduce fish impingement. Methodologies using hydroacoustics, gill nets and fish tags will be used to refine previous efficiency estimates derived solely from tagging studies.

F. IMPINGEMENT SURVIVAL - BOWLINE POINT

Impingement survival studies at Bowline Point will be continued through the spring of 1981 to refine previous estimates of survival and evaluate any potential effects of the new return system for impinged fish. Initial and latent mortality estimates will be compared for impinged and control fish. Water quality data will be recorded as appropriate.

G. ENVIRONMENTAL TECHNICAL SPECIFICATION REQUIREMENTS

Biological studies conducted by Consolidated Edison and the Power Authority in accordance with the Environmental Technical Specification Requirements for the Indian Point plants in effect during April 1981 shall constitute part of the monitoring program identified in the Settlement Agreement.

The settlement specifies that the biological monitoring program will be conducted "at a cost of at least $2 million per year, adjusted annually from the base year, which shall be the first year of the term of this Agreement, in accordance with the Implicit Price Deflator, GNP, published by the US Dept. of Commerce in the Survey of Current Business".

1981 represents the base year for which the biological monitoring expenditures will be $2,000,000.