

THREE MILE ISLAND AQUATIC STUDY
MONTHLY REPORT FOR APRIL 1985

Prepared for

GPU Nuclear Corporation
P. O. Box 480
Route 441 South
Middletown, Pennsylvania 17057

Prepared by

EA Engineering, Science and Technology, Inc.
Hunt Valley/Loveton Center
15 Loveton Circle
Sparks, Maryland 21152

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8506050535 850520
PDR ADOCK 05000287
R PDR

INTRODUCTION

The objective of this monthly report is to document compliance with the nonradiological (aquatic) environmental monitoring programs specified in Sections 3.1.1.a(4), 3.1.2.a., and 4.6.1 of the Environmental Technical Specifications (ETS). These programs have been carried out as directed in the Environmental Controls Aquatic Sampling Manual. Program elements being conducted under contract to GPU Nuclear Corporation include benthic macroinvertebrates, ichthyoplankton, fish population dynamics (seine and electrofishing), creel surveys, and water quality. The ultimate purpose of these studies is to obtain a database sufficient to establish the natural fluctuations within the ecosystem and identify any significant biological alterations resulting from the TMINS.

Compliance with all programs specified in the ETS and detailed in the Aquatic Sampling Manual was achieved in April (Table 1). Aquatic field sampling for the 1985 season was initiated on 1 April, and specified calibrations of all field instruments were completed prior to the first sample date. Progress during April also involved the completion of the 1984 Annual Report and subsequent delivery to TMI Environmental Controls (TMI-EC). Details are provided in the following pages wherein progress is described for each program.

Data presented in this report are considered provisional, pending subsequent proofing, analysis, and presentation in the annual report.

Water Quality Analysis

Objective: To measure select physical and chemical parameters of the Susquehanna River in the vicinity of Three Mile Island Nuclear Station (TMINS) concurrent with General Ecological Survey samples.

Progress: The 1984 water quality section was completed, edited, printed, and the Annual Report was subsequently delivered to TMI-EC.

Water quality samples were collected on 16 April 1985 and forwarded to TMI-EC (Table 1). Select water quality parameters were also measured at sampling times and locations of the General Ecological Survey.

Benthic Macroinvertebrates

Objective: To assess the abundance, distribution, and diversity of benthic macroinvertebrates at three stations in the vicinity of TMINS.

Progress: The 1984 benthos section was edited, printed, and subsequently delivered to TMI-EC.

Benthos sampling on 16 April 1985 consisted of replicate (4) samples taken at each of the three benthos stations (Table 1).

Ichthyoplankton

Objective: To determine species composition, relative abundance, density, seasonal and spatial distribution of ichthyoplankton at eight stations in the vicinity of TMINS.

Progress: The 1984 ichthyoplankton section was edited, printed, and the Annual Report was subsequently delivered to TMI-EC.

Replicate (2) ichthyoplankton samples were taken at each of the eight sampling stations on 1, 8, 15, 22, and 29 April (Table 1).

Seine

Objective: To assess species composition, relative abundance, seasonal and spatial distribution, condition factor, occurrence

of parasites, anomalies and fish kills, and species diversity of fishes vulnerable to seine capture at six stations in the vicinity of TMINS.

Progress: The 1984 seine section was edited, printed, and the Annual Report was subsequently delivered to TMI-EC.

Seine collections were taken at each of the six sampling stations on 24 April 1985 (Table 1).

Electrofishing

Objective: To assess species composition, relative abundance, occurrence of parasites, anomalies, and species diversity of fishes vulnerable to electrofisher capture at six stations in the vicinity of TMINS.

Progress: The 1984 electrofishing section was edited, printed, and the Annual Report was subsequently delivered to TMI-EC.

Electrofishing at the six stations was completed on 23 April 1985 (Table 1). Samples consisted of 105 fish of 11 species (Table 2). More fish (27 specimens) were collected at Station 4A1 than at any other station, while most species (6) were taken at Station 10A3. Quillback dominated the catch with a collected total of 49 specimens. Leeches were found on one bluegill and three smallmouth bass. Anchor worms (Lernaea) were seen on two bluegill and one white crappie.

Creel Survey

Objective: To investigate the extent of success of sport-fishing, and determine angler residence and use of catch, in the Susquehanna River near TMINS.

Progress: The 1984 creel survey was edited, printed, and the Annual Report was subsequently delivered to TMI-EC.

Creel surveys were completed on 2, 6, 19, and 28 April 1985 (Table 1). Interviews consisted of 166 anglers who reportedly fished 340.80 hours, caught 455 fish, and harvested 162 fish (36% of the catch)(Tables 3 through 6). The average catch per effort (c/e) and harvest per effort (h/e) was 1.34 and 0.48 per hour, respectively. Smallmouth bass (228 specimens) was the predominant species caught by anglers, while rock bass (71 specimens) dominated angler harvest. Most anglers (85), most fish caught (197), and most hours fished (186.79) were recorded at the General Reservoir. However, most fish kept (91) and the highest c/e (1.99) was recorded at the York Haven Generating Station. Anglers interviewed were predominantly residents of York or Dauphin Counties, and the majority indicated that they eat at least a portion of their catch.

TABLE 1 AQUATIC SAMPLING CONDUCTED DURING APRIL 1985 IN
COMPLIANCE WITH THREE MILE ISLAND NUCLEAR STATION
ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Discipline	April 1-6	April 7-13	April 14-20	April 21-27	April 28-30
Water Quality Analysis			X		
Benthic Macro- invertebrates			X		
Ichthyoplankton	X	X	X	X	X
Seine				X	
Electrofishing				X	
Creel Survey	XX		X		X

TABLE 2 FISHES CAPTURED BY AC ELECTROFISHER ON 23 APRIL 1985 NEAR TMINS

Zone	TM-AQF -4A1	TM-AQF -13A1	TM-AQF -10A3	TM-AQF -9B5	TM-AQF -10B3	TM-AQF -11B1	TOTAL
Time	2113	2149	2217	2248	2026	1939	
Duration (min)	19	14	14	12	14	24	
Air Temp (C)	19.0	16.5	17.0	17.0	19.0	21.5	
Water Temp (C)	21.0	22.0	22.5	22.0	21.0	22.5	
Dissolved Oxygen (mg/l)	9.7	9.2	8.7	8.8	10.4	12.6	
pH	8.2	8.4	8.1	8.6	8.2	8.1	
Conductivity (micromhos/cm)	260	260	260	275	225	250	
Secchi Disc (cm)	61.0	55.9	45.7	61.0	91.4	61.0	
Volts	175	180	180	180	180	170	
Amps	6.0	6.0	6.0	6.0	5.5	6.0	
Gizzard shad	-	-	1	-	-	-	1
Carp	5	3	1	-	-	3	12
Quillback	22	7	9	1	4	6	49
Shorthead redhorse	-	1	-	-	-	-	1
Redbreast sunfish	-	2	7	-	1	-	10
Pumpkinseed	-	-	1	-	5	3	9
Bluegill	-	-	-	-	3	12	15
Smallmouth bass	-	4	1	-	-	-	5
White crappie	-	-	-	-	-	1	1
Yellow perch	-	-	-	1	-	-	1
Walleye	-	-	-	-	1	-	1
Total Specimens	27	17	20	2	14	25	105
Total Species	2	5	6	2	5	5	11

TABLE 3. CREEL SURVEY DATA FROM THE GENERAL RESERVOIR (GR) FOR EACH SURVEY DAY IN APRIL 1985

Day	2 Tue			6 Sat		19 Fri		28 Sun		
Weather	Partly Cloudy/windy; Overcast/windy			Partly Cloudy/windy		Partly Cloudy		Overcast;Overcast; Partly Cloudy		
River Stage (m)	2.67			2.02		1.42		1.30		
Air Temp (C)	7.5	7.0		15.0	15.5	30.0	28.5	19.0	18.5	18.5
Water Temp (C)	7.0	7.0		9.5	10.0	17.0	17.5	19.0	18.5	19.0
Times:										
a) morning (0900-1300)	a			a		a		a		
b) afternoon (1301-1700)		b			b		b		b	
c) evening (1701-2100)			c1			c1				c
Total Per Time Period:										
Anglers	-	-		3	2	12	4	40	14	10
Fish Caught	-	-		-	1	24	5	90	74	3
Fish Kept	-	-		-	1	6	1	5	-	1
Hours Fished	-	-		2.25	2.00	30.01	4.00	91.93	43.60	13.00
Catch/Effort (h)	-	-		0.00	0.50	0.80	1.25	0.98	1.70	0.23
Day Totals:										
Anglers	-	-		5		16		64		
Fish Caught	-	-		1		29		167		
Fish Kept	-	-		1		7		9		
Hours Fished	-	-		4.25		34.01		148.53		
Catch/Effort (h)	-	-		0.24		0.85		1.12		
Species:										
Common carp	-	-		-	-	-	-	3R	-	-
Channel catfish	-	-		-	1K	2K6R	3R	1K7R	-	-
Rock bass	-	-		-	-	3R	-	2K10R	29R	-
Bluegill	-	-		-	-	-	-	-	1R	-
Sunfishes (<i>Lepomis</i> spp.) ²	-	-		-	-	2K	-	6R	-	-
Smallmouth bass	-	-		-	-	2K8R	1K1R	2K46R	43R	2R
Largemouth bass	-	-		-	-	1R	-	-	-	-
Black crappie	-	-		-	-	-	-	-	1R	1K
Crappies (<i>Pomoxis</i> spp.) ²	-	-		-	-	-	-	3K10R	-	-

1 Survey not conducted due to darkness

2 General identification

K Kept

R Released

TABLE 4. CREEL SURVEY DATA FROM THE WEST DAM (WD) FOR EACH SURVEY DAY IN APRIL 1985

Day	2 Tue		6 Sat		19 Fri		28 Sun		
Weather	Partly Cloudy/windy; Overcast/windy		Partly Cloudy/windy		Partly Cloudy/windy; Partly Cloudy		Overcast;Overcast; Clear		
River Stage (m)	2.67		2.02		1.42		1.30		
Air Temp (C)	7.5	7.0	14.0	14.5	29.0	29.0	19.0	18.5	18.5
Water Temp (C)	7.5	7.5	9.0	10.0	16.5	17.5	18.5	18.0	18.5
Times:									
a) morning (0900-1300)	a		a		a		a		
b) afternoon (1301-1700)		b		b		b		b	
c) evening (1701-2100)									c
Total Per Time Period:									TOTAL
Anglers	-	-	-	-	-	-	2	6	8
Fish Caught	-	-	-	-	-	-	10	5	15
Fish Kept	-	-	-	-	-	-	-	3	3
Hours Fished	-	-	-	-	-	-	6.50	9.00	15.50
Catch/Effort (h)	-	-	-	-	-	-	1.54	0.56	0.97
Day Totals:									
Anglers	-	-	-	-	-	-		8	
Fish Caught	-	-	-	-	-	-		15	
Fish Kept	-	-	-	-	-	-		3	
Hours Fished	-	-	-	-	-	-		15.50	
Catch/Effort (h)	-	-	-	-	-	-		0.97	
Species:									
Channel catfish	-	-	-	-	-	-	-	2K	2
Smallmouth bass	-	-	-	-	-	-	9R	1K 1R	11
Crappies (<i>Pomoxis</i> spp.) ²	-	-	-	-	-	-	-	1R	1
Walleye	-	-	-	-	-	-	1R	-	1

¹ Survey not conducted due to darkness

² General identification

K Kept

R Released

TABLE 5. CREEL SURVEY DATA FROM THE EAST DAM (ED) FOR EACH SURVEY DAY IN APRIL 1985

Day	2 Tue			6 Sat		19 Fri		28 Sun		
Weather	Partly Cloudy/windy			Partly Cloudy/windy		Partly Cloudy;Overcast		Partly Cloudy;Overcast; Partly Cloudy		
River Stage (m)	2.67			2.02		1.42		1.30		
Air Temp (C)	6.0	8.0		13.5	15.0	28.5	29.0	18.5	18.5	21.0
Water Temp (C)	7.5	7.5		10.5	11.5	17.5	18.5	19.0	19.0	19.5
Times:										
a) morning (0900-1300)	a	b		a	b	a	b	a	b	
b) afternoon (1301-1700)										
c) evening (1701-2100)			c1		c1		c1		c	
Total Per Time Period:										
Anglers	3	2		4	4	4	4	2	8	6
Fish Caught	3	2		-	4	31	23	1	13	7
Fish Kept	-	-		-	1	21	9	1	12	7
Hours Fished	3.00	4.00		7.50	2.50	10.00	7.00	2.50	13.00	9.50
Catch/Effort (h)	1.00	2.00		0.00	1.60	3.10	3.28	0.40	1.00	0.74
Day Totals:										
Anglers	5			8		8		16		
Fish Caught	5			4		54		21		
Fish Kept	-			1		30		20		
Hours Fished	7.00			10.00		17.00		25.00		
Catch/Effort (h)	0.71			0.40		3.18		0.84		
Species:										
Common carp	-	-		-	-	-	2K	-	-	-
White sucker	-	-		-	-	-	1K	-	-	-
Shorthead redhorse	-	-		-	-	-	1K	-	-	-
Rock bass	-	-		-	-	15K	2K 3R	1K	6K	4K
Redbreast sunfish	-	-		-	-	-	-	-	1K	-
Green sunfish	-	-		-	-	-	1R	-	-	1K
Pumpkinseed	-	-		-	-	-	-	-	1K	-
Bluegill	-	-		-	-	-	1R	-	1K	-
Sunfishes (Lepomis spp.) ²	-	-		-	-	-	-	-	2K	-
Smallmouth bass	-	-		-	1K	10R	3K 8R	-	1K 1R	1K
Black crappie	-	-		-	-	6K	-	-	-	-
Crappies (Pomoxis spp.) ²	-	-		-	-	-	-	-	1K	-
Walleye	3R	2R		-	3R	-	1R	-	-	-

¹ Survey not conducted due to darkness² General identification

K Kept

R Released

TABLE 6. CREEL SURVEY DATA FROM THE YORK HAVEN GENERATING STATION (YHGS) FOR EACH SURVEY DAY IN APRIL 1985

Day	2 Tue			6 Sat			19 Fri			28 Sun		
Weather	Partly Cloudy/windy;Overcast/ windy;Overcast/windy			Partly Cloudy/windy			Partly Cloudy			Overcast/Light rain;Partly Cloudy; Partly Cloudy		
River Stage (m)	2.67			2.02			1.42			1.30		
Air Temp (C)	8.0	8.5	7.5	15.0	15.0	15.0	31.5	32.0	27.0	17.5	21.0	18.0
Water Temp (C)	7.5	8.0	8.0	12.5	13.0	13.0	19.5	20.0	20.0	19.0	19.5	18.5
Times:												
a) morning (0900-1300)	a			a			a			a		
b) afternoon (1301-1700)		b			b			b			b	
c) evening (1701-2100)			c			c			c			c
Total Per Time Period:												
Anglers	-	-	-	-	-	-	3	2	3	10	12	6
Fish Caught	-	-	-	-	-	-	34	1	15	46	10	53
Fish Kept	-	-	-	-	-	-	16	1	-	45	4	25
Hours Fished	-	-	-	-	-	-	7.75	0.34	3.25	34.67	21.00	12.50
Catch/Effort (h)	-	-	-	-	-	-	4.39	2.94	4.62	1.33	0.48	4.16
Day Totals:												
Anglers	-	-	-	-	-	-	8	-	-	28	-	-
Fish Caught	-	-	-	-	-	-	50	-	-	109	-	-
Fish Kept	-	-	-	-	-	-	17	-	-	74	-	-
Hours Fished	-	-	-	-	-	-	11.34	-	-	68.17	-	-
Catch/Effort (h)	-	-	-	-	-	-	4.41	-	-	1.58	-	-
Species:												
Common carp	-	-	-	-	-	-	-	-	-	1K	2R	-
Quillback	-	-	-	-	-	-	-	-	-	1K	-	-
Shorthead redhorse	-	-	-	-	-	-	-	-	-	1R	-	-
Channel catfish	-	-	-	-	-	-	-	-	-	1K	2K	6K
Rock bass	-	-	-	-	-	-	2K	-	-	25K	2R	14K
Redbreast sunfish	-	-	-	-	-	-	-	-	-	-	-	1K
Pumpkinseed	-	-	-	-	-	-	-	-	-	1K	-	-
Bluegill	-	-	-	-	-	-	1K	-	-	-	-	-
Sunfishes (<i>Lepomis</i> spp.) ¹	-	-	-	-	-	-	-	-	-	4K	-	2K 1R
Smallmouth bass	-	-	-	-	-	-	12K 18R	1K	14R	10K	4R	1K 27R
Crappies (<i>Pomoxis</i> spp.) ¹	-	-	-	-	-	-	-	-	-	2K	-	-
Yellow perch	-	-	-	-	-	-	1K	-	-	-	-	1K
Walleye	-	-	-	-	-	-	-	-	1R	-	-	-

¹ General identification

K Kept

R Released