

THREE MILE ISLAND AQUATIC STUDY
Monthly Report for May 1981

by

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INTRODUCTION

The ecology of York Haven Pond near the Three Mile Island Nuclear Station (TMINS) has been under investigation since February 1974. Studies initiated in April 1974 include analysis of ambient water quality, ichthyoplankton (far-field), ichthyoplankton entrainment, macroinvertebrates, fish population dynamics, impingement of fishes, creel survey, and thermal plume mapping.

This report discusses the progress of investigations conducted in May 1981.

COMPLIANCE WITH ENVIRONMENTAL TECHNICAL SPECIFICATIONS (ETS)

Objectives: To determine compliance with the nonradiological (aquatic) environmental monitoring programs specified in sections 3.1.1.a.(4), 3.1.2.a., 4.2, and 4.6.1 of the ETS and to insure that said programs are performed as detailed in the Generation Procedures Manual.

Progress: Compliance with all programs specified in the ETS and detailed in the Procedures Document was achieved in May (Table 1).

A program by program summary of the progress for May follows.

MACROINVERTEBRATES

Objective: To describe the diversity and distribution of the benthic macroinvertebrates occurring at the five benthos sampling stations near TMINS.

Progress: Replicate (4) benthos samples were taken on 4 and 18 May (Table 1). Enumeration, determination of dry weights, and preliminary identification of macroinvertebrates have been completed through 18 May.

ICHTHYOPLANKTON

Objectives: (1) To determine the species composition, abundance, and distribution of ichthyoplankton in York Haven Pond; and (2) To investigate ichthyoplankton entrained at TMINS Unit 1 and 2 Intakes.

FAR-FIELD

Progress: Day/night samples were taken on 5, 12, 20, and 26-27 May (Table 1). A total of 7,259 larvae was captured, 331 in day samples and 6,928 at night. Totals for each week were 230, 1067, 2274, and 3688, respectively. Water temperatures ranged from 14.0 to 23.0 C.

Samples have been identified and tabulated through 12 May.

Sorting of 8 June samples is in progress.

ENTRAINMENT

Progress: Ichthyoplankton surveys were conducted at Units 1 and 2 on 12-13 and 26-27 May (Table 1). At Unit 1, 184 ichthyoplanktors (103 surface, 81 oblique) were taken on 12-13 May. The 26-27 May sample yielded 96 specimens (47 surface, 49 oblique).

At Unit 2, 131 ichthyoplanktors (91 surface, 40 oblique) were taken on 12-13 May. The 26-27 May collection yielded 219 specimens (88 surface, 131 oblique).

TRAPNET

Objectives: (1) To determine the distribution and relative abundance of fishes in the Three Mile Island area vulnerable to trapnet; (2) To provide specimens for movements studies; (3) To monitor the occurrence of diseased fishes; (4) To provide specimens for radiation analysis; and (5) To determine reproductive status for fishes throughout the year.

Progress: Samples were taken on 6-8 and 20-22 May (Table 1). A total of 104 fish of 12 species was taken on 6-8 May (Table 2). Most fish (47) and most species (8) were taken at Station 1A3 while greatest biomass (4.62 kg) occurred at 9B2. The pumpkinseed and rock bass were most abundant and comprised 60.6% and 11.5% of the total catch, respectively. One Lepomis hybrid (redbreast sunfish X pumpkinseed) was collected at Station 11A2. Four rock bass and one brown bullhead were tagged. Three previously tagged rock bass were recaptured. Parasites and anomalies observed included 3 pumpkinseed with eye protuberances, 1 yellow perch with slight black spot, 1 redbreast sunfish with a leech, and 1 redbreast sunfish with an anchor worm.

Some 101 fish of 12 species was taken on 20-22 May (Table 3). Most fish (43) were taken at Station 9B2, greatest biomass (9.08 kg) at 1A3, and most species (8) at 1A3 and 9B2. Common fishes included the pumpkinseed (30.7% of the total catch), white crappie (28.7%), and rock bass (11.9%). Six rock bass, 3 brown bullhead, and 1 channel catfish were tagged. One previously tagged rock bass was recaptured. Four male pumpkinseed were ripe. Three spotfin shiner exhibited slight black spot, 1 rock bass was parasitized by a leech, 1 brown bullhead bore abdominal ulcers, and 1 channel catfish had a caudal fin fungus.

Dead fishes observed in the study area included 1 common carp, 1 quillback, and 1 channel catfish.

SEINE

Objectives: (1) To determine the species composition of fish upstream and downstream from the TMINS Discharge vulnerable to seine; (2) To determine the relative condition factor for important species; and (3) To determine the reproductive status for fishes throughout the year.

Progress: Collections were made at the 10 stations on 6 and 20 May (Table 1). A total of 4,442 fish of 19 species was taken on 6 May (Table 4). Most fish (1,590) and most species (9) were taken at Station 9B6 while greatest biomass (388.7 g) occurred at 10B5. The spotfin shiner was the most abundant species at all stations except 10A2 and comprised 94.8% of the total catch. The numbers of fishes bearing slight black spot infestations remained high and included the spotfin shiner (179 specimens); bluntnose minnow (5); spottail shiner (3); common shiner (2); and blacknose dace, fallfish, pumpkinseed, and bluegill (1 each). Two pumpkinseed exhibited eye protuberances, 1 spotfin shiner had spinal curvature, and 1 spottail shiner and 1 pumpkinseed were

parasitized by anchor worms. Two, male bluntnose minnow were tuberculate and four tessellated darter were gravid.

A total of 2,619 fish of 20 species was taken on 20 May (Table 5). Most fish (937), most species (13), and greatest biomass (420.2 g) were taken at Station 13B5. The spotfin shiner was the most abundant species at all stations except 9A1 and comprised 88.8% of the total catch. Young of the chain pickerel and white sucker were taken for the first time this year. Occurrences of slight black spot infestations remained numerous and included the spotfin shiner (150 specimens); bluntnose minnow (19); common shiner, spottail shiner, and shorthead redhorse (2 each); and blacknose dace and fallfish (1 each). Other parasites and anomalies were 1 smallmouth bass with an anchor worm, 1 bluegill with a leech, and 1 pumpkinseed with eye protuberances. Two, male bluntnose minnow were tuberculate and one tessellated darter was gravid.

No pattern of parasite infection was observed with respect to the location of TMINS from either May sample.

IMPINGEMENT OF FISH

Objectives: (1) To determine the numbers and species impinged on the river water intake screens; (2) To determine day-night differences in impingement frequency; and (3) To determine the extent of mortality of impinged fish.

Progress: Impingement surveys were conducted weekly (6-7, 11-12, 20-21, 27-28 May) at the TMINS Unit 1 and 2 Intakes (Table 1). Unit 1 impinged 7 fish of 6 species weighing 844.1 g (Tables 6 through 13). Most fish were young and all were dead. Fish biomass and numbers were highest during the 11-12 May survey. More fish were collected at 0400 h than during the other survey periods. The estimated impingement for Unit 1 for May was 54 fish weighing 6,541.8 g (14.4 lb).

Unit 2 impinged 31 fish of 5 species weighing 328.6 g (Tables 14 through 21). Most fish were young and dead. Fish numbers and biomass were highest during the 27-28 May survey. The estimated impingement for May from Unit 2 was 240 fish weighing 2,546.6 g (5.6 lb).

The total estimated impingement at TMINS during May was 294 fish weighing 9,088.4 g (20.0 lb).

ELECTROFISHING

Objectives: (1) To provide specimens for radiation analysis and movements studies; and (2) To determine the relative abundance of fishes vulnerable to electrofishing in various parts of York Haven Pond.

Progress: Sampling was conducted on four nights in May (Table 1). Twenty-four collections in twelve zones yielded 859 specimens of 18 species (Table 22). The smallmouth bass (193 specimens), quillback (175), shorthead redhorse (149), and pumpkinseed (121) were most abundant. A total of 112 fish was tagged for movements studies.

MOVEMENTS OF FISHES

Objective: To determine if fishes in waters receiving the TMINS effluent mix with fishes from other areas.

Progress: A total of 127 fish was tagged and 35 previously tagged fish were recaptured in May. Recaptured fishes included the channel catfish (1 specimen), rock bass (25), and smallmouth bass (9). The channel catfish made a 2.0 km complex movement. One rock bass was recaptured twice during May, bringing the total number of recaptures to 26. Eight rock bass moved upstream (distances of 13.4 to 92.5 km), three moved downstream (0.2 to 9.5 km), six made complex movements (1.0 to 81.3 km), and nine were recaptured in the same areas in which they were tagged. Three smallmouth bass made complex movements (0.3 to 3.0 km); the remaining six smallmouth bass were recaptured in the same areas in which they were tagged.

CREEL SURVEYS

Objectives: (1) To determine the extent and success of sport fishing; and (2) To determine information on angler residence and use of catch.

Progress: Creel surveys were conducted in all areas on 3, 11, 16, and 28 May (Table 1). The 564 anglers interviewed fished 943.85 hours and caught 1,838 fish (Tables 23 through 26). The actual harvest was 452 fish or 24.6% of the total catch. The mean catch per effort (c/e) was 1.95. Most anglers (198), most hours fished (376.45), and largest total harvest (176) were recorded at the York Haven Generating Station. The largest total catch (731) was recorded at the East Dam, and the highest mean c/e (4.29) occurred at the West Dam.

Walleye (607 specimens) were caught in greatest numbers. Other common species included the smallmouth bass (574), rock bass (507), unidentified sunfishes (31), channel catfish (29), and common carp (25).

Approximately 76% of the anglers lived in York or Dauphin counties. Most of the anglers reported they eat some of their catch.

AMBIENT WATER QUALITY

Objective: To determine concentrations of selected water quality parameters in ambient river areas and the TMINS effluent.

Progress: Water quality samples were collected on 4 and 18 May at the five river stations (Table 1). Data are currently being analyzed; results will be presented in the June 1981 progress report.

The water quality samples collected in April have now been analyzed; results are presented in Table 27.

On 7 April values for turbidity, sulfate, and total zinc were highest at Station 1A1 (located upstream from the TMINS Discharge);

total dissolved solids were highest at 1A2. Dissolved zinc values were highest at Station 11A2 (downstream from the Discharge). Values for water temperature, pH, dissolved oxygen, and alkalinity were highest at Station 9B1.

On 20 April values for dissolved oxygen and total dissolved solids were highest at Station 9B1. Sulfate, pH, and turbidity values were highest at Stations 1A1, 11A1, and 11A2, respectively.

Parameters, for which State water quality criteria have been established, were not exceeded at any station on 7 or 20 April.

Table 1

Sampling conducted in compliance with the Generation Procedures Manual in May 1981.

PROGRAM	May 1-9	May 10-16	May 17-23	May 24-31
Macroinvertebrates	X		X	
Ichthyoplankton:				
Far-Field	X	X	X	X
Entrainment		X		X
Trapnet	X		X	
Seine	X		X	
Impingement of Fish	X	X	X	X
Electrofishing	X		X	
Movements of Fishes	X		X	
Creel Surveys	X	X		X
Ambient Water Quality	X		X	

Table 2

Fishes taken by trapnet on 6-8 May 1981 near TMINS.

Station	TM-AQF-1A1		TM-AQF-11A2		TM-AQF-11A3		TM-AQF-982		Total	% Catch
	6-7	7-8	6-7	7-8	6-7	7-8	6-7	7-8		
Date	6-7	7-8	6-7	7-8	6-7	7-8	6-7	7-8		
Time	0917-1000	1004-0956	0927-0931	0935-0939	0920-0917	0920-0928	0906-0858	0900-0910		
Air Temp (C)	16.5, 9.0	9.0, 13.5	17.0, 10.0	10.0, 13.0	17.5, 9.0	9.0, 12.5	17.0, 9.5	9.5, 11.5		
Water Temp (C)	16.5, 14.0	14.0, 14.5	16.5, 14.0	14.0, 14.5	16.5, 14.0	14.0, 14.0	16.0, 14.0	14.0, 14.0		
Dissolved Oxygen (mg/l)	9.5, 9.8	9.8, 9.8	9.6, 9.7	9.7, 10.0	9.5, 9.6	9.6, 9.8	9.5, 9.5	9.5, 9.5		
pH	7.4, 7.3	7.3, 7.5	7.4, 7.3	7.3, 7.6	7.5, 7.3	7.3, 7.5	7.6, 7.6	7.6, 7.9		
Secchi Disc (cm)	94, 97	97, 99	94, 97	97, 91	91, 91	91, 104	107, 107	107, 102		
River Stage (m)	1.64, 1.55	1.55, 1.49	1.64, 1.55	1.55, 1.49	1.64, 1.55	1.55, 1.49	1.64, 1.55	1.55, 1.49		
Weather	Haze, Clear	Clear, Clear	Haze, Clear	Clear, Clear	Haze, Clear	Clear, Clear	Haze, Clear	Clear, Clear		
No. of Specimens	29	18	14	15	4	6	8	10	104	
No. of Species	7	2	3	5	2	4	3	6	12	
Common carp	-	-	-	-	-	-	-	1	1	1.0
Yellow bullhead	1	-	-	-	-	-	-	-	1	1.0
Brown bullhead	1	-	-	-	-	-	-	-	2	1.9
Channel catfish	1	-	-	1	-	-	-	1	12	11.5
Rock bass	1	-	3	2	3	2	-	-	10	9.6
Redbreast sunfish	1	-	4	4	1	-	-	3	63	60.6
Pumpkinseed	23	16	7	6	-	2	6	3	1	1.0
Bluegill	-	-	-	-	-	-	-	1	1	1.0
Lepomis hybrid	-	-	-	1	-	-	-	-	2	1.9
Smallmouth bass	-	-	-	-	-	1	-	3	5	4.8
White crappie	1	-	-	-	-	-	1	1	2	1.9
Black crappie	-	-	-	-	-	-	-	-	3	2.9
Yellow perch	-	2	-	-	-	1	-	-		

Table 3

Fishes taken by trapnet on 20-22 May 1981 near TMDS.

Station	TM-AQF-1A3		TM-AQF-11A2		TM-AQF-11A3		TM-AQF-982		Total	% Catch
	20-21 1506-1421	21-22 1425-1402	20-21 1454-1351	21-22 1354-1346	20-21 1447-1337	21-22 1343-1331	20-21 1437-1317	21-22 1320-1313		
Date	20-21	21-22	20-21	21-22	20-21	21-22	20-21	21-22		
Time	1506-1421	1425-1402	1454-1351	1354-1346	1447-1337	1343-1331	1437-1317	1320-1313		
Air Temp (C)	23.0, 23.5	23.5, 24.5	22.0, 24.0	24.0, 26.0	21.5, 22.0	22.0, 25.0	20.5, 24.5	24.5, 26.0		
Water Temp (C)	17.0, 18.0	18.0, 19.5	17.0, 18.0	18.0, 19.0	17.0, 17.5	17.5, 19.0	17.0, 17.5	17.5, 18.5		
Dissolved Oxygen (mg/l)	9.9, 10.7	10.7, 10.0	9.8, 10.1	10.1, 10.0	9.7, 10.0	10.0, 10.1	9.9, 9.9	9.9, 10.3		
pH	7.6, 7.4	7.4, 7.4	7.5, 7.3	7.3, 7.5	7.6, 7.5	7.5, 7.7	7.8, 7.6	7.6, 7.6		
Secchi Disc (cm)	66, 61	61, 69	58, 64	64, 69	61, 61	61, 64	91, 76	76, 89		
River Stage (m)	1.74, 1.64	1.64, 1.54	1.74, 1.64	1.64, 1.54	1.74, 1.64	1.64, 1.54	1.74, 1.64	1.64, 1.54		
Weather	Partly Cloudy, Clear	Clear, Partly Cloudy	Partly Cloudy, Clear	Clear, Clear	Partly Cloudy, Clear	Clear, Clear	Partly Cloudy, Clear	Clear, Clear		
No. of Specimens	14	10	10	10	5	9	27	16	101	
No. of Species	6	6	4	4	3	3	6	5	12	
Common carp	1	-	-	-	-	-	1	-	1	1.0
Golden shiner	-	-	-	-	2	5	-	-	7	6.9
Spotfin shiner	-	-	-	-	-	-	-	-	3	3.0
Quillback	2	1	-	-	-	-	-	1	3	3.0
Brown bullhead	-	2	-	-	-	-	1	-	3	3.0
Channel catfish	1	1	-	-	-	-	-	-	2	2.0
Rock bass	3	-	1	1	2	3	2	-	11	11.0
Redbreast sunfish	-	-	-	1	-	-	-	-	1	1.0
Pumpkinseed	6	4	1	6	1	-	6	7	31	30.7
Bluegill	-	1	-	-	-	-	-	3	4	4.0
White crappie	1	1	7	2	-	-	14	4	29	28.7
Black crappie	-	-	1	-	-	1	3	1	6	5.9

Table 4

Fishes taken by seine on 6 May 1981 near TMNS.

Station	TM-AQF-13B5	TM-AQF-10B5	TM-AQF-16A5	TM-AQF-1A2	TM-AQF-16A1	TM-AQF-10A2	TM-AQF-9B6	TM-AQF-9A1	TM-AQF-9B3	TM-AQF-6A2	Total	% Catch
Time	1547	1232	1523	1507	1415	1359	1336	1316	1257	1440		
Air Temp (C)	16.5	17.0	15.5	16.5	18.0	17.0	16.0	16.0	16.0	17.0		
Water Temp (C)	17.0	17.5	16.0	16.5	16.5	16.5	16.0	16.5	16.0	17.0		
Dissolved Oxygen (mg/l)	9.0	10.9	10.0	9.8	9.7	9.8	9.8	9.8	9.8	8.5		
pH	7.6	8.4	7.3	7.2	7.2	7.2	7.2	7.3	7.3	7.2		
Secchi Disc (cm)	81	86	114	91	94	86	91	91	84	102		
River Stage (m)	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64		
Weather	Fog	Fog	Light Rain	Haze	Fog	Haze	Fog	Fog	Light Rain	Haze		
No. of Specimens	84	1531	294	206	282	4	1590	77	85	289	4442	
No. of Species	6	6	5	4	6	3	9	5	7	5	19	
No. of Hauls	4	4	4	4	4	4	4	5	4	5	42	
Golden shiner	-	-	-	-	1	-	-	-	-	-	1	+
Comely shiner	-	2	-	-	-	-	-	-	-	-	2	+
Common shiner	-	-	-	-	-	-	2	-	-	-	2	+
Spottail shiner	-	13	68	-	1	-	3	-	-	-	85	1.9
Swallowtail shiner	-	-	1	-	-	-	2	-	-	-	3	0.1
Rosyface shiner	-	-	-	-	1	-	-	-	-	-	1	+
Spotfin shiner	78	1512	212	202	274	-	1569	70	67	228	4212	94.8
Mimic shiner	-	-	2	-	-	-	2	-	-	-	4	0.1
Bluntnose minnow	-	1	11	2	-	-	7	-	2	7	30	0.7
Blacknose dace	-	-	-	1	-	-	-	-	-	-	1	+
Fallfish	-	-	-	-	-	-	1	-	-	-	1	+
Northern hog sucker	1	-	-	-	-	-	-	-	-	-	1	+
Shorthead redhorse	-	-	-	-	-	1	-	-	-	-	1	+
Rock bass	-	-	-	-	-	-	-	-	-	1	1	+
Redbreast sunfish	1	-	-	-	4	-	-	2	3	-	10	0.2
Pumpkinseed	2	2	-	-	-	-	-	2	8	49	64	1.4
Bluegill	1	-	-	-	-	-	-	2	1	4	8	0.2
Smallmouth bass	1	-	-	-	-	1	1	-	2	-	5	0.1
Tessellated darter	-	1	-	1	1	2	3	1	1	-	10	0.2

+ Less than 0.05%.

Table 5

Fishes taken by seine on 20 May 1981 near TMINS.

Station	TM-AQF-1385	TM-AQF-1085	TM-AQF-16A5	TM-AQF-1A2	TM-AQF-16A1	TM-AQF-10A2	TM-AQF-9B6	TM-AQF-9A1	TM-AQF-9B1	TM-AQF-6A2	Total	% Catch
Time	0817	1145	0905	0925	1006	1030	1054	1111	1124	0945		
Air Temp (C)	14.0	18.0	14.0	14.5	16.0	16.5	17.5	17.5	18.0	15.0		
Water Temp (C)	15.0	17.5	14.5	15.5	15.5	15.5	15.5	15.0	15.5	14.5		
Dissolved Oxygen (mg/l)	9.2	10.8	10.0	9.4	9.4	9.7	9.6	9.8	9.8	9.0		
pH	7.9	7.5	7.7	7.5	7.4	7.3	7.3	7.4	7.3	7.5		
Secchi Disc (cm)	58	84	64	56	61	76	86	91	97	48		
River Stage (m)	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74		
Weather	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear		
No. of Specimens	937	764	34	151	323	127	62	1	95	125	2619	
No. of Species	13	7	8	2	10	10	8	1	3	4	20	
No. of Hauls	4	5	5	4	5	4	4	4	4	4	43	
Chain pickerel	-	-	1	-	-	-	-	-	-	-	1	+
Comely shiner	1	-	-	-	-	-	-	-	-	-	1	+
Common shiner	-	-	-	-	1	-	-	-	-	1	2	0.1
Spottail shiner	13	16	8	-	7	24	1	-	-	-	69	2.6
Swallowtail shiner	2	-	-	-	1	1	-	-	-	-	4	0.2
Spotfin shiner	847	714	19	150	297	87	49	-	91	72	2326	88.8
Mimic shiner	32	-	1	-	1	-	1	-	-	-	35	1.3
Bluntnose minnow	11	24	1	-	2	5	2	-	-	18	63	2.4
Blacknose dace	1	-	-	-	-	-	-	-	-	-	1	+
Fallfish	-	-	1	-	-	-	-	-	-	-	1	+
Quillback	1	-	-	-	-	-	-	-	-	-	1	+
White sucker	-	1	1	-	2	2	3	-	-	-	9	0.3
Shorthead redhorse	-	-	-	-	-	2	-	-	-	-	2	0.1
Rock bass	1	-	-	-	-	-	-	-	-	-	1	+
Redbreast sunfish	5	-	-	-	5	2	-	-	-	-	12	0.5
Pumpkinseed	20	1	-	-	-	2	3	-	2	34	62	2.4
Bluegill	2	7	-	-	-	-	-	-	2	-	11	0.4
Smallmouth bass	1	1	2	-	6	1	1	1	-	-	13	0.5
White crappie	-	-	-	-	-	1	-	-	-	-	1	+
Tessellated darter	-	-	-	1	1	-	2	-	-	-	4	0.2

+ Less than 0.05%.

Table 6

Numbers of fishes impinged at the Unit 1 Intake during a 24-h impingement survey on 6-7 May 1981.

Date	6		7		7			
Time	2000		0400		1200			
Volumetric Flow Rate (m ³ /s)	0.84		0.84		0.34			
Number of River Water Pumps:								
Nuclear Service	1		1		1			
Secondary Service	1		1		1			
Decay Heat	0		0		0			
Intake Velocity (cm/s)	18		18		18			
River Flow (m ³ /s)	1059.3		1016.1		999.6			
Air Temp (C)	10.0		8.0		18.0			
Water Temp (C)	15.0		15.0		13.5			
Condition of Fish							Total	
	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Smallmouth bass	-	-	-	1	-	-	-	1
Total	-	-	-	1	-	-	-	1

Table 7

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 6-7 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Smallmouth bass	96-100	1 Young	13.1	1
Total			13.1	1

Table 8

Numbers of fishes impinged at the Unit 1 Intake during a 24-h impingement survey on 11-12 May 1981.

Date	11	12	12							
Time	2000	0400	1200							
Volumetric Flow Rate (m ³ /s)	0.84	0.84	0.84							
Number of River Water Pumps:										
Nuclear Service	1	1	1							
Secondary Service	1	1	1							
Decay Heat	0	0	0							
Intake Velocity (cm/s)	-14	-14	-14							
River Flow (m ³ /s)	713.8	761.0	778.7							
Air Temp (C)	18.0	15.0	17.0							
Water Temp (C)	17.0	17.0	16.5							
Condition of Fish	<u>Alive</u> <u>Dead</u>		<u>Alive</u> <u>Dead</u>		<u>Alive</u> <u>Dead</u>		<u>Total</u>			
Shorthead redbhorse	-	-	-	-	-	1	-	-	1	
Channel catfish	-	1	-	-	-	-	-	-	1	
Rock bass	-	-	-	-	-	1	-	-	1	
Redbreast sunfish	-	1	-	-	-	-	-	-	1	
Pumpkinseed	-	-	-	2	-	-	-	-	2	
Total	-	2	-	2	-	2	-	-	6	

Table 9

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 11-12 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Shorthead redbhorse	361-365	1 Adult	743.0	1
Channel catfish	91-95	1 Juvenile	10.3	1
Rock bass	61-65	1 Young	6.1	1
Redbreast sunfish	136-140	1 Adult	69.0	1
Pumpkinseed	41-50	2 Young	2.6	2
Total			831.0	6

Table 10

Numbers of fishes impinged at the Unit 1 Intake during a 24-h impingement survey on 20-21 May 1981.

Date	20	21	21		
Time	2000	0400	1200		
Volumetric Flow Rate (m ³ /s)	0.84	0.84	0.84		
Number of River Water Pumps					
Nuclear Service	1	1	1		
Secondary Service	1	1	1		
Decay Heat	0	0	0		
Intake Velocity (cm/s)	-26	-26	-26		
River Flow (m ³ /s)	1229.4	1165.2	1141.2		
Air Temp (C)	19.0	9.5	24.0		
Water Temp (C)	17.0	15.0	18.0		
Condition of Fish	Alive	Dead	Alive	Dead	Total
					Alive
					Dead
NO FISH TAKEN					

Table 11

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 20-21 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
NO FISH TAKEN				

Table 12

Numbers of fishes impinged at the Unit 1 Intake during a 24-h impingement survey on 27-28 May 1981.

Date	27	28	28		
Time	2000	0400	1200		
Volumetric Flow Rate (m ³ /s)	0.84	0.84	0.84		
Number of River Water Pumps:					
Nuclear Service	1	1	1		
Secondary Service	1	1	1		
Decay Heat	0	0	0		
Intake Velocity (cm/s)	-27	-27	-27		
River Flow (m ³ /s)	552.9	535.1	529.5		
Air Temp (C)	24.0	19.0	21.5		
Water Temp (C)	22.5	21.5	22.0		
Condition of Fish	<u>Alive</u> - <u>Dead</u>	<u>Alive</u> - <u>Dead</u>	<u>Alive</u> - <u>Dead</u>	<u>Total</u>	
Total	NO FISH TAKEN				

17

Table 13

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 1 Intake on 27-28 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Total	NO FISH TAKEN			

Table 14

Numbers of fishes impinged at the Unit 2 Intake during a 24-h impingement survey on 6-7 May 1981.

Date	6		7		7			
Time	2000		0400		1200			
Volunetric Flow Rate (m ³ /s)	1.58		1.58		1.58			
Number of River Water Pumps:								
Nuclear Service	1		1		1			
Secondary Service	1		1		1			
Intake Velocity (cm/s)	-8		-8		-8			
River Flow (m ³ /s)	1059.3		1016.1		999.6			
Air Temp (C)	9.5		8.0		16.0			
Water Temp (C)	14.5		13.0		15.0		Total	
Condition of Fish	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Spottail shiner	-	-	-	-	-	1	-	1
Rock bass	-	-	-	1	-	-	-	1
Tessellated darter	-	-	-	-	-	1	-	1
Total	-	-	-	1	-	2	-	3

Table 15

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 2 Intake on 6-7 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Spottail shiner	61-65	1 Juvenile	2.9	1
Rock bass	66-70	1 Young	9.4	1
Tessellated darter	46-50	1 Juvenile	1.0	1
Total			13.3	3

Table 16

Numbers of fishes impinged at the Unit 2 Intake during a 24-h impingement survey on 11-12 May 1981.

Date	11	12	12					
Time	2000	0400	1200					
Volumetric Flow Rate (m ³ /s)	1.58	1.58	1.58					
Number of River Water Pumps:								
Nuclear Service	1	1	1					
Secondary Service	1	1	1					
Intake Velocity (cm/s)	-4	-4	-4					
River Flow (m ³ /s)	713.8	761.0	778.7					
Air Temp (C)	18.0	15.0	16.0					
Water Temp (C)	17.5	17.0	16.5					
Condition of Fish					Total			
	Alive	Dead	Alive	Dead	Alive	Dead		
Spottail shiner	-	-	-	2	-	-	-	2
Rock bass	-	-	-	1	-	1	-	2
Tessellated darter	-	-	-	1	-	-	-	1
Total	-	-	-	4	-	1	-	5

Table 17

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 2 Intake on 11-12 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Spottail shiner	66-75	2 Adult	6.9	2
Rock bass	36-40, 51-55	2 Young	5.3	2
Tessellated darter	51-55	1 Adult	2.0	1
Total			14.2	5

Table 18

Numbers of fishes impinged at the Unit 2 Intake during a 24-h impingement survey on 20-21 May 1981.

Date	20	21	21							
Time	2000	0400	1200							
Volumetric Flow Rate (m ³ /s)	1.56	1.58	1.58							
Number of River Water Pumps:										
Nuclear Service	1	1	1							
Secondary Service	1	1	1							
Intake Velocity (cm/s)	-9	-9	-9							
River Flow (m ³ /s)	1229.4	1165.2	1141.2							
Air Temp (C)	18.0	9.0	26.0							
Water Temp (C)	17.0	15.5	18.0							
Condition of Fish	Alive		Dead		Alive		Dead		Total	
Spottail shiner	-	1	-	-	-	-	-	-	1	1
Channel catfish	2	1	-	1	-	1	2	3	2	3
Rock bass	-	-	-	2	-	-	-	2	-	2
Tessellated darter	-	-	-	1	-	-	-	1	-	1
Total	2	2	-	4	-	1	2	7	2	7

Table 19

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 2 Intake on 20-21 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Spottail shiner	71-75	1 Adult	4.5	1
Channel catfish	76-90	4 Young, 1 Juvenile	40.7	5
Rock bass	41-45, 66-70	2 Young	8.2	2
Tessellated darter	61-65	1 Adult	2.7	1
Total			56.1	9

Table 20

Numbers of fishes impinged at the Unit 2 Intake during a 24-h impingement survey on 27-28 May 1981.

Date	27	28	28							
Time	2000	0400	1200							
Volumetric Flow Rate (m ³ /s)	1.58	1.58	1.58							
Number of River Water Pumps:										
Nuclear Service	1	1	1							
Secondary Service	1	1	1							
Intake Velocity (cm/s)	-10	-10	-10							
River Flow Rate (m ³ /s)	552.9	535.1	529.5							
Air Temp (C)	23.0	19.0	21.0							
Water Temp (C)	22.5	22.0	21.0							
Condition of Fish	Alive Dead		Alive Dead		Alive Dead		Total			
Spottail shiner	-	-	-	-	-	3	-	3		
Channel catfish	1	3	-	1	-	2	1	6		
Rock bass	-	-	-	-	-	1	-	1		
Pumpkinseed	-	1	-	-	-	-	-	1		
Tessellated darter	-	1	-	1	-	-	-	2		
Total	1	5	-	2	-	6	1	13		

Table 21

Summary of lengths, weights, breeding condition, and numbers of fishes impinged at the Unit 2 Intake on 27-28 May 1981.

Species	Fork Length Range (5 mm groups)	Reproductive Status	Total Weight (g)	Total Number
Spottail shiner	61-70	2 Juvenile, 1 Adult	9.3	3
Channel catfish	76-90, 96-100	5 Young, 2 Juvenile	60.3	7
Rock bass	181-185	1 Adult	161.8	1
Pumpkinseed	71-75	1 Juvenile	9.0	1
Tessellated darter	46-50, 61-65	1 Juvenile, 1 Adult	4.6	2
Total			245.0	14

Table 22

Numbers of fishes captured by AC electrofisher near TMDS in May 1981.

Zone	15B2	16B8	4A1	16A2	15A2	15A1	11B1	10B3	10B1	13A1	10A3	9B5
Date	4 May	4 May	4 May	4 May	4 May	5 May	7 May	7 May	7 May	7 May	7 May	7 May
Time	2039	2146	2222	2247	2352	0022	2046	2118	2156	2230	2305	2348
Duration (min)	15	13	13	17	14	14	15	17	14	16	18	18
Air Temp (C)	14.0	15.0	15.0	15.0	12.0	15.0	12.0	12.0	12.0	12.0	11.0	9.0
Water Temp (C)	16.0	14.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Dissolved Oxygen (mg/l)	10.2	10.4	10.0	10.0	10.2	10.2	10.0	11.8	10.8	10.3	10.2	10.3
pH	8.8	7.8	8.5	7.5	8.5	8.4	7.8	7.3	7.4	7.5	7.4	7.4
Conductivity (micromhos/cm)	198	112	173	162	126	121	250	136	142	195	193	195
Secchi Disc (cm)	91	91	86	61	66	76	91	122	99	91	91	91
Volts	215	210	220	210	220	220	200	205	205	215	220	215
Amps	5.0	2.5	4.0	3.0	2.0	2.0	5.0	3.0	3.0	5.0	5.0	5.0
Gizzard shad	-	-	-	-	-	-	-	-	-	-	-	-
Brown trout	-	-	-	-	-	-	-	-	-	-	-	-
Common carp	-	-	-	2	-	1	1	-	1	1	-	2
Golden shiner	-	-	-	-	-	-	2	-	-	-	-	-
Fallfish	-	-	-	-	-	2	-	-	-	-	-	-
Quillback	16	2	-	6	1	-	10	9	21	1	9	26
White sucker	-	2	-	4	1	1	-	-	-	-	1	-
Northern hog sucker	-	-	-	1	-	-	-	1	-	-	-	-
Shorthead redhorse	3	1	-	22	1	1	-	6	-	29	30	4
Rock bass	10	3	-	8	1	6	-	6	-	5	3	4
Redbreast sunfish	8	5	1	1	-	-	-	4	-	1	6	1
Pumpkinseed	12	-	-	9	-	4	23	5	1	6	16	29
Bluegill	-	-	-	-	-	-	-	1	-	-	-	-
Smallmouth bass	11	10	-	38	4	12	-	9	4	12	10	3
Largemouth bass	1	-	-	-	-	-	1	-	-	-	-	-
White crappie	-	-	-	-	-	-	1	-	-	-	-	-
Black crappie	-	1	-	-	-	-	-	1	-	-	-	-
Walleye	6	1	2	1	-	3	2	7	2	4	5	16
No. of Specimens	67	25	3	92	8	30	40	49	29	59	60	85
No. of Species	8	8	2	10	5	8	7	10	5	8	8	8

Table 22 Continued.

Zone	1181	1083	1081	13A1	10A3	985	1582	1688	4A1	16A2	15A2	15A1	Total
Date	18 May	18 May	18 May	18 May	18 May	18 May	20 May	20 May	20 May	20 May	20 May	21 May	
Time	2055	2125	2200	2231	2304	2328	2104	2145	2224	2251	2335	0005	
Duration (min)	14	14	14	13	12	14	16	14	14	17	13	14	
Air Temp (C)	12.0	12.0	14.0	12.0	12.0	12.0	14.0	14.0	13.0	12.0	12.0	12.0	
Water Temp (C)	16.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
Dissolved Oxygen (mg/l)	9.0	9.6	9.7	9.5	9.3	9.2	9.5	9.6	9.3	9.2	9.5	9.5	
pH	8.0	8.0	8.0	8.1	8.1	8.0	8.4	8.6	8.7	8.7	8.8	8.7	
Conductivity (micromhos/cm)	182	120	127	178	178	178	225	127	182	182	147	144	
Secchi Disc (cm)	61	64	61	61	61	61	61	91	33	33	33	36	
Volts	210	215	215	215	215	215	210	225	220	220	220	225	
Amps	4.5	2.5	2.5	4.0	4.0	4.0	4.0	2.0	1.0	2.5	2.5	2.0	
Cizzard shad	3	-	-	1	-	1	-	-	-	2	-	-	7
Brown trout	-	-	-	-	-	-	-	1	-	-	-	-	1
Common carp	1	1	-	2	1	-	-	-	-	-	1	1	15
Golden shiner	-	-	-	-	-	-	-	-	-	-	-	-	2
Fallfish	-	-	-	-	-	-	-	-	-	-	1	-	3
Quillback	5	8	14	2	8	16	1	6	1	8	1	4	175
White sucker	-	-	-	-	2	1	-	-	-	5	-	2	19
Northern hog sucker	-	-	-	-	-	-	-	-	-	-	1	-	3
Shorthead redhorse	1	2	-	7	2	-	6	-	-	11	6	17	149
Rock bass	1	1	-	-	-	-	3	4	-	2	-	6	63
Redbreast sunfish	-	-	-	-	-	-	2	6	-	1	-	4	40
Pumpkinseed	8	1	-	-	-	1	2	1	-	3	-	-	121
Bluegill	-	1	-	-	-	-	-	-	-	-	-	-	2
Smallmouth bass	6	8	-	6	4	4	8	6	3	25	2	8	193
Largemouth bass	-	-	-	-	-	-	1	-	-	-	-	-	3
White crappie	-	-	-	-	-	-	-	-	-	-	-	-	1
Black crappie	-	-	-	-	-	-	-	-	-	-	-	-	2
Walleye	-	-	-	-	3	1	2	-	-	5	-	-	60
No. of Specimens	25	22	14	18	20	24	25	24	4	62	12	42	359
No. of Species	7	7	1	5	6	6	8	6	2	9	6	7	18

Table 23

Creel survey data from the GR for each survey day in May 1981.

Day Weather	3 Sun Clear			11 Mon Light Rain, Heavy Rain, Overcast			16 Sat Partly Cloudy, Overcast, Partly Cloudy Windy			28 Thu Overcast, Heavy Rain			
River Stage (m)	2.11			1.37			1.83			1.27			
Air Temperature (C)	15.0	20.0	16.0	18.0	18.0	17.5	17.0	18.0	17.0	21.0	20.5	19.5	
Water Temperature (C)	13.0	14.0	14.0	17.0	17.5	17.5	15.5	16.0	16.5	22.5	22.5	22.0	
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
Total Per Time Period:													
Anglers	36	28	21	6	4	1	22	17	16	4	1	-	156
Fish Caught	59	24	21	7	3	-	15	35	25	3	1	-	193
Fish Kept	15	10	16	-	-	-	7	11	16	3	-	-	78
Hours Fished	98.50	46.25	22.40	2.75	1.25	0.10	38.50	35.15	20.55	2.60	2.50	-	270.55
Catch/Effort (h)	0.60	0.52	0.94	2.55	2.40	-	0.39	1.00	1.22	1.15	0.40	-	0.71
Day Totals:													
Anglers	85			11			55			5			
Fish Caught	104			10			75			4			
Fish Kept	41			-			34			3			
Hours Fished	167.15			4.10			94.20			5.10			
Catch/Effort (h)	0.62			2.44			0.80			0.78			
Species	a	b	c	a	b	c	a	b	c	a	b	c	Total
Common carp	2R	-	-	-	-	-	-	-	-	-	-	-	2R 2
Yellow bullhead	1R	-	-	-	-	-	-	-	-	-	-	-	1R 1
Channel catfish	1K	-	-	-	-	-	2R	-	2K	3K	-	-	6K 2R 8
Rock bass	-	1K 4R	1R	4R	1R	-	4K 1R	8K 17R	5K 5R	-	-	-	18K 33R 51
Redbreast sunfish	-	-	11K	-	-	-	-	-	6K	-	-	-	17K - 17
Pumpkinseed	-	-	3K	-	-	-	-	-	1K	-	-	-	4K - 4
Sunfishes (<i>Lepomis</i> spp.) ¹	-	3R	3R	-	-	-	-	1R	2R	-	-	-	9R 9
Smallmouth bass	14K 39R	9K 7R	2K 1R	3R	2R	-	3K 5R	3K 6R	2K 1R	-	1R	-	33K 65R 98
Crappies (<i>Pomoxis</i> spp.) ¹	2R	-	-	-	-	-	-	-	-	-	-	-	2R 2
Yellow perch	-	-	-	-	-	-	-	-	1R	-	-	-	1R 1

¹ General identification.

K Kept.

R Released.

Table 24

Creel survey data from the West Dam for each survey day in May 1981.

Day	3 Sun			11 Mon			16 Sat			28 Thu			
Weather	Clear			Light Rain, Heavy Rain, Overcast			Partly Cloudy, Overcast, Partly Cloudy Windy			Overcast, Heavy Rain			
River Stage (m)	2.11			1.37			1.83			1.27			
Air Temperature (C)	15.0	20.0	16.0	18.0	18.0	17.5	17.0	18.0	17.0	20.0	21.0	19.5	
Water Temperature (C)	13.0	14.0	14.0	17.0	17.5	17.5	15.5	16.0	16.5	22.0	22.0	21.0	
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
Total Per Time Period:													
Anglers	10	11	1	3	6	2	10	1	-	4	7	1	56
Fish Caught	75	92	11	42	31	8	28	-	-	77	57	6	427
Fish Kept	25	8	-	9	2	-	8	-	-	12	3	-	67
Hours Fished	26.50	21.75	1.00	4.50	10.00	1.00	13.50	0.10	-	11.50	9.25	1.50	100.60
Catch/Effort (h)	2.83	4.23	11.00	9.33	3.10	8.00	2.07	-	-	6.70	6.16	4.00	4.24
Day Totals:													
Anglers	22			11			11			12			
Fish Caught	178			81			28			140			
Fish Kept	33			11			8			15			
Hours Fished	49.25			15.50			13.60			22.25			
Catch/Effort (h)	3.61			5.23			2.06			6.29			
Species	a	b	c	a	b	c	a	b	c	a	b	c	Total
Common carp	-	-	-	-	-	-	-	-	-	2R	-	5R	7R 7
Quillback	-	-	-	3R	-	-	-	-	-	-	-	-	3R 3
Suckers (Catostomids) ¹	-	1R	-	-	-	-	-	-	-	-	-	-	1R 1
Yellow bullhead	-	-	-	-	-	-	-	-	-	-	-	1R	1R 1
Channel catfish	-	1K	-	-	-	-	-	-	-	1K 7R	1K	-	4K 7R 11
Rock bass	2K	2K 6R	1R	5K 6R	1K 2R	-	2K 4R	-	-	-	-	-	12K 25R 37
Redbreast sunfish	-	-	-	1K	-	-	-	-	-	-	-	-	1K 1
Sunfishes (Lepomis spp.) ¹	1R	-	-	-	-	-	4R	-	-	-	-	-	5R 5
Smallmouth bass	23K 24R	5K 57R	3R	3K 5R	5R	-	5K 7R	-	-	2K 8R	1K 3R	-	39K 112R 151
Black crappie	-	-	-	-	1K	-	-	-	-	-	-	-	1K 1
Crappies (Pomoxis spp.) ¹	-	-	-	-	-	-	-	-	-	2R	-	-	2R 2
Walleye	19R	20R	7R	19R	22R	8R	5R	-	-	9K 46R	1K 51R	-	10K 197R 207

¹ General identification.

K Kept.

R Released.

Table 25

Creel survey data from the East Dam for each survey day in May 1981.

Day	3 Sun Clear			11 Mon Overcast, Light Rain, Partly Cloudy			16 Sat Partly Cloudy, Partly Cloudy Windy			28 Thu Light Rain, Overcast			
Weather	1.11			1.37			1.83			1.27			
River Stage (m)													
Air Temperature (C)	16.0	20.0	19.0	17.5	18.0	18.5	15.0	15.5	17.0	22.0	21.0	20.5	
Water Temperature (C)	13.0	15.0	14.0	17.5	18.0	18.0	16.0	16.0	17.5	22.0	22.0	22.0	
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
Total Per Time Period:													
Anglers	16	22	30	14	6	12	11	21	16	3	3	-	154
Fish Caught	163	56	144	154	18	37	33	95	4	14	13	-	731
Fish Kept	30	10	39	29	1	2	4	11	3	-	2	-	131
Hours Fished	26.10	15.40	52.50	23.50	6.50	13.60	13.65	30.25	2.65	6.00	6.10	-	196.25
Catch/Effort (h)	6.25	3.64	2.74	6.55	2.77	2.72	2.42	3.14	1.51	2.33	2.13	-	3.72
Day Totals:													
Anglers	68			32			48			6			
Fish Caught	363			209			132			27			
Fish Kept	79			32			18			2			
Hours Fished	94.00			43.60			46.55			12.10			
Catch/Effort (h)	3.86			4.79			2.84			2.23			
Species	a	b	c	a	b	c	a	b	c	a	b	c	Total
Brook trout	-	-	-	1R	-	-	-	-	-	-	-	-	1R 1
Fallfish	-	-	1R	-	-	-	-	-	-	-	-	-	1R 1
Yellow perch	-	-	-	-	-	-	-	-	1R	-	-	-	1R 1
Catfishes (Ictalurids) ¹	-	-	-	-	-	-	-	-	-	1R	-	-	1R 1
Rock bass	25K 7R	2K 15R	22K 21R	23K 78R	11R	11R	10R	1K 12R	1K	4R	-	-	74K 169R 243
Redbreast sunfish	-	-	-	1K	-	-	-	-	-	-	-	-	1K - 1
Pumpkinseed	-	2K	-	-	-	-	-	-	-	-	-	-	2K - 2
Sunfishes (Lepomis spp.) ¹	-	-	5R	3R	-	1R	1R	5R	1K	-	-	-	1K 15R 16
Smallmouth bass	5K 5R	5K 28R	16K 16R	2K 23L	1K 2R	2K 7R	3K 10R	7K 40R	1K	9R	1K 3R	-	43K 143R 186
Black crappie	-	-	-	3K 1R	-	-	-	-	-	-	-	-	3K 1R 4
Crappies (Pomoxis spp.) ¹	-	-	-	-	-	-	1R	1R	-	-	-	-	- 2R 2
Yellow Perch	-	-	1K 1R	2R	-	-	-	-	-	-	-	-	1K 3R 4
Walleye	121R	1K 3R	61R	17R	4R	16R	1K 7R	3K 26R	-	-	1K 8R	-	6K 263R 269

1 General Identification.

K Kept.

R Released.

Table 26

Creel survey data from the YHGS for each survey day in May 1981.

Day	3 Sun			11 Mon			16 Sat			28 Thu			
Weather	Clear			Overcast			Overcast, Partly Cloudy			Overcast, Heavy Rain			
River Stage (m)	2.11			1.37			1.83			1.27			
Air Temperature (C)	20.0	21.0	16.5	19.0	18.5	19.5	20.0	16.5	15.5	22.5	21.0	19.5	
Water Temperature (C)	14.0	14.0	14.0	18.5	17.5	18.5	18.0	17.0	17.0	23.0	23.0	22.5	
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
Total Per Time Period:													
Anglers	14	22	24	11	14	26	25	17	25	7	3	10	198
Fish Caught	47	55	51	46	46	25	62	90	31	11	22	1	487
Fish Kept	13	21	34	11	14	0	29	24	7	5	9	1	176
Hours Fished	48.50	35.10	41.75	15.35	27.00	25.40	45.00	94.25	13.85	14.85	9.50	5.90	376.45
Catch/Effort (h)	0.97	2.54	1.22	3.00	1.70	0.98	1.38	0.95	2.24	0.74	2.32	0.17	1.29
Day Totals:													
Anglers	60			51			67			20			
Fish Caught	153			117			173			34			
Fish Kept	68			33			60			15			
Hours Fished	125.35			67.75			153.10			30.25			
Catch/Effort (h)	1.22			1.73			1.13			1.12			
Species	a	b	c	a	b	c	a	b	c	a	b	c	Total
Common carp	-	2K	1K 1R	-	1R	1K	1R	6K 2R	-	1K	-	-	11K 5R 16
Shorthead redhorse	-	-	1K	-	-	-	-	-	-	1K	-	-	2K - 2
Suckers (Catostomids) ¹	-	1K	-	-	-	-	-	-	-	-	-	-	1K - 1
Channel catfish	-	1K	1K	-	-	-	2R	1R	-	-	4R	1K	3K 7R 10
Rock bass	9K 2R	13K 4R	27K 5R	1R	12K 5R	6K 5P	21K 6R	15K 30R	4K	3K	8K	-	118K 58R 176
Redbreast sunfish	-	-	1R	-	-	-	-	-	-	-	1K	-	1K - 1
Sunfishes (<i>Lepomis</i> spp.) ¹	-	-	-	-	-	-	-	-	-	-	-	-	- 1R 1
Smallmouth bass	3K 3R	1K 4R	4K 4R	7K 24R	1K 19R	1K 9R	6K 15R	2K 23R	2K 8R	3R	-	-	27K 112R 139
Black crappie	-	2K	-	-	-	-	-	-	-	-	-	-	2K - 2
Crappies (<i>Pomoxis</i> spp.) ¹	-	-	-	-	-	2R	-	-	1R	-	-	-	- 3R 3
Yellow perch	1K	1K	-	-	1R	-	-	1K	-	-	1R	-	3K 2R 5
Walleye	29R	26R	6R	4K 10R	1K 6R	1R	2K 9R	10R	1K 15R	3R	8R	-	8K 123R 131

¹ General identification.

K Kept.

R Released.

Table 27

Summary of selected physicochemical parameters taken on 7 and 20 April 1981 near the TMDS. Values are expressed in mg/l except for water temperature (C), pH, and turbidity (NTU).

Location	Date	Water Temperature (C)	pH	Dissolved Oxygen	Turbidity (NTU)	Alkalinity as CaCO ₃	Sulfate	Total Dissolved Solids	Total Copper	Dissolved Copper	Total Zinc	Dissolved Zinc
TM-AQI-1A1	7 Apr	10.5	8.8	10.4	7.6	46.2	59	161	0.006	0.002	0.024	0.005
TM-AQI-1A2		10.5	8.8	10.4	6.5	46.2	58	168	0.005	0.002	0.019	0.005
TM-AQI-11A1		11.0	8.6	10.8	6.5	46.7	54	164	0.006	0.002	0.022	0.005
TM-AQI-11A2		11.0	8.9	10.8	7.3	46.2	54	164	0.009	0.002	0.022	0.006
TM-AQI-9B1		11.5	9.0	11.0	5.5	47.2	58	164	0.009	0.002	0.020	0.005
TM-AQI-1A1	20 Apr	13.0	8.0	10.6	6.5	34.0	48	122	0.003	0.002	0.015	0.007
TM-AQI-1A2		13.0	8.4	10.5	6.0	34.5	46	127	0.003	0.002	0.015	0.006
TM-AQI-11A1		13.0	8.6	10.6	6.0	34.5	44	172	0.003	0.002	0.014	0.007
TM-AQI-11A2		13.0	7.8	10.6	6.8	35.0	44	131	0.002	0.002	0.015	0.008
TM-AQI-9B1		13.0	8.1	10.8	5.3	35.0	44	138	0.003	0.002	0.014	0.008
MEAN VALUES FOR APRIL 1981												
TM-AQI-1A1	Apr	11.8	-	10.5	7.0	40.1	54	142	0.004	0.002	0.020	0.006
TM-AQI-1A2		11.8	-	10.4	6.2	40.4	52	148	0.004	0.002	0.017	0.006
TM-AQI-11A1		12.0	-	10.7	6.2	40.6	49	148	0.004	0.002	0.018	0.006
TM-AQI-11A2		12.0	-	10.7	7.0	40.6	49	148	0.006	0.002	0.018	0.007
TM-AQI-9B1		12.2	-	10.9	5.4	41.1	51	151	0.006	0.002	0.017	0.006