Admin #188 (82)

PSNH

Public Service of New Hampshire

April 15, 1987

Mr. Michael Marsh
U.S. Environmental Protection Agency
J.F.K. Federal Building
WC1-2103
Boston, Massachusetts 02203

RE: SUMMARY AND REQUEST FOR SUSPENSION OF JUVENILE ANADROMOUS FISH IMPINGEMENT MONITORING AT MERRIMACK GENERATING STATION, NPDES #NH0001465

Dear Mike:

For your convenience of review, I have summarized the recent two years of salmon smolt and juvenile clupeid monitoring in the two attached tables: "Table 1. Impingement Monitoring For Juvenile Atlantic Salmon (Smolt), Merrimack Generating Station, Spring, 1985 & 1986", and "Table 2. Impingement Monitoring For Juvenile Clupeid Fish, Merrimack Generating Station, Fall, 1985 & 1986". I have also attached copies of Appendix Tables E-5 and E-6 from our 1979 "Merrimack River Monitoring Program, Summary Report". These tables contain fish impingement data for January - December, 1976 and 1977, and June - October, 1978.

We request that PSNH be allowed to suspend impingement monitoring for Atlantic salmon smolt. Salmon smolt have never been observed in screenwash samples during four plus years of spring impingement monitoring.

We also request that the Company be allowed to suspend impingement monitoring for juvenile clupeids.

With the exception of a single pump entrainment event, which occurred during late September of 1984, an insignificant number of Alewives (216) and only one (1) juvenile American Shad have been observed in five years of fall impingement monitoring at Merrimack Station.

The 1984 entrainment event, which is estimated to have involved some 2-4,000 juvenile Alewives, probably occurred because of an extreme low flow, low water condition in the Merrimack River during the period of 9/20 - 10/2/84. During this period, river flows in the vicinity of the Station ranged from 411-892 cfs (measured at the upstream Garvins Falls Dam and not including the small contribution of the Suncook River). All four of the Station's main cooling water pumps were operating and withdrawing something less than their total capacity of 445 cfs, since river levels were also some 6-18 inches below normal for the Hooksett Dam impoundment during this period.

1000 Elm St., P.O. Box 330, Manchester, NH 03105 • Telephone (603) 669-4000

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From the information available it appears that, while migrating downriver along the river's western embankment, one large or several small schools of alewives were attracted by the majority of flow into one or both of the Station's intake structures. Since the inlet water velocity at the traveling screens is less than 1.5 fps -- not high enough to entrap or impinge juvenile clupeids of the size class involved -- the alewives must have actively sought passage around the screens or tired after a long period within the intake structure(s) and were drawn around the screens.

This combination of extreme low river flows and extreme low water levels during the early fall weeks of late September and October -- when juvenile clupeids are known to emigrate to sea -- is a very rare occurrence. Although rare, it should be possible to anticipate the potential for a repeat of the 1984 event and prevent or mitigate a recurrence. PSNH controls and monitors the flows at the mainstem river dams above and below Merrimack Station, including the Hooksett Dam which controls the river elevation at the Station.

As a result of the 1984 event, a PSNH bulletin providing "Guidelines for Reporting and Investigating Events of Fish Distress/Mortality at all PSNH Generating Stations" was written and implemented (9/30/85, attached). These guidelines provide a means of early detection of an event in progress and may allow the Company time to mitigate the event. In addition, the staffs of Merrimack Station, our Electric System Control Center and our Environmental Department will be on the alert for the development of the factors which could lead to, and thereby take all reasonable actions to prevent the recurrence of the 1984 event.

Based on the above discussion and the attached information, we believe that both of the impingement monitoring requirements of Merrimack Station's NPDES permit should be suspended and request same.

We would be pleased to meet with you to discuss and expedite this request. Please call me at 603/669-4000, Ext. 2364 if you have any questions or to arrange a meeting.

Sincerely,

Wayne E. Nelson

Wayne E. Nelson
Senior Biologist

WEN/cll
WEN-1:45

Attachments

cc: B. W. Smith
J. B. Lander

IMPINGEMENT MONITORING FOR JUVENILE ATLANTIC SALMON (SMOLT), MERRIMACK GENERATING STATION
SPRING, 1985 & 1986

DATES	UNIT	SPECIES (SIZE IN CM)								
1985		Salmo salar	Micropterus dolomieui	Micropterus salmoides	Lepomis gibbosus	Lepomis auritus	Notropis cornutus	Semotilus corporalis	Ictalurus nebulosus	Noturus gyrinus	Noturus insignis
4/15-17	I		1 (6.5)		2 (8.5-10)						
4/22-24	I										1 (9)
4/29-30	I										
5/06-08	I										
5/13-15	I & II										
5/20-22	II		1 (15)								
5/27-29	II										
6/03-05	II						1 (9.5)				1 (9.5)
6/10-12	II										
1986											
4/14-16	II			1 (5-6)	Micropterus sp.*		4 (6-7)			1 (6.5)	
4/21-23	II						2 (5-6.5)				
4/28-30	II				2 (5-5.5)				3 (6.5-14)		
5/05-07	No Data - Station Personnel Disposed of Sample										
5/12-14	I								4 (7-13.5)		
5/19-21	I										
6/02-04	I								1 (8.5)	1 (9.5)	
6/09-11	I			1 (10)		1 (15)		1 (19)			

*Specimen missing jaw and tailok

IMPINGEMENT MONITORING FOR JUVENILE CLUPEID FISH, MERRIMACK GENERATING STATION
FALL 1985 AND 1986

DATES	UNIT	SPECIES (SIZE IN CM)						
1985		Alosa spp.*	Micropterus dolomieui	Micropterus salmoides	Lepomis gibbosus	Perca flavescens	Notropis cornutus	Semotilus corporalis
9/15-17	II	15 (5-7.5)	1 (5)				1 (10)	8 (5-7.5)
9/23-25	II	11 (7.5-9)			1 (9)			
9/30-10/2	I	117 (4.5-12)	3 (8.5-10)			1 (11)		
10/06-08	I	15 (9.5-11)	1 (10.5)		34 (4.5-14.5)			
10/14-16	II	54 (7.5-12)		1 (8.5)	4 (6-7.5)			
10/20-22	I			1 (11)	16 (5.5-9.5), 1 (18)			
10/28-30	I				6 (5.5-7.5)			
1986								
9/14	Both units off or operating irregularly							
9/21	Both units off or operating irregularly							
10/01-02	II				1 (4.5)			
10/06-08	II						1 (8.5)	
10/15-17	II	3 (11.5)						
10/20-22	II	1 (11.5)						

*Alosa pseudoharengus or A. aestivalis

APPENDIX TABLE E-5. NUMBER AND TOTAL LENGTH (mm) OF FINFISH IMPINGED DURING 48 SAMPLING HOURS PER WEEK AT MERRIMACK STATION UNITS I AND II, 1976 AND 1977. MERRIMACK RIVER SUMMARY REPORT, 1979.

		JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP		OCT		NOV		DEC	
		NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
Rainbow smelt	1976									1	75									1	85				
	1977																			1	85				
Pickerel	1976																								
	1977							1	290																
Golden shiner	1976							1	80	5	65							1	80						
	1977							9	70	18	70	2	175					1	NA						
Bridle shiner	1976									1	65														
	1977																								
Common shiner	1976									1	70	6	120					1	55			16	70	1	75
	1977	2	80			2	80	135	80									1	NA						
Spottail shiner	1976			2	95	5	95					2	90												
	1977																								
Shiners	1976																			2	65				
	1977					1	80	15	80	7	80									2	NA				
Fallfish	1976							1	60			1	110												
	1977																								
White sucker	1976											4	265	3	385	1	180								
	1977									2	280	1	410			1	NA								
Yellow bullhead	1976			2	90	3	170			2	165														
	1977							1	120																
Brown bullhead	1976	1	55	1	80	5	100	16	95	32	100	7	110	2	150	9	155	1	190						
	1977							6	130	12	145	1	150	1	115	7	NA	1	NA						
Bullhead sp(p).	1976																								
	1977																								
Tadpole madtom	1976																								
	1977	1	55																			3	65	2	60
Margined madtom	1976									2	100														
	1977									1	60									2	95				
White perch	1976											1	205	1	230										
	1977																								
Redbreast sunfish	1976									1	190	1	190												
	1977																					1	130		
Pumpkinseed	1976					5	95	3	95	8	65	1	45			2	120	1	205	13	90	5	95		
	1977	2	60	1	60	2	125	10	130							2	NA	1	NA	1	NA				
Sunfish	1976															1	40	1	35						
	1977					1	40	3	110			1	150			1	NA	1	NA						
Smallmouth bass	1976			4	80					1	85			1	60	1	50			1	100				
	1977															1	50			1	100				
Largemouth bass	1976			1	65															2	125	1	80		
	1977																								
Yellow perch	1976			8	135	9	125	27	100	2	95	9	155	3	180	3	170			5	160	1	80		
	1977	3	130			2	125	10	90	3	170	1	140			3	NA			1	NA				
Unidentified	1976							1	60			1	NA			1	220								
	1977															1	NA								

APPENDIX TABLE E-6. SUMMARY OF FISH ENTRAPMENT MONITORING FOR UNITS I AND II, MERRIMACK STATION, JUNE THROUGH OCTOBER, 1978. MERRIMACK RIVER SUMMARY REPORT, 1979.

	JUNE		AUGUST		SEPTEMBER		OCTOBER	
	NO.	LENGTH RANGE (mm)	NO.	LENGTH RANGE (mm)	NO.	LENGTH RANGE (mm)	NO.	LENGTH RANGE (mm)
Golden shiner	3	71-86	0		0		1	130
Common shiner	2	55-95	0		0		0	
Spottail shiner	0		0		0		0	
Fallfish	3	100-200	1	87	0		0	
White sucker	1	461	0		0		0	
Yellow bullhead	1	170	0		0		0	
Brown bullhead	10	71-204	6	145-170	0		0	
Margined madtom	1	151	0		0		0	
Pumpkinseed	1	59	0		1	43	1	31
Smallmouth bass	1	280	0		0		0	
Largemouth bass	1	28	1	78	0		0	
Yellow perch	2	260-281	2	194-243	0		0	
American shad	0		0		0		1	91

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

ENGINEERING DIVISION BULLETIN

EFFECTIVE DATE	SUBJECT	BULLETIN NO.
Sept. 30, 1985	Guidelines for Reporting and Investigating Events of Fish Distress/Mortality at all PSNH Generating Stations	

PURPOSE

These guidelines provide a uniform procedure for Company personnel to follow when an extraordinary event is observed involving fish in distress or dead, at or in the vicinity of any PSNH generating station.

DEFINITIONS

1. Fish: Finfish and shellfish
2. Distress: Unusual swimming behavior or drifting on or near the surface with minimal movement.
3. Mortality: Death

EXTRAORDINARY EVENT

General: Any event where 50 or more fish of any size and species are observed in distress or dead at a PSNH generating station.

Specific: Any event where any number of Salmon (Atlantic, Coho, etc.), Striped Bass or American Lobster are observed in distress or dead at a PSNH generating station.

INTERNAL NOTIFICATION PROCEDURES

Company personnel observing an apparent fish distress/mortality event in progress or indications of a prior event should immediately initiate the notification procedures.

1. Generating Stations (Hydro & Steam)

   A. Each generating station is charged with creating its own internal notification procedures, with a copy on file in the Environmental Department.

   B. All station personnel should be briefed on these procedures a minimum of once per year.

   C. Station notification procedures should be prominently posted.

EFFECTIVE DATE	SUBJECT	BULLETIN NO.
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2. General Construction and Maintenance Division

   A. GC&M is charged with creating its own internal notification procedures, with a copy on file in the Environmental Department.

   B. All GC&M personnel who may perform work at a generating station during the course of a year should be briefed on these procedures a minimum of once per year.

3. All generating station and GC&M notification procedures will culminate in the timely notification of the Environmental Department by phone.

4. The following Environmental Department personnel should be notified by phone:

   Bruce Smith, Department Manager, Extension 2355 or 664-2238 (home).
   Wayne Nelson, Staff Biologist, Extension 2364 or 679-5175 (home).

EVENT INVESTIGATION

Preliminary Investigation

1. A preliminary investigation should be performed by generating station personnel immediately following initiation of the Internal Notification Procedures.

2. The following information should be obtained by generating station personnel during their investigation:

   A. The kinds (species) of fish involved, if known.

   B. The predominant sizes (lengths) of each species of fish involved.

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C. A count or estimate of the total number of each species involved.

D. The extent or size of the area where distressed or dead fish were observed, e.g., how far up or downriver, how far across the river, etc.

E. A brief description of the predominant locations and manner in which fish were found, e.g., floating on or near embankments, swimming erratically in or near a cooling water discharge, taken in large numbers from travelling screen washes or bar rack cleanings, etc.

3. Representative samples of each species of fish involved should be preserved by refrigeration or freezing for later analysis by Environmental Department personnel and others.

4. All information gathered during the station's preliminary investigation will be provided to the Environmental Department.

Comprehensive Investigation

The Environmental Department will perform a comprehensive investigation of the fish distress/ mortality event as soon as possible following notification of the event by telephone.

EXTERNAL NOTIFICATIONS & REPORTING

1. The Environmental Department will produce a report on each fish distress/mortality events and provide the reporting station/GC&M with a copy.

2. The Environmental Department will be responsible for all communications with agencies and others outside the Company, including all necessary and appropriate notifications and reporting.