ANNUAL ENVIRONMENTAL MONITORING REPORT

ARKANSAS NUCLEAR ONE

UNITS 1 & 2

DOCKET NOS. 50-313 & 50-368

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DARDANELLE RESERVOIR FISHERIES SURVEY

PROJECT NO. 873

PROGRESS REPORT NO. 13

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AGE AND GROWTH

A SUMMARY OF THE DARDANELLE RESERVOIR FISHERY SURVEY FROM JANUARY 1 THROUGH DECEMBER 31, 1980

Review of this data indicates that Arkansas Nuclear One is not having a significant impact on the fishery of Dardanelle Reservoir. The data does indicate a great deal of variation in the fish population from year to year.

In 1980, there was an upward trend in fish population. When compared to the 1979 data, there was a 65.5% increase in the fish numbers for all areas combined (see Table 1).

Table 1

NETTING GEAR STATISTICS FOR DARDANELLE RESERVOIR FOR 1980

Netting Gear	Total Number/ Weight	% Control Area Backwater	% Channel	% Discharge	% Intake
Meter Net	*398677	36	59	2	3
Mid-Water Trawl	* 7301	61	22	10	6
Shoreline Seine	5537/8036 gms	19/19	31/27	18/33	32/21
Trap Net	459/55 lbs	12/3	1/1	37/45	50/52
Trammel Net	2137/3702 lbs	15/15	23/24	37/36	25/25
Gill Net	3648/1686 lbs	9/11	25/19	37/41	29/29

*Number only

The greatest increase in numbers is found in the Meter Net and Mid-Water Trawl data which indicates a large spawn for 1980. An unusually large school of fish larvae was netted in the Channel area for the Meter Net sampling on June 6, 1980. That one sample comprised 53% of the total years sample for all stations combined. In reviewing 1974 through 1979 Meter Net data, there has never been a spawn of this magnitude in the Channel Area.

It does not appear that weather conditions promoted a washdown of the fish larvae from another area, and the condition of the larvae ruled against a massive group of dead and dying larvae floating in the current of the Channel. It appears that this was an unusual occurrence, probably the result of an influx of nutrient that caused the larvae to congregate in this area to feed.

The upward trend in fish populations is also seen in the Rotenone Data for 1980. However, the increase was only 4.8%. A shift in number and pounds per acre was seen between the Backwater (Control Area) and the Discharge area. The Backwater decreased 26.1% and 31.2% in number and pounds per acre, respectively, when compared to 1979 data. Conversely, the Discharge area increased in number and pounds per acre by 47.6% and

15.1%, respectively. Table 2 shows that the shift in populations in these areas is not unusual when compared year to year.

Table 2

ROTENONE DATA
1973 THROUGH 1980

Year	Backwater		Discharge	
	Number/Acre	Pounds/Acre	Number/Acre	Pounds/Acre
1973	1385	252	4380	360
1974	8343	505	4547	520
1975	2170	277	1339	303
1976	12843	1028	5985	454
1977	10465	919	3310	476
1978	6699	599	5328	445
1979	7325	880	2650	429
1980	5413	605	5062	506

The Rotenone data indicates an increase in the numerical relationship between Gizzard and Threadfin Shad over the last two years with Gizzard Shad accounting for 46.9% of the total fish caught and Threadfin Shad 0.4% of the total.

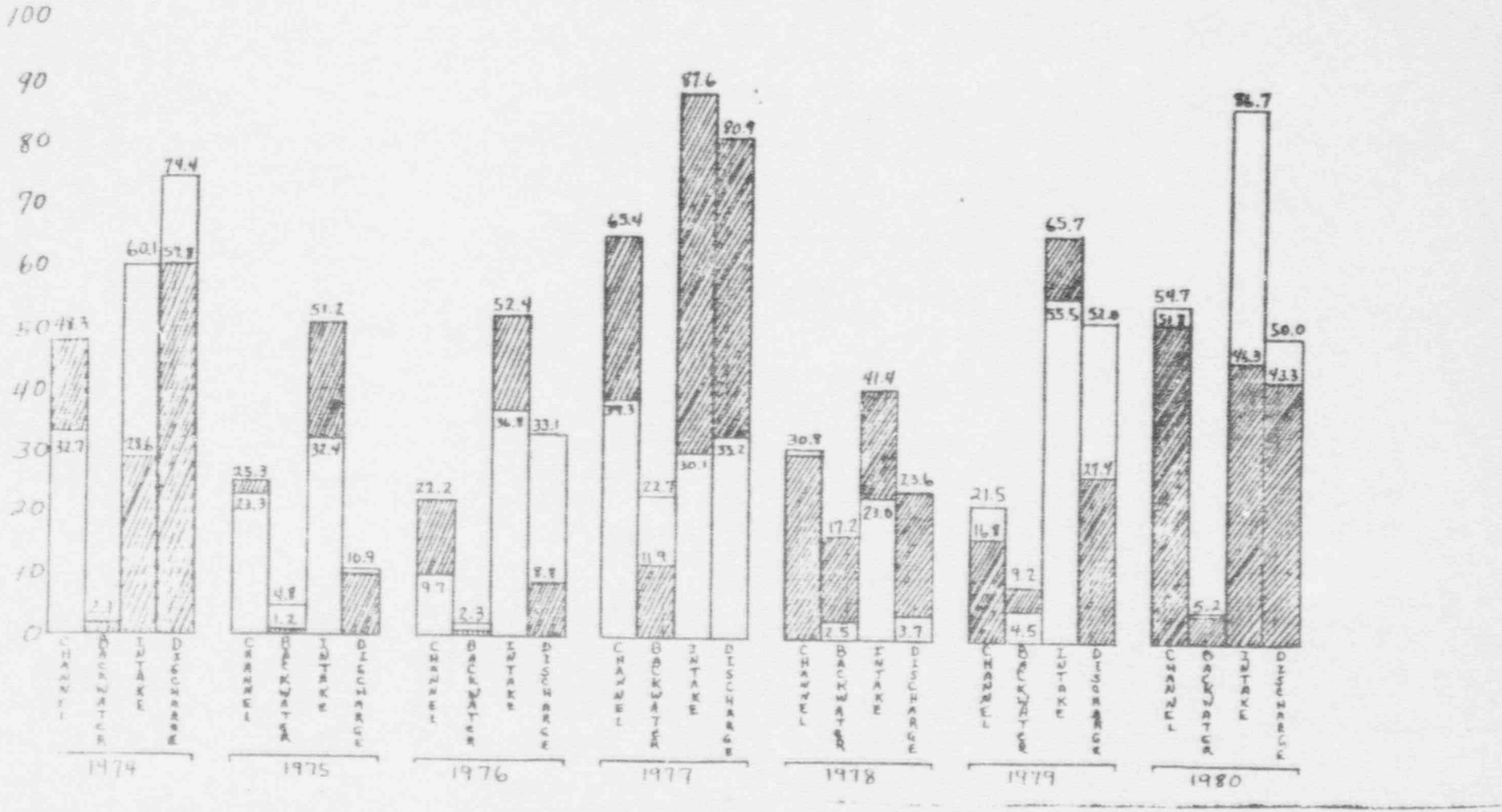
Spawning peaks remain similar in time to previous years, with peaks occurring from mid-May through mid-June.

When the fishery survey was started, it was decided that there would be two replicate samples per area for the Shoreline Seine. Due to heavy vegetative growth in the Replicate 2 site for the control area, Backwater, this site cannot be used for sampling and will have to be dropped.

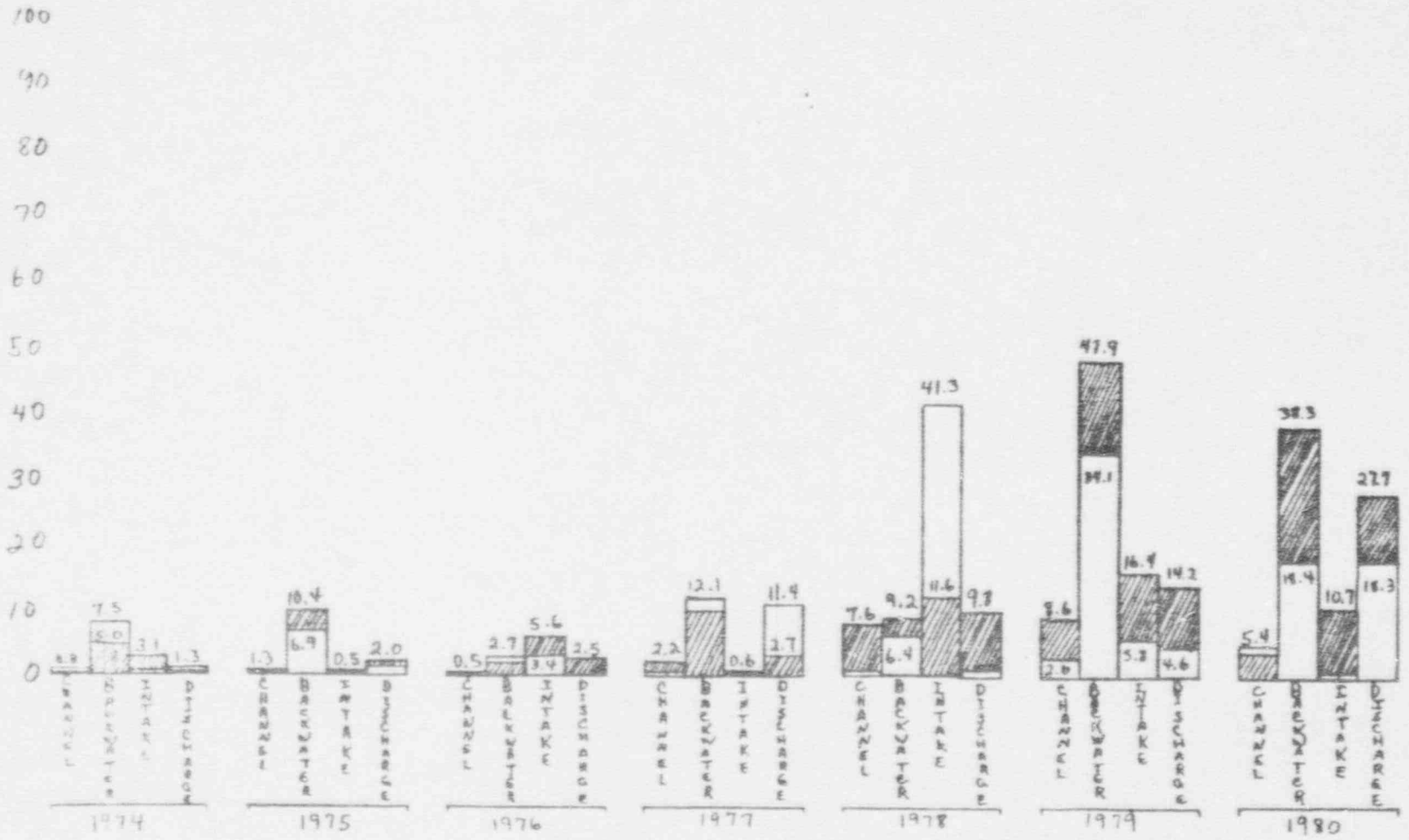
In reviewing the Shoreline Seine data for 1974 through 1980, an attempt was made to assess the impact of dropping a replicate sample and the usefulness of having only one sample per area to accurately indicate trends of fish populations. As can be seen in Graphs 1 through 4, there can be significant variation between the replicates and each year for the dominant families of fish.

On a yearly average of both replicates combined, there is significant variation (See Table 3). However, if the 7 year average of the replicates combined is compared to the 7 year average of each replicate, the percent difference is very small as shown by Table 3, columns 2 through 4. Thus, even though there is significant variation on a short term basis (year-to-year), either replicate on a long-term basis would be a reliable indicator of population trends for the Shoreline Seine. Therefore, we will request a Technical Specification change to drop Replicate 2 samples from all areas for this piece of gear.

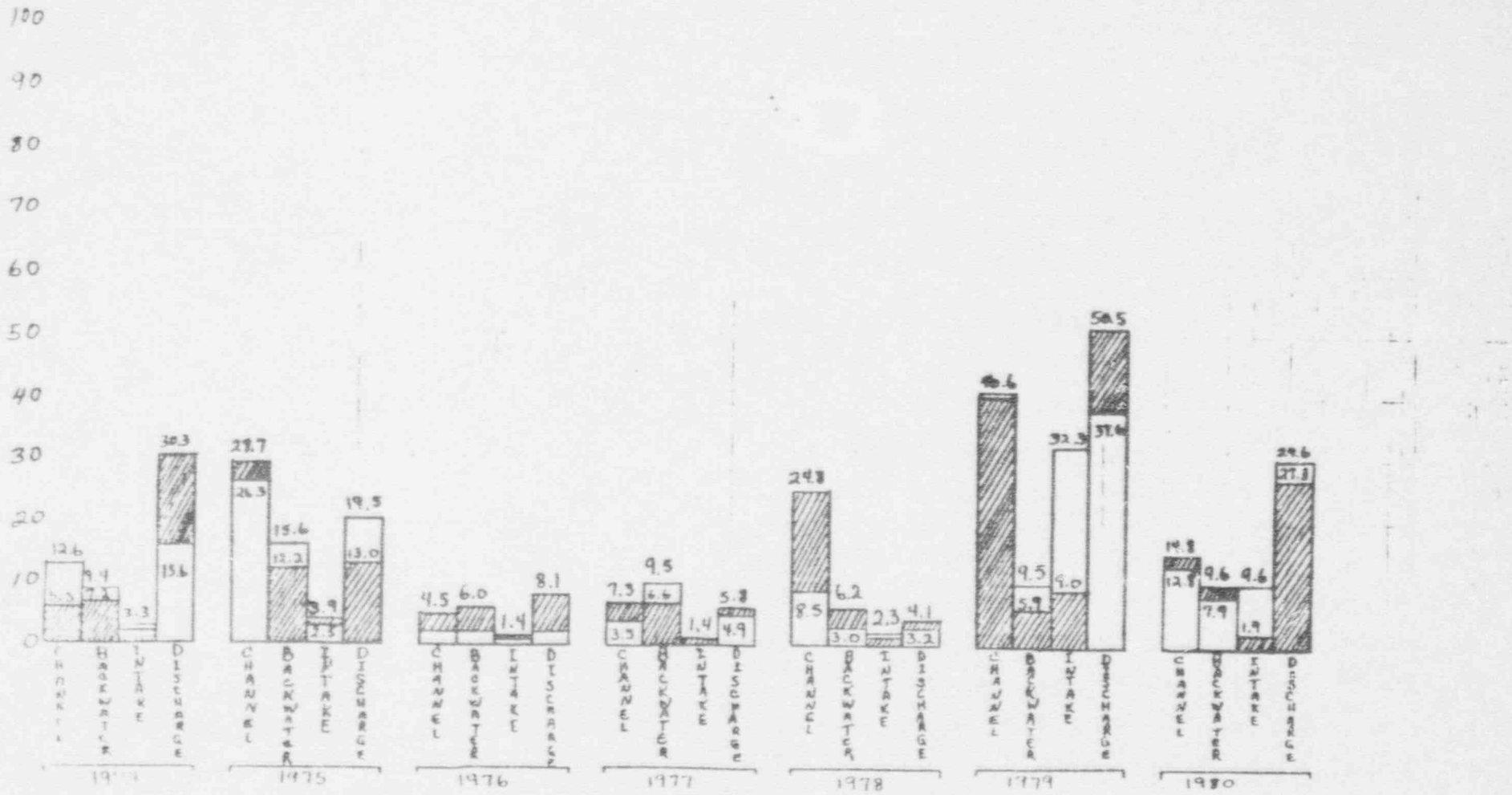
Graph 1. Replicate Comparisons By Percent to Total Fish Caught for Atherinidae Family by Replicate and Station for 1974 through 1980.



Graph 2. Replicate Comparisons By Percent to Total Fish Caught for Centrarchidae Family by Replicate and Station for 1974 Through 1980.



Graph 3. Replicate Comparisons By Percent to Total Fish Caught for Cyprinidae Family by Replicate and Station For 1974 Through 1980.



Graph 4. Replicate Comparisons By Percent to Total Fish Caught for Clupeidae Family by Replicate and Station For 1974 through 1980.

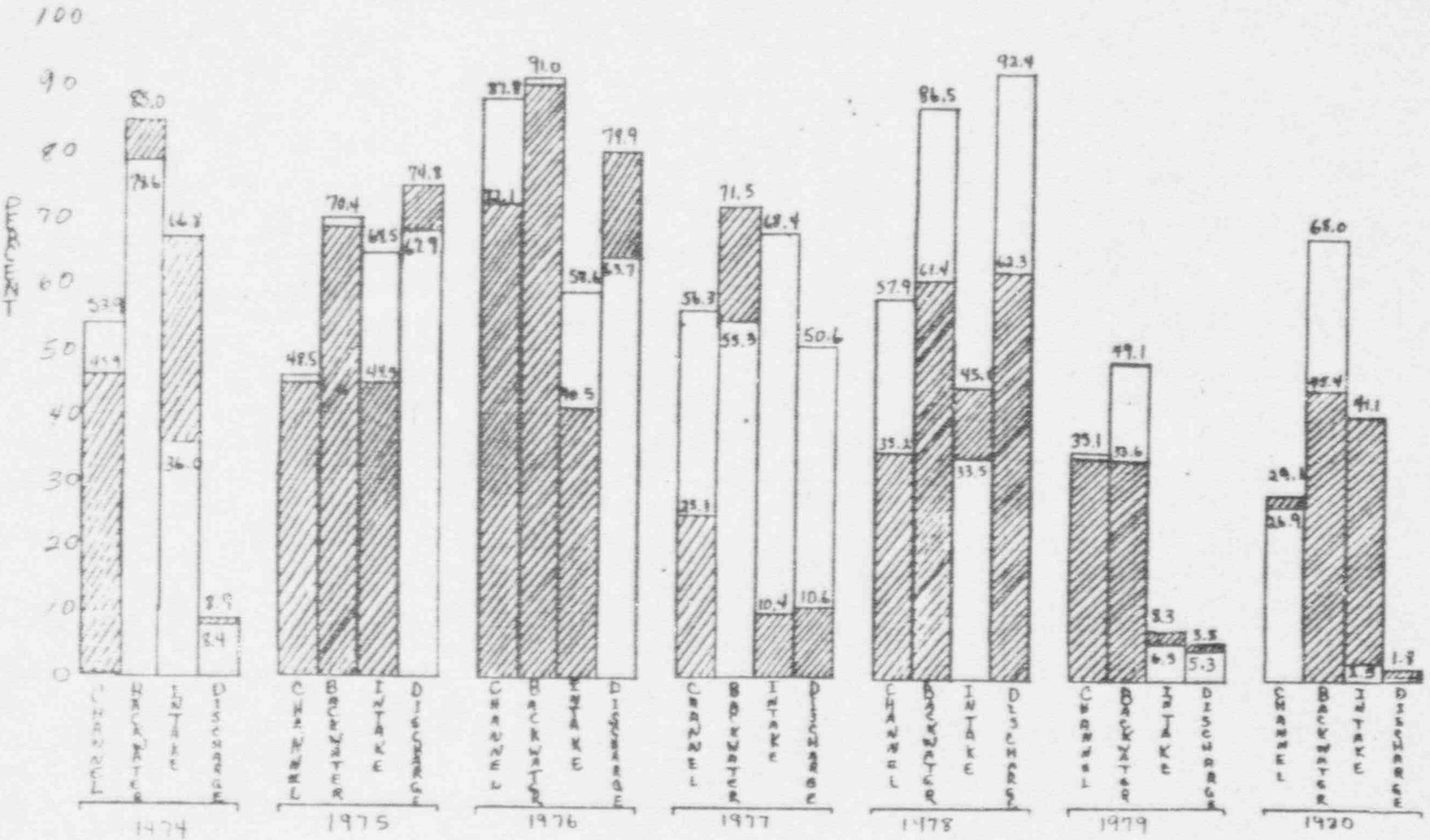


Table 3 (1) Average Percent of Total Fish Caught in Shoreline Seine for 1974 through 1980 for Dominant Families by Station for both replicates combined.
(2) Average Percent of Total Fish Caught for Dominant Families for the Seven Years for both replicates combined.
(3) Average Percent of Total Fish Caught for Dominant Families for Seven Years for each replicate.
(4) Relationship of Each Replicate for the Seven Years Compared to the Average of both replicates combined for the seven years.

Clupeidae Family (Herring & Shad)

Year	Channel				Backwater				Intake				Discharge			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1974	49.9	46.6	Rep. 1	Rep. 1	81.8	68.2	Rep. 1	Rep. 1	51.4	37.6	Rep. 1	Rep. 1	8.7	38.1	Rep. 1	Rep. 1
1975	46.5		47.3	+0.7	69.6		71.3	+3.1	54.5		38.6	+1.0	71.4		41.3	+3.2
1976	80.0				90.5				49.6				71.8			
1977	40.7				63.4				39.4				30.6			
1978	46.6		Rep. 2	Rep. 2	74.0		Rep. 2	Rep. 2	39.3		Rep. 2	Rep. 2	77.4		Rep. 2	Rep. 2
1979	34.6		41.2	-5.4	41.4		65.1	-3.1	7.4		36.7	-0.9	5.4		34.8	-3.3
1980	28.0				56.7				21.8				1.4			

Cyprinidae Family (Minnow)

Year																
1974	9.1	16.6	Rep. 1	Rep. 1	8.3	7.9	Rep. 1	Rep. 1	2.4	5.2	Rep. 1	Rep. 1	23.0	18.0	Rep. 1	Rep. 1
1975	27.5		15.2	-1.4	13.9		8.1	+0.2	3.2		7.5	+2.3	16.3		16.1	-1.9
1976	3.4				4.2				1.1				5.1			
1977	5.4				8.1				1.4				5.4			
1978	16.7		Rep. 2	Rep. 2	4.6		Rep. 2	Rep. 2	2.0		Rep. 2	Rep. 2	3.7		Rep. 2	Rep. 2
1979	40.3		17.9	+1.3	7.7		7.7	-0.2	20.7		3.1	-2.1	44.1		19.9	+1.9
1980	13.8				8.8				5.8				28.5			

Centrarchidae Family (Sunfish, Large & Smallmouth Bass)

1974	0.6	2.6	Rep. 1	Rep. 1	6.3	12.5	Rep. 1	Rep. 1	1.9	7.7	Rep. 1	Rep. 1	1.2	7.1	Rep. 1	Rep. 1
1975	1.3		1.8	-0.8	8.7		12.6	+0.1	0.4		6.8	-0.9	1.8		5.4	-1.7
1976	0.3				2.2				4.5				1.7			
1977	1.6				10.8				3.5				2.1			
1978	4.2		Rep. 2	Rep. 2	7.8		Rep. 2	Rep. 2	26.5		Rep. 2	Rep. 2	5.3		Rep. 2	Rep. 2
1979	5.6		3.5	+0.9	41.0		17.5	+5.0	11.1		6.9	-0.8	9.4		8.6	+1.5
1980	4.8				28.4				6.0				21.0			

Altherinidae Family (Silversides)

1974	40.5	33.8	Rep. 1	Rep. 1	2.1	6.6	Rep. 1	Rep. 1	44.4	49.9	Rep. 1	Rep. 1	67.1	36.5	Rep. 1	Rep. 1
1975	24.3		30.3	-3.5	3.0		6.3	-0.3	41.8		46.4	-3.5	10.5		36.8	+0.3
1976	16.0				1.7				44.6				21.0			
1977	52.4				17.3				58.9				57.1			
1978	30.6		Rep. 2	Rep. 2	9.9		Rep. 2	Rep. 2	32.2		Rep. 2	Rep. 2	13.7		Rep. 2	Rep. 2
1979	19.2		37.1	+3.3	6.9		10.7	+4.1	60.6		53.3	+3.4	39.7		36.3	-0.2
1980	53.3				5.0				66.5				46.7			

*All other Families of Fish comprised less than 1% of the total and could not be used to identify trends.

Abnormalities such as growths, parasites, humpback (curvature of the spine) etc., have been found on the fish in the Reservoir. Of particular interest are those fish determined to have humpback. Since the larval stage of the fish with this abnormality indicates stresses present that year, larval fish data was used in Table 4, namely Meter Net and Mid-Water data.

Since the abnormalities began to appear in 1975 when ANO Unit One began operation and the abnormality was most evident in the Discharge area, much concern was raised over possible plant influence. On the recommendation of the NRC staff, AP&L contracted Analytical Bio-Chemistry Laboratories of Columbia, Missouri to conduct analyses on the Reservoir water and fish samples. Toxaphene was evident in the samples and the consensus of opinion was that Toxaphene was probably responsible for this abnormality; it is quite possible that the warmer environment of the Discharge area enhanced the toxic effect of the Toxaphene. It was reported that large quantities of Toxaphene were used in the Dardanelle watershed for control of ticks and other livestock pests, as well as for agricultural use. Use of this chemical has been abandoned and recent years fish larvae data indicate that the abnormality is relatively rare.

Table 4

HUMPBACK (CURVATURE OF THE SPINE) FOUND IN FISH LARVAE
IN DARDANELLE RESERVOIR 1974 THROUGH 1980

METER NET

Year	Total Fish Caught	Backwater Total Fish	Backwater Curvature	Backwater %	Intake Total Fish	Intake Curvature	Intake %	Discharge Total Fish	Discharge Curvature	Discharge %	Channel Total Fish	Channel Curvature	Channel %
1974	13211	6084	0	0	1562	0	0	3575	0	0	1990	0	0
1975	-	-	-	-	-	-	-	-	-	-	-	-	-
1976	48919	23662	0	0	6426	0	0	9145	120	1.3	9686	0	0
1977	38021	14834	1	0.007	5801	0	0	5169	2	0.039	12217	0	0
1978	129704	102205	5	0.005	6687	1	0.015	7228	3	0.042	13584	0	0
1979	93365	60492	0	0	6868	0	0	12089	2	0.017	13916	0	0
1980	398677	143145	0	0	10820	2	0.018	9673	0	0	235039	0	0

MID-WATER TRAWL

1974	272	129	0	0	37	0	0	38	0	0	68	0	0
1975	974	323	0	0	143	0	0	233	15	6.4	275	0	0
1976	62908	30429	0	0	5724	0	0	15316	741	4.8	11439	45	0.4
1977	14145	7579	0	0	723	0	0	4286	29	0.7	1557	1	0.06
1978	4470	1283	0	0	1001	0	0	1324	0	0	862	0	0
1979	1995	1101	0	0	140	0	0	422	0	0	332	0	0
1980	7301	4485	0	0	462	0	0	754	1	0.133	1600	1	0.063

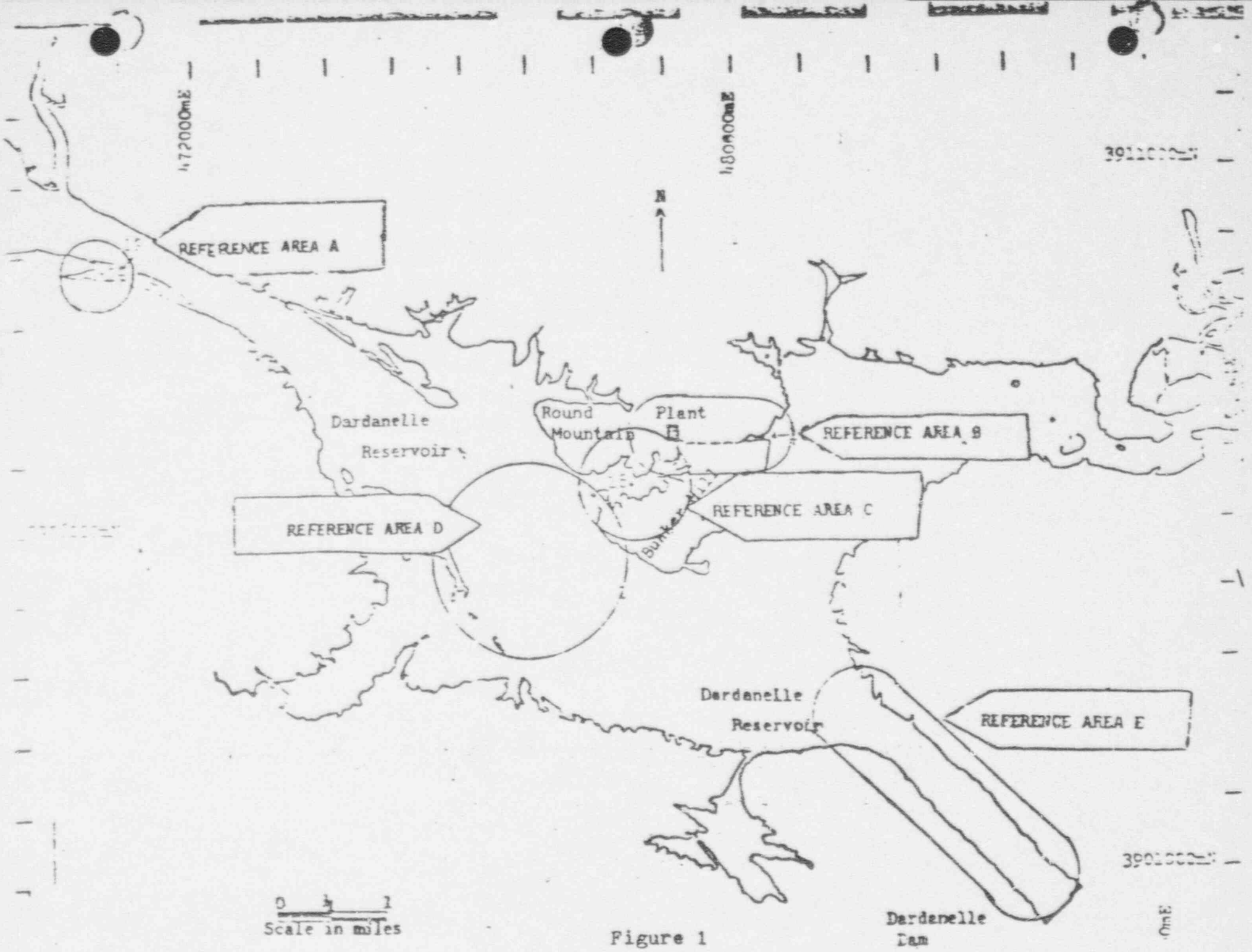

1,720000mE
1,800000mE
N
REFERENCE AREA A
Dardanelle
Reservoir
Round
Mountain
Plant
REFERENCE AREA B
REFERENCE AREA C
REFERENCE AREA D
Bunker Hill
Dardanelle
Reservoir
REFERENCE AREA E
0 ½ 1
Scale in miles
Dardanelle
Dam

Figure 1

Dardanelle Reservior Fisheries Background Survey

Progress Report No. 13

I. INTRODUCTION

A. The report period covered in this document includes January through December 1980. Data collections were temporarily halted at times due to high water, low water, wind, rain, fog, vandalized or lost equipment, and mechanical breakdowns. However, all samplings were carried out on schedule.

Field work during this report period consisted of the following:

1. Gill and trammel net combination twice each quarter.
2. Semiannual trap netting.
3. Weekly meter netting from March 28 through July 19 and semi-monthly through October 18, 1980
4. Weekly midwater trawling from June 5 through September 2, 1980.
5. Shoreline seining every other week from April 4 through August 22, 1980.
6. Annual rotenone samples in area "A" and "C".
7. Temperature, dissolved oxygen, and secchi disc data.
8. Semiannual radiological fish samples collected.
9. Semiannual radiological mussel samples collected from cages.
10. Age and growth data.

II. PROCEDURE

A. Site Location

The same five sampling areas as previously utilized were used during this collection period. The areas denoted as reference areas "A", "B", "C", "D", and "E" are depicted on Figure 1.

B. Gill and Trammel Net Survey

A combination of one experimental gill net and one trammel net was set in sample areas "A", "B", "C" and "D" for two days of fishing twice each quarter.

Gill nets were 300' total length, comprised of 100' each of bar mesh sizes 1", 1.5" and 2" respectively. All trammel nets were 300' total length with an outside wall of 14" bar mesh. Two sizes of inside wall trammel nets were employed. Inside wall bar measurements were 1.5" and 2.5". The larger 2.5" trammel was fished the first sampling period and the smaller 1.5" trammel was fished the second period of each quarter.

A few dead fish appeared in the gill and trammel nets from August through October 1980. Turtle predation was apparent in July and August. Gill and trammel net data are presented in Tables 1 through 12.

C. Trap Net Survey

Trap nets employed were 5/8" bar mesh 16' long, a frame 6' x 3', a lead 100' long by 3' deep with 5/8" bar mesh. Trap nets were set on June 3 through June 7 and November 1 through November 5, 1980, and fished for five consecutive days each period in sample areas "A", "B", "C", and "D". Trap net data are presented in Tables 13 through 16.

D. Trawling Survey: Two types of trawls were employed: (1) a meter net with 1/32" delta mesh nylon webbing; and (2) a midwater trawl with frame 6' 2" x 2' 6" and 8' of 5/8" bar mesh #6 twine, 8' of 3/8" bar king mesh, and 8' of 1/8" bar delta mesh on the cod end.

(1) Meter Net

Weekly meter netting began on March 28 through July 19 and continued semimonthly through October 18, 1980. Sampling areas were "A", "B", "C", and "D". Two trawls of approximately five minutes at 1,000 RPMs were made in each sample area. Fish in the meter net samples under 40 mm in length were usually keyed to family due to the large numbers and small size.

Mention should be made of a very unusual occurrence in area "D". On June 6th this area produced 210,297 laval fishes or 52.75% of the 58.95% taken from area "D". No obvious reason for this occurrence can be ascertained. However, this large sample should be noted in any statistical data analysis.

Meter net data are presented in Tables 17 through 19 and Figure 2.

(2) Midwater Trawl

Nighttime midwater trawling began on June 5 and continued on weekly intervals through September 2, 1980. Sample areas were "A", "B", "C", and "D". Two trawls of approximately five minutes each at 1,200 to 1,500 RPMs were made in each sample area. Fish under 40 mm collected in the midwater trawl were usually keyed to families and no weights taken due to gross errors in weighing fish this small. Fish above 40 mm were placed in 5 mm groups and weighed. Midwater trawl data are presented in Tables 20 through 22 and Figure 3.

E. Deformities

1. Raised areas or growths in fish samples.

A. Growths on several species of fish were common in each of the sampling areas. The cause and effect of this abnormality is still unknown. These data are presented in Tables 19, 22, and 27.

2. Curvature of the spine in fish samples

A. Six fish were collected with curvature of the spine. Area "D" produced 3, area "B" 2, area "C" 1, and area "A" none. Curvature of the spine, in this study, is noted when the abnormality can be detected with the unaided eye. Therefore, very small fish with curvature of the spine are not recorded. These data are presented in Tables 19, 22, and 27.

F. Shoreline Seine

Gear employed was a 1/8" mesh, 20' long, 6' deep nylon seine with a full bag. Every other week shoreline seining began on April 4 and continued through August 22, 1980. Each sample area "A", "B", "C", and "D", was divided into two 80' lengths of shoreline giving two separate but adjoining subsamples in each sampling area.

Fish collected in the seine under 1.5" long were usually keyed to family and no weights taken. Shoreline seine data are presented in Tables 23 through 27 and Figure 4

G. Rotenone Samples

In cooperation with the Arkansas Game and Fish Commission two standard rotenone samples were taken in September 1980.

1. Area "A" rotenone sample September 9 and 10, 1980.

a. Location: A cove located across the river and slightly downstream from the mouth of Piney Creek.

b. Collection site: 4.1 acres with average depth of 6.0'.

c. Collection method: 70 pounds of 7.5% powdered rotenone.

d. Water temperature: 85 degrees F.

e. Visibility: 24"

f. Cover: Brush, marginal vegetation and rock.

g. Remarks: This sample area was located directly across the main river channel and slightly downstream from the mouth of Big Piney creek on Dardanelle Reservoir. The mouth of the cove opened directly downstream into the main river channel. Part of the area consisted of steep, rocky banks; while the remaining banks were gently sloping and covered with rocks and timber. This was an open cove; with the bottom consisting of clay type soils, rocks, and gravel. Cover consisted of brush, marginal vegetation and rock. The area was surveyed to determine the exact size, which was 4.1 acres. The maximum depth was 16', with an average depth of 6.0'. A blockoff net was utilized to completely seal off the sample area. A two day pick-up of fish was employed in conducting this sample. The block-off net that was used to close the area was put out in the dark, and rotenone was distributed in the water at daylight. This area was sampled in 1970 and from 1973 through 1980, as a reference area in the Dardanelle Reservoir Fish Survey. The fish collected in this sample were worked up in 2" size groups. This was done so data available would be similar for any future comparisons of fish species diversity within this particular area, or other related areas of the reservoir.

2. Area "C" rotenone sample September 11 and 12, 1980.

a. Location: A cove located in the effluent bay at Arkansas Nuclear One and located approximately 1/2 mile southwest of the power plant on the south side of the bay.

b. Collection Site: 6.75 acres with an average depth of 4.2',

c. Collection Method: 85 pounds of 7.5% powdered rotenone.

d. Water Temperature: 88 degrees F.

e. Visibility: 24"

f. Cover: Fallen and dead timber, inundated buck brush, and a few rock.

g. Remarks: This sample area was a wide-mouth, wooded cove located in the effluent bay at Arkansas Nuclear One. The banks were gently sloping around the sample area, with clay eroded banks caused by wave action at the mouth of the cove. The bottom soils consisted of clay, gravel, mud, and debris. Cover consisted of fallen and dead timber, inundated buck brush, and a few rocks. The area was surveyed to determine the exact size, which was 6.75 acres. The maximum depth was 12', and the average depth of the area was 4.2'. A block off net 600' long was utilized to completely seal off the sample area. A two day pick-up of fish was employed in conducting this sample. The block-off net used to close off the area was put out in the dark, and rotenone was distributed in the water at daylight. This area had been sampled annually since 1971, in connection with the Dardanelle Reservoir Fish Survey. The fish collected in this sample were worked up in 2" size groups. This was done so data available would be similar for future comparisons of fish species diversity within this particular area, or other related areas of the reservoir. Rotenone

data are presented in Tables 28 through 30 and Figures 5 and 6.

H. Environmental Information

Lake levels, weather and lake conditions, dissolved oxygen, water temperature and secchi disk data were taken during fish sampling operations throughout the study period. Sample areas were "A", "B", "C", and "D". Thermal and dissolved oxygen data were collected at 20% and 80% total depths by means of a YSI 54RC oxygen meter and YSI probe. Tables 31 and 32 presents the above data.

I. Radiological Samples

(1) Fish Samples

Two semiannual fish samples were collected and sent to AP&L in June and November 1980. The sample consisted of 10 pounds each of predators, suckers and plankton feeders for each sample area "A", "B", "C", "D", and "E".

(2) Two semiannual mussel samples were collected and sent to AP&L in June and October 1980. Mussel samples were collected in areas "A", "B", "C", and "D". The mussels collected from local streams are held in cages 2' x 4' x 4' with a solid bottom, 6" sides and covered with 16 gauge galvanized vinyl dipped wire. Each cage had a 6" layer of gravel in the bottom. Each sample area "A", "B", "C", and "D" contains two cages.

J. Age and Growth

Age and growth calculations were made on seven species of fish collected. The species are: White Bass, Morone chrysops; Largemouth Bass, Micropterus salmoides; White Crappie, Pomoxis annularis; Freshwater Drum, Aplodinotus grunniens; Flathead Catfish, Pylodictis olivaris; Channel Catfish, Ictalurus punctatus, and Blue Catfish, Ictalurus furcatus

Determination of the age and rate of growth of a particular fish is accomplished by examination of a scale (or bony ray of catfish) under magnification, and interpretation of the markings which typically occur.

Breaks in the normal pattern of growth occur during the winter period of growth cessation, forming "annuli", and by counting these annuli, the age of the fish can be determined. False annuli appeared on the scales of many fish but could usually be identified by their position or by the relative degree of crowding of the circular ridges (circuli). The scales of each fish were cleaned by rubbing them between thumb and forefinger and mounted on glass slides with Scotch Brand "Magic Transparent Tape", No. 810 as described by Smith (1974) Prog. Fish Cult. 36(4): 195. All spines were sectioned using a small power saw on a stationary platform. This unit consisted of a fixed blade which could be elevated, a mechanical table that regulated the thickness of the sections, and a sliding table to which a V-block and clamp were attached to hold the spines immovable. All spines were mounted on glass microscope slides with Duponts Duco Cement.

Growth was calculated by direct proportion with an assumed intercept of zero for all species.

The asterisk symbol used in the age and growth tables signifies the fish was collected during the growing season and the length given is not an annulus. Fish collected from October 1 through March 31 are considered to have an annulus. Data on age and growth are presented in Tables 33 through 39 and Figures 7 through 13.

The average growth retes of the more important species of fish in the Reservoir appear to be following a normal pattern. Instead of Area C-Discharge Embayment-enhancing the growth rates of the majority of species of fish as seen in 1979, Areas B-Intake and D-Channel indicated greater growth rates than did Area A-Backwater or C for 1980.

K. Quality Control

a. Quality control measures were followed during the report period. Checks and calibrations were made on the following items:

barometer

oxygen meter

flow meters

weight scales

shoreline seine areas

gill nets

trammel nets

meter net

trap nets

bag seine

Data for these measures are recorded in the lake log.

L. Maintainence

a. Boat, gear, and cove marker maintainence was performed as needed. Dates and maintainence are recorded in the lake log.

M. Miscellaneous

a. Considerable time was devoted to transferring raw data to computer key punch forms.

Table 1 TOTAL NUMBER OF FISH CAUGHT BY STATION BY DATE AND FOR THE YEAR FOR GILLNET 1980

TABLE OF DATE BY STATION

DATE / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
800315	86	14	64	385	556
	2.41	0.52	1.75	10.55	15.24
800316	64	15	43	326	448
	1.75	0.41	1.18	8.94	12.28
800324	77	24	45	74	220
	2.11	0.66	1.23	2.03	6.03
800330	41	35	36	81	196
	1.12	1.04	0.99	2.22	5.37
800403	110	9	123	46	288
	3.02	0.25	3.37	1.26	7.89
800408	42	19	106	26	193
	1.15	0.52	2.91	0.71	5.29
800417	114	52	95	113	379
	3.26	1.43	2.60	3.10	10.39
800418	152	11	110	58	311
	3.02	0.30	3.02	1.59	8.53
800424	52	9	78	57	196
	1.43	0.25	2.14	1.56	5.37
800817	37	15	27	47	126
	1.01	0.41	0.74	1.29	3.45
800830	19	15	112	20	166
	0.52	0.41	3.07	0.55	4.55
800831	8	15	20	13	56
	0.22	0.41	0.55	0.36	1.54
801101	53	31	50	24	158
	0.90	0.85	1.38	0.65	4.33
801102	33	27	42	12	114
	0.90	0.74	1.15	0.33	3.13
801122	35	29	34	45	146
	0.90	0.79	1.07	1.23	4.00
801123	22	10	44	19	95
	0.60	0.27	1.21	0.52	2.60
TOTAL	910	355	1044	1556	3648
	24.95	9.27	28.62	37.17	100.00

ble 2 TOTAL WEIGHT OF FISH CAUGHT BY STATION BY DATE AND FOR THE YEAR FOR GILLNET 1980

TABLE OF DATE BY STATION

DATE	STATION				
FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	LENTIC REF B	RIVER MIDDISCHARGE REF C	TOTAL
800515	38	15	23	86	163
	2.25	0.90	1.36	5.12	9.65
800516	29	11	14	70	125
	1.75	0.64	0.85	4.15	7.39
800529	19	5	23	35	82
	1.15	0.30	1.35	2.09	4.89
800530	16	7	25	35	84
	0.98	0.41	1.51	2.11	5.00
800603	38	5	59	32	134
	2.27	0.30	3.58	1.90	7.98
800604	10	10	42	24	90
	0.57	0.57	2.48	1.70	5.32
800617	52	25	40	90	187
	1.87	1.49	2.36	5.34	11.07
800618	26	4	30	52	137
	1.52	0.56	2.94	3.10	8.12
800815	21	2	55	71	129
	1.26	0.10	2.08	4.20	7.64
800817	16	5	7	67	98
	0.93	0.33	0.55	3.96	5.80
800830	7	5	23	29	69
	0.41	0.28	1.38	1.73	3.10
800831	4	4	14	18	40
	0.25	0.25	0.81	1.08	2.40
801101	15	30	46	16	106
	0.87	1.75	2.73	0.94	6.30
801102	12	32	33	7	84
	0.72	1.91	1.93	0.44	5.00
801122	15	13	21	33	86
	0.87	1.04	1.23	1.97	5.13
801123	28	5	27	11	71
	1.65	0.29	1.61	0.66	4.21
TOTAL	325	185	489	684	1686
	19.31	11.15	29.00	40.54	100.00

Table 3

NUMBER OF SPECIES BY STATION FOR GILLNET 1980

TABLE OF SPECIES BY STATION

SPECIES / FREQUENCY / PERCENT	STATION: CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	MIDISCHARGE REF C	TOTAL
SPOTTED GAR	0	1	0	0	1
	0.00	0.03	0.00	0.00	0.03
LONGNOSE GAR	0	0	0	12	12
	0.00	0.00	0.00	0.33	0.33
SHORTNOSE GAR	3	0	0	3	6
	0.08	0.00	0.00	0.08	0.16
GIZZARD SHAD	292	83	348	772	1495
	8.00	2.28	9.54	21.16	40.98
SKIPJACK HERRING	22	0	1	30	53
	0.60	0.00	0.03	0.82	1.45
THREADFIN SHAD	4	0	0	1	5
	0.11	0.00	0.00	0.03	0.14
CARP	10	10	19	19	58
	0.27	0.27	0.52	0.52	1.59
RIVER CARPSUCKER	27	58	106	149	390
	0.74	1.59	2.91	5.48	10.69
SMALLMOUTH BUFFA	1	2	4	5	12
	0.03	0.05	0.11	0.14	0.33
BIGMOUTH BUFFALO	0	0	0	1	1
	0.00	0.00	0.00	0.03	0.03
BLACK BUFFALO	0	0	1	0	1
	0.00	0.00	0.03	0.00	0.03
RIVER REDHORSE	0	0	2	4	6
	0.00	0.00	0.05	0.11	0.16
GOLDEN REDHORSE	0	0	1	0	1
	0.00	0.00	0.03	0.00	0.03
YELLOW BULLHEAD	0	1	0	0	1
	0.00	0.03	0.00	0.00	0.03
CHANNEL CATFISH	73	25	56	52	206
	2.00	0.69	1.54	1.43	5.69
TOTAL	910	338	1044	1356	3648
	24.95	9.27	28.62	37.17	100.00

(CONTINUED)

Table 3 cont.

NUMBER OF SPECIES BY STATION FOR GILLNET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
BLUE CATFISH	105	37	100	117	442
	3.15	1.01	2.74	3.21	12.12
FLATHEAD CATFISH	0	1	2	0	3
	0.00	0.03	0.05	0.00	0.08
WHITE BASS	2	14	61	11	108
	0.05	0.38	2.22	0.30	2.96
STRIPED BASS	3	1	14	26	44
	0.08	0.03	0.38	0.71	1.21
FARMOUTH	1	1	4	0	6
	0.03	0.03	0.11	0.00	0.16
GREEN SUNFISH	1	3	2	0	6
	0.03	0.08	0.05	0.00	0.16
BLUEGILL	4	2	6	4	16
	0.11	0.05	0.16	0.11	0.44
LONGEAR SUNFISH	4	5	5	2	16
	0.11	0.14	0.14	0.05	0.44
LARGEMOUTH BASS	0	4	1	0	5
	0.00	0.11	0.03	0.00	0.14
WHITE CRAPPIE	55	53	157	64	329
	1.51	1.45	4.30	1.75	9.02
BLACK CRAPPIE	0	0	0	2	2
	0.00	0.00	0.00	0.05	0.05
BLUNTNOSE DARTER	0	0	2	0	2
	0.00	0.00	0.05	0.00	0.05
SAUGER	0	0	9	1	10
	0.00	0.00	0.25	0.03	0.27
FRESHWATER DRUM	220	39	123	31	413
	6.03	1.07	3.37	0.85	11.32
TOTAL	910	336	1044	1356	3648
	24.95	9.27	28.62	37.17	100.00

Table 8

WEIGHT OF SPECIES BY STATION FOR TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES	STATION				
FREQUENCY PERCENT	CHANNEL (REF C)	BACKWATER IN REF A	INTAKE REF B	MIDSTREAM IN REF C	TOTAL
LONGNOSE GAR	0 0.00	0 0.00	5 0.15	0 0.00	5 0.15
SHORTNOSE GAR	0 0.00	3 0.09	0 0.00	2 0.05	5 0.14
GIZZARD SHAD	3 0.08	1 0.02	0 0.00	24 0.64	27 0.74
SKIPJACK HERRING	0 0.00	0 0.00	0 0.00	6 0.17	6 0.17
THREADFIN SHAD	0 .	0 .	0 .	0 .	0 0.00
CARP	209 5.54	85 2.32	52 1.42	80 2.10	427 11.53
CYPRINIDAE	0 0.00	0 0.00	2 0.04	0 0.00	2 0.04
RIVER CARPSUCKER	345 9.35	264 7.13	408 11.03	954 25.77	1972 53.28
SMALLMOUTH BUFFA	127 3.43	48 1.29	108 4.54	119 3.21	462 12.47
BIGMOUTH BUFFALO	6 0.00	9 0.25	8 0.21	22 0.58	38 1.04
BLACK BUFFALO	29 0.79	10 0.20	17 0.47	14 0.37	70 1.89
TOTAL	903 24.39	555 15.00	925 25.07	1318 35.55	3702 100.00

(CONTINUED)

Table 4

WEIGHT OF SPECIES BY STATION FOR GILLNET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	MIDCHANNEL REF C	TOTAL
SPOTTED GAR	0	3	0	0	3
	0.00	0.20	0.00	0.00	0.20
LONGNOSE GAR	0	0	0	27	27
	0.00	0.00	0.00	1.59	1.59
SHORTNOSE GAR	17	0	0	11	28
	1.00	0.00	0.00	0.65	1.65
GIZZARD SHAD	35	9	34	98	176
	2.06	0.51	2.29	5.57	10.45
SKIPJACK HERRING	7	0	0	20	27
	0.39	0.00	0.02	1.20	1.61
THREADFIN SHAD	0	0	0	0	0
	0.01	0.00	0.00	0.00	0.01
CARP	18	17	28	33	96
	1.05	1.04	1.67	1.95	5.72
RIVER CARPSUCKER	45	52	104	310	610
	2.70	4.56	9.73	18.87	36.18
SMALLMOUTH BUFFA	1	3	6	10	20
	0.07	0.17	0.37	0.60	1.21
BIGMOUTH BUFFALO	0	0	0	6	6
	0.00	0.00	0.00	0.36	0.36
BLACK BUFFALO	0	0	2	0	2
	0.00	0.00	0.12	0.00	0.12
RIVER REDHORSE	0	0	4	4	8
	0.00	0.00	0.26	0.27	0.53
GOLDEN REDHORSE	0	0	1	0	1
	0.00	0.00	0.06	0.00	0.06
YELLOW BULLHEAD	0	0	0	0	0
	0.00	0.01	0.00	0.00	0.01
CHANNEL CATFISH	38	19	32	27	116
	2.25	1.13	1.90	1.61	6.90
TOTAL	325	188	489	684	1686
	19.31	11.15	29.00	40.54	100.00

(CONTINUED)

Table 4 cont.

WEIGHT OF SPECIES BY STATION FOR GILLNET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	MIDISCHARGE REF C	TOTAL
BLUE CATFISH	103	15	55	80	254
	6.10	0.90	3.25	4.73	15.04
FLATHEAD CATFISH	0	2	4	0	6
	0.00	0.12	0.24	0.00	0.37
WHITE BASS	1	8	54	8	71
	0.06	0.45	3.23	0.45	4.20
STRIPED BASS	10	0	9	25	43
	0.57	0.02	0.52	1.48	2.57
WARMOUTH	0	0	2	0	2
	0.01	0.01	0.09	0.00	0.11
GREEN SUNFISH	0	0	0	0	1
	0.01	0.03	0.02	0.00	0.06
BLUEGILL	0	0	0	0	2
	0.02	0.01	0.03	0.03	0.09
LONGEAR SUNFISH	0	0	0	0	1
	0.02	0.02	0.03	0.01	0.08
LARGEMOUTH BASS	0	6	0	0	6
	0.00	0.35	0.01	0.00	0.36
WHITE CRAPPIE	15	14	59	12	100
	0.88	0.83	3.49	0.71	5.93
BLACK CRAPPIE	0	0	0	0	0
	0.00	0.00	0.00	0.02	0.02
BLUNTNOSE DARTER	0	0	4	0	4
	0.00	0.00	0.24	0.00	0.24
SAUGER	0	0	12	1	13
	0.00	0.00	0.69	0.06	0.76
FRESHWATER DRUM	55	6	12	7	80
	2.07	0.37	0.71	0.40	3.56
TOTAL	326	188	469	584	1686
	19.31	11.15	27.80	40.54	100.00

Table 5

TOTAL NUMBER OF FISH CAUGHT PER STATION BY DATE AND FOR THE YEAR FOR TRAMMEL NET 1980

TABLE OF DATE BY STATION

DATE	STATION				
FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
800515	32 1.50	15 0.70	39 1.82	76 3.56	162 7.58
800516	37 1.73	21 0.98	30 1.40	44 2.06	132 6.18
800529	45 2.11	14 0.65	33 1.54	28 1.31	120 5.62
800530	30 1.40	30 1.40	33 1.54	49 2.29	142 6.64
800603	32 2.43	5 0.37	47 2.20	38 1.78	145 6.79
800604	15 0.70	14 0.65	19 0.89	39 1.82	87 4.07
800617	52 2.43	30 1.40	29 1.35	121 5.66	232 10.86
800618	26 1.22	15 0.70	29 1.35	58 2.71	128 5.99
800619	16 0.75	15 0.70	27 1.26	69 3.23	128 5.99
800617	26 1.22	13 0.61	16 0.75	62 2.90	117 5.47
800630	27 1.26	37 1.73	45 2.11	79 3.70	188 8.80
800631	47 2.20	19 0.89	83 3.88	53 2.48	202 9.45
801101	15 0.84	17 0.80	49 2.29	28 1.31	112 5.24
801102	13 0.61	9 0.42	16 0.75	9 0.42	47 2.20
801122	30 1.40	33 1.54	21 0.98	32 1.50	116 5.43
801123	34 1.59	13 0.84	17 0.80	10 0.47	79 3.70
TOTAL	500 23.40	309 14.45	533 24.98	795 37.20	2137 100.00

Table 6

TOTAL WEIGHT OF FISH CAUGHT PER STATION BY DATE AND FOR THE YEAR FOR TRAMMEL NET 1980

TABLE OF DATE BY STATION

DATE / FREQUENCY / PERCENT	CHANNEL INEF D	BACKWATER IN NEF A	INTAKE NEF B	MIDISCHARGE NEF C	TOTAL
800315	71	35	68	184	358
	1.92	0.89	2.38	4.42	9.61
800316	78	43	64	92	282
	2.11	1.15	1.88	2.47	7.62
800329	50	14	44	33	141
	1.36	0.37	1.17	0.89	3.81
800330	34	37	48	46	165
	0.91	1.01	1.30	1.25	4.47
800403	117	20	105	73	315
	3.15	0.55	2.84	1.98	8.50
800404	40	26	43	88	197
	1.08	0.71	1.15	2.38	5.32
800417	100	64	59	210	436
	2.70	1.87	1.59	5.68	11.83
800418	62	30	55	122	269
	1.68	0.81	1.48	3.30	7.27
800815	34	34	50	135	253
	0.91	0.92	1.35	3.64	6.82
800817	60	25	28	118	231
	1.63	0.75	0.75	3.12	6.24
800830	17	55	43	46	184
	0.45	1.03	1.15	1.25	3.89
800831	31	25	74	45	174
	0.83	0.82	2.00	1.23	4.69
801101	43	36	103	58	240
	1.16	0.96	2.79	1.56	6.48
801102	31	15	38	14	98
	0.83	0.85	0.92	0.38	2.61
801122	64	73	47	57	241
	1.72	1.97	1.25	1.53	6.50
801123	71	34	38	18	161
	1.43	0.92	1.02	0.48	4.34
TOTAL	903	555	928	1316	3702
	24.39	15.00	25.07	35.55	100.00

NUMBER OF SPECIES BY STATION FOR TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES	STATION				
FREQUENCY PERCENT	CHANNEL TRACKWAY(1) REP 1	CHANNEL TRACKWAY(1) REP 2	TAKE MIDDISCHARGE REP 1	TAKE MIDDISCHARGE REP 2	TOTAL
LONGNOSE GAR	0 0.00	0 0.00	1 0.05	0 0.00	1 0.05
SHORTNOSE GAR	0 0.00	1 0.05	0 0.00	24 1.12	25 1.17
GIZZARD SHAD	9 0.42	3 0.14	0 0.00	72 3.37	84 3.93
SKIPJACK HERRING	0 0.00	0 0.00	0 0.00	12 0.56	12 0.56
THREADFIN SHAD	0 0.00	0 0.00	0 0.00	1 0.05	1 0.05
CARP	60 2.74	36 1.68	24 1.12	56 1.68	176 8.24
CYPRINIDAE	0 0.00	0 0.00	1 0.05	0 0.00	1 0.05
RIVER CARPSUCKER	178 8.33	146 6.85	211 9.87	502 23.49	1037 48.53
SMALLMOUTH BUFFA	47 2.20	20 0.94	68 3.18	48 2.25	183 8.56
BIGMOUTH BUFFALO	0 0.00	2 0.09	2 0.09	4 0.19	8 0.37
BLACK BUFFALO	9 0.42	3 0.14	6 0.28	5 0.23	23 1.08
TOTAL	500 23.40	309 14.46	533 24.94	795 37.20	2137 100.00

(CONTINUED)

Table 7 cont.

NUMBER OF SPECIES BY STATION FOR CHANNEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL (REF D)	BACKWATER (REF A)	INTAKE (REF B)	DISCHARGE (REF C)	TOTAL
RIVER REDHORSE	0	0	1	0	1
	0.00	0.00	0.05	0.00	0.05
CHANNEL CATFISH	13	9	8	9	39
	0.61	0.42	0.37	0.42	1.82
BLUE CATFISH	35	31	27	28	121
	1.64	1.45	1.26	1.31	5.66
FLATHEAD CATFISH	10	13	19	4	46
	0.47	0.61	0.89	0.19	2.15
WHITE BASS	10	6	81	3	100
	0.47	0.28	3.79	0.14	4.68
STRIPED BASS	4	0	7	4	15
	0.19	0.00	0.33	0.19	0.70
BLUEGILL	0	0	2	0	2
	0.00	0.00	0.09	0.00	0.09
LARGEMOUTH BASS	0	2	4	0	6
	0.00	0.09	0.19	0.00	0.28
WHITE CRAPPIE	23	9	37	21	90
	1.08	0.42	1.73	0.98	4.21
SAUGER	0	0	3	1	4
	0.00	0.00	0.14	0.05	0.19
FRESHWATER DRUM	52	28	31	21	162
	3.59	1.31	1.45	0.98	7.58
TOTAL	500	309	533	795	2137
	23.40	14.46	24.94	37.20	100.00

Table 8 cont.

WEIGHT OF SPECIES BY STATION FOR TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES / FREQUENCY / PERCENT	STATION: CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
RIVER REDHORSE	0	0	2	0	2
	0.00	0.00	0.05	0.00	0.05
CHANNEL CATFISH	19	11	16	10	57
	0.52	0.31	0.45	0.28	1.53
BLUE CATFISH	53	55	37	47	195
	1.44	1.50	1.06	1.28	5.28
FLATHEAD CATFISH	38	41	57	10	147
	1.02	1.11	1.55	0.28	3.96
WHITE BASS	15	9	80	4	107
	0.40	0.24	2.16	0.10	2.90
STRIPED BASS	19	0	15	5	40
	0.52	0.00	0.42	0.14	1.08
BLUEGILL	0	0	0	0	0
	0.00	0.00	0.01	0.00	0.01
LARGEMOUTH BASS	0	5	14	0	19
	0.00	0.14	0.39	0.00	0.53
WHITE CRAPPIE	15	7	27	15	65
	0.42	0.19	0.74	0.41	1.75
SAUGER	0	0	3	1	4
	0.00	0.00	0.08	0.02	0.10
FRESHWATER DRUM	29	5	11	4	50
	0.77	0.15	0.31	0.12	1.35
TOTAL	903	555	925	1318	3702
	24.39	15.00	25.07	35.55	100.00

Table 9

TOTAL NUMBER OF FISH CAUGHT PER STATION BY DATE AND FOR THE YEAR FOR COMBINED GILL AND TRAMMEL NETS 1980

TABLE OF DATE BY STATION

DATE	STATION				
FREQUENCY | PERCENT	CHANNEL REF D	DACKMATE REF A	INTAKE REF B	MIDSCHANGE REF C	TOTAL
800515	120	34	103	461	718
	2.07	0.59	1.78	7.97	12.41
800516	101	36	73	370	580
	1.75	0.62	1.26	6.40	10.03
800529	122	38	78	102	340
	2.11	0.66	1.35	1.76	5.88
800530	71	66	69	130	338
	1.23	1.18	1.19	2.25	5.84
800603	152	17	170	84	453
	2.60	0.29	2.94	1.45	7.48
800604	57	33	125	65	280
	0.99	0.57	2.16	1.12	4.84
800617	171	82	124	234	611
	2.96	1.42	2.14	4.04	10.56
800618	158	25	159	116	459
	2.73	0.45	2.40	2.01	7.59
800816	68	25	105	126	324
	1.18	0.43	1.82	2.18	5.60
800817	65	26	43	109	243
	1.09	0.48	0.74	1.88	4.20
800830	46	52	157	99	354
	0.80	0.90	2.71	1.71	6.12
800831	55	34	103	66	258
	0.95	0.59	1.78	1.14	4.46
801101	51	43	109	62	270
	0.88	0.83	1.88	1.07	4.67
801102	46	35	56	21	161
	0.80	0.62	1.00	0.36	2.78
801122	63	62	60	77	262
	1.09	1.07	1.04	1.33	4.53
801123	56	28	61	29	174
	0.97	0.48	1.05	0.50	3.01
TOTAL	1410	647	1577	2151	5785
	24.37	11.18	27.26	37.18	100.00

Table 10

TOTAL WEIGHT OF FISH CAUGHT PER STATION BY DATE AND FOR THE YEAR FOR COMBINED GILL AND TRAMMEL NETS 1960

TABLE OF DATE BY STATION

DATE FREQUENCY PERCENT	STATION CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
800315	109 2.02	48 0.89	111 2.07	250 4.64	518 9.62
800316	104 2.00	53 0.99	84 1.56	162 3.00	403 7.55
800329	70 1.29	19 0.35	67 1.24	68 1.27	223 4.15
800330	50 0.93	44 0.82	74 1.37	82 1.51	250 4.64
800403	155 2.87	25 0.46	154 5.08	105 1.96	449 8.34
800404	50 0.92	35 0.66	84 1.57	117 2.17	287 5.32
800417	132 2.44	95 1.76	99 1.83	300 5.56	625 11.59
800418	88 1.63	39 0.73	104 1.94	174 3.24	406 7.53
800516	55 1.02	35 0.67	85 1.58	206 3.82	381 7.08
800517	76 1.41	33 0.61	37 0.69	183 3.39	329 6.10
800530	24 0.44	43 0.80	71 1.32	75 1.40	213 3.96
800531	35 0.66	27 0.51	87 1.62	64 1.18	214 3.97
801101	58 1.07	65 1.21	149 2.77	75 1.39	346 6.42
801102	43 0.79	50 0.92	67 1.24	22 0.40	181 3.36
801122	78 1.46	90 1.65	69 1.28	90 1.66	327 5.07
801123	44 1.64	39 0.72	65 1.20	29 0.53	232 4.30
TOTAL	1220 22.59	743 13.79	1417 28.40	2000 37.11	5390 100.00

Table 11

NUMBER OF SPECIES BY STATION FOR COMBINED GILL AND TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	MIDSTREAM REF C	TOTAL
SPOTTED GAR	0	1	0	0	1
	0.00	0.02	0.00	0.00	0.02
LONGNOSE GAR	0	0	1	12	13
	0.00	0.00	0.02	0.21	0.22
SHORTNOSE GAR	3	1	0	27	31
	0.05	0.02	0.00	0.47	0.54
GIZZARD SHAD	301	85	548	844	1579
	5.20	1.47	6.02	14.59	27.29
SKIPJACK HERRING	22	0	1	42	65
	0.38	0.00	0.02	0.73	1.12
THREADFIN SHAD	4	0	0	2	6
	0.07	0.00	0.00	0.03	0.10
CARP	90	48	43	53	234
	1.56	0.83	0.74	0.92	4.04
CYPRINIDAE	0	0	1	0	1
	0.00	0.00	0.02	0.00	0.02
RIVER CARPSUCKER	205	204	317	701	1427
	3.54	3.53	5.48	12.12	24.67
SMALLMOUTH BUFFA	48	22	72	53	195
	0.83	0.38	1.24	0.92	3.37
BIGMOUTH BUFFALO	0	2	2	5	9
	0.00	0.03	0.03	0.09	0.16
BLACK BUFFALO	9	3	7	5	24
	0.16	0.05	0.12	0.09	0.41
RIVER REDHORSE	0	0	3	4	7
	0.00	0.00	0.05	0.07	0.12
GOLDEN REDHORSE	0	0	1	0	1
	0.00	0.00	0.02	0.00	0.02
YELLOW BULLHEAD	0	1	0	0	1
	0.00	0.02	0.00	0.00	0.02
TOTAL	1410	647	1577	2151	5785
	24.37	11.18	27.26	37.18	100.00

(CONTINUED)

Table 11 cont.

NUMBER OF SPECIES BY STATION FOR COMBINED GILL AND TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
CHANNEL CATFISH	66	52	64	61	243
	1.49	0.55	1.11	1.05	4.20
BLUE CATFISH	223	68	127	145	563
	3.85	1.18	2.20	2.51	9.73
FLATHEAD CATFISH	10	14	21	4	49
	0.17	0.24	0.36	0.07	0.85
WHITE BASS	12	20	162	14	208
	0.21	0.35	2.80	0.24	3.60
STRIPED BASS	7	1	21	30	59
	0.12	0.02	0.36	0.52	1.02
WARMOUTH	3	1	4	0	6
	0.02	0.02	0.07	0.00	0.10
GREEN SUNFISH	1	3	2	0	6
	0.02	0.05	0.03	0.00	0.10
BLUEGILL	4	2	8	4	18
	0.07	0.03	0.14	0.07	0.31
LONGEAR SUNFISH	4	5	5	2	16
	0.07	0.09	0.09	0.03	0.28
LARGEMOUTH BASS	0	6	5	0	11
	0.00	0.10	0.09	0.00	0.19
WHITE CRAPPIE	78	62	194	85	419
	1.35	1.07	3.35	1.47	7.24
BLACK CRAPPIE	0	0	0	2	2
	0.00	0.00	0.00	0.03	0.03
BLUNTNOSE DARTER	0	0	2	0	2
	0.00	0.00	0.03	0.00	0.03
SAUGER	0	0	12	2	14
	0.00	0.00	0.21	0.03	0.24
FRESHWATER DRUM	302	67	154	52	575
	5.22	1.16	2.65	0.90	9.93
TOTAL	1410	647	1577	2151	5785
	24.37	11.18	27.26	37.18	100.00

Table 12

WEIGHT OF SPECIES BY STATION FOR COMBINED GILL AND TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	MIDDISCHARGE REF C	TOTAL
SPOTTED GAR	0 0.00	5 0.06	0 0.00	0 0.00	5 0.06
LONGNOSE GAR	0 0.00	0 0.00	5 0.10	27 0.50	32 0.60
SHORTNOSE GAR	17 0.31	5 0.06	0 0.00	15 0.28	33 0.61
GIZZARD SHAD	38 0.71	9 0.17	39 0.72	118 2.16	204 3.78
SKIPJACK HERRING	7 0.12	0 0.00	0 0.01	27 0.49	34 0.62
THREADFIN SHAD	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
CARP	227 4.21	103 1.92	80 1.49	112 2.09	523 9.71
CYPRINIDAE	0 0.00	0 0.00	2 0.03	0 0.00	2 0.03
RIVER CARPSUCKER	392 7.27	346 6.43	572 10.62	1272 23.61	2582 47.92
SMALLMOUTH BUFFA	128 2.38	51 0.94	174 3.23	129 2.40	482 8.95
BIGMOUTH BUFFALO	0 0.00	9 0.17	8 0.14	28 0.51	45 0.82
BLACK BUFFALO	29 0.54	10 0.18	20 0.35	14 0.25	72 1.34
RIVER REDHORSE	0 0.00	0 0.00	6 0.12	4 0.08	11 0.20
GOLDEN REDHORSE	0 0.00	0 0.00	1 0.02	0 0.00	1 0.02
YELLOW BULLHEAD	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
TOTAL	1225 22.50	745 13.79	1417 26.30	2000 37.11	5388 100.00

(CONTINUED)

Table 12 cont.

WEIGHT OF SPECIES BY STATION FOR COMBINED GILL AND TRAMMEL NET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	MIDISCHARGE REF C	TOTAL
CHANNEL CATFISH	57	30	49	37	173
	1.06	0.56	0.90	0.68	3.21
BLUE CATFISH	156	72	94	127	449
	2.90	1.33	1.75	2.36	8.33
FLATHEAD CATFISH	38	45	61	10	153
	0.70	0.80	1.14	0.19	2.84
WHITE BASS	15	17	134	11	178
	0.29	0.32	2.49	0.21	3.31
STRIPED BASS	29	0	24	30	83
	0.55	0.01	0.45	0.55	1.54
MARMOUTH	0	0	2	0	2
	0.00	0.00	0.03	0.00	0.04
GREEN SUNFISH	0	0	0	0	1
	0.00	0.01	0.01	0.00	0.02
BLUEGILL	0	0	1	0	2
	0.01	0.00	0.02	0.01	0.04
LONGEAR SUNFISH	0	0	0	0	1
	0.01	0.01	0.01	0.00	0.03
LARGEMOUTH BASS	0	11	14	0	25
	0.00	0.20	0.27	0.00	0.47
WHITE CRAPPIE	30	21	86	27	165
	0.56	0.40	1.60	0.50	3.06
BLACK CRAPPIE	0	0	0	0	0
	0.00	0.00	0.00	0.01	0.01
BLUNTNOSE DARTER	0	0	4	0	4
	0.00	0.00	0.09	0.00	0.08
SAUGER	0	0	15	2	17
	0.00	0.00	0.27	0.04	0.31
FRESHWATER DRUM	63	12	23	11	110
	1.18	0.22	0.43	0.21	2.04
TOTAL	1225	743	1417	2000	5385
	22.80	13.79	26.30	37.11	100.00

Table 13

TOTAL NUMBER OF FISH CAUGHT PER STATION BY DATE AND FOR THE YEAR FOR INAPNET 1980

TABLE OF DATE BY STATION

DATE FREQUENCY PERCENT	STATION CHANNEL REF B	BACKWATER REF A	INTAKE REF D	MIDISCHARGE REF C	TOTAL
800803	0	4	28	33	65
	0.00	0.87	6.10	7.19	14.16
800808	2	1	38	8	49
	0.44	0.22	8.28	1.74	10.68
800805	0	3	22	1	26
	0.00	0.65	4.79	0.22	5.66
800806	0	2	44	21	67
	0.00	0.44	9.59	4.58	14.60
800807	0	2	16	30	48
	0.00	0.44	3.49	6.54	10.46
801101	2	18	21	22	63
	0.44	3.92	4.58	4.79	13.73
801102	0	4	12	20	36
	0.00	0.87	2.61	4.36	7.84
801103	0	2	19	34	55
	0.00	0.44	4.14	7.41	11.98
801104	1	9	15	0	25
	0.22	1.96	3.27	0.00	5.45
801105	1	9	14	1	25
	0.22	1.96	3.05	0.22	5.45
TOTAL	6	54	229	170	459
	1.31	11.76	49.89	37.04	100.00

Table 14

TOTAL WEIGHT OF FISH CAUGHT PER STATION BY DATE AND FOR THE YEAR FOR TRAPNET 1980

TABLE OF DATE BY STATION

DATE FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
800803	0	0	1	4	6
	0.00	0.41	2.74	7.85	11.50
800804	0	0	3	0	3
	0.36	0.15	5.47	0.36	6.39
800805	0	0	2	0	2
	0.00	0.55	3.47	0.00	4.01
800806	0	0	5	2	7
	0.00	0.36	9.31	3.83	13.50
800807	0	0	2	2	4
	0.00	0.18	3.10	4.01	7.30
801101	0	0	2	7	9
	0.18	0.15	4.20	12.23	16.79
801102	0	0	2	2	4
	0.00	0.00	3.65	3.47	7.12
801103	0	0	3	7	10
	0.00	0.18	5.84	12.77	18.80
801104	0	0	4	0	4
	0.00	0.15	6.57	0.00	6.73
801105	0	0	4	0	4
	0.00	0.55	7.30	0.00	7.85
TOTAL	0	2	28	24	55
	0.55	3.26	51.64	44.53	100.00

Table 15 NUMBER OF SPECIES BY STATION FOR TMAPNET 1980

TABLE OF SPECIES BY STATION

SPECIES / FREQUENCY / PERCENT	STATION: CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
NO FISH CAUGHT	0	0	0	0	0
	.	.	.	.	0.00
LONGNOSE GAR	0	0	0	1	1
	0.00	0.00	0.00	0.22	0.22
GIZZARD SHAD	1	2	3	9	15
	0.22	0.44	0.65	1.96	3.27
SKIPJACK HERRING	0	0	0	1	1
	0.00	0.00	0.00	0.22	0.22
THREADFIN SHAD	1	4	5	4	14
	0.22	0.87	1.09	0.87	3.05
RIVER CARPSUCKER	0	0	0	1	1
	0.00	0.00	0.00	0.22	0.22
CHANNEL CATFISH	1	3	19	4	27
	0.22	0.65	4.14	0.87	5.88
BLUE CATFISH	0	0	0	1	1
	0.00	0.00	0.00	0.22	0.22
FLATHEAD CATFISH	1	0	0	0	1
	0.22	0.00	0.00	0.00	0.22
WHITE BASS	0	0	1	6	7
	0.00	0.00	0.22	1.31	1.53
STRIPED BASS	0	1	0	1	2
	0.00	0.22	0.00	0.22	0.44
WARMOUTH	0	0	2	0	2
	0.00	0.00	0.44	0.00	0.44
GREEN SUNFISH	0	0	0	2	2
	0.00	0.00	0.00	0.44	0.44
ORANGESPOTTED SU	0	1	0	1	2
	0.00	0.22	0.00	0.22	0.44
BLUEGILL	0	4	5	96	105
	0.00	0.87	1.09	20.92	22.88
LONGEAR SUNFISH	0	2	0	12	14
	0.00	0.44	0.00	2.61	3.05
LARGEMOUTH BASS	0	0	0	1	1
	0.00	0.00	0.00	0.22	0.22
WHITE CRAPPIE	1	23	166	28	218
	0.22	5.01	36.17	6.10	47.49
BLACK CRAPPIE	0	0	1	2	3
	0.00	0.00	0.22	0.44	0.65
FRESHWATER DRUM	1	14	27	0	42
	0.22	3.05	5.88	0.00	9.15
TOTAL	6	54	224	170	459
	1.31	11.76	48.84	37.04	100.00

Table 16 WEIGHT OF SPECIES BY STATION FOR THAPNEL 1980

TABLE OF SPECIES BY STATION

SPECIES / FREQUENCY / PERCENT	STATION: CHANNEL REF D	BACKWATER REF A	INTAKE REF B	MIDDISCHARGE REF C	TOTAL
NO FISH CAUGHT	0	0	0	0	0
	.	.	.	.	0.00
LONGNOSE GAR	0	0	0	1	1
	0.00	0.00	0.00	1.26	1.26
GIZZARD SHAD	0	0	0	1	1
	0.18	0.36	0.55	1.64	2.74
SKIPJACK HERRING	0	0	0	0	0
	0.00	0.00	0.00	0.18	0.18
THREADFIN SHAD	0	0	0	0	0
	0.00	0.00	0.00	0.18	0.18
RIVER CARPSUCKER	0	0	0	2	2
	0.00	0.00	0.00	4.01	4.01
CHANNEL CATFISH	0	0	1	1	2
	0.18	0.55	1.09	1.46	3.28
BLUE CATFISH	0	0	0	0	0
	0.00	0.00	0.00	0.18	0.18
FLATHEAD CATFISH	0	0	0	0	0
	0.18	0.00	0.00	0.00	0.18
WHITE BASS	0	0	0	1	1
	0.00	0.00	0.18	2.37	2.55
STRIPED BASS	0	0	0	1	1
	0.00	0.00	0.00	2.19	2.19
MAMMOUTH	0	0	0	0	0
	.	.	.	.	0.00
GREEN SUNFISH	0	0	0	0	0
	0.00	0.00	0.00	0.55	0.55
ORANGESPOTTED SU	0	0	0	0	0
	.	.	.	.	0.00
BLUEGILL	0	0	0	5	5
	0.00	0.00	0.91	9.12	10.04
LONGEAR SUNFISH	0	0	0	0	0
	0.00	0.00	0.00	0.91	0.91
LARGEMOUTH BASS	0	0	0	0	0
	.	.	.	.	0.00
WHITE CRAPPIE	0	0	26	11	37
	0.00	0.73	46.72	19.89	67.34
BLACK CRAPPIE	0	0	0	0	0
	0.00	0.00	0.18	0.55	0.73
FRESHWATER DRUM	0	1	1	0	2
	0.00	1.64	2.01	0.00	3.65
TOTAL	0	2	29	24	55
	0.00	3.28	51.64	44.55	100.00

Table 17

NUMBER OF FISH PER STATION BY DATE FOR METER NET 1980

TABLE OF DATE BY STATION

DATE FREQUENCY PERCENT	STATION CHANNEL IMP D	DAMAGE IN REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
800328	0 .	0 .	0 .	0 .	0 0.00
800405	0 0.00	24 0.01	1 0.00	0 0.00	25 0.01
800418	15 0.00	187 0.05	5 0.00	25 0.01	232 0.06
800426	67 0.02	103 0.03	14 0.00	36 0.01	220 0.06
800502	101 0.03	253 0.06	152 0.05	59 0.01	600 0.15
800510	458 0.11	2080 0.52	1144 0.30	285 0.07	3977 1.00
800516	9699 2.43	31142 7.82	835 0.16	911 0.23	42837 10.80
800523	4106 1.03	6133 1.54	578 0.14	4500 1.13	15319 3.86
800530	1214 0.30	17820 4.47	527 0.13	774 0.19	20335 5.10
800606	210247 52.75	17422 4.37	5469 1.37	2704 0.68	235841 59.17
800613	7842 1.97	25024 6.28	282 0.07	232 0.06	33380 8.37
TOTAL	235039 58.95	143145 35.91	10820 2.71	9673 2.43	398677 100.00

(CONTINUED)

Table 17 cont.

NUMBER OF FISH PER STATION BY DATE FOR METER NET 1980

TABLE OF DATE BY STATION

DATE / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
800621	636	40601	1035	60	42950
	0.16	10.18	0.41	0.02	10.77
800627	127	987	151	8	1273
	0.03	0.25	0.04	0.00	0.32
800703	304	801	2	9	1116
	0.08	0.20	0.00	0.00	0.28
800711	55	87	21	0	164
	0.01	0.02	0.01	0.00	0.04
800719	29	56	22	6	117
	0.01	0.01	0.01	0.00	0.03
800801	15	95	22	22	155
	0.00	0.02	0.01	0.01	0.04
800808	54	80	50	5	159
	0.02	0.01	0.01	0.00	0.04
800822	0	163	0	45	208
	0.00	0.04	0.00	0.01	0.05
800905	7	64	50	7	108
	0.00	0.02	0.01	0.00	0.03
800921	2	3	5	3	13
	0.00	0.00	0.00	0.00	0.00
801018	0	0	0	0	0
	.	.	.	.	0.00
TOTAL	235039	143145	10820	9673	398677
	58.95	35.91	2.71	2.43	100.00

Table 18

SPECIES NUMBERS OF FISH PER STATION FOR METER NET 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
NO FISH CAUGHT	0	0	0	0	0
	.	.	.	.	0.00
CLUPEIDAE	234065	140019	10577	9320	393981
	58.71	35.12	2.65	2.34	98.82
CYPRINIDAE	117	222	45	25	409
	0.03	0.06	0.01	0.01	0.10
CATOSTOMIDAE	112	69	16	5	202
	0.03	0.02	0.00	0.00	0.05
MORONE SP.	213	414	64	142	833
	0.05	0.10	0.02	0.04	0.21
LEPOMIS SP.	350	1140	82	112	1684
	0.09	0.29	0.02	0.03	0.42
MICROPTERUS SP.	1	0	1	1	3
	0.00	0.00	0.00	0.00	0.00
POMOXIS SP.	7	327	4	26	364
	0.00	0.08	0.00	0.01	0.09
PERCIDAE-PERCHES	40	826	7	15	888
	0.01	0.21	0.00	0.00	0.22
FRESHWATER DRUM	78	2	0	3	83
	0.02	0.00	0.00	0.00	0.02
ATHERINIDAE-SILV	56	126	24	24	230
	0.01	0.03	0.01	0.01	0.06
TOTAL	235039	143145	10820	9673	398677
	58.95	35.91	2.71	2.43	100.00

Table 19

ABNORMALITIES BY SPECIES AND STATION FOR METER NET 1980

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CLUPEIDAE

STATION DISEASEP

FREQUENCY / PERCENT	IND PARASITE	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	1668	0	1668
	.	19.21	.	19.21
BACKWATER REF A	0	4597	0	4597
	.	52.95	.	52.95
INTAKE REF B	0	1913	0	1913
	.	22.03	.	22.03
DISCHARGE REF C	0	504	0	504
	.	5.81	.	5.81
TOTAL	.	8682	.	8682
	.	100.00	.	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CYPRINIDAE

STATION DISEASEP

FREQUENCY / PERCENT	IND PARASITE	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0
	.	.	.	0.00
BACKWATER REF A	0	1	0	1
	.	100.00	.	100.00
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL	.	1	.	1
	.	100.00	.	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CATOSTOMIDAE

STATION DISEASEP

FREQUENCY / PERCENT	IND PARASITE	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0
	.	.	.	0.00
BACKWATER REF A	0	0	0	0
	.	.	.	0.00
INTAKE REF B	0	1	0	1
	.	100.00	.	100.00
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL	.	1	.	1
	.	100.00	.	100.00

Table 19 cont.

ABNORMALITIES BY SPECIES AND STATION FOR METER NET 1980

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=MOHONE SP.

STATION DISEASEP

FREQUENCY / PERCENT	INJ PARASIGMOATH ITE	HUMPBACK	TOTAL
CHANNEL REF D	0	1	0	1
	.	11.11	.	11.11
BACKWATER REF A	0	3	0	3
	.	33.33	.	33.33
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	5	0	5
	.	55.56	.	55.56
TOTAL	.	9	.	9
	.	100.00	.	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=LEPOMIS SP.

STATION DISEASEP

FREQUENCY / PERCENT	INJ PARASIGMOATH ITE	HUMPBACK	TOTAL
CHANNEL REF D	0	1	0	1
	.	33.33	.	33.33
BACKWATER REF A	0	1	0	1
	.	33.33	.	33.33
INTAKE REF B	0	1	0	1
	.	33.33	.	33.33
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL	.	3	.	3
	.	100.00	.	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=PUMOXIS SP.

STATION DISEASEP

FREQUENCY / PERCENT	INJ PARASIGMOATH ITE	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0
	.	.	.	0.00
BACKWATER REF A	0	1	0	1
	.	25.00	.	25.00
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	3	0	3
	.	75.00	.	75.00
TOTAL	.	4	.	4
	.	100.00	.	100.00

Table 19 cont.

ABNORMALITIES BY SPECIES AND STATION FOR METER NET 1980

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=ATHERINIDAE=SILV

STATION	DISEASEP			
FREQUENCY / PERCENT	INJ PARASITE	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0
	.	.	.	0.00
BACKWATER REF A	0	1	0	1
	.	33.33	0.00	33.33
INTAKE REF B	0	0	2	2
	.	0.00	66.67	66.67
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL	.	1	2	3
	.	33.33	66.67	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=PERCIDAE=PERCHES

STATION	DISEASEP			
FREQUENCY / PERCENT	INJ PARASITE	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0
	.	.	.	0.00
BACKWATER REF A	0	11	0	11
	.	100.00	.	100.00
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL	.	11	.	11
	.	100.00	.	100.00

Figure 2

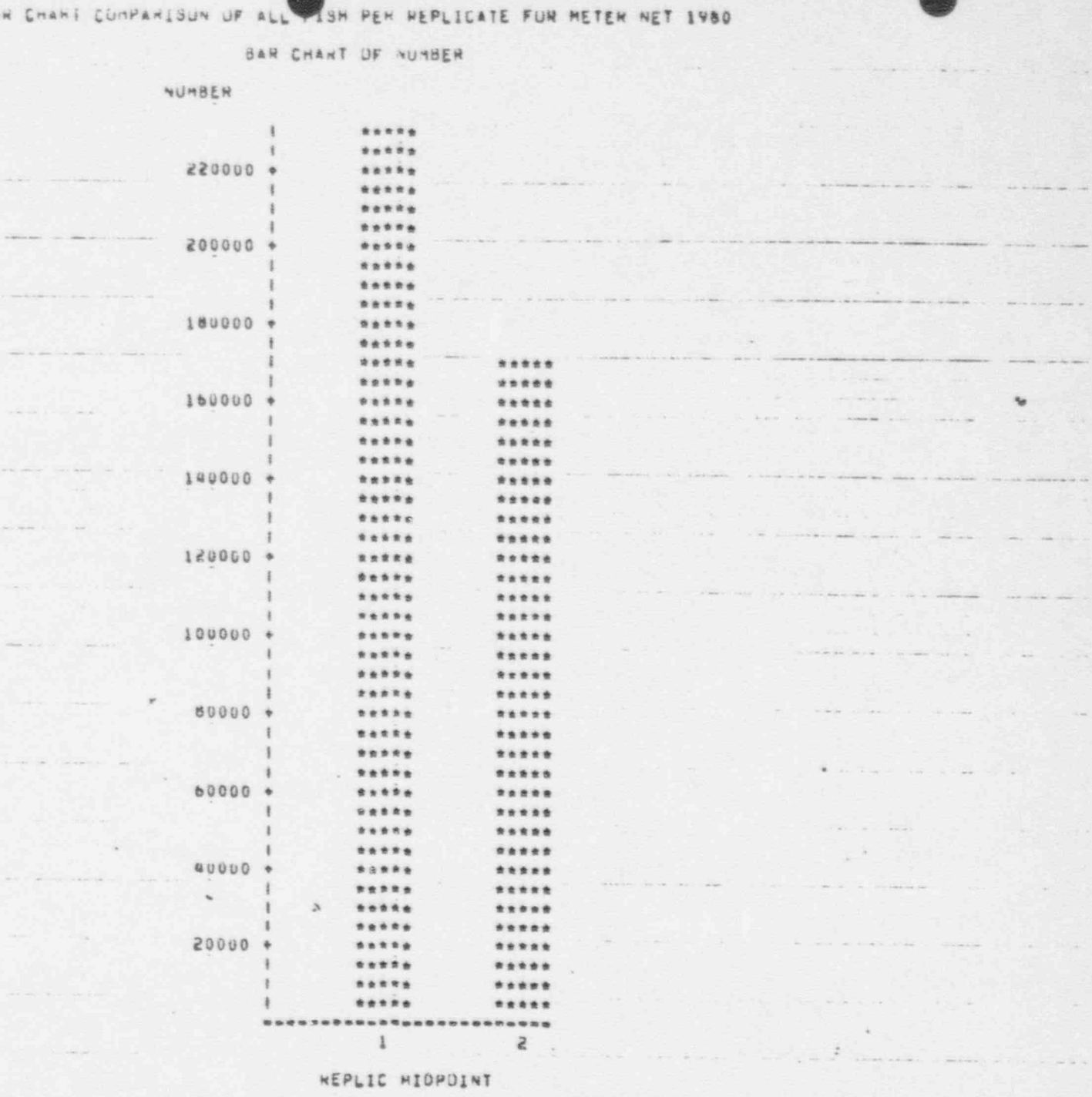

BAR CHART COMPARISON OF ALL FISH PER REPLICATE FOR METER NET 1980
BAR CHART OF NUMBER
NUMBER
220000
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
1
2
REPLIC MIDPOINT

Table 20

NUMBER OF FISH PER STATION BY DATE FOR MID WATER TRAWL 1980

TABLE OF DATE BY STATION

DATE FREQUENCY PERCENT	STATION CHANNEL REF D	BACKWATER REF A	INTAKE REF B	MIDDISCHARGE REF C	TOTAL
800505	0	67	8	0	75
	0.00	0.92	0.11	0.00	1.03
800612	173	75	17	333	598
	2.37	1.03	0.23	4.56	8.19
800618	802	1935	150	216	3103
	10.98	26.50	2.05	2.96	42.50
800627	93	754	29	0	876
	1.27	10.33	0.40	0.00	12.00
800705	226	309	37	0	572
	3.10	4.23	0.53	0.00	7.86
800714	9	80	49	0	138
	0.12	1.10	0.67	0.00	1.89
800721	58	80	25	86	209
	0.52	0.82	0.34	1.18	2.86
800728	55	87	20	58	200
	0.48	1.19	0.27	0.79	2.74
800806	51	63	24	16	154
	0.42	0.86	0.33	0.22	1.84
800811	24	65	17	20	126
	0.33	0.89	0.23	0.27	1.73
800818	19	884	53	5	961
	0.25	12.11	0.73	0.07	13.16
800825	54	106	19	10	189
	0.74	1.45	0.26	0.14	2.59
800902	96	50	12	10	118
	1.31	0.00	0.16	0.14	1.62
TOTAL	1600	4485	462	754	7301
	21.91	61.43	6.33	10.33	100.00

Table 21

SPECIES NUMBERS PER STATION FOR MID WATER TRAWL 1980

TABLE OF SPECIES BY STATION

SPECIES / FREQUENCY / PERCENT	STATION: CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
NO FISH CAUGHT	0	0	0	0	0
	.	.	.	.	0.00
LONGNOSE GAR	0	1	0	0	1
	0.00	0.01	0.00	0.00	0.01
CLUPEIDAE	1019	3539	227	528	5313
	15.96	48.47	3.11	7.23	72.77
GIZZARD SHAD	161	583	92	42	878
	2.21	7.99	1.26	0.58	12.03
THREADFIN SHAD	49	34	43	12	138
	0.67	0.47	0.59	0.16	1.89
EMERALD SHINER	4	3	1	12	20
	0.05	0.04	0.01	0.16	0.27
RIVER SHINER	0	0	1	0	1
	0.00	0.00	0.01	0.00	0.01
RED SHINER	1	0	1	0	2
	0.01	0.00	0.01	0.00	0.03
CYPRINIDAE	9	35	5	24	73
	0.12	0.48	0.07	0.33	1.00
ICTALURIDAE	0	3	0	1	4
	0.00	0.04	0.00	0.01	0.05
CHANNEL CATFISH	46	55	15	0	116
	0.63	0.75	0.21	0.00	1.59
BLUE CATFISH	204	30	9	9	252
	2.79	0.41	0.12	0.12	3.45
TOTAL	1600	4485	462	754	7301
	21.91	61.43	6.33	10.33	100.00

(CONTINUED)

Table 21 cont.

SPECIES NUMBERS PER STATION FOR MID WATER TRAWL 1980

TABLE OF SPECIES BY STATION

SPECIES FREQUENCY PERCENT	STATION CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
MORONE SP.	4 0.05	5 0.07	1 0.01	1 0.01	11 0.15
WHITE BASS	10 0.14	26 0.36	3 0.04	5 0.07	44 0.60
CENTRARCHIDAE SP	8 0.11	68 0.93	6 0.08	25 0.34	107 1.47
LEPOMIS SP.	3 0.04	19 0.26	4 0.05	17 0.23	43 0.59
BLUEGILL	0 0.00	13 0.18	0 0.00	0 0.00	13 0.18
POMOXIS SP.	0 0.00	0 0.00	1 0.01	0 0.00	1 0.01
WHITE CRAPPIE	0 0.00	10 0.14	0 0.00	0 0.00	10 0.14
BLACK CRAPPIE	0 0.00	1 0.01	0 0.00	0 0.00	1 0.01
FRESHWATER DRUM	6 0.08	16 0.22	7 0.10	11 0.15	40 0.55
ATHERINIDAE-SILV	14 0.19	14 0.19	8 0.11	13 0.18	49 0.67
BROOK SILVERSIDE	0 0.00	4 0.05	1 0.01	0 0.00	5 0.07
MISSISSIPPI SILV	62 0.85	26 0.36	37 0.51	54 0.74	179 2.45
TOTAL	1600 21.91	4485 61.43	462 6.33	754 10.33	7301 100.00

Table 22 ABNORMALITIES BY SPECIES AND STATION FOR MID WATER TRAWL 1980

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CLUPEIDAE

STATION	DISEASEP				
FREQUENCY / PERCENT	HERRINGBONE GUT A	GROWTH	HUMPBACK		TOTAL
CHANNEL REF D	0	0	170	0	170
	.	.	18.81	.	18.81
BACKWATER REF A	0	0	618	0	618
	.	.	68.36	.	68.36
INTAKE REF B	0	0	41	0	41
	.	.	4.54	.	4.54
DISCHARGE REF C	0	0	75	0	75
	.	.	8.30	.	8.30
TOTAL	.	.	904	.	904
	.	.	100.00	.	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CHANNEL CATFISH

STATION	DI				
FREQUENCY / PERCENT	HERRINGBONE GUT A	GROWTH	HUMPBACK		TOTAL
CHANNEL REF D	0	0	0	1	1
	.	0.00	0.00	20.00	20.00
BACKWATER REF A	0	1	3	0	4
	.	20.00	60.00	0.00	80.00
INTAKE REF B	0	0	0	0	0
	.	.	.	.	0.00
DISCHARGE REF C	0	0	0	0	0
	.	.	.	.	0.00
TOTAL	.	1	3	1	5
	.	20.00	60.00	20.00	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CENTRARCHIDAE SP

STATION	DISEASEP				
FREQUENCY / PERCENT	HERRINGBONE GUT A	GROWTH	HUMPBACK		TOTAL
CHANNEL REF D	0	0	0	0	0
	.	.	.	.	0.00
BACKWATER REF A	0	0	1	0	1
	.	.	50.00	0.00	50.00
INTAKE REF B	0	0	0	0	0
	.	.	.	.	0.00
DISCHARGE REF C	0	0	0	1	1
	.	.	0.00	50.00	50.00
TOTAL	.	.	1	1	2
	.	.	50.00	50.00	100.00

Table 22 cont.

ABNORMALITIES BY SPECIES AND STATION FOR MID WATER TRAWL 1980

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=FRESHWATER DRUM

STATION	DISEASEP			
FREQUENCY PERCENT		HENNEGUYIA	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0	0
	.	.	.	.	0.00
BACKWATER REF A	0	0	0	0	0
	.	.	.	.	0.00
INTAKE REF B	0	0	1	0	1
	.	.	100.00	.	100.00
DISCHARGE REF C	0	0	0	0	0
	.	.	.	.	0.00
TOTAL	.	.	1	.	1
	.	.	100.00	.	100.00

Figure 3

BAR CHART COMPARISON OF ALL FISH PER REPLICATE FOR MID WATER TRAWL 1980

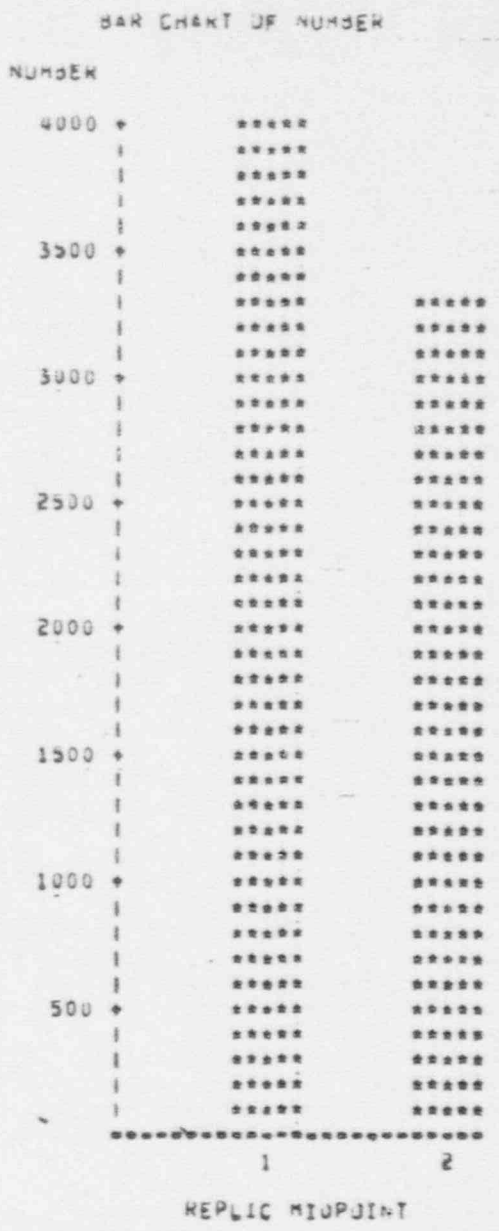


Table 23

NUMBER OF FISH PER STATION BY DATE FOR BAG SEINE 1980

TABLE OF DATE BY STATION

DATE FREQUENCY PERCENT	STATION CHANNEL REF D	BACKWATER REF A	ISLAND REF B	MAINLAND DISCHARGE REF C	TOTAL
800408	5	37	12	86	141
	0.11	0.67	0.22	1.55	2.55
800418	11	42	53	65	181
	0.20	0.76	1.14	1.17	3.27
800502	59	33	12	119	223
	1.07	0.59	0.22	2.15	4.12
800516	60	37	35	201	393
	1.08	0.67	0.63	4.71	7.12
800530	196	32	55	73	356
	3.54	0.58	0.99	1.32	6.43
800613	764	525	1253	27	2569
	13.80	9.50	22.61	0.49	46.40
800627	174	253	71	80	583
	3.23	4.57	1.28	1.48	10.53
800711	332	2	137	0	471
	6.00	0.04	2.47	0.00	8.51
800808	93	89	27	248	367
	0.78	0.88	0.49	4.48	6.63
800822	50	95	85	55	236
	0.90	0.83	1.54	0.99	4.26
TOTAL	1700	1002	1701	1014	5537
	30.70	19.18	31.80	18.31	100.00

Table 4

WEIGHT IN GRAMS OF FISH BY STATION BY DATE FOR BAG SEINE 1980

NOTE: SEVERAL FISH WEIGHED LESS THAN ONE GRAM

TABLE OF DATE BY STATION

DATE	STATION				
FREQUENCY PERCENT	CHANNEL REF D	BACKWATER IR REF A	INTAKE REF B	DISCHARGE IE REF C	TOTAL
800408	40 0.50	55 0.68	10 0.12	385 4.79	490 6.10
800418	49 0.61	205 2.56	364 4.53	199 2.48	818 10.18
800502	325 4.04	210 2.61	347 4.32	560 6.97	1442 17.94
800516	356 4.45	267 3.32	208 2.59	670 8.34	1503 18.70
800530	654 8.20	143 1.78	300 3.73	441 5.49	1543 19.20
800613	256 3.31	165 2.05	150 1.99	28 0.35	619 7.70
800627	50 0.62	75 0.93	89 1.11	85 1.06	249 3.72
800711	30 0.37	0 0.00	0 0.00	0 0.00	30 0.37
800808	170 2.12	209 2.60	71 0.88	224 2.79	674 8.39
800822	211 2.63	153 1.90	164 2.04	90 1.12	618 7.69
TOTAL	2155 26.85	1485 18.49	1715 21.32	2682 33.37	8036 100.00

SPECIES NUMBERS STATION FOR BAG SEINE 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION FREQUENCY PERCENT	CHANNEL (REF D)	BACKWATER (REF A)	INTAKE (REF B)	DISCHARGE (REF C)	TOTAL
NO FISH CAUGHT	0 .	0 .	0 .	0 .	0 0.00
CLUPEIDAE	458 8.20	601 10.85	440 8.85	2 0.04	1547 27.98
GIZZARD SHAD	22 0.40	30 0.54	12 0.22	10 0.18	74 1.34
THREADFIN SHAD	0 0.00	2 0.04	1 0.02	0 0.00	3 0.05
GOLDEN SHINER	0 0.00	2 0.04	0 0.00	3 0.05	5 0.09
EMERALD SHINER	11 0.20	1 0.02	3 0.05	19 0.34	34 0.61
RIVER SHINER	0 0.00	0 0.00	0 0.00	5 0.09	5 0.09
RED SHINER	83 1.50	9 0.16	53 0.96	148 2.67	293 5.29
SILVERBAND SHINE	1 0.02	2 0.04	1 0.02	20 0.36	24 0.43
BLACKTAIL SHINER	0 0.00	0 0.00	1 0.02	0 0.00	1 0.02
BULLHEAD MINNOW	57 0.67	61 1.10	1 0.02	85 1.54	184 3.32
CYPRINIDAE	103 1.86	15 0.27	19 0.34	13 0.23	151 2.73
GHOST SHINER	0 0.00	0 0.00	0 0.00	1 0.02	1 0.02
CATOSTOMIDAE	1 0.02	3 0.05	1 0.00	1 0.02	5 0.09
CHANNEL CATFISH	0 0.00	0 0.00	0 0.00	3 0.05	3 0.05
MOSQUITOFISH	1 0.02	0 0.00	0 0.00	0 0.00	1 0.02
TOTAL	1700 30.70	1062 19.18	1761 31.80	1014 18.31	5537 100.00

Table 25 cont.

SPECIES NUMBERS PER STATION FOR BAG SEINE 1980

TABLE OF SPECIES BY STATION

SPECIES / STATION / FREQUENCY / PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
MINNOW SP.	0	6	0	1	7
	0.00	0.11	0.00	0.02	0.13
WHITE BASS	0	0	0	1	1
	0.00	0.00	0.00	0.02	0.02
CENTRARCHIDAE SP	24	144	126	73	367
	0.43	2.60	2.28	1.32	6.63
LEPOMIS SP.	0	29	0	54	83
	0.00	0.52	0.00	1.07	1.59
GREEN SUNFISH	0	0	0	2	2
	0.00	0.00	0.00	0.04	0.04
ORANGESPOTTED SU	1	0	0	0	1
	0.02	0.00	0.00	0.00	0.02
BLUEGILL	11	91	4	17	113
	0.20	1.46	0.07	0.31	2.04
LONGEAR SUNFISH	39	12	1	49	101
	0.70	0.22	0.02	0.88	1.82
LARGEMOUTH BASS	5	5	3	12	25
	0.09	0.14	0.05	0.22	0.51
PUMURIS SP.	1	0	0	0	1
	0.02	0.00	0.00	0.00	0.02
LOGPERCH	1	0	0	0	1
	0.02	0.00	0.00	0.00	0.02
FRESHWATER DRUM	0	1	0	2	3
	0.00	0.02	0.00	0.04	0.05
ATHERINIDAE-SILV	17	2	315	3	337
	0.31	0.04	5.69	0.05	6.09
BROOK SILVERSIDE	3	5	28	1	37
	0.05	0.09	0.51	0.02	0.67
MISSISSIPPI SILV	885	47	703	484	2119
	15.98	0.85	12.70	8.74	38.27
TOTAL	1700	1062	1761	1014	5537
	30.70	19.18	31.80	18.31	100.00

Table 26

SPECIES WEIGHT IN GRAMS PER STATION FOR BAG SEINE 1980

NOTE: SEVERAL FISH WEIGHED LESS THAN ONE GRAM

TABLE OF SPECIES BY STATION

SPECIES / STATION FREQUENCY PERCENT	CHANNEL REF D	BACKWATER REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
NO FISH CAUGHT	0	0	0	0	0
	.	.	.	.	0.00
CLUPEIDAE	3	2	0	1	6
	0.04	0.02	0.00	0.01	0.07
GIZZARD SHAD	44	280	465	290	1079
	0.55	3.48	5.79	3.61	13.43
THREADFIN SHAD	0	3	0	0	3
	0.00	0.04	0.00	0.00	0.04
GOLDEN SHINER	0	8	0	11	19
	0.00	0.10	0.00	0.14	0.24
EMERALD SHINER	8	1	6	35	50
	0.10	0.01	0.07	0.44	0.62
RIVER SHINER	0	0	0	15	15
	0.00	0.00	0.00	0.19	0.19
RED SHINER	114	6	70	184	374
	1.42	0.07	0.87	2.29	4.65
SILVERBAND SHINE	1	0	1	22	24
	0.01	0.00	0.01	0.27	0.30
BLACKTAIL SHINER	0	0	3	0	3
	0.00	0.00	0.04	0.00	0.04
BULLHEAD MINNOW	57	65	2	176	300
	0.71	0.81	0.02	2.19	3.73
TOTAL	2158	1453	1713	2682	8036
	26.85	18.45	21.32	33.37	100.00

(CONTINUED)

Table 26 cont.

SPECIES WEIGHT IN GRAMS PER STATION FOR BAG SEINE 1980

NOTE: SEVERAL FISH WEIGHED LESS THAN ONE GRAM

TABLE OF SPECIES BY STATION

SPECIES	STATION				
FREQUENCY PERCENT	CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	MIDSTREAM IE REF C	TOTAL
CYPRINIDAE	0	0	1	0	1
	0.00	0.00	0.01	0.00	0.01
GHOST SHINER	0	0	0	1	1
	0.00	0.00	0.00	0.01	0.01
CATOSTOMIDAE	0	0	0	0	0
	.	.	.	.	0.00
CHANNEL CATFISH	0	0	0	136	136
	0.00	0.00	0.00	1.69	1.69
MOSQUITOFISH	0	0	0	0	0
	.	.	.	.	0.00
MORONE SP.	0	0	0	0	0
	.	.	.	.	0.00
WHITE BASS	0	0	0	2	2
	0.00	0.00	0.00	0.02	0.02
CENTRARCHIDAE SP	0	0	0	0	0
	.	.	.	.	0.00
LEPOMIS SP.	0	0	0	0	0
	.	.	.	.	0.00
GREEN SUNFISH	0	0	0	13	13
	0.00	0.00	0.00	0.16	0.16
ORANGESPOTTED SU	3	0	0	0	3
	0.04	0.00	0.00	0.00	0.04
TOTAL	2158	1485	1713	2682	8038
	26.85	18.45	21.32	33.37	100.00

(CONTINUED)

Table 26 cont.

SPECIES WEIGHT IN GRAMS PER STATION FOR BAG SEINE 1980

NOTE: SEVERAL FISH WEIGHED LESS THAN ONE GRAM

TABLE OF SPECIES BY STATION

SPECIES STATION FREQUENCY PERCENT	CHANNEL REF D	BACKWATER IN REF A	INTAKE REF B	DISCHARGE REF C	TOTAL
BLUEGILL	129	461	40	26	706
	1,61	5,74	1,12	0,32	8,79
LONGEAR SUNFISH	809	136	22	310	1277
	10,07	1,69	0,27	3,86	15,89
LARGEMOUTH BASS	113	147	50	151	461
	1,41	1,83	0,62	1,88	5,74
PUMPKIN SP.	0	0	0	0	0
	.	.	.	.	0,00
LOGPERCH	0	0	0	0	0
	.	.	.	.	0,00
FRESHWATER DRUM	0	153	0	37	190
	0,00	1,90	0,00	0,46	2,36
ATHERINIDAE-SILV	0	0	0	0	0
	.	.	.	.	0,00
BROOK SILVERSIDE	3	14	1	1	19
	0,04	0,17	0,01	0,01	0,24
MISSISSIPPI SILV	874	207	1002	1271	3354
	10,88	2,58	12,47	15,82	41,74
TOTAL	2158	1483	1713	2682	8036
	26,85	18,45	21,32	33,37	100,00

Table 27 ABNORMALITIES BY SPECIES AND STATION FOR BAG SEINE 1980

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CYPRINIDAE

STATION	DISEASEP			
FREQUENCY / PERCENT		GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	1	1	2
	.	50.00	50.00	100.00
BACKWATER REF A	0	0	0	0
	.	.	.	0.00
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL		1	1	2
		50.00	50.00	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CENTRARCHIDAE BP

STATION	DISEASEP			
FREQUENCY / PERCENT		GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	0	0
	.	.	.	0.00
BACKWATER REF A	0	0	0	0
	.	100.00	.	100.00
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL		0		0
		100.00		100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=MISSISSIPPI SILV

STATION	DISEASEP			
FREQUENCY / PERCENT		GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	0	1	1
	.	.	100.00	100.00
BACKWATER REF A	0	0	0	0
	.	.	.	0.00
INTAKE REF B	0	0	0	0
	.	.	.	0.00
DISCHARGE REF C	0	0	0	0
	.	.	.	0.00
TOTAL			1	1
			100.00	100.00

Table 27 cont.

ABNORMALITIES BY SPECIES AND STATION FOR BAG SEINE 1980

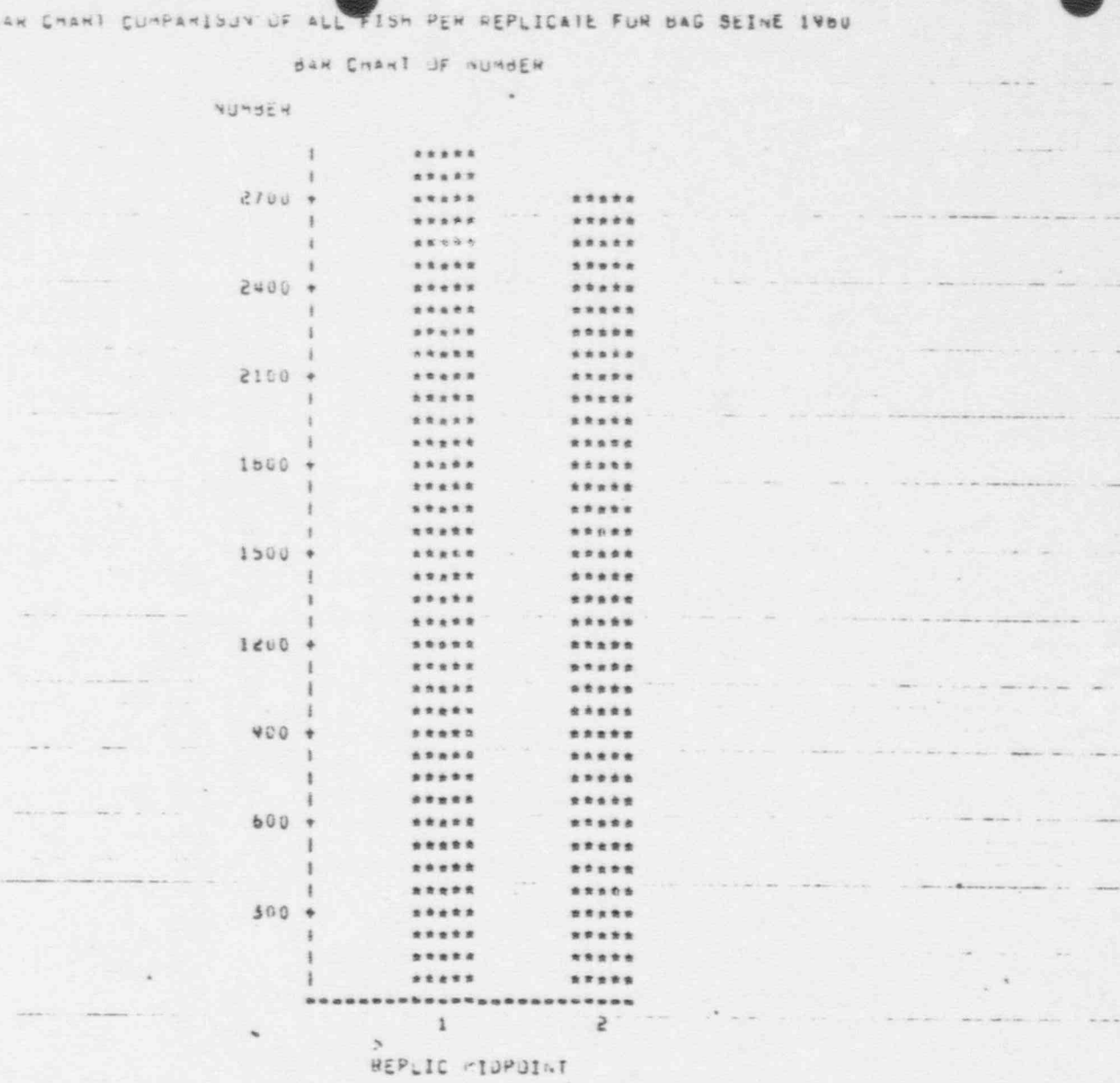
TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=CLUPEIDAE

STATION	DISEASEP		
FREQUENCY / PERCENT	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	238	0	238
	0.00	27.77	0.00	27.77
BACKWATER REF A	0	429	0	429
	0.00	50.06	0.00	50.06
INTAKE REF B	0	190	0	190
	0.00	22.17	0.00	22.17
DISCHARGE REF C	0	0	0	0
	0.00	0.00	0.00	0.00
TOTAL	0	857	0	857
	0.00	100.00	0.00	100.00

TABLE OF STATION BY DISEASEP
CONTROLLING FOR SPECIES=GIZZARD SHAD

STATION	DISEASEP		
FREQUENCY / PERCENT	GROWTH	HUMPBACK	TOTAL
CHANNEL REF D	0	4	0	4
	0.00	100.00	0.00	100.00
BACKWATER REF A	0	0	0	0
	0.00	0.00	0.00	0.00
INTAKE REF B	0	0	0	0
	0.00	0.00	0.00	0.00
DISCHARGE REF C	0	0	0	0
	0.00	0.00	0.00	0.00
TOTAL	0	4	0	4
	0.00	100.00	0.00	100.00

Figure 4


BAR CHART COMPARISON OF ALL FISH PER REPLICATE FOR BAG SEINE 1980
BAR CHART OF NUMBER
NUMBER
2700
2400
2100
1800
1500
1200
900
600
300
1
2
REPLIC MIDPOINT

SPECIES NUMBERS AND WEIGHT BY STATION FOR RUTENONE 1980

OBS	STATION	SPECIES	NUMBER	WEIGHT
1	BACKWATER REF A	GIZZARD SHAD	5822	371.7
2	DISCHARGE REF C	GIZZARD SHAD	20534	1753.4
3	BACKWATER REF A	SKIPJACK HERRING	14	0.4
4	DISCHARGE REF C	SKIPJACK HERRING	81	4.5
5	BACKWATER REF A	THREADFIN SHAD	38	0.7
6	DISCHARGE REF C	THREADFIN SHAD	184	5.1
7	BACKWATER REF A	CARP	100	422.7
8	DISCHARGE REF C	CARP	142	248.8
9	BACKWATER REF A	CYPRINIDAE	202	0.7
10	DISCHARGE REF C	CYPRINIDAE	5300	4.5
11	BACKWATER REF A	RIVER CARPSUCKER	142	220.5
12	DISCHARGE REF C	RIVER CARPSUCKER	158	248.1
13	BACKWATER REF A	SMALLMOUTH BUFFALO	223	491.4
14	DISCHARGE REF C	SMALLMOUTH BUFFALO	205	505.5
15	BACKWATER REF A	BIGMOUTH BUFFALO	15	40.0
16	DISCHARGE REF C	BIGMOUTH BUFFALO	5	23.7
17	BACKWATER REF A	BLACK BUFFALO	10	30.4
18	DISCHARGE REF C	BLACK BUFFALO	6	20.5
19	BACKWATER REF A	GOLDEN REDHORSE	1	0.9
20	BACKWATER REF A	BLACK BULLHEAD	6	0.5
21	BACKWATER REF A	YELLOW BULLHEAD	1	0.1
22	BACKWATER REF A	CHANNEL CATFISH	847	238.2
23	DISCHARGE REF C	CHANNEL CATFISH	464	155.3
24	BACKWATER REF A	BLUE CATFISH	74	18.0
25	DISCHARGE REF C	BLUE CATFISH	44	28.7
26	BACKWATER REF A	FLATHEAD CATFISH	40	31.5
27	DISCHARGE REF C	FLATHEAD CATFISH	3	1.8
28	BACKWATER REF A	AMERICAN EEL	4	7.4
29	BACKWATER REF A	WHITE BASS	93	35.1
30	DISCHARGE REF C	WHITE BASS	49	9.6
31	BACKWATER REF A	STRIPED BASS	18	2.5
32	DISCHARGE REF C	STRIPED BASS	43	0.7
33	BACKWATER REF A	MAMMOUTH	1249	14.7
34	DISCHARGE REF C	MAMMOUTH	69	8.7
35	BACKWATER REF A	GREEN SUNFISH	606	22.9
36	DISCHARGE REF C	GREEN SUNFISH	157	4.7
37	BACKWATER REF A	ORANGESPOTTED SUNFISH	2069	6.8
38	DISCHARGE REF C	ORANGESPOTTED SUNFISH	345	3.9
39	BACKWATER REF A	BLUEGILL	5141	53.6
40	DISCHARGE REF C	BLUEGILL	2410	45.2
41	BACKWATER REF A	LONGEAR SUNFISH	2134	9.3
42	DISCHARGE REF C	LONGEAR SUNFISH	1010	03.6
43	BACKWATER REF A	SPOTTED BASS	1	0.1
44	BACKWATER REF A	LARGEMOUTH BASS	110	18.6
45	DISCHARGE REF C	LARGEMOUTH BASS	172	50.2
46	BACKWATER REF A	WHITE CRAPPIE	509	24.0
47	DISCHARGE REF C	WHITE CRAPPIE	57	4.8
48	BACKWATER REF A	BLACK CRAPPIE	4	0.6
49	DISCHARGE REF C	BLACK CRAPPIE	9	1.7
50	DISCHARGE REF C	LOGPERCH	18	0.2
51	BACKWATER REF A	SAUGER	1	0.1
52	BACKWATER REF A	FRESHWATER DRUM	4505	352.1
53	DISCHARGE REF C	FRESHWATER DRUM	3471	171.1

Table 29

NUMBER OF FISH PER ACRE BY STATION FOR ROTENONE 1980 15:40 TUESDAY, JANUARY 27, 1981

BACKWATER AREA=0.1 ACRES DISCHARGE AREA=0.75 ACRES

OBS	STATION	NUM_ACRE	LB_ACRE
1	BACKWATER REF A	3013.17	605.439
2	DISCHARGE REF C	3001.93	505.044

ble 30 — SAMPLE FOR STATIONSBACKWATER AND DISCHARGE FOR 196 — 15:00 TUESDAY, JANUARY 27, 1981

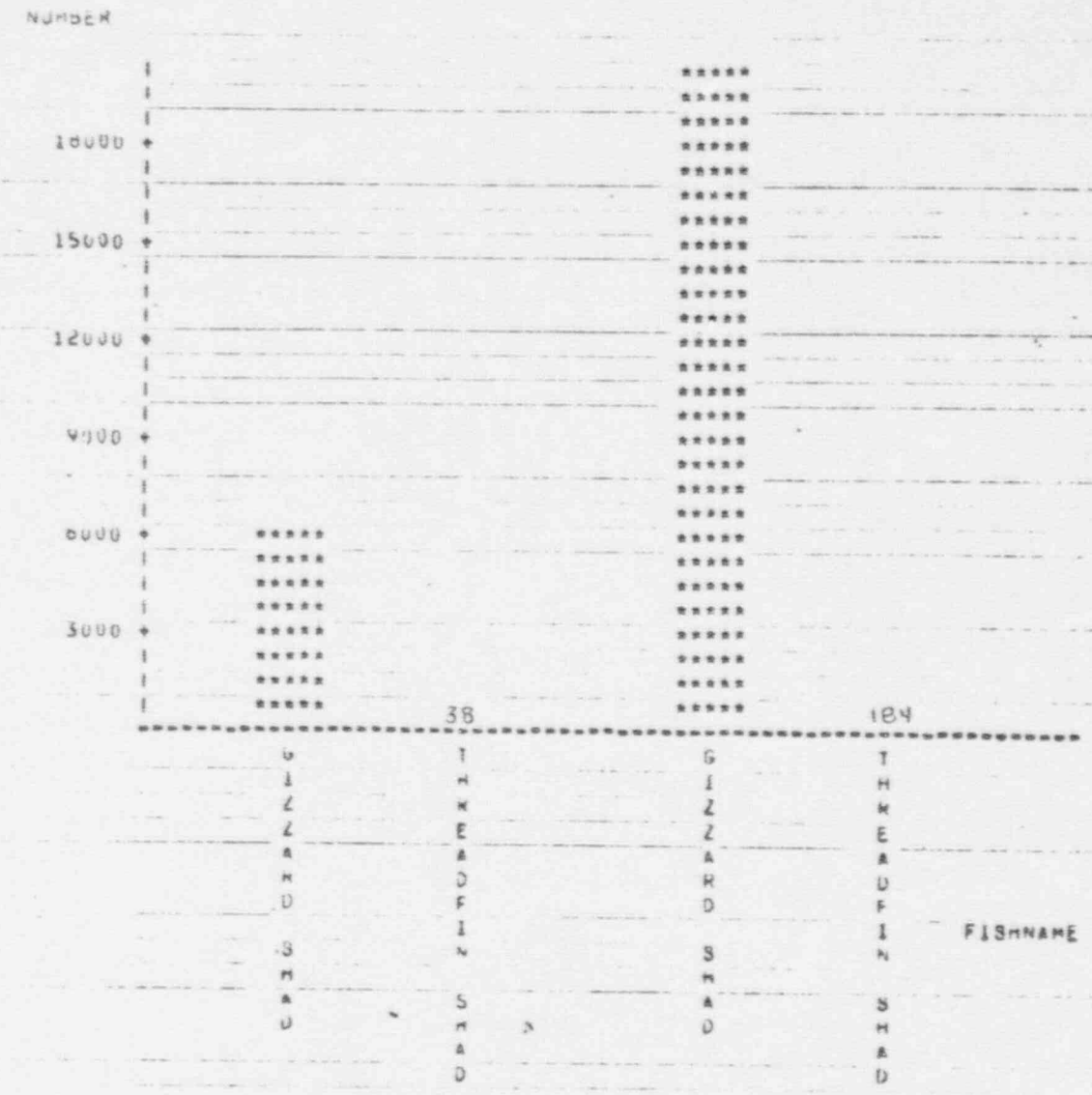
OBS	DATA TYPE	DATE	SITE	STATION	INVEST	TSAMPLE	LENGTH	SPECIES	INCHCLASS	DISEASE	NUMBER	WEIGHT	FISH SPECIES	LOCATION
1	HUT	800909	21	BACKWATER REF A	ATU	800	48	10	GIZZARD SHAD	305	• •	5822	371.7	GIZZARD SHAD	BACKWATER REF A
2	HUT	800917	21	DISCHARGE REF C	ATU	800	48	12	GIZZARD SHAD	103	• •	20364	1750.4	GIZZARD SHAD	DISCHARGE REF C
3	HUT	800909	21	BACKWATER REF A	ATU	800	48	10	THREADFIN SHAD	103	• •	36	0.7	THREADFIN SHAD	BACKWATER REF A
4	HUT	800911	21	DISCHARGE REF C	ATU	800	48	12	THREADFIN SHAD	103	• •	184	3.1	THREADFIN SHAD	DISCHARGE REF C

Figure 3

BAR CHART COMPARISON OF NUMBERS OF GIZZARD AND THREADFIN SHAD CAUGHT IN NOTENUNK 1990

15:03 TUESDAY, JANUARY 21, 1

BAR CHART OF NUMBER



Figure

BAR CHART COMPARISON OF WEIGHTS IN POUNDS OF GIZZARD AND THREADFIN SHAD CAUGHT IN NOTENJVE 1980

15140 TUESDAY, JANUARY 27, 1

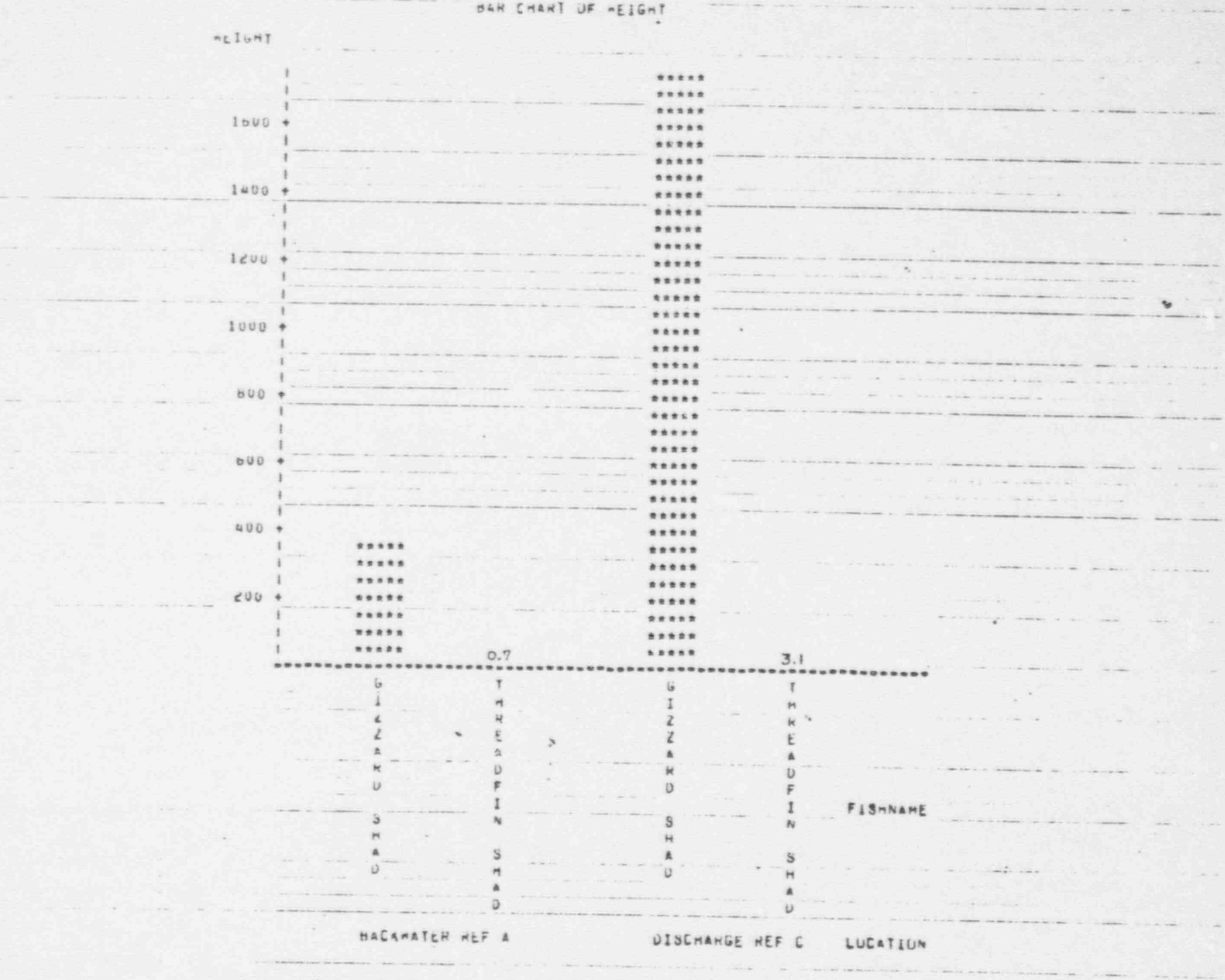


TABLE 31 DAILY AVERAGE OF DISSOLVED OXYGEN AND WATER TEMPERATURE AND OTHER PARAMETERS BY STATION FOR 1980

DAYAVGDO=DAILY AVERAGE DISSOLVED OXYGEN
DAYAVGT=DAILY AVERAGE WATER TEMPERATURE

OBS	DATE	STATION	SECCHI INCHES	AAIRTEMP C	LAKELEVL FEET	DAYAVGDO PPM	DAYAVGT C
1	800515	CHANNEL REF D	23	6.0	1.14	10.75	8.00
2	800515	BACKWATER REF A	26	7.0	1.14	14.70	8.25
3	800515	INTAKE REF B	28	13.0	1.14	11.00	10.00
4	800515	DISCHARGE REF C	25	13.0	1.14	8.50	16.25
5	800516	CHANNEL REF D	29	14.0	1.04	10.20	10.00
6	800516	BACKWATER REF A	25	14.0	1.04	9.80	10.25
7	800516	INTAKE REF B	31	12.5	1.04	8.95	9.75
8	800516	DISCHARGE REF C	24	14.0	1.04	9.50	17.00
9	800524	CHANNEL REF D	17	21.0	1.04	5.55	12.50
10	800526	BACKWATER REF A	17	21.0	1.44	8.50	14.00
11	800528	INTAKE REF B	27	21.0	1.44	9.20	12.50
12	800528	DISCHARGE REF C	20	21.0	1.04	8.75	16.00
13	800529	CHANNEL REF D	16	15.5	1.69	10.40	12.25
14	800529	BACKWATER REF A	17	14.0	1.69	10.70	11.75
15	800529	INTAKE REF B	30	15.5	1.69	9.90	12.00
16	800529	DISCHARGE REF C	21	15.5	1.69	10.70	17.25
17	800530	CHANNEL REF D	15	8.0	2.12	9.30	12.50
18	800530	BACKWATER REF A	17	8.0	2.12	10.60	10.25
19	800530	INTAKE REF B	25	12.0	2.12	13.00	11.00
20	800530	DISCHARGE REF C	.	.	2.12	.	.
21	800605	CHANNEL REF D	13	19.0	1.98	8.45	15.00
22	800605	BACKWATER REF A	11	17.0	1.98	10.25	13.50
23	800605	INTAKE REF B	23	20.5	1.98	7.80	13.50
24	800605	DISCHARGE REF C	16	19.0	1.98	9.65	18.50
25	800618	CHANNEL REF D	12	22.0	1.30	5.20	15.50
26	800618	BACKWATER REF A	11	20.0	1.30	6.65	14.50
27	800618	INTAKE REF B	20	23.0	1.30	5.15	16.00
28	800618	DISCHARGE REF C	16	20.0	1.30	6.95	19.00
29	800626	CHANNEL REF D	13	12.0	0.77	9.30	15.50
30	800626	BACKWATER REF A	12	12.0	0.77	8.65	15.50
31	800626	INTAKE REF B	16	12.0	0.77	9.30	15.00
32	800626	DISCHARGE REF C	14	13.0	0.77	9.40	15.00
33	800702	CHANNEL REF D	14	18.0	1.69	9.25	17.75
34	800702	BACKWATER REF A	11	20.0	1.69	9.65	17.00
35	800702	INTAKE REF B	29	19.0	1.69	10.05	17.50
36	800702	DISCHARGE REF C	15	17.5	1.69	11.50	18.00
37	800710	CHANNEL REF D	9	20.0	2.09	9.15	19.50
38	800710	BACKWATER REF A	9	20.5	2.09	9.05	19.50
39	800710	INTAKE REF B	21	17.5	2.09	12.30	19.50
40	800710	DISCHARGE REF C	14	26.0	2.09	12.40	21.50
41	800716	CHANNEL REF D	6	24.0	0.99	7.80	21.00
42	800716	BACKWATER REF A	7	17.5	0.99	8.05	19.50
43	800716	INTAKE REF B	19	23.0	0.99	8.05	20.00
44	800716	DISCHARGE REF C	13	24.0	0.99	7.85	20.75
45	800723	CHANNEL REF D	7	26.0	2.08	7.25	21.50
46	800723	BACKWATER REF A	7	24.0	2.08	7.05	21.00
47	800723	INTAKE REF B	15	27.0	2.08	8.95	21.25
48	800723	DISCHARGE REF C	7	25.0	2.08	8.70	21.50
49	800730	CHANNEL REF D	11	30.0	1.96	8.10	25.00
50	800730	BACKWATER REF A	7	26.5	1.96	8.55	24.75
51	800730	INTAKE REF B	22	30.0	1.96	8.85	25.00
52	800730	DISCHARGE REF C	13	30.0	1.96	9.15	26.50
53	800802	CHANNEL REF D	11	30.0	1.33	7.80	26.45

TABLE 3
cont.

DAILY AVERAGE OF DISSOLVED OXYGEN AND WATER TEMPERATURE AND OTHER PARAMETERS BY STATION FOR 1980

DAYAVGDO=DAILY AVERAGE DISSOLVED OXYGEN
DAYAVGT=DAILY AVERAGE WATER TEMPERATURE

OBS	DATE	STATION	SECCHI INCHES	AAIRTEMP C	LAKELEVL FEET	DAYAVGDO PPM	DAYAVGT C
54	800602	BACKWATER REF A	9	32.0	1.33	6.15	26.00
55	800602	INTAKE REF B	19	30.0	1.33	6.15	26.25
56	800602	DISCHARGE REF C	11	30.0	1.33	4.30	26.75
57	800603	CHANNEL REF D	10	32.0	1.21	6.60	25.00
58	800603	BACKWATER REF A	8	31.0	1.21	5.75	26.00
59	800603	INTAKE REF B	16	.	1.21	7.50	27.25
60	800603	DISCHARGE REF C	11	32.0	1.21	7.40	28.25
61	800604	CHANNEL REF D	11	32.0	1.20	6.15	27.00
62	800604	BACKWATER REF A	11	31.5	1.20	6.25	27.00
63	800604	INTAKE REF B	17	32.0	1.20	8.05	28.00
64	800604	DISCHARGE REF C	12	31.0	1.20	8.05	24.00
65	800605	CHANNEL REF D	.	30.0	1.55	6.45	25.50
66	800605	BACKWATER REF A	.	27.0	1.55	6.25	28.00
67	800605	INTAKE REF B	.	30.0	1.55	8.05	28.50
68	800605	DISCHARGE REF C	.	28.0	1.55	8.05	28.50
69	800606	CHANNEL REF D	10	31.0	1.77	6.40	26.75
70	800606	BACKWATER REF A	12	32.0	1.77	6.60	27.25
71	800606	INTAKE REF B	18	32.0	1.77	7.45	25.50
72	800606	DISCHARGE REF C	11	31.0	1.77	6.75	29.00
73	800607	CHANNEL REF D	11	31.5	2.03	6.85	28.50
74	800607	BACKWATER REF A	9	31.5	2.03	6.80	28.50
75	800607	INTAKE REF B	17	31.5	2.03	6.35	28.00
76	800607	DISCHARGE REF C	10	31.0	2.03	7.00	24.25
77	800612	CHANNEL REF D	.	.	1.37	.	.
78	800612	BACKWATER REF A	.	.	1.37	.	.
79	800612	INTAKE REF B	.	.	1.37	.	.
80	800612	DISCHARGE REF C	.	.	1.37	.	.
81	800613	CHANNEL REF D	12	30.0	1.21	.	27.25
82	800613	BACKWATER REF A	9	33.0	1.21	6.65	28.00
83	800613	INTAKE REF B	17	32.0	1.21	7.20	25.00
84	800613	DISCHARGE REF C	13	33.0	1.21	7.25	33.50
85	800616	CHANNEL REF D	16	34.0	1.29	6.75	28.00
86	800616	BACKWATER REF A	11	32.0	1.29	6.85	27.00
87	800616	INTAKE REF B	23	34.0	1.29	8.15	25.50
88	800616	DISCHARGE REF C	17	32.0	1.29	6.35	31.00
89	800617	CHANNEL REF D	13	23.0	1.53	6.40	26.50
90	800617	BACKWATER REF A	10	23.0	1.53	6.40	25.75
91	800617	INTAKE REF B	13	23.0	1.53	6.60	25.50
92	800617	DISCHARGE REF C	15	22.0	1.53	6.60	32.50
93	800618	CHANNEL REF D	11	28.0	1.15	5.90	27.00
94	800618	BACKWATER REF A	11	29.0	1.15	6.20	26.75
95	800618	INTAKE REF B	14	28.0	1.15	6.50	27.00
96	800618	DISCHARGE REF C	12	24.0	1.15	5.30	32.00
97	800621	CHANNEL REF D	7	32.0	2.15	6.60	26.25
98	800621	BACKWATER REF A	10	23.5	2.15	7.10	25.00
99	800621	INTAKE REF B	21	28.0	2.15	6.55	26.50
100	800621	DISCHARGE REF C	14	32.0	2.15	6.10	29.50
101	800627	CHANNEL REF D	13	30.5	1.15	11.30	31.50
102	800627	BACKWATER REF A	12	34.0	1.15	8.50	30.75
103	800627	INTAKE REF B	21	36.0	1.15	10.70	31.25
104	800627	DISCHARGE REF C	18	38.0	1.15	8.05	38.00
105	800705	CHANNEL REF D	8	37.5	1.86	5.95	32.00
106	800705	BACKWATER REF A	8	38.0	1.86	4.30	32.50

TABLE 31 cont.

DAILY AVERAGE OF DISSOLVED OXYGEN AND WATER TEMPERATURE AND OTHER PARAMETERS BY STATION FOR 1980

DAYAVGOU=DAILY AVERAGE DISSOLVED OXYGEN
DAYAVGT=DAILY AVERAGE WATER TEMPERATURE

OBS	DATE	STATION	SECCHI INCHES	AAIRTEMP C	LAKELEVL FEET	DAYAVGOU PPM	DAYAVGT C
107	800705	INTAKE REF B	18	37.0	1.66	6.25	33.00
108	800705	DISCHARGE REF C	14	35.0	1.66	5.00	30.00
109	800711	CHANNEL REF D	12	38.0	1.34	6.15	31.00
110	800711	BACKWATER REF A	14	36.0	1.34	4.10	32.50
111	800711	INTAKE REF B	18	39.0	1.34	7.15	31.00
112	800711	DISCHARGE REF C	12	38.0	1.34	6.15	33.50
113	800714	CHANNEL REF D	.	35.0	1.70	5.00	29.50
114	800714	BACKWATER REF A	.	36.0	1.70	4.20	33.50
115	800714	INTAKE REF B	.	32.0	1.70	5.45	33.50
116	800714	DISCHARGE REF C	.	35.0	1.70	4.80	31.50
117	800719	CHANNEL REF D	.	29.5	2.10	.	.
118	800719	BACKWATER REF A	11	28.0	2.10	.	.
119	800719	INTAKE REF B	14	29.0	2.10	.	.
120	800719	DISCHARGE REF C	.	32.0	2.10	.	.
121	800721	CHANNEL REF D	.	28.0	2.16	6.30	31.00
122	800721	BACKWATER REF A	.	28.0	2.16	6.25	31.00
123	800721	INTAKE REF B	.	28.0	2.16	5.75	31.00
124	800721	DISCHARGE REF C	.	27.0	2.16	5.80	31.50
125	800728	CHANNEL REF D	.	28.0	1.78	5.25	29.00
126	800728	BACKWATER REF A	.	31.0	1.78	7.20	30.50
127	800728	INTAKE REF B	.	29.5	1.78	7.15	30.00
128	800728	DISCHARGE REF C	.	26.0	1.78	6.05	29.00
129	800801	CHANNEL REF D	25	30.0	1.73	6.65	30.00
130	800801	BACKWATER REF A	25	27.0	1.73	6.70	30.00
131	800801	INTAKE REF B	30	30.0	1.73	6.30	30.00
132	800801	DISCHARGE REF C	22	32.0	1.73	6.40	30.00
133	800806	CHANNEL REF D	.	30.0	1.46	5.15	30.75
134	800806	BACKWATER REF A	.	34.0	1.46	6.10	31.50
135	800806	INTAKE REF B	.	32.0	1.46	5.45	30.50
136	800806	DISCHARGE REF C	.	30.0	1.46	.	.
137	800808	CHANNEL REF D	12	30.5	1.46	4.40	28.00
138	800808	BACKWATER REF A	25	36.0	1.46	6.05	28.50
139	800808	INTAKE REF B	29	34.0	1.46	5.95	28.50
140	800808	DISCHARGE REF C	22	35.0	1.46	6.45	30.25
141	800811	CHANNEL REF D	.	30.0	1.40	2.20	29.00
142	800811	BACKWATER REF A	.	32.0	1.40	5.15	30.00
143	800811	INTAKE REF B	.	31.0	1.40	2.15	29.00
144	800811	DISCHARGE REF C	.	30.0	1.40	4.10	32.75
145	800816	CHANNEL REF D	21	28.5	1.72	6.30	30.25
146	800816	BACKWATER REF A	23	33.0	1.72	4.20	30.00
147	800816	INTAKE REF B	20	31.0	1.72	11.10	31.00
148	800816	DISCHARGE REF C	22	29.0	1.72	6.80	33.00
149	800817	CHANNEL REF D	21	32.0	1.72	5.20	30.50
150	800817	BACKWATER REF A	19	35.0	1.72	4.80	30.50
151	800817	INTAKE REF B	26	30.0	1.72	5.20	30.00
152	800817	DISCHARGE REF C	17	33.0	1.72	5.25	33.50
153	800818	CHANNEL REF D	.	32.0	1.48	4.50	31.70
154	800818	BACKWATER REF A	.	33.0	1.48	5.50	31.50
155	800818	INTAKE REF B	.	32.0	1.48	5.00	30.00
156	800818	DISCHARGE REF C	.	32.0	1.48	.	34.50
157	800822	BACKWATER REF A	19	28.0	1.71	5.65	29.00
158	800822	INTAKE REF B	20	31.0	1.71	5.40	31.00
159	800822	DISCHARGE REF C	18	26.0	1.71	5.80	29.75

TABLE 31
cont.

DAILY AVERAGE OF DISSOLVED OXYGEN AND WATER TEMPERATURE AND OTHER PARAMETERS BY STATION FOR 1980

DAYAVGDO=DAILY AVERAGE DISSOLVED OXYGEN
DAYAVGT=DAILY AVERAGE WATER TEMPERATURE

OBS	DATE	STATION	SECCHI INCHES	AAIRTEMP C	LAKELEVL FEET	DAYAVGDO PPM	DAYAVGT C
160	800825	CHANNEL REF D	.	30.0	1.57	4.05	26.75
161	800825	BACKWATER REF A	.	32.0	1.57	2.90	27.00
162	800825	INTAKE REF B	.	31.0	1.57	4.05	27.50
163	800825	DISCHARGE REF C	.	30.5	1.57	3.55	29.00
164	800830	CHANNEL REF D	20	28.0	1.30	5.00	25.75
165	800830	BACKWATER REF A	21	33.0	1.30	.	30.00
166	800830	INTAKE REF B	21	28.0	1.30	3.15	28.50
167	800830	DISCHARGE REF C	17	29.0	1.30	4.50	32.50
168	800902	CHANNEL REF D	.	.	1.26	.	.
169	800902	BACKWATER REF A	.	.	.	.	.
170	800902	INTAKE REF B	.	.	1.26	.	.
171	800902	DISCHARGE REF C	.	.	1.26	.	.
172	800905	CHANNEL REF D	24	36.0	1.16	4.35	31.00
173	800905	BACKWATER REF A	23	34.0	1.16	.	.
174	800905	INTAKE REF B	24	35.0	1.16	.	31.00
175	800905	DISCHARGE REF C	21	36.0	1.16	3.40	32.00
176	800921	CHANNEL REF D	18	27.0	1.16	4.80	26.50
177	800921	BACKWATER REF A	22	29.0	1.16	2.05	27.00
178	800921	INTAKE REF B	18	27.0	1.16	3.05	26.50
179	800921	DISCHARGE REF C	19	30.0	1.16	.	27.00
180	801122	CHANNEL REF D	21	11.0	0.86	8.00	12.00
181	801122	BACKWATER REF A	26	10.0	0.86	4.45	9.50
182	801122	INTAKE REF B	24	10.0	0.86	7.50	11.00
183	801122	DISCHARGE REF C	20	11.0	0.86	8.60	13.50
184	801123	CHANNEL REF D	26	10.5	0.84	8.00	12.00
185	801123	BACKWATER REF A	24	11.0	0.84	5.05	10.00
186	801123	INTAKE REF B	28	10.0	0.84	7.00	11.00
187	801123	DISCHARGE REF C	23	10.5	0.84	5.65	15.50

TABLE 32

MONTHLY AVERAGE DISSOLVED OXYGEN, WATER TEMPERATURE, SECCHI, AMBIENT AIR TEMPERATURE, AND LAKE LAVEL BY STATION FOR 1980 11

DOMEAN=MONTHLY DISSOLVED OXYGEN TEMPMEAN=MONTHLY WATER TEMPERATURE
SECMMEAN=MONTHLY SELCHI IN INCHES AAIRMEAN=MONTHLY AMBIENT AIR TEMPERATURE
LAKEMEAN=MONTHLY LAKE LEVEL IN FEET ABOVE 550.00 FEET ABOVE SEA LEVEL

OBS	MONTH	STATION	DOMEAN PPM	TEMPMEAN C	SECMMEAN INCHES	AAIRMEAN C	LAKEMEAN FEET
1	03 MARCH	CHANNEL REF D	9.2400	11.0500	20.0000	12.9000	1.40600
2	03 MARCH	BACKWATER REF A	10.8600	10.9000	20.4000	12.8000	1.48600
3	03 MARCH	INTAKE REF B	10.4100	11.0500	28.2000	14.8000	1.48600
4	03 MARCH	DISCHARGE REF C	9.3625	17.1250	22.5000	15.8750	1.40600
5	04 APRIL	CHANNEL REF D	7.6500	15.3333	12.6667	17.6667	1.35000
6	04 APRIL	BACKWATER REF A	8.6500	14.5000	11.3333	16.3333	1.35000
7	04 APRIL	INTAKE REF B	7.4167	14.8333	19.6667	16.5000	1.35000
8	04 APRIL	DISCHARGE REF C	8.7333	17.5000	15.3333	17.3333	1.35000
9	05 MAY	CHANNEL REF D	7.9100	20.9500	9.4000	23.6000	1.76200
10	05 MAY	BACKWATER REF A	8.0700	20.3500	8.2000	22.9000	1.76200
11	05 MAY	INTAKE REF B	9.2000	20.6500	20.2000	23.3000	1.76200
12	05 MAY	DISCHARGE REF C	9.6200	21.6500	12.4000	24.5000	1.76200
13	06 JUNE	CHANNEL REF D	7.5818	27.6083	11.5636	30.3333	1.45692
14	06 JUNE	BACKWATER REF A	6.6417	27.2500	10.1818	29.9583	1.45692
15	06 JUNE	INTAKE REF B	7.6455	27.7708	17.8182	30.5909	1.45692
16	06 JUNE	DISCHARGE REF C	7.4000	30.6042	13.0909	30.3333	1.45692
17	07 JULY	CHANNEL REF D	6.1300	30.5000	10.0000	32.6667	1.82333
18	07 JULY	BACKWATER REF A	7.2100	32.4000	11.0000	32.8333	1.82333
19	07 JULY	INTAKE REF B	6.7500	31.7000	16.6667	32.4167	1.82333
20	07 JULY	DISCHARGE REF C	5.5600	32.3000	13.0000	32.1667	1.82333
21	08 AUGUST	CHANNEL REF D	5.3833	29.5222	19.8000	30.5556	1.53778
22	08 AUGUST	BACKWATER REF A	5.1584	29.8000	22.0000	32.3000	1.55500
23	08 AUGUST	INTAKE REF B	5.0550	29.6000	24.3333	31.4000	1.55500
24	08 AUGUST	DISCHARGE REF C	5.6667	32.1389	19.6667	30.6500	1.55500
25	09 SEPTEMBER	CHANNEL REF D	4.5750	28.7500	21.0000	31.5000	1.19333
26	09 SEPTEMBER	BACKWATER REF A	2.6500	27.0000	22.5000	31.5000	1.16000
27	09 SEPTEMBER	INTAKE REF B	3.6500	28.7500	21.0000	31.0000	1.19333
28	09 SEPTEMBER	DISCHARGE REF C	3.4000	29.5000	20.0000	33.0000	1.19333
29	11 NOVEMBER	CHANNEL REF D	6.3000	12.0000	23.5000	10.7500	0.85000
30	11 NOVEMBER	BACKWATER REF A	5.3000	9.7500	27.5000	10.5000	0.85000
31	11 NOVEMBER	INTAKE REF B	7.5500	11.0000	26.0000	10.0000	0.85000
32	11 NOVEMBER	DISCHARGE REF C	6.1250	15.5000	21.5000	10.7500	0.85000

Table 33

Average Growth in inches of Blue Catfish with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X
A Fastest	6.1	8.6	10.4	13.5	17.1	16.0	18.7	19.4		
A Average	4.5	7.2	9.2	11.0	13.4	15.2	18.4	19.4		
A Slowest	3.1	5.8	7.3	8.9	11.4	14.3	17.7	19.4		
B Fastest	5.9	9.0	11.0	13.8	15.1	18.9	19.1			
B Average	4.5	7.4	9.5	11.6	13.0	15.4	17.6			
B Slowest	3.3	6.1	7.5	10.0	11.3	12.8	16.1			
C Fastest	6.7	9.9	12.8	14.1	16.3					
C Average	5.0	8.1	10.1	11.9	14.2					
C Slowest	3.5	6.8	8.9	10.7	12.2					
D Fastest	5.8	9.4	11.9	14.5	17.6	20.1				
D Average	4.4	7.4	9.6	11.7	13.9	15.3				
D Slowest	3.5	6.2	8.0	9.5	10.6	12.6				
Entire Lake Fastest	6.7	9.9	12.8	14.5	17.6	20.1	19.1	19.4		
Entire Lake Average	4.5	7.4	9.5	11.5	13.6	15.3	18.1	19.4		
Entire Lake Slowest	3.1	5.8	7.3	8.9	10.6	12.6	16.1	19.4		

2500 6-76 / 111218 (G)

Figure 7

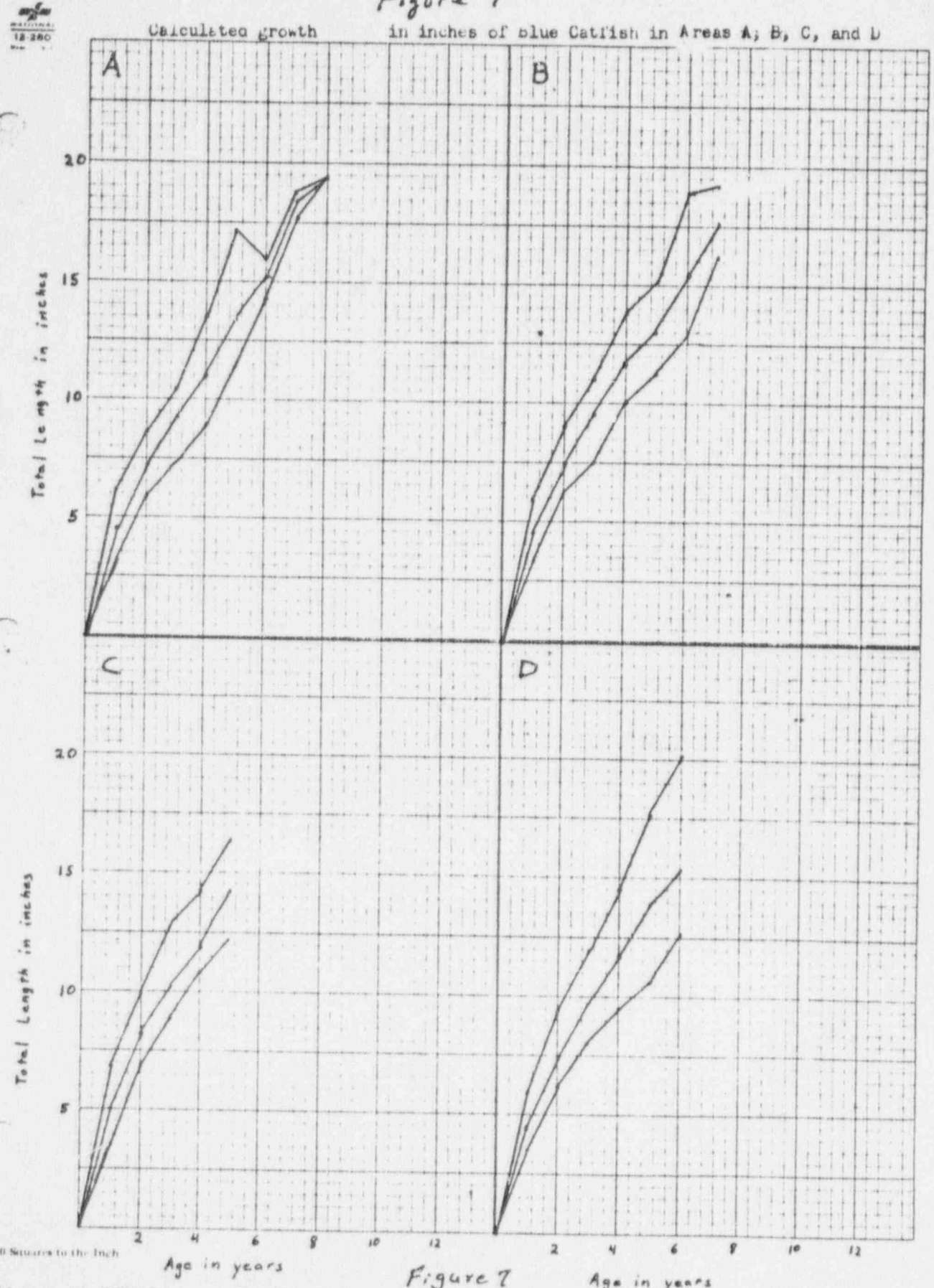


Figure 7

Table 34

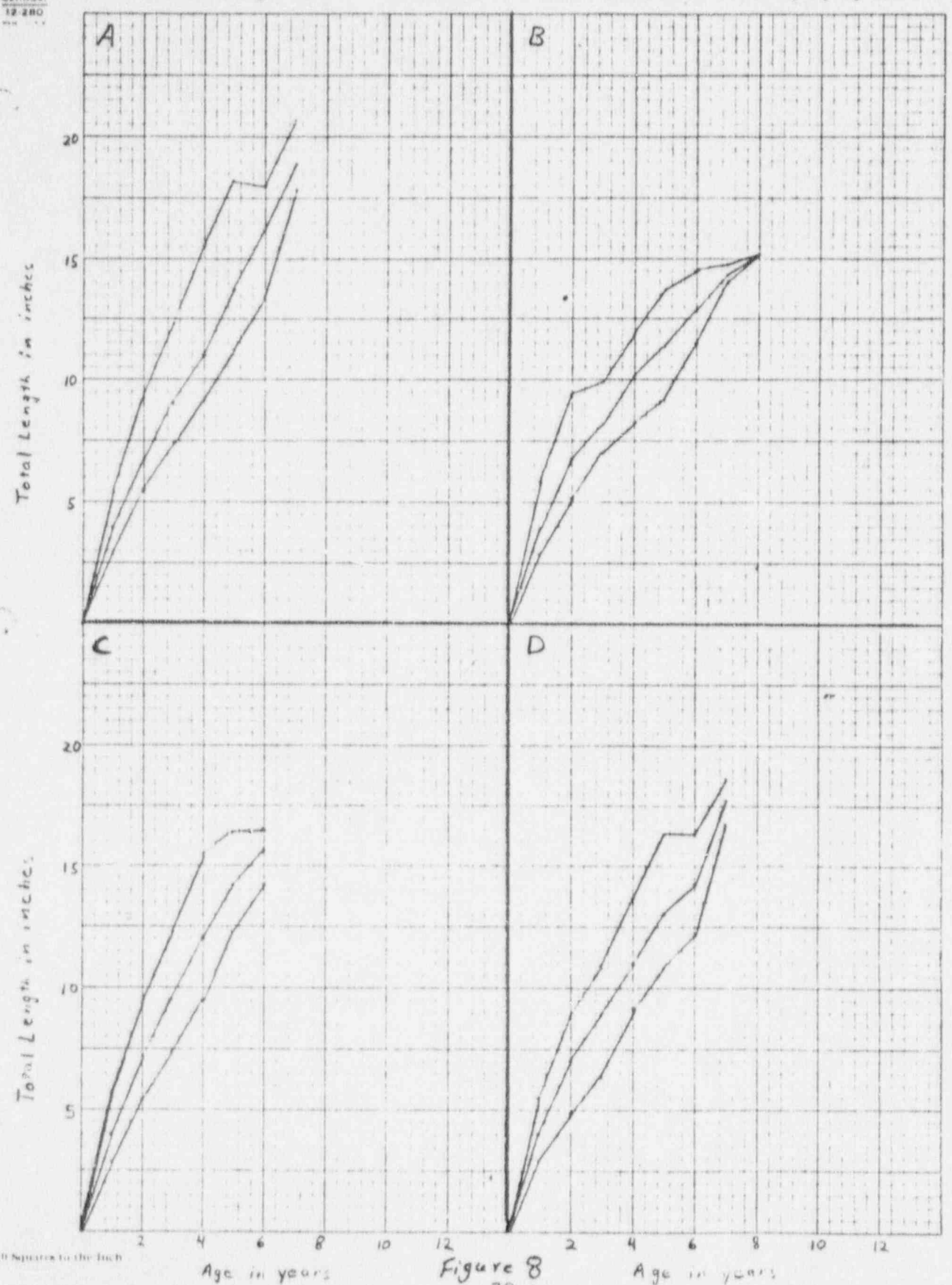
Average Growth in inches of Channel Catfish with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X
A Fastest	5.4	9.1	12.3	15.6	18.2	18.0	20.6			
A Average	4.0	6.7	9.0	11.0	13.7	16.2	18.9			
A Slowest	2.9	5.5	7.4	9.1	11.2	13.4	17.8			
B Fastest	5.8	9.4	9.8	11.8	13.7	14.5	14.7	15.2		
B Average	3.9	6.7	8.1	10.1	11.4	12.9	14.4	15.2		
B Slowest	2.8	5.1	7.0	8.2	9.1	11.5	14.0	15.2		
C Fastest	5.7	9.4	12.3	15.4	16.4	16.5				
C Average	4.0	7.2	9.5	12.0	14.2	15.6				
C Slowest	2.8	5.4	7.4	9.5	12.3	14.2				
D Fastest	5.5	8.8	10.8	13.6	16.3	16.3	18.6			
D Average	4.0	7.0	8.9	11.0	13.0	14.2	17.7			
D Slowest	2.9	4.9	6.4	9.1	10.8	12.1	16.7			
Entire Lake Fastest	5.8	9.4	12.3	15.6	18.2	18.0	20.6	15.2		
Entire Lake Average	4.0	6.9	9.0	11.3	13.4	14.8	17.3	15.2		
Entire Lake Slowest	2.8	4.9	6.4	8.2	9.1	11.5	14.0	15.2		

Table 34

Figure 8

Calculated growth in inches of Channel Catfish in Areas A, B, C, and D



10 Squares to the Inch

Figure 8

Table 35

Average Growth in inches of Flathead Catfish with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X
A Fastest	8.2	12.5	18.1	19.7	18.1					
A Average	5.4	10.5	15.6	16.9	18.1					
A Slowest	3.5	9.1	10.9	14.0	18.1					
B Fastest	8.2	14.8	18.8	20.1						
B Average	6.2	10.8	15.2	17.2						
B Slowest	4.2	8.4	11.0	14.9						
C Fastest	7.0	15.3								
C Average	6.7	14.4								
C Slowest	6.7	13.4								
D Fastest	9.4	15.4	21.2	18.4						
D Average	6.7	11.0	17.1	18.2						
D Slowest	5.7	8.8	14.1	17.9						
Entire Lake Fastest	9.4	15.4	21.2	20.1	18.1					
Entire Lake Average	6.0	11.0	15.7	17.3	18.1					
Entire Lake Slowest	3.5	8.4	10.9	14.0	18.1					

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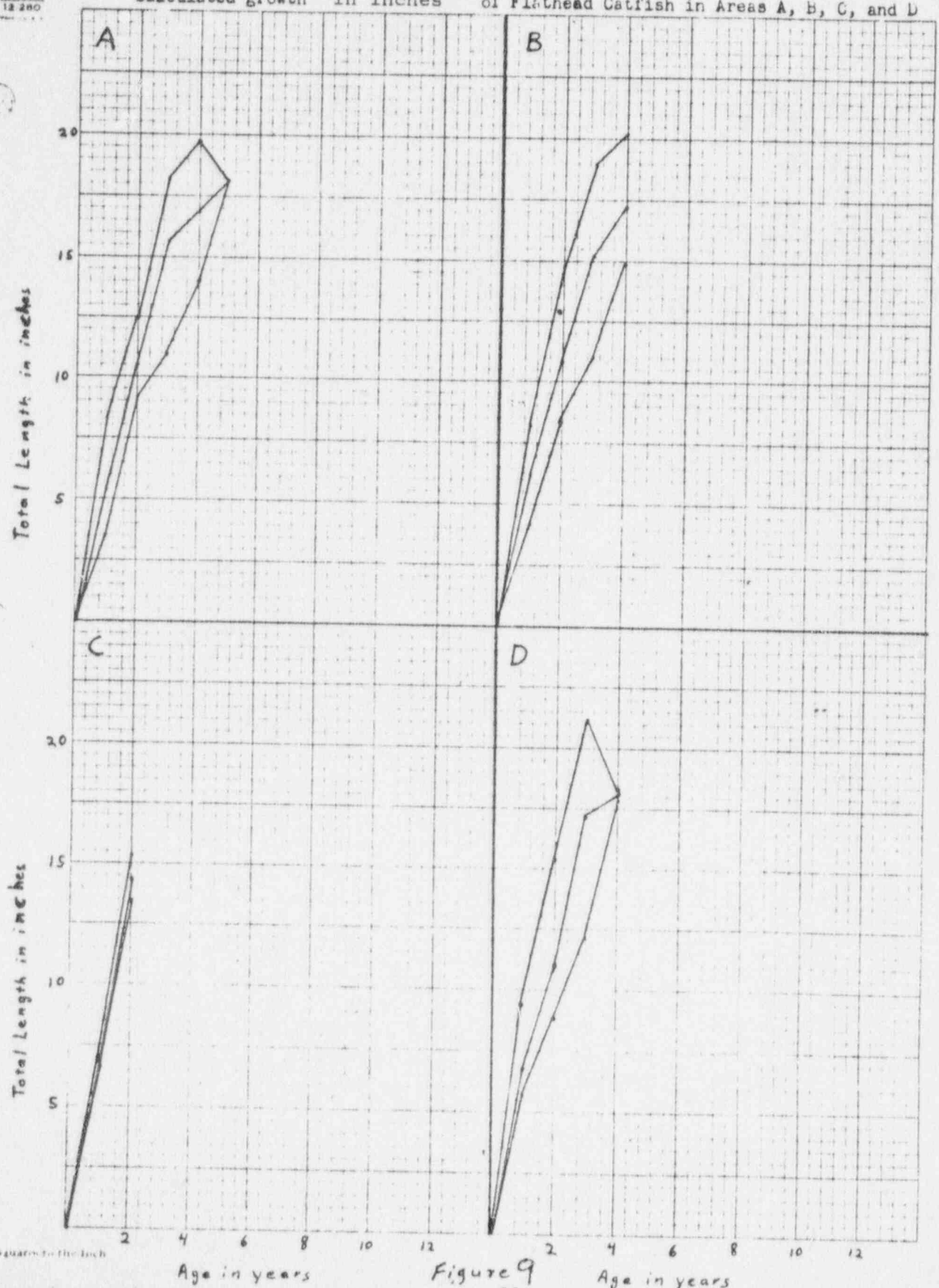
Figure 9

Calculated growth in inches of Flathead Catfish in Areas A, B, C, and D



10 Squares to the Inch

Figure 9

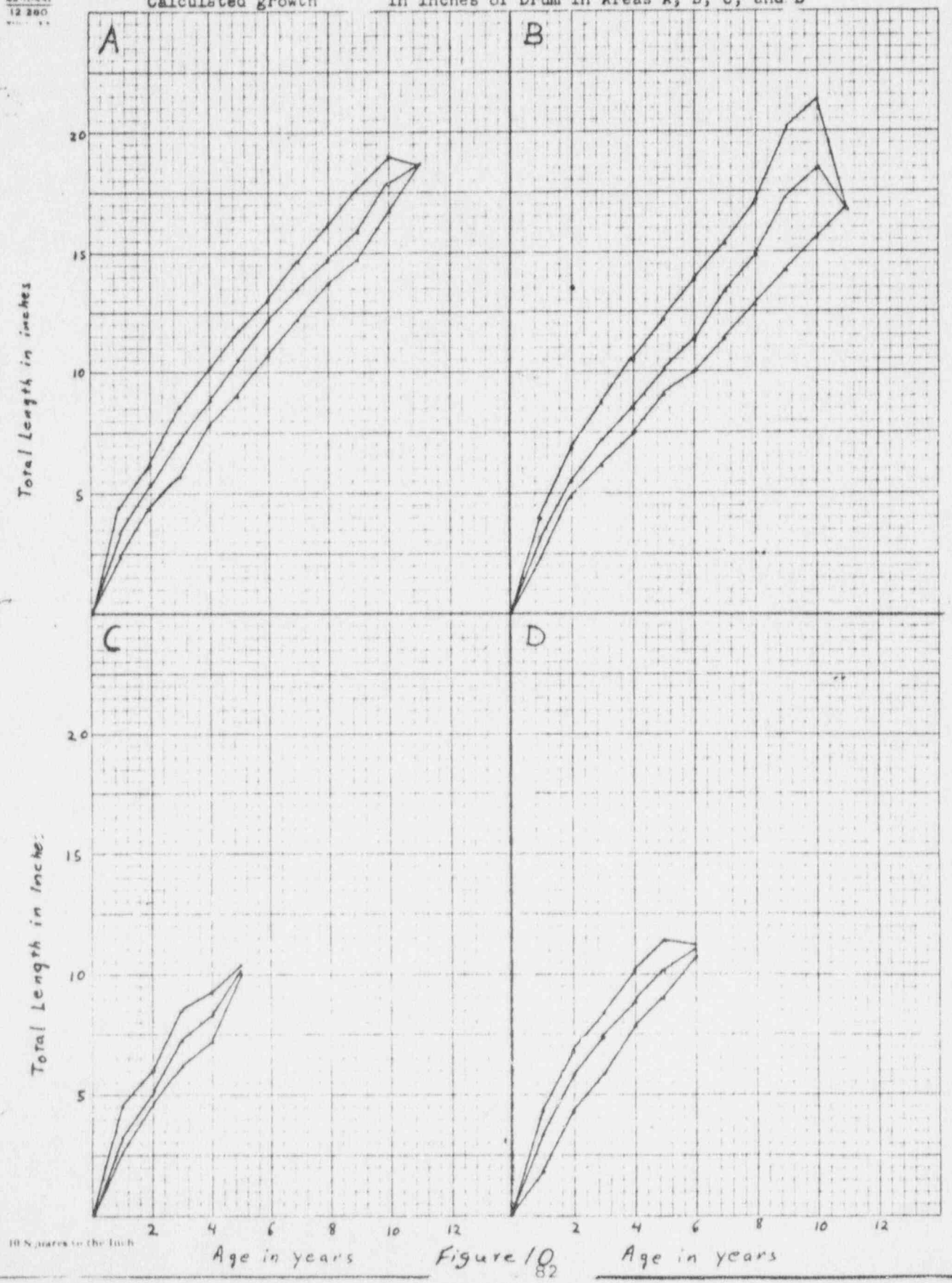
Table 36

Average Growth in inches of Drum with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X	X
A Fastest	4.4	6.2	8.6	10.1	11.7	13.1	14.6	16.2	17.6	19.0	18
A Average	3.3	5.4	7.1	8.8	10.5	12.1	13.5	14.7	15.8	17.9	18
A Slowest	2.4	4.4	5.7	7.8	9.0	10.7	12.2	13.7	14.7	16.7	18
B Fastest	4.0	6.8	8.7	10.5	12.2	13.8	15.4	17.1	20.1	21.3	16
B Average	3.2	5.5	7.2	8.5	10.1	11.3	13.4	14.9	17.2	18.5	16
B Slowest	2.4	4.4	6.1	7.5	9.0	10.0	11.4	12.7	14.2	15.6	16
C Fastest	4.5	6.0	8.5	9.2	10.4						
C Average	3.2	5.1	7.2	8.4	10.2						
C Slowest	2.6	4.6	6.2	7.1	10.0						
D Fastest	4.3	6.8	8.4	10.1	11.4	11.3					
D Average	3.4	5.8	7.4	8.9	10.1	11.0					
D Slowest	1.8	4.3	5.9	7.8	9.0	10.7					
Entire Lake Fastest	4.5	6.8	8.7	10.5	12.2	13.8	15.4	17.1	20.1	21.3	18
Entire Lake Average	3.3	5.5	7.2	8.7	10.3	11.7	13.4	14.8	16.4	18.2	17
Entire Lake Slowest	1.8	4.3	5.7	7.1	9.0	10.0	11.4	12.7	14.2	15.6	16

2500 6-76 1 11218 IGI

Figure 10



10 Squares to the Inch

Figure 10

Table 37

Average Growth in inches of Largemouth Bass with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X
A Fastest	6.6	9.9	12.6							
A Average	4.8	8.7	11.9							
A Slowest	4.1	7.9	11.3							
B Fastest										
B Average										
B Slowest										
C Fastest	6.8	11.0	12.3	12.9	14.9					
C Average	5.4	9.3	11.2	12.9	14.9					
C Slowest	3.7	7.0	10.1	12.9	14.9					
D Fastest										
D Average										
D Slowest										
Entire Lake Fastest	6.8	11.0	12.6	12.9	14.9					
Entire Lake Average	5.2	9.2	11.6	12.9	14.9					
Entire Lake Slowest	3.7	7.0	10.1	12.9	14.9					

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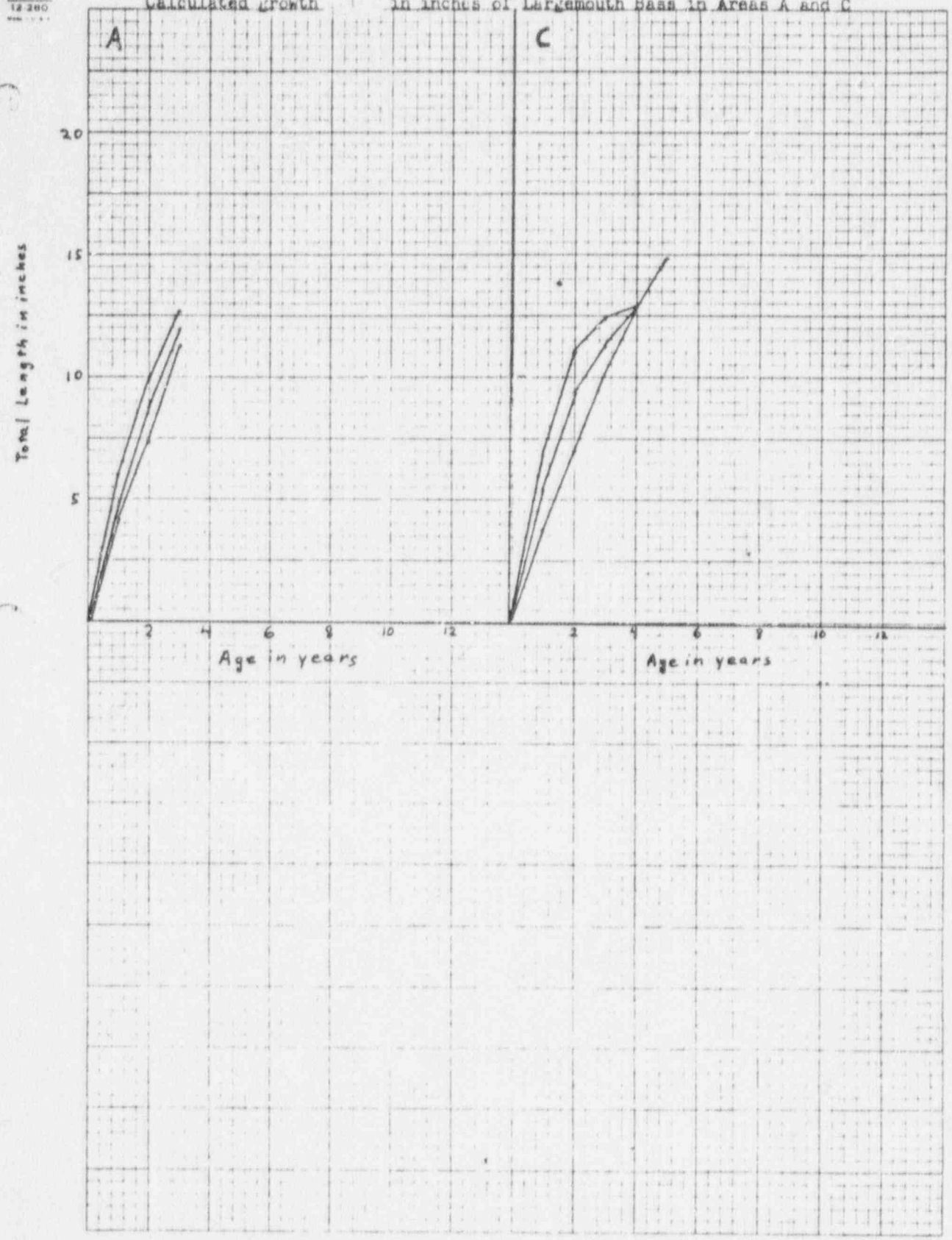
Table 37

Figure 11



10 Squares to the Inch

Figure 11

Table 38

Average Growth in inches of White Bass with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X
A Fastest	5.4	9.2	11.4	14.6	16.5	12.9				
A Average	3.8	6.6	9.1	11.4	13.8	12.9				
A Slowest	2.8	5.0	7.2	9.0	11.0	12.9				
B Fastest	4.5	7.4	10.2	12.3	12.1	14.0	14.4	15.8		
B Average	3.5	6.3	8.9	11.0	11.7	13.5	14.1	15.3		
B Slowest	2.9	5.5	7.5	9.8	10.8	12.7	13.7	14.8		
C Fastest	4.6	7.5	9.9	9.9	11.9					
C Average	4.0	6.7	9.1	9.9	11.9					
C Slowest	3.4	6.2	7.9	9.9	11.9					
D Fastest	3.9	7.5	10.7	13.5	15.1	16.3	15.9	16.4		
D Average	3.8	7.0	9.3	12.2	14.0	15.5	15.9	16.4		
D Slowest	3.5	6.5	8.3	10.9	12.9	14.6	15.9	16.4		
Entire Lake Fastest	5.4	9.2	11.4	14.6	16.5	16.3	15.9	16.4		
Entire Lake Average	3.8	6.5	9.0	11.2	12.7	14.0	14.7	15.7		
Entire Lake Slowest	2.8	5.0	7.2	9.0	10.8	12.7	13.7	14.8		

2500 8-76 / 1 11218 IGI

Figure 12

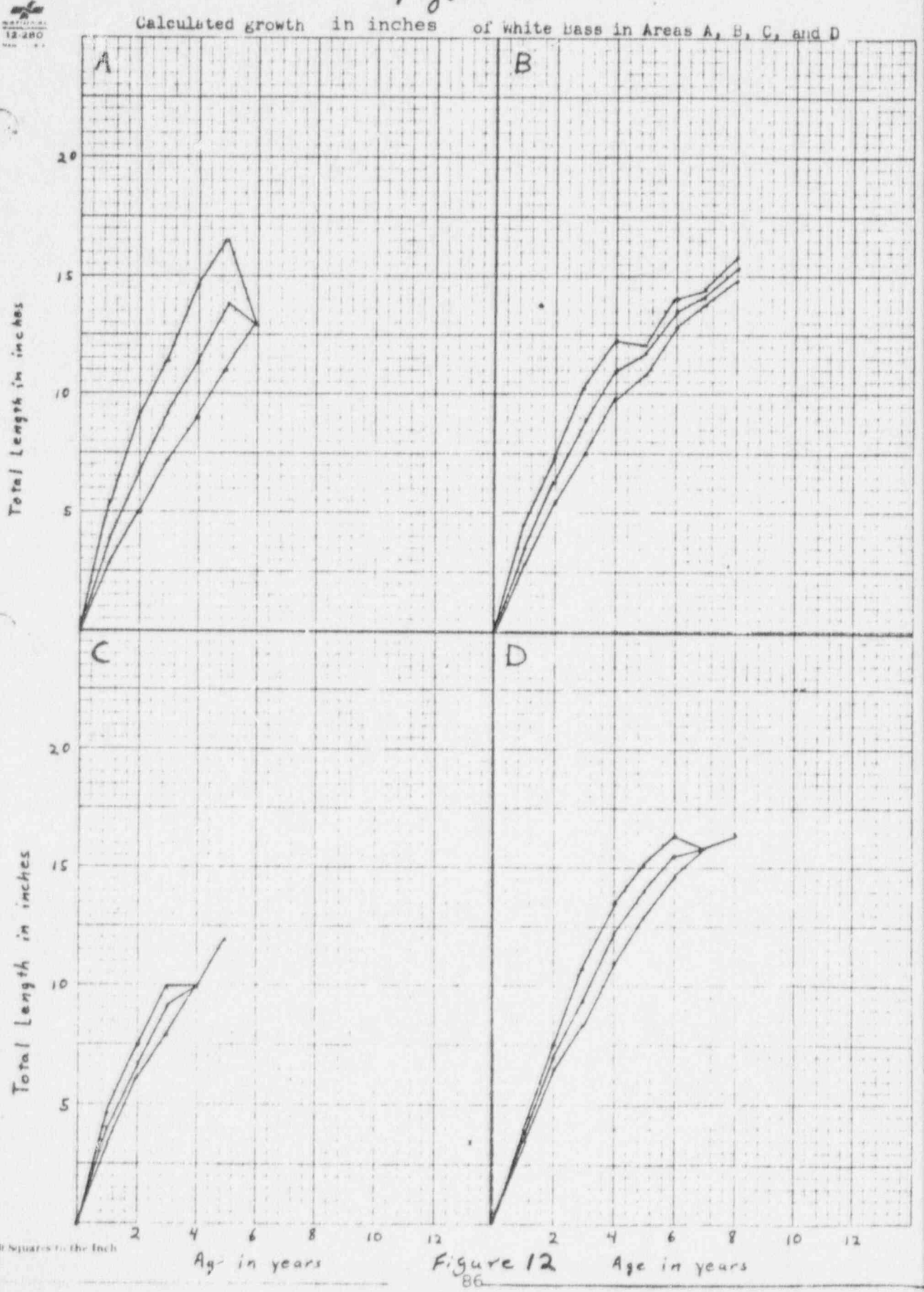


Figure 12

Table 39

Average Growth in inches of White Crappie with Slowest and Fastest Rates Recorded for Areas A,B,C, and D and for Entire Lake

Area Growth	I	II	III	IV	V	VI	VII	VIII	IX	X
A Fastest	3.8	6.8	8.5	9.6	12.0					
A Average	3.0	5.9	7.7	9.6	12.0					
A Slowest	1.3	3.4	6.5	9.6	12.0					
B Fastest	4.5	7.0	9.2	11.6	14.5	13.4	13.8	15.1		
B Average	2.7	5.7	7.9	9.9	11.7	12.8	13.8	15.1		
B Slowest	1.8	4.5	6.4	7.8	9.7	12.1	13.8	15.1		
C Fastest	4.1	6.4	8.7	8.5						
C Average	2.9	5.6	7.3	8.5						
C Slowest	2.0	4.5	6.3	8.5						
D Fastest	4.0	6.9	8.9	10.3	11.4	13.3				
D Average	2.9	5.9	8.2	9.6	11.4	13.3				
D Slowest	2.1	4.8	7.2	8.9	11.4	13.3				
Entire Lake Fastest	4.5	7.0	9.2	11.6	14.5	13.4	13.8	15.1		
Entire Lake Average	2.8	5.8	7.8	9.7	11.7	12.9	13.8	15.1		
Entire Lake Slowest	1.3	3.4	6.3	7.8	9.7	12.1	13.8	15.1		

Figure 13

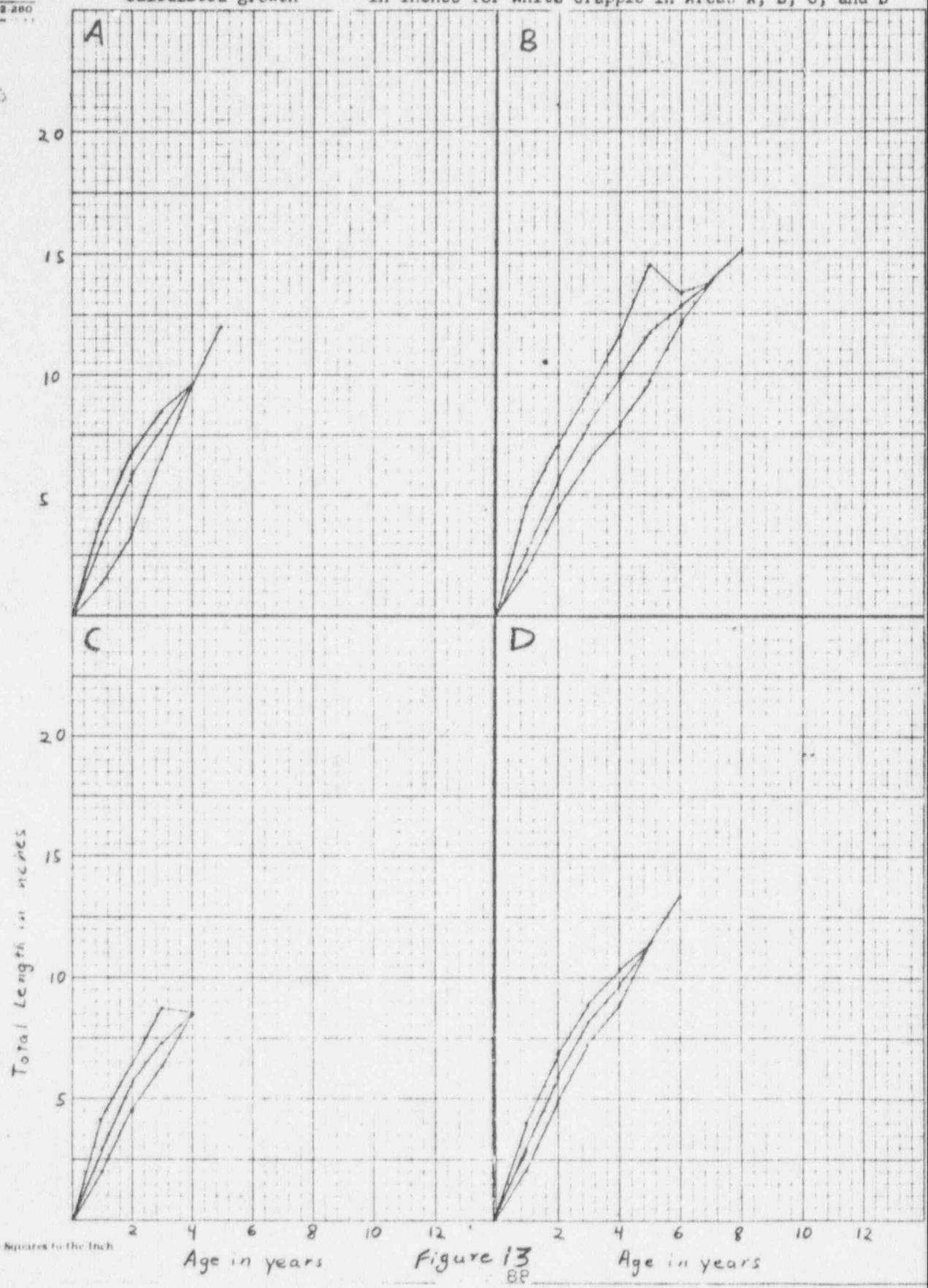


Figure 13

BP

DARDANELLE RESERVOIR-ILLINOIS BAYOU EMBAYMENT SURVEY

PROGRESS REPORT NO. 24

by

John D. Rickett

13 February 1981

ARKANSAS POWER & LIGHT COMPANY

REVIEW AND SUMMARY

A review of Progress Report No. 23 shows that it complies with Section 4.0 of the Environmental Technical Specifications for Arkansas Nuclear One Unit 1. The data collected for all parameters in this period, January through December 1980, closely resemble those data collected during 1979 and do not express any significant difference, other than thermal, from pre-operational data collected from 1968 to 1974.

It is concluded from these results, that no significant impact to Dardanelle Reservoir water quality, planktonic communities or benthic populations is attributable to the operation of Arkansas Nuclear One.

DARDANELLE RESERVOIR-ILLINOIS BAYOU EMBAYMENT SURVEY

PROGRESS REPORT NO. 24

Introduction

According to specifications of contract between the University of Arkansas at Little Rock and Arkansas Power and Light Company, this report is respectfully submitted.

Progress Report No. 21 filed with AP&L in February 1979 contains standard field and laboratory procedures for this project, and subsequent reports contain any changes in procedure and data for the previous year. This report contains data and a superficial analysis of trends and oddities for 1980, and the reader is referred to Report No. 21 for specific procedures.

Plant Operation

Unit I of ANO was down for refueling and technical modifications at trip time in January, May and September. In April and July it was in the process of being shut down or operating below capacity. To my knowledge the modifications involved safety features and did not directly affect the quality of the discharge water.

Procedural Changes

There were no modifications in the project operations during 1980. Table 1 is a summary of our standard collection procedures,

and Figure 1 is a map of the lake with sampling stations designated.

Data and Discussion

Table 2 contains general meteorological data recorded while visiting the various collecting sites, by month. The duration of hot weather during the summer of 1980 broke numerous records and was acclaimed by some to be the hottest summer on record for central Arkansas (as well as other locales).

Table 3 contains a brief survey of thermal loading and dispersal for several stations closest to the plant site. Although our data do not show the discharge to have been pushing the maximum, it apparently occurred several days between the June and July trips (pers. comm., Mr. Bob West).

Table 4 lists monthly ranges of six of the most reliable parameters (besides temperature and dissolved oxygen). We noticed no unusual values or trends other than variation due to seasonal rainfall. When examining the total hardness, chloride and sulfate, it seems there was greater probability that Sta. 21 would show the highest reading. pH, turbidity and total iron varied considerably among the sampling stations.

Tables 8 through 19 (Appendix I) contain all physico-chemical data for January through December, respectively. Gaps in the data are due either to heavy weather which prevented sampling or a leaky sample bag which wasn't discovered until laboratory tests were begun. There were no obvious oddities among these tables. Phosphate was measured separately and showed highly varied results

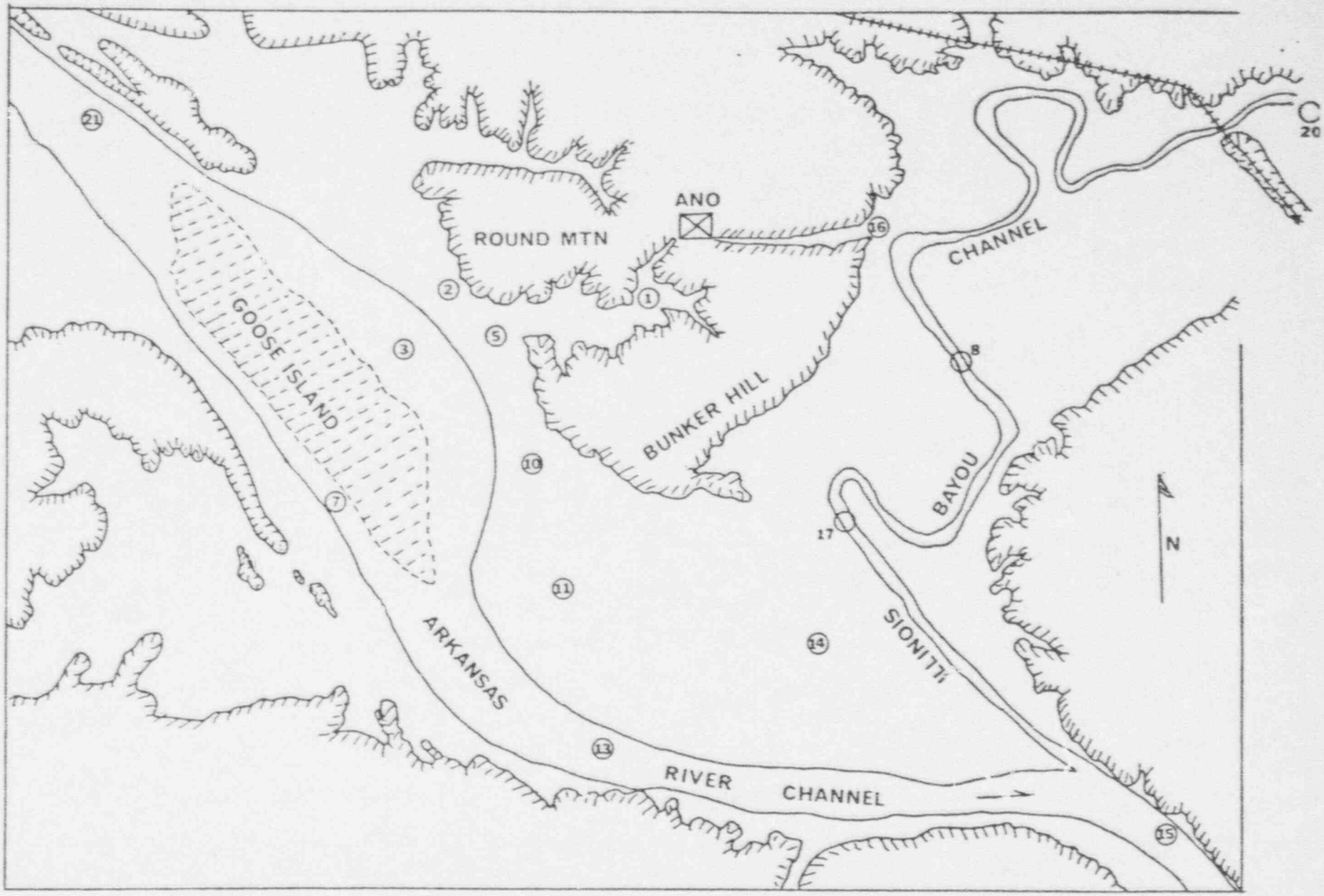


Figure 1. Locations of Sampling Stations on Lake Dardanelle for Arkansas Nuclear One (ANO) Project, January - December, 1980.

MONTH	Temp.	D.O.	pH	Iron	Filt. Iron	Manganese	Turbidity	COD	Tot. Hardness	Boron	Susp. Solids	Sulfate	Chloride	Nitrite	Plankton	Benthos	Plankton for Rad. testing	Sediment for Rad. testing	Total Diss. Solids	Kjeldahl Nitrogen	Nitrate	Copper	Phosphate	Conductivity
January	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*
February	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*	*	*
March	*	*	*	*	*	*	*	*	*	*	*	*	*	*					*	*	*	*	*	*
April	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*
May	*	*	*	*	*	*	*	*	*	*	*	*	*	*					*	*	*	*	*	*
June	*	*	*	*	*	*	*	*	*	*	*	*	*	*					*	*	*	*	*	*
July	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*
August	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*	*	*
September	*	*	*	*	*	*	*	*	*	*	*	*	*	*					*	*	*	*	*	*
October	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			*	*	*	*	*	*
November	*	*	*	*	*	*	*	*	*	*	*	*	*	*					*	*	*	*	*	*
December	*	*	*	*	*	*	*	*	*	*	*	*	*	*					*	*	*	*	*	*
at depths	all	all	tmb	tmb	t b	tmb	tmb	t b	t b	tmb	t b	t b	t b	t b	---	---	---	---	t	t	t b	t b	t b	t b
at stations	all	all	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(3)	(3)	(3)	(3)	(2)	(2)	(4)	(4)	(3)	(3)	(3)	(3)	(3)	(3)

Table 1. Standard Operations Procedure for Field Collections, Lake Dardanelle,

*Station code: (1) all except 20; (2) 1,2,3,5,10,11,14,15,16,21; (3) 1,5,21; (4) 5,10,15,16,21
(beginning January 1979, station code (3) will be 1,5,16,21 and (2) will drop sta. 2)

Depth code: t, top; m, middle; b, bottom

**Note: COD and Boron are tested at top and bottom from stations 1,5,16 and 21 and from top of others.

Table 2. Meteorological data for vicinity of ANO, Lake Dardanelle, Arkansas, 1980.

Month	Air Temp. (°F)	Solar BTU	Wind	Approximate Lake level	Cloud Cover
JAN	50-57	40-180	E,N 0-10	normal	30-100%
FEB	27-62	20-165	NE,NW 8-18	normal	40-100%
MAR	57-63	80-240	S,SE 3-14	normal	0-90 %
APR	66-75	90-315	S,N 0-3	normal	5-90 %
MAY	73-76	180-290	SW,N,NW 0-9	normal	30-70 %
JUN	82-91	130-300	SE,S,SW 0-12	-0.5 ft	0 %
JUL	85-106	80-300	NE,E,SE 3-8	-1.0 ft	0-45 %
AUG	80-97	20-375	SE,S,SW 0-12	-1.0 ft	30-100%
SEP	81-90	90-255	E,SE 0-10	-1.0 ft	0 %
OCT	54-77	30-300	E,SE 0-7	-1.0 ft	20-90 %
NOV	42-45	10-70	E,SE 3-7	-1.0 ft	100 %
DEC	53-65	60-205	E,SE 3-8	-1.0 ft	0 %

Table 3. Thermal loading and dispersal in the upper two feet (0.61m) in the vicinity of ANO, Lake Dardanelle, Arkansas, 1980.

Month	Plant Operation	Temperature change betw/ Sta. 16 & 1 (through plant)		Thermal dispersal values as a ratio of intake and downstreams temperatures (Degrees C). (See note below).					
				Sta. 1	Sta. 5	Sta. 10	Sta. 11	Sta. 3	Sta. 7
JAN	down	+0.9°C	+ 1.6°F	1.13	1.11	1.07	1.00	1.14	1.08
FEB	up	+11.2	+20.2	4.28	3.34	2.06	1.16	0.99	--
MAR	up	+11.1	+20.0	2.20	2.07	1.09	1.08	1.41	1.06
APR	going down	+ 0.8	+12.2	1.45	1.52	1.32	1.13	1.41	1.09
MAY	down	+ 1.5	+ 2.7	1.07	1.12	1.07	1.03	1.08	1.08
JUN	up	+ 7.9	+14.2	1.29	1.28	1.06	1.05	1.15	1.06
JUL	below cap	+ 3.0	+ 5.4	1.09	1.10	1.05	1.06	1.08	1.08
AUG	up	+ 7.9	+14.2	1.26	1.24	1.03	1.02	1.11	1.05
SEP	down	+ 0.5	+ 0.9	1.02	0.98	0.98	0.97	0.97	0.97
OCT	up	+ 6.2	+11.2	1.29	1.25	1.01	0.97	1.18	1.00
NOV	up	+ 6.6	+11.9	1.58	1.56	1.14	1.13	1.42	1.08
DEC	up	+ 7.9	+14.2	1.80	1.66	1.27	1.13	1.42	1.08

Note: Sta. 16 is the intake; Sta. 1 is the first discharge station. The approximate distances other stations are from Sta. 1 are given in 1000's feet: Sta. 5, 4(1.22km); Sta. 10, 6.3(1.92km); Sta. 11, 6.7 (2.04km); Sta. 3, 7(2.13km); Sta. 7, 13(3.96km).

Table 4. Ranges, by month, of six reliable physico-chemical parameters, Lake Dardanelle, Arkansas, 1980.

Month	pH	Total hardness (mg/l as $CaCO_3$)	Turbidity (FTU)	Chloride (mg/l)	Sulfate (mg/l)	Iron (mg/l)
JAN	6.7-7.7	58-102	27-38	37-53	27-46	.26-.29
FEB	6.7-7.5	100-144	0-18	68-137	73-161	.12-.25
MAR	8.9-9.3	116-172	12-29	114-262	61-89	.10-.23
APR	6.7-7.3	56-148	22-66	72-130	37-68	.20-.50
MAY	6.9-7.3	90-130	24-110	129-141	58-68	.19-.78
JUN	7.7-8.4	120-166	30-88	175-220	60-73	.22-.60
JUL	7.9-9.3	130-182	22-52	118-160	78-90	.18-.35
AUG	7.7-8.3	174-184	17-60	123-141	60-84	.04-.45
SEP	8.0-8.4	170-184	15-42	96-124	65-85	.04-.21
OCT	7.8-8.2	164-178	17-50	96-103	77-87	.04-.28
NOV	7.9-8.1	168-178	10-22	106-110	79-85	.05-.19
DEC	8.1-8.3	168-184	4-18	96-106	77-80	.05-.12

with no apparent trends. We learned that sometimes an improperly rinsed sample bottle from a previous test (copper or manganese) contained a little phosphate residue, but this accounted for less than half of some of the very high readings obtained during 1979 and the first half of 1980. Other than the contamination, phosphate readings ranged up to 2.5 mg/l.

Tables 20 through 23 (Appendix II) are phytoplankton data for January, April, July and October, respectively, whereas Tables 24 through 27 (Appendix III) contain zooplankton data for the same months. Dominant phytoplankton taxa were generally Tribonema early in the year and Oscillatoria later with Ankistrodesmus, Stephanodiscus, Astrionella, Anabaena, Scenedesmus, Chlamydomonas and Kirchneriella showing date- and station-specific dominance. The peaks of general abundance were in January and July. No unusual abundances or absences were noticed with regard to plant operation. The dominant zooplankton taxa were Brachionus, Keratella, unidentified rotifers or immature stages (eggs or nauplii). Again no unusual trends were noticed.

Table 5 gives wet and dry weights of the plankton samples, whereas Table 6 contains total plankton counts (average of field count and strip count determinations) and the phytoplankton/zooplankton ratio. The ratio was highest in July and lowest in October. When the phytoplankton community increased or decreased, obviously the zooplankton community would do likewise but lagged somewhat. Even though January showed the greatest abundance of plankton, the phy/zoo ratio was less (than in July) apparently because the lagging zooplankton had caught up, which was not the case in July and October.

Table 5. Weights of plankton samples from Lake Dardanelle, Arkansas, 1980.

Station	JANUARY Wet(g)	JANUARY Dry(g)	APRIL Wet(g)	APRIL Dry(g)
1	.00134	.00124	.00141	.00139
2	.00151	.00142	.00140	.00131
3	.00103	.00093	.00152	.00150
5	.00140	.00138	.00140	.00125
10	.00150	.00136	.00150	.00140
11	.00110	.00104	.00130	.00122
14	.00158	.00150	.00140	.00144
15	.00150	.00140	.00160	.00152
16	.00160	.00148	.00120	.00118
21	.00130	.00120	.00138	.00132
MEAN	.00139	.00130	.00138	.00132
	JULY		OCTOBER	
1	.00132	.00120	.00142	.00103
2	.00150	.00145	.00150	.00140
3	.00160	.00150	.00160	.00152
5	.00120	.00111	.00151	.00132
10	.00170	.00160	.00165	.00161
11	.00150	.00141	.00151	.00151
14	.00148	.00130	.00140	.00130
15	.00152	.00138	.00170	.00158
16	.00140	.00140	.00132	.00111
21	.00170	.00162	.00132	.00121
MEAN	.00149	.00140	.00149	.00136

Table 6. Numbers of plankton and phy/zoo ratios, Lake Dardanelle, Arkansas, 1980. (Zooplankton counts are adjusted to reflect that proportion of the average totals which the actual counts reflect of the strip count total).

	JANUARY			APRIL		
Sta.	Total	Zoopl.	phy/zoo	Total	Zoopl.	phy/zoo
1	4772	708	6.7	832	291	2.9
2	4550	701	6.5	1032	250	4.1
3	5484	869	6.3	1680	699	2.4
5	7270	1523	4.8	982	198	5.0
10	4484	947	4.7	1610	658	2.4
11	4358	648	6.7	1160	136	8.5
14	4440	1075	4.1	558	165	3.4
15	6406	977	6.6	990	372	2.7
16	4678	607	7.7	790	206	3.8
21	4945	585	8.4	1078	88	12.2
MEAN			6.25			4.74
	JULY			OCTOBER		
1	7465	803	9.3	648	379	1.7
2	5948	369	16.1	758	282	2.7
3	2870	97	29.6	307	215	1.4
5	4808	367	13.1	400	224	1.8
10	1927	553	3.5	404	266	1.5
11	2631	137	19.2	658	486	1.4
14	2934	360	8.2	736	590	1.2
15	2206	244	9.0	788	652	1.2
16	3819	105	36.4	539	261	2.1
21	1760	382	4.6	532	436	1.2
MEAN			14.90			1.62

Tables 28 through 31 (Appendix IV) contain data on benthic samples taken in January, April, July and October, respectively. Table 7 is a summary of the other tables and includes the five most abundant taxa, which for many samples, was the complete list of taxa. Again, Sta. 1 had virtually no benthos because of current-scouring. The population of Chaoborus peaked in October, of Chironomidae, Oligochaeta and Hexagenia in April and of Sphaeriidae in January. Without exception, Hexagenia was more abundant at the five closer stations (1,2,3,5,10) than at the distant stations (11,14,15,16,21), whereas Sphaeriidae and Oligochaeta showed the opposite. Sphaeriidae were absent in July and absent from all stations but one in October. Chaoborus and Chironomidae were less abundant at the closer stations with one exception each--July for Chaoborus and October for Chironomidae.

Summary

During this study period, plant operations at ANO did not significantly alter any physico-chemical parameter measured, seemed to cause a slight elevation of plankton numbers and a shift in the phy/zoo ratio (except in October), and appeared to be connected to an increase in the abundance of Hexagenia (except in October) and a general depression of the abundance of Chaoborus, Chironomidae, Oligochaeta and Sphaeriidae.

Table 7. Summary of benthic abundance, Lake Dardanelle, Arkansas, 1980. (Close stations are 1,2,3,5,10; distant stations are 11,14,15,16,21).

Month	Chaoborus	Chironomidae	Oligochaeta	Hexagenia	Sphaeriidae
JANUARY					
Mean close sta.	69	284	138	47	39
Mean distant sta.	95	353	297	43	52
Mean all sta.	82	318	217	45	46
APRIL					
Mean close sta.	22	293	168	146	4.3
Mean distant sta.	86	460	306	64	22
Mean all sta.	54	376	237	105	13
JULY					
Mean close sta.	146	82	86	8.6	0
Mean distant sta.	77	95	138	0	0
Mean all sta.	112	88	112	4.3	0
OCTOBER					
Mean close sta.	314	125	26	8.6	0
Mean distant sta.	370	125	60	17	4.3
Mean all sta.	342	125	43	13	2.15

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	IRON	MN	BOD	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	46.9	8.0	10.8	.	.	.	.	.	146		.	.	0.7	.	.	.	.
1	2	46.4	8.0	10.8	6.9	25	31	56	16	.	<.2	0.01	29	.	37	.007	0.28	0.10
1	5	46.0	7.8	10.3	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	45.0	7.8	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
1	10	45.0	7.8	10.3	6.9	27	20	60	17	.	<.2	0.00	27	.	37	.011	0.27	0.11
3	1	46.8	8.2	10.5	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	46.4	8.0	10.8	6.9	35	40	80	.	.	<.2	0.05	.	.	.	.	0.26	0.17
3	5	46.4	8.0	10.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	45.0	7.2	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	44.6	7.0	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	44.2	8.8	10.9	6.9	31	.	98	.	.		0.01	.	.	.	.	0.28	.
3	22	43.7	8.5	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	43.2	8.2	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	42.8	8.0	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	42.8	8.0	10.8	6.9	35	.	98	.	.		0.01	.	.	.	.	0.29	0.22
5	1	45.4	8.0	11.2	.	.	.	.	.	186		.	.	0.9	.	.	.	.
5	2	45.9	7.7	10.9	6.9	30	25	68	17	.	<.2	0.05	33	.	42	.013	0.26	0.12
5	5	45.5	7.5	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	45.3	7.4	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
5	10	45.0	7.2	10.8	6.9	30	30	70	5	.	<.2	0.05	38	.	45	.007	0.27	0.10
7	1	45.0	7.8	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	45.5	7.5	11.8	7.5	28	50	102	.	.	<.2	0.00	.	.	.	.	0.25	0.11
7	5	44.8	7.0	11.3	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	44.8	7.0	11.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	41.8	5.2	10.7	7.5	28	.	88	.	.		0.00	.	.	.	.	0.23	.
7	17	41.2	5.1	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	41.0	5.0	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	40.1	4.5	10.6	7.5	30	.	92	.	.		0.00	.	.	.	.	0.24	0.08
8	1	45.0	7.8	11.9	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	44.4	8.9	10.8	6.7	34	22	72	.	.	<.2	0.00	.	.	.	.	0.24	0.09
8	5	44.2	8.8	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	44.2	8.8	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	44.2	8.8	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	43.3	8.8	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	43.3	8.3	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	43.2	8.2	10.2	6.7	38	.	82	.	.		0.00	.	.	.	.	0.27	0.11
10	1	45.4	8.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	45.0	7.2	11.2	6.9	32	21	92	.	.	<.2	0.00	.	.	.	.	0.26	0.10
10	5	44.2	8.8	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	43.2	8.2	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	42.8	8.8	10.9	6.9	30	.	98	.	.		0.00	.	.	.	.	0.25	0.12

Note: Water chemistry data are reported in mg/l and turbidity in JTU.

16JAN80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (Ft.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	45.0	7.2	11.3	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	44.6	7.0	11.2	6.9	30	48	96	.	.	<.2	0.00	.	.	.	.	0.24	0.12
11	5	43.2	6.2	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	42.8	6.0	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	42.8	6.0	10.8	6.9	29	.	96	.	.		0.00	.	.	.	.	0.24	0.09
13	1	44.6	7.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	43.7	6.5	10.5	6.9	30	23	98	.	.	<.2	0.00	.	.	.	.	0.24	0.09
13	5	42.8	6.0	10.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	42.8	6.0	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	42.8	6.0	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	42.8	6.0	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	42.8	6.0	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	42.8	6.0	10.7	6.9	30	.	94	.	.		0.00	.	.	.	.	0.27	.
13	32	42.8	6.0	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	42.8	6.0	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	41.9	5.5	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	41.9	5.5	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	42.4	5.8	10.7	6.9	32	.	98	.	.		0.01	.	.	.	.	0.26	0.09
14	1	44.6	7.1	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	44.4	6.9	11.1	6.7	34	38	94	.	.	<.2	0.00	.	.	.	.	0.24	0.11
14	5	44.1	6.7	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	43.9	6.6	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	43.3	6.4	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	15	43.2	6.2	10.3	6.9	30	.	88	.	.		0.01	.	.	.	.	0.26	0.10
15	1	44.8	7.1	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	43.2	6.2	10.8	6.7	28	5	94	.	.	<.2	0.01	.	.	.	.	0.28	0.10
15	5	42.8	6.0	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	42.8	6.0	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	42.8	6.0	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	42.8	6.0	10.8	6.7	28	.	94	.	.		0.00	.	.	.	.	0.27	.
15	22	42.4	5.8	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	42.4	5.8	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	42.4	5.8	10.8	6.9	30	.	98	.	.		0.00	.	.	.	.	0.24	0.11
16	1	45.0	7.2	10.8	.	.	.	.	.	184		.	.	0.9	.	.	.	.
16	2	44.6	7.0	10.8	6.7	28	38	62	15	.	<.2	0.00	28	.	34	.010	0.24	0.14
16	5	44.2	6.8	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	44.2	6.8	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
16	11	44.2	6.8	10.4	6.7	30	30	62	15	.	<.2	0.00	29	.	41	.021	0.23	0.12

18JAN80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	IRON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	44.6	7.0	10.6	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	44.2	6.8	10.1	6.7	32	40	82	.	.	<.2	0.00	.	.	.	.	0.23	0.08
17	3	44.2	6.8	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	44.2	6.8	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	43.7	6.5	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	43.7	6.5	10.0	6.7	28	.	80	.	.		0.00	.	.	.	.	0.25	.
17	22	43.2	6.2	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	43.0	6.1	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	42.8	6.0	10.1	6.7	35	.	86	.	.		0.00	.	.	.	.	0.25	0.11
20	1	43.3	7.5	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	43.3	7.5	11.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	3	43.3	7.4	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	44.8	7.1	10.3	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	44.8	7.1	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	44.8	7.1	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	44.8	7.0	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	40.4	6.9	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	47.3	8.8	13.0	.	.	.	.	.	221		.	.	1.1	.	.	.	.
21	2	45.4	8.0	12.3	7.7	32	33	102	18	.	<.2	0.00	43	.	33	.017	0.20	0.10
21	3	45.4	8.0	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	45.4	8.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	45.1	7.3	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	44.8	7.1	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	44.6	7.0	11.3	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	44.2	6.8	11.3	7.5	32	52	92	19	.	<.2	0.00	46	.	52	.017	0.25	0.10

TABLE 9

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	R.IRON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	57.2	14.0	11.5	.	.	.	.	.	325		.	.	0.4	.	.	.	.
1	2	54.1	15.1	11.1	6.9	8	53	108	6	.	0.1	0.00	88	.	70	.040	0.12	0.08
1	5	56.1	14.5	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	55.0	12.8	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	54.3	12.4	10.9	6.9	5	58	100	8	.	0.1	0.10	73	.	58	.017	0.17	0.07
3	1	57.7	5.5	12.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	56.1	5.4	11.9	7.5	0	25	132	.	.	<.1	0.00	.	.	.	.	0.16	0.06
3	5	56.1	5.4	11.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	57.9	5.5	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	57.8	5.2	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	57.8	5.1	12.2	7.5	4	.	140	.	.		0.05	.	.	.	.	0.19	.
3	22	57.8	5.1	12.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	57.4	5.0	12.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	57.4	5.0	12.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	57.2	2.9	12.9	7.5	2	.	142	.	.		0.20	.	.	.	.	0.21	0.08
5	1	52.2	11.2	11.3	.	.	.	.	.	388		.	.	0.5	.	.	.	.
5	2	52.7	11.5	11.2	7.3	3	20	120	11	.	<.1	0.05	98	.	89	.012	0.15	0.00
5	5	45.7	7.6	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	42.8	5.9	11.2	.	.	.	.	.	.		.	.	.	.	.	.	.
5	10	41.2	5.1	11.3	7.3	5	20	140	16	.	0.0	0.01	145	.	114	.013	0.19	0.02
7	DUE TO SEVERE WEATHER, NO DATA WERE COLLECTED FOR THIS STATION																	
7	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.
8	1	54.0	5.9	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	56.8	5.8	11.5	6.9	5	30	120	.	.	<.1	0.01	.	.	.	.	0.14	0.08
8	5	56.7	5.7	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	56.7	5.7	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	56.3	5.8	11.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	56.3	5.5	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	56.5	5.5	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	56.5	5.5	12.0	6.9	4	.	120	.	.		0.05	.	.	.	.	0.15	0.04
10	1	44.6	7.0	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	44.6	7.0	11.6	7.5	6	25	126	.	.	<.1	0.05	.	.	.	.	0.16	0.04
10	5	44.6	7.0	11.5	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	44.6	7.0	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	44.6	7.0	11.7	7.5	5	.	128	.	.		0.10	.	.	.	.	0.18	0.05
11	1	57.2	4.0	12.5	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	54.0	5.4	12.1	7.5	0	25	134	.	.	0.1	0.10	.	.	.	.	0.15	0.05
11	5	54.0	5.4	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	56.5	5.8	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
11	11	56.7	5.7	12.2	7.5	0	.	139	.	.		0.05	.	.	.	.	0.18	0.07
13	DUE TO SEVERE WEATHER, NO DATA WERE COLLECTED FOR THIS STATION																	
13	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.

15FEB80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
14	1	40.6	4.8	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	40.6	4.8	11.8	7.3	4	47	126	.	.	<.1	0.05	.	.	.	.	0.15	0.07
14	5	40.6	4.8	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	40.6	4.9	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	40.8	4.9	11.7	7.3	5	.	122	.	.		0.30	.	.	.	.	0.11	0.04
15	1	39.2	4.0	12.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	39.2	4.0	11.8	7.3	2	26	132	.	.	<.1	0.00	.	.	.	.	0.15	0.02
15	5	39.2	4.0	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	39.2	4.0	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	39.2	4.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	39.0	3.9	11.9	7.3	2	.	130	.	.		0.00	.	.	.	.	0.25	.
15	22	39.0	3.9	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	38.8	3.8	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	38.8	3.8	12.1	7.3	2	.	130	.	.		0.00	.	.	.	.	0.19	0.04
16	1	38.3	3.5	12.0	.	.	.	.	.	335		.	.	0.4	.	.	.	.
16	2	37.9	3.3	11.8	6.9	4	78	108	7	.	<.1	0.10	138	.	92	.016	0.11	0.14
16	5	37.8	3.1	11.9	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	37.8	3.1	11.9	.	.	.	.	.	.		.	.	.	.	.	.	.
16	10	37.8	3.1	11.9	6.9	2	80	122	6	.	<.1	0.10	115	.	93	.011	0.14	0.04
17	1	39.2	4.0	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	39.2	4.0	11.8	6.9	5	48	122	.	.	<.1	0.05	.	.	.	.	0.16	0.04
17	5	39.2	4.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	39.2	4.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	39.0	3.9	11.7	6.9	2	.	126	.	.		.	.	.	.	.	0.19	.
17	17	39.0	3.9	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	22	39.0	3.9	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	38.8	3.8	12.1	7.3	3	.	120	.	.		0.30	.	.	.	.	0.13	0.00
20	1	42.8	6.0	13.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	41.4	5.2	12.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	40.8	4.9	12.3	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	40.8	4.8	12.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	40.8	4.8	12.3	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	40.5	4.7	12.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	40.5	4.8	12.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	39.9	4.8	12.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	39.7	4.3	12.4	.	.	.	.	.	458		.	.	0.4	.	.	.	.
21	2	39.4	4.1	12.4	7.3	12	80	144	11	.	<.1	0.00	160	.	135	.021	0.13	0.13
21	5	39.2	4.0	12.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	39.2	4.0	12.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	39.2	4.0	12.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	39.2	4.0	12.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	39.2	4.0	12.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	39.2	4.0	13.0	7.3	18	49	140	12	.	<.1	0.00	161	.	137	.021	0.10	0.12

15MAR80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	66.0	20.0	12.6	.	.	.	.	.	459		.	.	0.4	.	.	.	.
1	2	66.4	20.3	12.6	9.2	18	30	118	6	.	0.1	0.00	64	.	178	.011	0.11	0.04
1	5	64.3	20.7	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	64.3	20.7	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	66.4	20.3	12.0	9.3	17	23	116	8	.	0.2	0.00	61	.	175	.009	0.13	0.03
3	1	55.4	13.0	12.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	55.2	12.9	12.0	9.1	19	22	156	.	.	0.1	0.01	.	.	.	.	0.13	0.05
3	5	55.0	12.8	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	54.1	12.3	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	51.8	11.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	48.2	9.0	11.8	9.1	22	.	162	.	.		0.00	.	.	.	.	0.13	.
3	22	47.8	8.8	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	47.1	8.4	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	46.8	8.2	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	46.8	8.1	11.7	9.1	24	.	170	.	.		0.00	.	.	.	.	0.23	0.09
5	1	65.2	18.4	11.8	.	.	.	.	.	524		.	.	0.6	.	.	.	.
5	2	65.2	18.4	11.6	9.3	18	23	124	9	.	<.1	0.00	67	.	184	.010	0.15	0.04
5	5	57.2	14.0	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	53.6	12.0	11.2	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	50.4	10.2	10.6	9.3	20	25	160	9	.	0.2	0.00	86	.	262	.011	0.12	0.07
7	1	44.6	7.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	44.6	7.0	11.8	9.2	18	60	162	.	.	0.2	0.00	.	.	.	.	0.10	0.07
7	5	46.4	7.8	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	46.2	7.8	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	46.2	7.8	11.8	9.2	18	.	166	.	.		0.00	.	.	.	.	0.17	.
7	17	46.8	8.2	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	46.4	8.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	46.0	7.8	11.8	9.2	20	.	162	.	.		0.00	.	.	.	.	0.15	0.10
8	1	46.4	7.8	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	46.2	7.8	11.8	8.9	18	51	126	.	.	0.2	0.00	.	.	.	.	0.10	0.04
8	5	46.2	7.8	11.9	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	46.4	8.0	11.9	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	44.6	7.0	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	44.1	6.7	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	42.8	6.0	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	42.4	5.8	11.9	8.9	18	.	144	.	.		0.00	.	.	.	.	0.15	0.05
10	1	50.0	10.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	50.0	10.0	11.8	9.1	18	52	166	.	.	<.1	0.05	.	.	.	.	0.12	0.05
10	5	49.8	9.8	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	49.1	9.5	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
10	11	46.2	7.9	11.8	9.1	20	.	166	.	.		0.05	.	.	.	.	0.17	0.10

TABLE 10 (con't)
1SMAR80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	50.0	10.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	44.6	7.0	11.6	9.1	21	49	164	.	.	<.1	0.00	.	.	.	.	0.10	0.04
11	5	46.2	7.9	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	46.2	7.9	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	46.0	6.7	11.7	9.2	15	.	160	.	.		0.01	.	.	.	.	0.19	0.04
13	1	44.6	7.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	46.7	7.9	11.6	9.1	16	50	160	.	.	<.1	0.05	.	.	.	.	0.15	0.05
13	5	46.2	7.9	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	47.3	8.5	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	47.3	8.5	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	47.2	8.4	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	46.7	8.3	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	46.6	8.1	11.6	9.2	<1	.	164	.	.		0.00	.	.	.	.	0.13	.
13	32	46.4	8.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	46.4	8.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	46.4	8.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	46.4	8.0	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	46.2	7.9	11.6	9.1	20	.	164	.	.		0.00	.	.	.	.	0.13	0.02
14	1	46.4	8.0	12.6	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	46.0	7.9	12.2	9.1	15	54	164	.	.	0.1	0.00	.	.	.	.	0.10	0.04
14	5	42.6	6.0	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	42.3	5.7	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	42.3	5.7	12.1	.	.	.	.	.	.		.	.	.	.	.	.	.
14	15	42.6	6.0	12.1	9.1	22	.	160	.	.		0.00	.	.	.	.	0.12	0.05
15	1	46.6	7.2	12.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	46.2	7.9	12.0	9.1	18	31	172	.	.	0.1	0.05	.	.	.	.	0.13	0.06
15	5	46.2	7.9	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	46.2	7.9	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	46.0	6.7	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	47.6	8.6	12.0	9.1	16	.	162	.	.		0.00	.	.	.	.	0.15	.
15	22	47.1	8.1	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	47.6	8.6	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	46.4	8.0	12.0	9.1	26	.	166	.	.		0.00	.	.	.	.	0.13	0.09
16	1	46.1	7.8	12.1	.	.	.	.	.	461		.	.	0.6	.	.	.	.
16	2	46.4	7.1	12.0	9.0	12	40	112	4	.	<.1	0.05	61	.	116	.011	0.12	0.04
16	5	46.2	7.9	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	46.2	7.9	12.0	.	.	.	.	.	.		.	.	.	.	.	.	.
16	9	46.0	7.8	12.0	9.0	20	62	120	8	.	0.1	0.05	63	.	114	.010	0.13	0.05

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	46.0	7.8	11.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	46.0	7.8	11.4	9.1	15	58	156	.	.	<.1	0.10	.	.	.	.	0.11	0.05
17	5	46.0	8.1	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	46.0	8.2	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	45.5	8.1	11.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	44.5	7.0	12.0	8.9	29	.	146	.	.		0.02	.	.	.	.	0.15	.
17	22	44.5	7.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	44.5	7.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	44.4	6.9	11.7	8.9	21	.	164	.	.		0.00	.	.	.	.	0.18	0.06
20	1	44.5	6.6	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	44.1	6.5	11.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	44.1	6.5	11.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	46.0	7.8	11.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	47.5	8.5	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	46.4	8.0	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	47.5	8.5	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	46.0	8.2	11.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	50.7	10.4	11.7	.	.	.	.	.	655		.	.	0.5	.	.	.	.
21	2	50.7	10.4	11.8	9.2	19	75	164	5	.	0.1	0.10	89	.	180	.011	0.15	0.09
21	5	50.4	10.2	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	50.0	10.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	49.8	9.9	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	47.1	8.4	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	46.4	8.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	46.2	7.9	11.9	8.9	19	41	168	11	.	<.1	0.01	89	.	185	.012	0.14	0.05

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	71.6	22.0	10.4	.	.	.	.	.	320		.	.	1.1	.	.	.	.
1	2	70.7	21.5	10.4	7.1	30	40	72	8	.	0.1	0.00	42	.	80	.015	0.28	0.05
1	5	70.7	21.5	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	70.3	21.3	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	70.0	21.1	10.3	7.1	30	38	76	7	.	0.1	0.00	41	.	79	.016	0.27	0.05
3	1	73.7	23.3	10.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	66.2	19.0	11.3	7.3	40	35	102	.	.	0.1	0.00	.	.	.	.	0.26	0.04
3	5	60.8	16.0	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	59.3	15.3	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	59.0	15.0	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	58.8	14.8	9.6	7.1	54	.	148	.	.		0.00	.	.	.	.	0.32	.
3	22	58.3	14.7	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	58.1	14.5	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	58.1	14.5	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	58.1	14.5	9.6	7.1	58	.	142	.	.		0.00	.	.	.	.	0.33	0.04
5	1	73.2	24.0	10.6	.	.	.	.	.	236		.	.	1.1	.	.	.	.
5	2	70.3	21.3	9.6	7.1	38	15	82	11	.	0.2	0.01	40	.	80	.018	0.26	0.07
5	5	63.3	17.5	9.0	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	61.3	16.3	9.0	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	60.9	16.0	9.2	7.1	65	30	146	50	.	0.3	0.01	68	.	130	.030	0.50	0.10
7	1	62.6	17.0	10.6	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	59.9	15.5	10.2	7.1	50	25	146	.	.	0.2	0.00	.	.	.	.	0.32	0.08
7	5	59.0	15.0	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	58.1	14.5	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	57.9	14.4	9.5	7.1	58	.	144	.	.		0.00	.	.	.	.	0.34	.
7	17	57.6	14.2	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	57.2	14.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	57.2	14.0	9.5	7.1	58	.	140	.	.		0.00	.	.	.	.	0.36	0.07
8	1	59.4	15.2	10.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	59.2	15.1	10.5	6.7	27	22	48	.	.	0.1	0.05	.	.	.	.	0.24	0.08
8	5	58.8	14.9	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	57.7	14.3	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	57.2	14.0	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	57.2	14.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	56.7	13.7	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	56.1	13.4	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	32	56.4	13.6	8.4	6.7	58	.	116	.	.		0.00	.	.	.	.	0.41	0.05
10	1	64.3	20.7	10.5	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	65.7	18.7	10.1	7.3	48	30	128	.	.	0.1	0.00	.	.	.	.	0.39	0.05
10	5	60.1	15.6	9.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	58.8	14.9	9.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	11	58.8	14.9	9.4	7.3	58	.	146	.	.		0.00	.	.	.	.	0.35	0.04

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	T. B	COD	HARD NESS	TSS	TDS	BORON	MN	SUS	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	64.4	18.3	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	59.4	15.5	9.4	7.3	50	35	146	.	.	0.2	0.00	.	.	.	.	0.30	0.04
11	5	59.4	15.2	9.4	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	59.1	14.5	9.5		.	.	.	.	.		.	.	.	.	.	.	.
11	11	58.1	14.5	9.5		60	.	.	.	.		0.00	.	.	.	.	0.38	0.04
13	1	61.7	16.5	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	60.5	16.0	11.3	7.3	42	35	148	.	.	0.1	0.00	.	.	.	.	0.32	0.05
13	5	60.1	15.6	10.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	58.5	14.7	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	58.1	14.5	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	58.1	14.5	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	57.9	14.4	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	57.5	14.2	9.5	7.1	52	.	142	.	.		0.00	.	.	.	.	0.29	.
13	32	57.2	14.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	57.2	14.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	57.2	14.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	57.2	14.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	57.2	14.0	9.5	7.1	52	.	148	.	.		0.00	.	.	.	.	0.31	0.08
14	1	63.7	17.6	11.2	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	62.5	17.0	11.0	7.3	48	35	152	.	.	0.1	0.00	.	.	.	.	0.28	0.05
14	5	61.3	16.3	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	60.1	15.6	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	59.0	15.0	9.2	.	.	.	.	.	.		.	.	.	.	.	.	.
14	17	57.2	14.0	8.9	8.9	56	.	142	.	.		0.00	.	.	.	.	0.45	0.05
15	1	62.6	17.0	11.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	61.7	16.6	11.2	7.3	42	40	150	.	.	0.1	0.00	.	.	.	.	0.24	0.05
15	5	61.2	16.2	11.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	60.8	16.0	10.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	57.2	14.0	9.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	57.2	14.0	8.9	8.9	55	.	140	.	.		0.00	.	.	.	.	0.32	.
15	22	56.3	13.6	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	56.3	13.5	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	56.1	13.4	8.9	8.9	60	.	142	.	.		0.01	.	.	.	.	0.36	0.04
16	1	59.0	15.0	10.6	.	.	.	.	.	231		.	.	0.9	.	.	.	.
16	2	58.3	14.9	10.7	8.7	25	28	56	4	.	0.1	0.00	37	.	72	.017	0.21	0.04
16	5	58.3	14.7	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	58.3	14.6	10.7	.	.	.	.	.	.		.	.	.	.	.	.	.
16	10	58.3	14.6	10.7	8.9	22	45	64	4	.	0.1	0.00	40	.	72	.017	0.21	0.05

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	AN	SUB	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	61.2	16.2	11.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	60.1	15.6	10.7	6.7	30	47	100	.	.	0.1	0.00	.	.	.	.	0.20	0.04
17	5	59.2	15.1	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	56.5	14.9	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	56.6	14.8	9.4	6.9	32	.	94	.	.		0.01	.	.	.	.	0.22	.
17	17	57.4	14.1	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
17	22	56.7	13.7	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	56.1	13.4	8.6	6.9	35	.	130	.	.		0.10	.	.	.	.	0.36	0.07
20	1	56.1	14.5	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	57.6	14.2	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	57.2	14.0	10.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	56.7	13.7	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	56.7	13.7	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	55.4	13.0	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	54.5	12.4	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	55.0	12.8	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	57.9	15.5	9.6	.	.	.	.	.	404		.	.	1.0	.	.	.	.
21	2	56.1	14.5	9.6	6.9	50	30	142	28	.	0.1	0.00	65	.	121	.015	0.55	0.05
21	5	55.1	14.5	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	57.5	14.2	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	57.4	14.1	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	57.0	13.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	57.0	13.9	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	57.0	13.9	9.6	6.9	59	28	142	45	.	0.1	0.01	68	.	127	.023	0.43	0.04

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	73.4	23.0	7.5	.	.	.	.	.	401		.	.	0.6	.	.	.	.
1	2	73.0	22.8	7.5	7.1	30	49	122	10	.	0.1	0.00	67	.	131	.018	0.23	0.05
1	5	72.5	22.4	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	72.1	22.3	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	71.8	22.0	7.1	6.9	30	33	122	8	.	<.2	0.00	67	.	129	.021	0.25	0.04
3	1	73.4	23.0	9.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	73.0	23.1	8.8	7.1	72	43	114	.	.	<.2	0.00	.	.	.	.	0.48	0.09
3	5	71.4	21.9	7.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	70.2	21.2	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	69.8	21.0	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	68.9	20.5	7.3	6.9	80	.	96	.	.		0.05	.	.	.	.	0.46	.
3	22	68.2	20.1	7.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	68.0	20.0	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	68.0	20.0	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	67.8	19.9	8.3	6.9	48	.	90	.	.		0.10	.	.	.	.	0.65	0.06
5	1	73.2	24.0	11.2	.	.	.	.	.	397		.	.	0.7	.	.	.	.
5	2	73.2	24.0	10.4	7.3	45	47	118	17	.	<.1	0.00	67	.	135	.017	0.37	0.04
5	5	71.6	22.0	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	70.2	21.2	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	69.3	21.0	8.3	6.9	50	48	120	19	.	0.1	0.00	68	.	135	.017	0.31	0.04
7	1	73.2	24.0	9.1	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	72.2	22.3	8.1	6.9	70	40	116	.	.	<.1	0.00	.	.	.	.	0.50	0.09
7	5	70.3	21.3	7.7	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	69.4	20.8	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	69.1	20.6	7.2	6.9	75	.	112	.	.		0.00	.	.	.	.	0.48	.
7	17	68.9	20.5	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	68.7	20.5	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	68.7	20.4	7.0	6.9	77	.	112	.	.		0.00	.	.	.	.	0.57	0.08
8	1	73.4	23.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	73.4	23.0	8.0	6.9	24	10	112	.	.	0.1	0.00	.	.	.	.	0.18	0.06
8	5	71.6	22.0	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	71.4	21.9	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	70.3	21.4	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	69.8	21.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	68.7	20.4	4.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	68.0	20.0	8.6	6.9	45	.	130	.	.		0.00	.	.	.	.	0.50	0.04
10	1	74.1	23.4	9.3	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	72.5	22.5	8.0	6.9	70	51	106	.	.	<.1	0.00	.	.	.	.	0.53	0.12
10	5	70.5	21.4	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	69.3	21.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
10	11	69.3	21.0	7.4	6.9	78	.	102	.	.		0.01	.	.	.	.	0.60	0.10

TABLE (con't)

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SUL	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	72.7	22.6	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
11	2	71.2	21.8	7.2	8.9	78	48	110	*	*	0.1	0.00	*	*	*	*	0.52	0.07
11	5	70.0	21.1	7.1	*	*	*	*	*	*		*	*	*	*	*	*	*
11	7	69.8	21.0	7.0	*	*	*	*	*	*		*	*	*	*	*	*	*
11	11	69.4	20.8	8.4	8.9	82	*	112	*	*		0.00	*	*	*	*	0.58	0.05
13	1	73.8	24.1	9.8	*	*	*	*	*	*		*	*	*	*	*	*	*
13	2	73.5	23.1	9.7	7.3	58	51	100	*	*	<.2	0.00	*	*	*	*	0.42	0.07
13	5	72.1	22.3	8.1	*	*	*	*	*	*		*	*	*	*	*	*	*
13	7	70.2	21.2	7.0	*	*	*	*	*	*		*	*	*	*	*	*	*
13	12	69.5	21.0	8.4	*	*	*	*	*	*		*	*	*	*	*	*	*
13	17	69.8	20.9	8.4	*	*	*	*	*	*		*	*	*	*	*	*	*
13	22	69.4	20.8	7.0	*	*	*	*	*	*		*	*	*	*	*	*	*
13	27	69.4	20.8	8.4	8.4	78	*	130	*	*		0.00	*	*	*	*	0.48	*
13	32	68.8	20.4	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
13	37	69.0	20.8	8.7	*	*	*	*	*	*		*	*	*	*	*	*	*
13	42	69.0	20.8	8.7	*	*	*	*	*	*		*	*	*	*	*	*	*
13	47	68.8	20.8	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
13	52	67.2	19.4	8.1	8.9	110	*	98	*	*		0.00	*	*	*	*	0.75	0.04
14	1	73.8	23.8	7.7	*	*	*	*	*	*		*	*	*	*	*	*	*
14	2	71.8	22.8	7.2	8.9	84	10	108	*	*	<.1	0.00	*	*	*	*	0.56	0.07
14	5	70.2	21.2	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
14	7	69.8	21.0	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
14	12	69.4	20.8	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
14	17	68.4	20.2	8.8	8.9	95	*	104	*	*		0.00	*	*	*	*	0.78	0.10
15	1	73.8	23.1	8.7	*	*	*	*	*	*		*	*	*	*	*	*	*
15	2	72.5	22.4	7.9	8.9	80	45	118	*	*	<.1	0.00	*	*	*	*	0.40	0.08
15	5	70.0	21.1	7.1	*	*	*	*	*	*		*	*	*	*	*	*	*
15	7	69.8	21.0	7.0	*	*	*	*	*	*		*	*	*	*	*	*	*
15	12	69.4	20.8	7.0	*	*	*	*	*	*		*	*	*	*	*	*	*
15	17	68.4	20.2	8.4	8.9	90	*	118	*	*		0.00	*	*	*	*	0.50	*
15	22	68.7	20.4	8.4	*	*	*	*	*	*		*	*	*	*	*	*	*
15	27	68.7	20.4	8.8	*	*	*	*	*	*		*	*	*	*	*	*	*
15	32	68.0	20.0	8.3	8.9	95	*	108	*	*		0.00	*	*	*	*	0.62	0.10
16	1	71.1	21.7	7.7	*	*	*	*	*	550		*	*	0.7	*	*	*	*
16	2	70.2	21.2	7.3	8.9	32	22	112	5	*	0.1	0.00	62	*	129	.018	0.19	0.04
16	5	69.3	21.0	7.1	*	*	*	*	*	*		*	*	*	*	*	*	*
16	7	69.3	21.0	7.0	*	*	*	*	*	*		*	*	*	*	*	*	*
16	9	69.3	21.0	8.4	8.9	28	20	112	8	*	0.1	0.00	62	*	131	.020	0.19	0.05

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	72.1	22.3	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	71.9	22.1	8.0	6.9	30	21	110	.	.	0.1	0.00	.	.	.	.	0.20	0.04
17	3	71.4	21.9	7.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	70.3	21.3	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	69.8	21.0	8.4	6.9	60	.	110	.	.		0.00	.	.	.	.	0.42	.
17	17	69.1	20.6	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	22	68.0	20.0	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	68.0	20.0	8.4	6.9	102	.	106	.	.		0.00	.	.	.	.	0.65	0.05
20	1	68.7	20.4	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	68.0	20.0	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	3	67.8	19.8	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	66.7	19.3	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	65.3	18.5	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	64.0	17.8	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	63.9	17.7	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	63.3	17.5	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	74.1	23.4	7.9	.	.	.	.	.	488		.	.	0.9	.	.	.	.
21	2	73.4	23.0	8.3	7.1	68	40	120	23	.	0.1	0.00	59	.	141	.012	0.50	0.08
21	3	71.5	22.0	7.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	70.3	21.3	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	69.8	21.0	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	69.4	20.8	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	68.4	20.2	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	68.0	20.0	7.2	6.9	80	38	98	46	.	0.1	0.00	58	.	111	.017	0.65	0.11

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	95.0	35.0	6.7	.	.	.	.	.	434		.	.	0.8	.	.	.	.
1	2	95.0	35.0	6.4	7.9	35	25	128	7	.	0.1	0.00	62	.	182	.001	0.50	0.02
1	5	95.2	35.1	6.3	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	95.2	35.1	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	95.0	35.0	6.0	7.9	30	20	128	9	.	<.2	0.00	63	.	184	.001	0.27	0.05
3	1	88.0	31.1	6.5	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	87.5	31.0	6.4	8.3	38	35	142	.	.	0.1	0.00	.	.	.	.	0.22	0.05
3	5	87.4	30.8	6.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	86.0	30.0	7.7	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	82.4	28.0	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	80.4	26.9	6.0	7.9	55	.	158	.	.		0.00	.	.	.	.	0.28	.
3	22	80.2	26.5	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	74.2	23.2	5.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	74.0	23.1	5.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	73.8	23.0	4.1	7.9	80	.	166	.	.		0.00	.	.	.	.	0.48	0.03
5	1	94.5	34.8	6.0	.	.	.	.	.	431		.	.	0.9	.	.	.	.
5	2	94.5	34.5	6.5	8.3	38	35	128	10	.	0.1	0.10	65	.	178	.003	0.24	0.02
5	5	91.4	33.0	6.4	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	87.5	31.0	6.4	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	82.2	27.9	5.4	7.9	58	35	154	21	.	<.2	0.00	71	.	202	.002	0.34	0.33
7	1	84.2	29.0	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	82.9	28.3	6.5	8.3	45	25	160	.	.	0.1	0.00	.	.	.	.	0.28	0.04
7	5	82.0	27.5	6.6	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	80.6	27.0	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	80.6	27.0	5.7	7.9	60	.	158	.	.		0.00	.	.	.	.	0.40	.
7	17	80.2	26.5	5.6	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	74.7	23.5	5.7	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	74.3	23.4	5.7	7.9	70	.	158	.	.		0.00	.	.	.	.	0.50	0.07
8	1	82.0	27.8	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	82.0	27.8	6.5	8.4	35	45	142	.	.	<.1	0.00	.	.	.	.	0.19	0.05
8	5	82.0	27.8	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	80.4	26.9	7.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	79.9	26.6	6.9	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	79.0	26.1	4.6	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	79.0	26.1	4.6	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	78.8	26.0	4.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	78.5	25.9	2.9	7.5	55	.	144	.	.		0.20	.	.	.	.	0.54	0.02
10	1	80.0	26.7	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	83.1	28.4	7.4	8.5	40	31	154	.	.	0.1	0.00	.	.	.	.	0.26	0.04
10	5	82.4	28.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	82.4	28.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	80.5	27.0	6.1	8.3	42	.	154	.	.		0.00	.	.	.	.	0.24	0.04

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SUS	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	83.7	28.5	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	82.4	28.0	7.5	8.3	48	43	154	.	.	0.1	0.00	.	.	.	.	0.27	0.05
11	5	82.0	27.8	7.3	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	81.3	27.4	6.9	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	81.5	27.5	5.6	7.9	62	.	156	.	.		0.00	.	.	.	.	0.41	0.05
13	1	82.4	28.0	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	82.4	28.0	7.3	8.3	42	42	152	.	.	<0.1	0.00	.	.	.	.	0.25	0.04
13	5	81.1	27.3	6.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	80.8	27.0	6.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	80.2	26.8	6.3	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	80.1	26.7	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	79.3	26.4	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	79.2	26.2	5.5	7.9	52	.	164	.	.		0.00	.	.	.	.	0.29	.
13	32	79.0	26.1	5.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	78.8	26.0	5.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	78.8	26.0	5.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	78.8	26.0	5.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	78.8	26.0	5.5	7.7	58	.	158	.	.		0.00	.	.	.	.	0.60	0.05
14	1	82.2	27.9	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	80.3	27.1	7.4	8.1	44	51	152	.	.	0.1	0.00	.	.	.	.	0.26	0.26
14	5	80.5	27.0	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	80.4	26.9	6.5	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	79.5	26.4	5.9	.	.	.	.	.	.		.	.	.	.	.	.	.
14	17	79.2	26.2	4.7	7.7	48	.	154	.	.		0.00	.	.	.	.	0.30	0.32
15	1	82.4	28.0	9.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	82.0	27.8	9.2	8.3	42	32	148	.	.	<0.1	0.00	.	.	.	.	0.26	0.05
15	5	81.7	27.6	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	81.3	27.4	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	80.6	27.0	10.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	80.1	26.7	11.8	7.9	45	.	152	.	.		0.00	.	.	.	.	0.21	.
15	22	79.3	26.4	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	79.3	26.3	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	79.2	26.2	8.7	7.7	58	.	154	.	.		0.05	.	.	.	.	0.38	0.04
16	1	81.0	27.2	7.7	.	.	.	.	.	455		.	.	0.7	.	.	.	.
16	2	80.6	27.0	7.4	8.1	24	40	120	9	.	<0.1	0.10	60	.	185	.003	0.21	0.03
16	5	80.5	27.0	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	80.3	27.0	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
16	11	80.4	26.9	6.7	7.9	32	47	120	10	.	<0.1	0.00	62	.	175	.003	0.20	0.04

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	82.4	28.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	82.0	27.8	8.0	8.3	38	30	154	.	.	0.1	0.00	.	.	.	.	0.23	0.19
17	5	81.0	27.2	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	80.5	27.0	7.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	80.4	26.9	5.8	7.7	48	.	150	.	.		0.00	.	.	.	.	0.25	.
17	17	79.5	26.4	5.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	22	79.0	26.1	5.1	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	78.5	26.0	4.8	7.7	50	.	154	.	.		0.00	.	.	.	.	0.34	0.16
20	1	80.4	26.9	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	80.4	26.9	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	80.4	26.9	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	80.5	27.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	79.2	26.2	5.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	78.8	26.0	4.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	78.3	25.7	3.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	77.4	25.2	2.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	84.2	29.0	8.4	.	.	.	.	.	350		.	.	1.0	.	.	.	.
21	2	84.2	29.0	8.3	8.5	42	29	152	16	.	0.1	0.00	73	.	220	.004	0.21	0.03
21	5	84.0	28.9	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	83.3	28.5	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	80.6	27.0	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	80.1	26.7	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	79.3	26.4	6.1	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	79.2	26.2	6.0	7.9	68	30	162	32	.	0.1	0.00	73	.	191	.001	0.42	0.05

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

SIA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	TKD	TSS	TDS	BORON	MN	SUS	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	95.1	35.1	8.2	.	.	.	.	.	481		.	.	0.8	.	.	.	.
1	2	94.8	34.8	8.1	8.3	28	83	130	20	.	.2	0.00	80	.	118	.008	0.19	0.04
1	5	93.8	34.2	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	93.2	34.0	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	93.0	33.9	8.0	8.7	22	83	130	12	.	<.2	0.00	80	.	127	.008	0.18	0.02
3	1	93.0	33.9	9.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	93.8	34.2	8.8	8.3	35	90	146	.	.	<.2	0.00	.	.	.	.	0.24	0.03
3	5	91.8	33.2	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	91.4	33.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	91.0	32.8	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	90.1	32.3	8.4	7.9	36	.	180	.	.		0.00	.	.	.	.	0.18	.
3	22	89.8	32.1	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	89.8	32.0	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	89.8	32.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	89.4	31.9	8.3	7.9	39	.	188	.	.		0.10	.	.	.	.	0.29	0.02
5	1	95.1	35.0	11.7	.	.	.	.	.	572		.	.	0.7	.	.	.	.
5	2	93.0	33.8	11.7	8.3	25	430	153	8	.	<.1	0.00	82	.	132	.006	0.20	0.06
5	5	92.8	33.8	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	91.4	33.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	90.3	32.3	8.0	8.3	42	440	180	20	.	.2	0.00	81	.	136	.008	0.35	0.03
7	1	94.8	34.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	94.1	34.5	9.2	8.7	32	80	152	.	.	<.2	0.00	.	.	.	.	0.25	0.21
7	5	91.4	33.0	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	91.0	32.8	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	90.3	32.4	8.1	7.9	48	.	178	.	.		.	.	.	.	.	0.15	.
7	17	90.1	32.3	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	90.0	32.2	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	89.8	32.1	8.0	7.9	48	.	176	.	.		0.10	.	.	.	.	0.31	0.28
8	1	91.0	32.8	7.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	90.3	32.4	8.8	8.3	30	80	136	.	.	<.2	0.00	.	.	.	.	0.21	0.05
8	5	90.1	32.3	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	90.1	32.3	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	90.1	32.3	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	90.0	32.2	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	90.0	32.2	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	90.0	32.2	8.8	8.3	42	.	188	.	.		0.00	.	.	.	.	0.25	0.04
10	1	93.0	33.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	91.8	33.2	7.4	8.3	31	83	160	.	.	0.3	0.00	.	.	.	.	0.21	0.03
10	5	90.4	32.4	8.4	.	.	.	-	.	.		.	.	.	.	.	.	.
10	7	90.0	32.2	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	89.8	32.1	8.1	7.9	38	.	174	.	.		0.05	.	.	.	.	0.25	0.02

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SOR	TKN	CL	NO2	TOTAL INOR	FILTR. INOR
11	1	93.0	34.2	10.0	.	.	.	.	.	.		.	.	.	.		.	.
11	2	93.0	33.9	9.4	8.7	32	60	176	.	.	.2	0.00	.	.	.		0.19	0.03
11	5	91.4	33.0	9.7	.	.	.	.	.	.		.	.	.	.		.	.
11	7	91.2	32.9	9.4	.	.	.	.	.	.		.	.	.	.		.	.
11	12	90.7	32.6	9.0	8.1	48	.	172	.	.		0.00	.	.	.		0.28	0.02
13	1	91.5	33.2	8.9	.	.	.	.	.	.		.	.	.	.		.	.
13	2	91.0	33.1	9.4	8.1	32	60	180	.	.	<.2	0.05	.	.	.		0.22	0.05
13	5	91.4	33.0	9.0	.	.	.	.	.	.		.	.	.	.		.	.
13	7	90.9	32.7	9.9	.	.	.	.	.	.		.	.	.	.		.	.
13	12	90.1	32.3	9.7	.	.	.	.	.	.		.	.	.	.		.	.
13	17	89.0	32.1	9.7	.	.	.	.	.	.		.	.	.	.		.	.
13	22	89.0	32.0	9.0	.	.	.	.	.	.		.	.	.	.		.	.
13	27	89.0	32.0	9.0	7.9	39	.	180	.	.		0.00	.	.	.		0.20	.
13	32	89.0	32.0	9.0	.	.	.	.	.	.		.	.	.	.		.	.
13	37	89.0	32.0	9.0	.	.	.	.	.	.		.	.	.	.		.	.
13	42	89.0	32.0	9.0	.	.	.	.	.	.		.	.	.	.		.	.
13	47	89.4	31.9	8.9	.	.	.	.	.	.		.	.	.	.		.	.
13	52	89.4	31.9	1.5	7.9	40	.	180	.	.		0.00	.	.	.		0.28	0.03
14	1	92.1	33.4	7.2	.	.	.	.	.	.		.	.	.	.		.	.
14	2	91.4	33.0	8.9	8.3	32	48	166	.	.	.1	0.00	.	.	.		0.23	0.04
14	5	91.0	32.8	9.1	.	.	.	.	.	.		.	.	.	.		.	.
14	7	90.9	32.7	9.0	.	.	.	.	.	.		.	.	.	.		.	.
14	12	90.3	32.3	9.7	.	.	.	.	.	.		.	.	.	.		.	.
14	17	90.3	32.4	9.7	8.1	38	.	178	.	.		0.00	.	.	.		0.24	0.02
15	1	91.8	33.2	8.8	.	.	.	.	.	.		.	.	.	.		.	.
15	2	91.0	33.1	8.4	8.3	30	120	172	.	.	<.2	0.05	.	.	.		0.17	0.03
15	5	91.4	33.0	8.0	.	.	.	.	.	.		.	.	.	.		.	.
15	7	91.4	33.0	8.0	.	.	.	.	.	.		.	.	.	.		.	.
15	12	91.2	32.9	9.8	.	.	.	.	.	.		.	.	.	.		.	.
15	17	90.3	32.4	9.8	7.9	38	.	170	.	.		0.05	.	.	.		0.18	.
15	22	90.1	32.3	9.8	.	.	.	.	.	.		.	.	.	.		.	.
15	27	90.1	32.3	9.3	.	.	.	.	.	.		.	.	.	.		.	.
15	32	90.0	32.2	9.1	7.9	38	.	172	.	.		0.05	.	.	.		0.28	0.04
16	1	89.8	32.0	9.8	.	.	.	.	.	350		.	.	0.7	.	.	.	.
16	2	89.8	32.0	8.1	8.1	30	60	166	12	.	.2	0.00	78	.	127	.013	0.20	0.11
16	5	89.8	32.1	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	89.8	32.1	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
16	9	89.8	32.1	9.9	8.3	28	50	162	9	.	<.2	0.00	80	.	127	.013	0.24	0.21

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	IRN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	91.6	33.1	5.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	91.2	32.9	5.7	8.1	38	60	164	.	.	0.1	0.00	.	.	.	.	0.25	0.04
17	5	90.3	32.3	5.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	90.3	32.4	5.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	90.0	32.2	5.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	87.8	32.1	5.0	7.9	42	.	160	.	.		0.00	.	.	.	.	0.20	.
17	22	87.8	32.1	4.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	87.8	32.0	4.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	87.8	32.0	4.5	7.9	40	.	160	.	.		0.05	.	.	.	.	0.32	0.07
20	1	87.8	32.1	5.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	90.1	32.3	5.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	90.1	32.3	5.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	90.1	32.3	5.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	90.1	32.3	5.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	90.0	32.2	4.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	90.0	32.2	4.3	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	87.8	32.0	3.3	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	97.3	36.4	12.2	.	.	.	.	.	818		.	.	0.8	.	.	.	.
21	2	95.2	35.1	11.4	8.9	38	80	178	15	.	<.2	0.00	90	.	180	.001	0.24	0.14
21	5	92.8	33.8	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	91.8	33.2	5.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	91.4	33.0	5.3	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	91.2	32.9	5.0	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	90.9	32.7	4.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	90.3	32.4	4.2	7.9	45	52	180	22	.	0.2	0.05	86	.	155	.000	0.32	0.20

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	NH3N	NO3	SO4	TKN	CL	VOL	TOTAL IRON	FILTR. IRON
1	1	94.5	37.5	8.7	.	.	.	.	.	340		.	.	0.7	.	.	.	.
1	2	100.4	38.0	8.3	8.3	20	36	182	16	.	<.1	0.05	70	.	139	.017	<.17	0.04
1	3	100.4	38.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	100.4	38.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
1	4	100.4	38.0	8.3	8.3	20	36	176	12	.	<.1	0.01	66	.	141	.019	0.18	0.04
3	1	91.0	33.2	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	91.0	33.1	8.9	8.3	26	40	180	.	.	<.1	0.00	.	.	.	.	0.14	0.04
3	3	91.4	33.0	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	91.4	33.0	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	89.3	31.8	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	87.6	30.9	8.9	8.1	30	.	176	.	.		0.05	.	.	.	.	0.11	.
3	22	87.4	30.8	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	86.7	30.4	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	86.2	30.1	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	86.0	30.0	8.4	7.7	30	.	176	.	.		0.20	.	.	.	.	0.20	0.04
5	1	94.6	37.2	8.2	.	.	.	.	.	350		.	.	0.5	.	.	.	.
5	2	90.2	32.3	8.6	8.3	21	10	180	10	.	<.1	0.00	64	.	140	.023	0.17	0.03
5	3	89.3	32.1	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	89.0	31.1	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	87.4	30.8	8.3	8.3	25	25	174	17	.	<.1	0.00	80	.	133	.028	0.15	0.02
7	1	89.3	31.3	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	89.2	31.2	8.7	8.3	21	60	176	.	.	<.1	0.80	.	.	.	.	0.14	0.05
7	5	89.2	31.2	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	87.3	31.0	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	87.3	31.0	8.3	8.1	32	.	176	.	.		1.00	.	.	.	.	0.12	.
7	17	87.4	30.8	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	86.7	30.4	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	86.0	30.0	8.8	7.9	42	.	174	.	.		1.60	.	.	.	.	0.28	0.04
8	1	86.0	30.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	86.0	30.0	8.8	7.9	22	40	184	.	.	<.1	0.05	.	.	.	.	0.20	0.04
8	3	86.0	30.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	86.0	30.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	86.0	30.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	86.0	30.0	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	86.0	30.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	83.8	28.8	8.8	7.9	22	.	180	.	.		0.05	.	.	.	.	0.20	0.03
10	1	87.8	30.4	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	88.7	31.4	8.3	8.2	20	20	180	.	.	<.1	0.00	.	.	.	.	0.14	0.04
10	3	89.4	31.8	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	89.0	31.8	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	89.0	31.8	8.1	8.1	22	.	176	.	.		0.05	.	.	.	.	0.17	0.02

TABLE (con't)

1540330

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	NONION	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	87.1	30.6	5.4	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	85.4	30.5	5.2	8.1	22	30	180	.	.	<.1	0.01	.	.	.	.	0.15	0.02
11	5	85.3	30.5	5.0	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	85.4	30.2	4.9	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	85.2	30.1	4.7	8.1	25	.	180	.	.		0.00	.	.	.	.	0.17	0.05
13	1	85.4	30.2	4.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	85.2	30.1	4.4	7.9	20	45	176	.	.	<.1	0.00	.	.	.	.	0.14	0.03
13	5	85.2	30.1	4.2	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	85.0	30.0	4.0	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	85.0	30.0	3.9	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	85.0	30.0	3.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	85.0	30.0	3.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	85.0	30.0	3.6	7.9	32	.	176	.	.		0.10	.	.	.	.	0.09	.
13	32	85.0	30.0	3.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	85.0	30.0	3.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	85.0	30.0	3.1	.	.	.	.	.	.		.	.	-	-	.	.	.
13	47	85.0	30.0	3.0	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	85.3	29.9	0.4	7.7	28	.	175	.	.		0.40	.	.	.	.	0.21	0.03
14	1	85.0	30.0	5.3	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	85.0	30.0	5.3	8.1	30	48	178	.	.	<.1	0.00	.	.	.	.	0.16	0.06
14	5	85.0	30.0	5.2	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	85.0	30.0	5.1	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	85.0	30.0	5.1	.	.	.	.	.	.		.	.	.	.	.	.	.
14	17	85.2	30.1	5.0	8.1	30	.	176	.	.		0.00	.	.	.	.	0.18	0.04
15	1	85.3	30.3	5.1	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	85.3	30.3	4.9	7.9	15	45	176	.	.	<.1	0.00	.	.	.	.	0.11	0.02
15	5	85.4	30.2	4.9	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	85.4	30.2	4.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	85.4	30.2	4.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	85.4	30.2	4.7	7.9	28	.	176	.	.		0.00	.	.	.	.	0.04	.
15	22	85.4	30.2	4.5	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	85.4	30.2	4.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	85.4	30.2	4.0	.	.	.	.	.	.		.	.	.	.	.	.	.
15	37	86.0	30.0	1.2	7.9	20	.	180	.	.		0.00	.	.	.	.	0.12	0.04
16	1	85.5	29.8	5.0	.	.	.	.	.	527		.	.	0.5	.	.	.	.
16	2	85.5	29.9	5.5	8.1	25	50	184	10	.	<.1	0.00	64	.	139	.025	0.20	0.02
16	5	85.0	30.0	5.7	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	85.0	30.0	5.5	.	.	.	.	.	.		.	.	.	.	.	.	.
16	10	85.0	30.0	5.5	8.1	17	55	180	9	.	<.1	0.10	64	.	139	.027	0.18	0.04

TABLE (con't)

1978UGHO

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	85.0	30.0	6.1	*	*	*	*	*	*		*	*	*	*	*	*	*
17	2	85.0	30.0	5.4	8.1	22	35	180	*	*	<.1	0.00	*	*	*	*	0.14	0.04
17	5	85.0	30.0	5.5	*	*	*	*	*	*		*	*	*	*	*	*	*
17	7	85.0	30.0	5.7	*	*	*	*	*	*		*	*	*	*	*	*	*
17	12	85.0	30.0	5.5	*	*	*	*	*	*		*	*	*	*	*	*	*
17	17	85.0	30.0	5.4	8.1	21	*	176	*	*		0.10	*	*	*	*	0.16	*
17	22	85.0	30.0	5.4	*	*	*	*	*	*		*	*	*	*	*	*	*
17	27	85.0	30.0	5.0	*	*	*	*	*	*		*	*	*	*	*	*	*
17	32	85.0	30.0	4.1	7.9	50	*	174	*	*		0.20	*	*	*	*	0.45	0.05
20	1	85.2	30.1	6.9	*	*	*	*	*	*		*	*	*	*	*	*	*
20	2	85.4	30.2	6.7	*	*	*	*	*	*		*	*	*	*	*	*	*
20	5	85.3	30.3	6.5	*	*	*	*	*	*		*	*	*	*	*	*	*
20	7	85.3	30.3	6.4	*	*	*	*	*	*		*	*	*	*	*	*	*
20	12	85.3	30.3	6.4	*	*	*	*	*	*		*	*	*	*	*	*	*
20	17	85.2	30.1	4.9	*	*	*	*	*	*		*	*	*	*	*	*	*
20	22	85.0	30.0	5.5	*	*	*	*	*	*		*	*	*	*	*	*	*
20	27	85.5	29.7	2.0	*	*	*	*	*	*		*	*	*	*	*	*	*
21	1	91.0	32.8	7.4	*	*	*	*	*	498		*	*	0.4	*	*	*	*
21	2	90.1	32.3	6.7	8.5	18	15	180	18	*	<.1	0.00	70	*	137	.018	0.12	0.04
21	5	87.5	32.0	6.5	*	*	*	*	*	*		*	*	*	*	*	*	*
21	7	89.5	31.9	5.8	*	*	*	*	*	*		*	*	*	*	*	*	*
21	12	88.5	31.5	5.8	*	*	*	*	*	*		*	*	*	*	*	*	*
21	17	87.8	31.0	5.8	*	*	*	*	*	*		*	*	*	*	*	*	*
21	22	87.8	31.0	5.1	*	*	*	*	*	*		*	*	*	*	*	*	*
21	27	88.4	31.3	4.1	8.1	30	20	172	17	*	<.1	0.00	64	*	123	.025	0.17	0.04

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COLOR	HARD NESS	TSS	TDS	AURUN	MN	SUS	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	83.1	28.4	7.4	.	.	.	.	.	464		.	.	0.4	.	.	.	.
1	2	82.4	28.0	7.3	8.3	15	20	170	0	.	<.1	0.10	80	.	117	.024	0.14	0.02
1	3	82.4	28.0	7.3	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	82.2	27.9	7.3	.	.	.	.	.	.		.	.	.	.	.	.	.
1	12	81.4	27.7	7.3	8.4	15	15	182	0	.	.0	0.10	78	.	117	.023	0.16	0.03
3	1	80.2	26.8	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	80.2	26.8	8.1	8.2	21	15	176	.	.	<.3	0.00	.	.	.	.	0.11	0.02
3	3	80.2	26.8	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	80.2	26.8	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	80.2	26.8	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	80.2	26.8	8.2	8.2	22	.	176	.	.		0.00	.	.	.	.	0.13	.
3	22	80.2	26.8	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	80.2	26.8	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	80.2	26.8	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	80.2	26.8	7.3	8.2	22	.	172	.	.		0.00	.	.	.	.	0.13	0.03
5	1	81.1	27.3	7.3	.	.	.	.	.	470		.	.	0.6	.	.	.	.
5	2	80.8	27.1	7.3	8.4	20	20	176	15	.	.0	0.00	74	.	114	.024	0.15	0.02
5	3	81.0	27.2	7.0	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	80.8	27.1	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
5	12	80.2	26.8	8.4	8.2	22	10	176	15	.	.0	0.00	80	.	118	.027	0.20	0.03
7	1	80.3	27.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	80.4	26.9	8.4	8.2	20	25	180	.	.	<.1	0.00	.	.	.	.	0.15	0.03
7	3	80.4	26.9	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	80.4	26.9	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	80.2	26.8	8.1	8.2	19	.	174	.	.		.	.	.	.	.	0.09	.
7	17	80.2	26.8	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	80.2	26.8	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	80.1	26.7	8.1	8.2	22	.	170	.	.		0.00	.	.	.	.	0.14	0.04
8	1	83.8	28.8	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	84.8	29.3	8.8	8.1	18	50	180	.	.	<.2	0.00	.	.	.	.	0.09	0.04
8	3	84.2	29.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	82.4	28.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	81.4	27.4	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	81.1	27.3	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	80.8	27.1	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	80.8	27.0	8.0	8.0	19	.	172	.	.		0.00	.	.	.	.	0.16	0.03
10	1	81.3	27.4	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	81.0	27.2	8.3	8.2	20	40	184	.	.	<.2	0.00	.	.	.	.	0.17	0.03
10	3	80.8	27.1	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	80.8	27.1	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	80.4	26.9	8.8	8.1	20	.	176	.	.		0.00	.	.	.	.	0.18	0.03

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	MORON	MN	SOA	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	80.5	27.0	8.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11	2	80.5	27.0	8.5	8.2	22	25	184	.	.	<.1	0.10	.	.	.	.	0.16	0.04
11	5	80.4	26.9	8.5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11	7	80.4	26.9	8.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11	12	80.2	26.8	8.1	8.2	21	.	176	.	.		0.00	.	.	.	.	0.13	0.06
13	1	81.0	27.2	8.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	2	80.8	27.1	8.2	8.2	22	10	174	.	.	<.1	0.00	.	.	.	.	0.11	0.02
13	5	80.8	27.0	8.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	7	80.8	27.0	8.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	12	80.8	27.0	8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	17	80.4	26.9	8.3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	22	80.4	26.9	8.3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	27	80.2	26.8	8.3	8.0	21	.	174	.	.	.	.	.	.	.	.	0.10	.
13	32	80.2	26.8	8.3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	37	80.2	26.8	8.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	42	80.2	26.8	8.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	47	80.2	26.8	8.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	52	80.2	26.8	8.1	8.0	52	.	174	.	.	.	.	.	.	.	.	0.18	0.02
14	1	82.4	28.0	8.8	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14	2	82.3	28.1	8.7	8.2	15	25	180	.	.	<.1	0.10	.	.	.	.	0.14	0.02
14	5	82.4	28.0	8.5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14	7	82.2	27.9	8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14	12	82.0	27.8	8.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14	17	81.8	27.8	8.4	8.2	19	.	174	.	.		0.00	.	.	.	.	0.11	0.03
15	1	83.8	28.8	8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	2	83.7	28.7	8.4	8.2	19	25	172	.	.	<.2	0.00	.	.	.	.	0.06	0.03
15	5	83.1	28.4	8.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	7	82.9	28.3	8.5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	12	82.8	28.2	8.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	17	81.0	27.2	8.3	8.2	21	.	174	.	.		0.00	.	.	.	.	0.04	.
15	22	80.8	27.0	8.3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	27	80.8	27.0	8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	32	80.6	27.0	8.1	8.2	56	.	180	.	.		0.00	.	.	.	.	0.20	0.03
16	1	82.0	27.8	8.8	.	.	.	.	.	358		.	.	0.6	.	.	.	.
16	2	81.7	27.6	8.8	8.2	18	45	172	10	.	<.1	0.00	85	.	114	.027	0.21	0.05
16	5	81.7	27.6	8.5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
16	7	81.5	27.5	8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
16	9	81.5	27.5	8.4	8.1	17	25	176	15	.	<.2	0.00	85	.	124	.028	0.14	0.04

TABLE (con't)

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	NONION	MN	SOA	TKN	CL	NO2	TOTAL INON	FILTN. INON
17	1	82.5	28.1	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	82.2	27.9	8.3	8.1	18	45	164	.	.	<.1	0.20	.	.	.	.	0.13	0.03
17	3	82.0	27.8	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	81.7	27.7	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	81.3	27.4	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	80.3	27.0	8.0	8.1	42	.	170	.	.		0.05	.	.	.	.	0.10	.
17	22	80.4	26.9	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	80.2	26.8	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	80.2	26.8	8.7	8.0	26	.	176	.	.		0.00	.	.	.	.	0.19	0.03
20	1	84.5	29.2	7.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	83.5	28.6	7.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	3	82.4	28.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	82.0	27.8	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	81.7	27.6	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	80.8	27.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	80.2	26.8	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	80.1	26.7	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	80.1	26.7	8.3	.	.	.	.	.	424		.	.	0.4	.	.	.	.
21	2	80.2	26.8	8.3	8.1	18	10	174	10	.	<.1	0.05	78	.	96	.033	0.11	0.03
21	3	80.2	26.8	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	80.2	26.8	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	80.2	26.8	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	80.2	26.8	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	80.2	26.8	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	80.2	26.8	8.1	8.1	21	25	172	10	.	<.1	0.00	76	.	101	.032	0.08	0.04

TABLE 17

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SOD	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	80.6	27.0	7.2	.	.	.	.	.	445		.	.	0.5	.	.	.	.
1	2	81.3	27.4	7.5	8.0	20	20	178	0	.	<.2	0.00	87	.	102	.029	0.17	0.02
1	5	82.0	27.8	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	82.2	27.9	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	82.2	27.9	7.1	8.0	20	35	170	5	.	<.1	0.00	85	.	103	.027	0.17	0.02
3	1	76.5	24.5	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	76.5	24.5	7.4	8.0	18	30	174	.	.	0.1	0.00	.	.	.	.	0.14	0.04
3	5	76.5	24.5	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	70.5	21.4	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	69.5	21.0	6.5	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	69.5	20.9	6.5	7.9	19	.	170	.	.		0.00	.	.	.	.	0.10	.
3	22	68.4	20.2	6.4	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	68.0	20.0	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	68.0	20.0	5.5	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	67.5	19.7	5.0	7.8	48	.	176	.	.		0.10	.	.	.	.	0.28	0.02
5	1	74.6	23.2	7.2	.	.	.	.	.	444		.	.	0.5	.	.	.	.
5	2	74.9	23.5	7.1	7.9	19	20	172	.	.	<.2	0.00	80	.	.	.	0.20	0.02
5	5	73.6	22.9	6.6	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	71.6	21.5	6.3	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	70.3	21.3	6.2	7.9	25	25	176	5	.	<.1	0.00	77	.	99	.034	0.22	0.03
7	1	69.8	21.0	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	70.2	21.2	7.8	8.0	19	25	168	.	.	<.1	0.00	.	.	.	.	0.10	0.03
7	5	70.6	21.2	7.7	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	70.0	21.1	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	69.5	21.0	7.0	8.0	21	.	172	.	.		0.00	.	.	.	.	0.13	.
7	17	69.4	20.8	6.6	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	69.8	20.8	6.5	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	69.5	20.7	6.1	7.9	45	.	172	.	.		0.05	.	.	.	.	0.28	0.02
8	1	71.5	22.0	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	71.2	21.8	6.1	8.1	19	40	168	.	.	<.1	0.00	.	.	.	.	0.11	0.03
8	5	70.5	21.5	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	70.0	21.1	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	69.8	21.0	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	69.5	20.9	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	69.8	20.8	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	69.4	20.8	7.1	7.9	22	.	172	.	.		0.00	.	.	.	.	0.15	0.04
10	1	69.5	21.0	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	70.7	21.5	7.6	8.0	19	25	170	.	.	<.1	0.00	.	.	.	.	0.10	0.03
10	5	70.5	21.4	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	70.0	21.1	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
10	11	69.8	20.9	6.9	7.9	20	.	170	.	.		0.00	.	.	.	.	0.12	0.02

OCTOBER

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	IRON	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	65.7	20.4	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	64.1	20.6	7.3	7.9	20	20	168	.	.	<.1	0.00	.	.	.	.	0.15	0.04
11	5	64.3	20.7	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	64.3	20.7	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	64.3	20.7	7.1	7.9	21	.	170	.	.		0.05	.	.	.	.	0.14	0.04
13	1	64.5	21.0	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	64.5	21.0	7.5	8.0	18	10	168	.	.	<.2	0.00	.	.	.	.	0.10	0.03
13	5	64.5	21.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	64.5	21.0	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	64.5	21.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	64.5	21.0	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	64.5	20.9	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	64.4	20.8	7.0	8.0	17	.	168		.		0.10	.	.	.	.	0.11	.
13	32	64.4	20.8	6.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	65.4	20.8	6.0	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	65.4	20.8	5.8	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	65.4	20.8	5.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	65.4	20.8	5.5	7.9	30	.	172	.	.		0.20	.	.	.	.	0.20	0.04
14	1	71.2	21.8	7.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	71.1	21.7	7.7	7.9	21	60	172	.	.	<.2	0.00	.	.	.	.	0.12	0.04
14	5	70.7	21.5	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	70.5	21.5	7.4	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	64.8	21.0	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
14	17	64.4	20.8	6.8	8.0	19	.	168	.	.		0.00	.	.	.	.	0.12	0.03
15	1	71.1	21.7	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	70.7	21.5	7.4	7.9	18	35	168	.	.	<.1	0.00	.	.	.	.	0.11	0.03
15	5	70.5	21.4	7.3	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	70.2	21.2	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	64.5	21.0	7.0	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	64.5	21.0	7.0	7.9	18	.	172	.	.		0.00	.	.	.	.	0.05	.
15	22	64.4	20.8	6.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	64.3	20.7	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	65.4	20.8	6.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	37	65.4	20.8	6.5	7.9	30	.	164	.	.		0.00	.	.	.	.	0.18	0.03
16	1	70.0	21.1	7.5	.	.	.	.	.	430		.	.	0.2	.	.	.	.
16	2	64.5	21.0	7.4	7.9	21	45	168	5	.	<.1	0.00	85	.	105	.030	0.16	0.03
16	5	64.4	20.8	7.3	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	64.4	20.8	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
16	10	64.4	20.8	7.2	7.9	21	25	168	5	.	<.1	0.00	80	.	102	.025	0.13	0.03

TA[illegible]18 (con't)

18OCT80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SUS	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	70.4	21.3	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	70.4	21.3	7.8	7.9	22	75	168	.	.	<.1	0.00	.	.	.	.	0.10	0.03
17	5	70.3	21.4	7.7	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	70.2	21.2	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	69.8	21.0	7.6	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	69.5	20.9	7.0	7.9	22	.	168	.	.		0.00	.	.	.	.	0.14	.
17	22	69.4	20.8	6.9	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	69.4	20.8	6.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	69.4	20.8	6.8	7.9	30	.	168	.	.		0.01	.	.	.	.	0.16	0.04
20	1	70.3	21.4	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	70.0	21.1	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	69.8	21.0	7.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	69.8	21.0	7.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	69.8	20.8	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	69.1	20.6	6.6	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	68.9	20.5	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	68.7	20.4	6.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	69.8	21.0	6.6	.	.	.	.	.	432		.	.	0.5	.	.	.	.
21	2	70.2	21.2	6.0	8.2	20	25	174	5	.	<.1	0.00	50	.	100	.024	0.04	0.03
21	5	70.2	21.2	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	70.2	21.2	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	70.2	21.2	7.7	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	70.0	21.1	7.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	68.0	20.0	6.6	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	68.0	20.0	6.4	7.9	19	40	168	5	.	<.1	0.00	60	.	98	.022	0.11	0.06

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	NONION	MN	SUS	TRN	CL	NO2	TOTAL INON	FILTR. INON
1	1	84.4	15.0	9.2	.	.	.	.	.	452		.	.	0.4	.	.	.	.
1	2	84.3	15.1	8.9	8.1	14	15	172	7	.	<.1	0.00	82	.	108	.025	0.17	0.02
1	5	84.4	15.3	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	83.3	15.6	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
1	9	83.7	15.7	8.3	8.1	10	15	176	4	.	<.1	0.20	82	.	110	.025	0.13	0.02
3	1	58.3	14.6	9.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	57.0	13.9	8.9	8.0	10	20	172	.	.	<.1	0.05	.	.	.	.	0.13	0.02
3	5	57.0	13.9	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	57.7	14.3	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	57.2	14.0	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	53.8	13.1	8.1	8.0	11	.	176	.	.		0.01	.	.	.	.	0.09	.
3	22	55.2	12.9	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	54.9	12.7	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	54.3	12.3	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	54.1	12.3	8.1	8.0	13	.	174	.	.		0.01	.	.	.	.	0.18	0.03
5	1	64.0	17.8	8.8	.	.	.	.	.	465		.	.	0.9	.	.	.	.
5	2	64.2	17.9	8.5	8.1	12	15	170	0	.	<.1	0.01	85	.	107	.024	0.12	0.01
5	5	62.8	16.9	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	57.0	13.9	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
5	9	56.1	13.4	8.1	8.1	18	5	176	8	.	<.1	0.00	79	.	108	.025	0.08	0.03
7	1	54.9	12.7	9.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	55.0	12.8	8.5	8.0	11	55	172	.	.	<.1	0.01	.	.	.	.	0.12	0.01
7	5	55.2	12.9	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	55.2	12.9	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	55.4	13.0	8.2	8.0	19	.	176	.	.		0.00	.	.	.	.	0.11	.
7	17	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	55.0	12.8	8.0	8.0	16	.	176	.	.		0.00	.	.	.	.	0.10	0.04
8	1	52.7	11.5	9.1	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	55.2	11.8	8.8	7.9	12	30	172	.	.	<.1	0.05	.	.	.	.	0.17	0.00
8	5	55.2	11.8	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	55.2	11.8	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	55.4	11.9	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	55.4	11.9	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	55.4	11.9	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	55.4	11.9	8.4	7.9	10	.	172	.	.		0.00	.	.	.	.	0.15	0.00
8	32	55.4	11.9	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
8	37	55.4	11.9	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	1	55.4	13.0	9.0	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	55.4	13.0	8.8	8.0	17	20	176	.	.	<.1	0.00	.	.	.	.	0.13	0.02
10	5	55.4	13.0	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	55.4	13.0	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	55.2	13.1	8.4	8.0	18	.	168	.	.		0.00	.	.	.	.	0.13	0.02

TABLE [illegible] (con't)

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	55.0	12.8	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	55.4	13.0	8.8	8.0	15	20	170	.	.	<.1	0.00	.	.	.	.	0.12	0.02
11	5	55.4	13.0	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	55.4	13.0	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	55.4	13.0	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
11	14	55.4	13.0	8.5	8.0	12	.	176	.	.		0.20	.	.	.	.	0.14	0.00
13	1	55.0	12.8	9.2	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	55.4	13.0	8.5	8.0	12	25	172	.	.	<.1	0.00	.	.	.	.	0.12	0.01
13	5	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	55.4	13.0	8.1	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	55.4	13.0	8.0	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	55.4	13.0	8.0	8.0	20	.	174	.	.		0.00	.	.	.	.	0.10	.
13	32	55.4	13.0	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	55.4	13.0	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	55.4	13.0	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	55.4	13.0	7.9	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	55.4	13.0	7.9	8.0	18	.	172	.	.		0.05	.	.	.	.	0.18	0.04
14	1	55.4	13.0	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	55.6	13.1	8.8	8.1	18	20	172	.	.	<.1	0.00	.	.	.	.	0.19	0.00
14	5	55.5	13.2	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	55.5	13.2	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	55.5	13.2	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
14	14	55.5	13.2	8.5	8.1	14	.	172	.	.		0.00	.	.	.	.	0.10	0.01
15	1	55.0	12.8	9.1	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	55.2	12.9	8.7	8.0	12	40	172	.	.	<.1	0.00	.	.	.	.	0.08	0.00
15	5	55.4	13.0	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	55.4	13.0	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	55.4	13.0	8.3	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	55.4	13.0	8.3	8.0	10	.	172	.	.		0.00	.	.	.	.	0.11	.
15	22	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	55.4	13.0	8.2	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	55.4	13.0	8.1	8.1	10	.	172	.	.		0.00	.	.	.	.	0.10	0.00
16	1	52.0	11.1	9.2	.	.	.	.	.	471		.	.	0.4	.	.	.	.
16	2	55.2	11.8	8.8	7.9	14	25	172	8	.	<.1	0.05	80	.	110	.022	0.21	0.00
16	5	55.4	11.9	8.7	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	55.4	11.9	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
16	11	55.4	11.9	8.8	7.9	10	55	172	5	.	<.1	0.00	82	.	109	.022	0.15	0.02

TABLE (con't)

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARDNESS	TSS	TDS	BORON	MN	SO4	IRN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	54.0	12.2	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	54.5	12.5	8.7	8.0	10	25	172	.	.	<.1	0.20	.	.	.	.	0.09	0.00
17	5	54.7	12.6	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	54.9	12.7	8.6	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	54.5	12.5	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	53.5	12.1	8.4	8.0	18	.	178	.	.		0.00	.	.	.	.	0.08	.
17	22	53.5	12.1	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	53.5	12.1	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	53.5	12.0	8.5	8.0	12	.	172	.	.		0.00	.	.	.	.	0.12	0.01
20	1	52.2	11.2	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	52.9	11.6	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	52.9	11.6	9.1	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	52.9	11.6	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	52.9	11.6	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	52.5	11.3	8.9	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	52.2	11.2	9.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	52.0	11.1	9.2	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	55.4	13.0	9.0	.	.	.	.	.	217	5	.	.	0.9	.	.	.	.
21	2	56.1	13.4	8.7	8.1	10	25	172	2	.	<.1	0.00	80	.	109	.022	0.10	0.01
21	5	56.1	13.4	8.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	56.5	13.5	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	56.1	13.4	8.4	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	55.8	13.2	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	55.4	13.0	8.5	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	54.4	12.7	8.2	8.1	22	25	172	5	.	<.1	0.00	80	.	108	.025	0.05	0.01

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	IRON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
1	1	54.0	17.8	10.5	.	.	.	.	.	426		.	.	0.4	.	.	.	.
1	2	53.4	17.7	10.1	8.2	6	25	176	10	.	<.1	0.01	79	.	106	.016	0.10	0.00
1	5	53.4	17.7	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
1	7	53.4	17.7	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
1	10	53.4	17.7	10.1	8.2	8	30	172	10	.	<.1	0.01	80	.	104	.028	0.10	0.01
3	1	57.2	14.0	10.3	.	.	.	.	.	.		.	.	.	.	.	.	.
3	2	57.2	14.0	10.3	8.2	8	35	174	.	.	<.1	0.00	.	.	.	.	0.10	0.00
3	5	54.5	12.4	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
3	7	53.5	12.0	9.9	.	.	.	.	.	.		.	.	.	.	.	.	.
3	12	51.0	11.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	17	50.7	10.4	9.8	8.2	5	.	172	.	.		0.00	.	.	.	.	0.05	.
3	22	50.2	10.1	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	27	50.0	10.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	32	49.8	9.8	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
3	37	49.8	9.8	9.8	8.1	12	.	170	.	.		0.00	.	.	.	.	0.11	0.02
5	1	61.7	16.5	10.1	.	.	.	.	.	445		.	.	0.5	.	.	.	.
5	2	61.5	16.5	10.0	8.2	10	35	176	9	.	<.1	0.00	78	.	102	.025	0.10	0.00
5	5	55.2	12.9	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
5	7	53.5	12.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
5	11	52.0	11.1	9.8	8.2	9	40	168	9	.	<.1	0.01	78	.	106	.026	0.10	0.00
7	1	51.4	10.8	10.5	.	.	.	.	.	.		.	.	.	.	.	.	.
7	2	50.4	10.3	10.4	8.2	5	52	170	.	.	<.1	0.00	.	.	.	.	0.08	0.01
7	5	50.3	10.3	10.3	.	.	.	.	.	.		.	.	.	.	.	.	.
7	7	50.3	10.3	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	12	50.0	10.0	10.2	8.3	8	.	172	.	.		0.00	.	.	.	.	0.12	.
7	17	50.0	10.0	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
7	22	50.0	10.0	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
7	27	49.8	9.9	9.9	8.2	4	.	176	.	.		0.00	.	.	.	.	0.10	0.01
8	1	50.0	10.0	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
8	2	50.0	10.0	9.9	8.1	17	50	170	.	.	<.1	0.00	.	.	.	.	0.10	0.02
8	5	50.0	10.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
8	7	49.8	9.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	12	49.8	9.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	17	49.8	9.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	22	49.8	9.9	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
8	27	49.8	9.9	9.8	8.1	17	.	172	.	.		0.00	.	.	.	.	0.10	0.02
10	1	53.9	12.2	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
10	2	54.0	12.2	10.1	8.2	7	70	172	.	.	<.1	0.00	.	.	.	.	0.10	0.00
10	5	53.4	11.9	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
10	7	53.2	11.8	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
10	12	52.0	11.1	9.9	8.2	9	.	174	.	.		0.10	.	.	.	.	0.11	0.00

TABLE 19 (cont'd)

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ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (Ft.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	BORON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
11	1	52.2	11.2	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
11	2	51.5	11.0	10.0	8.2	10	51	172	.	.	<.1	0.00	.	.	.	.	0.05	0.00
11	5	51.5	11.0	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
11	7	51.5	11.0	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
11	12	51.5	10.9	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
11	15	51.9	10.8	10.0	8.1	7	.	172	.	.		0.01	.	.	.	.	0.10	0.00
13	1	50.7	10.4	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
13	2	50.5	10.2	9.6	8.1	5	50	174	.	.	<.1	0.00	.	.	.	.	0.09	0.01
13	5	50.4	10.2	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	7	50.2	10.1	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	12	50.2	10.1	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	17	50.0	10.0	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
13	22	50.0	10.0	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
13	27	50.0	10.0	9.6	8.1	5	.	174	.	.		0.00	.	.	.	.	0.10	.
13	32	50.0	10.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	37	50.0	10.0	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	42	49.8	9.9	9.5	.	.	.	.	.	.		.	.	.	.	.	.	.
13	47	49.8	9.9	9.4	.	.	.	.	.	.		.	.	.	.	.	.	.
13	52	49.8	9.9	9.4	8.1	9	.	176	.	.		0.00	.	.	.	.	0.08	0.01
14	1	51.5	11.0	10.3	.	.	.	.	.	.		.	.	.	.	.	.	.
14	2	51.5	10.9	10.1	8.1	8	55	170	.	.	<.1	0.05	.	.	.	.	0.10	0.02
14	5	51.4	10.8	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	7	51.4	10.8	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
14	12	51.1	10.6	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
14	14	51.1	10.6	9.6	8.1	8	.	172	.	.		0.05	.	.	.	.	0.11	0.02
15	1	51.6	10.8	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	2	50.9	10.5	10.2	8.1	8	55	172	.	.	<.1	0.00	.	.	.	.	0.08	0.02
15	5	50.9	10.5	9.9	.	.	.	.	.	.		.	.	.	.	.	.	.
15	7	50.9	10.5	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
15	12	50.7	10.4	9.7	.	.	.	.	.	.		.	.	.	.	.	.	.
15	17	50.7	10.4	9.6	8.1	6	.	172	.	.		0.00	.	.	.	.	0.12	.
15	22	50.5	10.3	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	27	50.4	10.2	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	32	50.4	10.2	9.6	.	.	.	.	.	.		.	.	.	.	.	.	.
15	37	50.4	10.2	9.6	8.1	9	.	172	.	.		0.00	.	.	.	.	0.12	0.01
16	1	49.5	9.8	11.0	.	.	.	.	.	417		.	.	0.5	.	.	.	.
16	2	49.5	9.7	10.5	8.1	18	55	172	4	.	<.1	0.00	80	.	96	.025	0.09	0.02
16	5	49.5	9.7	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
16	7	49.5	9.7	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
16	10	49.5	9.7	9.7	8.1	16	65	172	8	.	<.1	0.00	80	.	104	.025	0.10	0.03

TABLE 19 (con't)

18DEC80

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYSICO CHEMICAL WATER QUALITY DATA

STA	DEPTH (FT.)	TEMP F	TEMP C	DO	PH	TURB	COD	HARD NESS	TSS	TDS	MIRON	MN	SO4	TKN	CL	NO2	TOTAL IRON	FILTR. IRON
17	1	50.4	10.2	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
17	2	50.4	10.2	9.9	8.1	11	70	172	.	.	<.1	0.00	.	.	.	.	0.10	0.02
17	5	50.3	10.2	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	7	50.4	10.2	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	12	50.2	10.1	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	17	50.2	10.1	9.7	8.1	15	.	172	.	.		0.00	.	.	.	.	0.08	.
17	22	50.0	10.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	27	50.0	10.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
17	32	50.0	10.0	9.8	8.1	12	.	174	.	.		.	.	.	.	.	0.10	0.04
20	1	49.1	9.5	10.8	.	.	.	.	.	.		.	.	.	.	.	.	.
20	2	49.5	9.7	10.4	.	.	.	.	.	.		.	.	.	.	.	.	.
20	5	49.5	9.7	10.2	.	.	.	.	.	.		.	.	.	.	.	.	.
20	7	49.5	9.7	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
20	12	49.5	9.7	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
20	17	49.5	9.7	9.9	.	.	.	.	.	.		.	.	.	.	.	.	.
20	22	49.5	9.7	9.9	.	.	.	.	.	.		.	.	.	.	.	.	.
20	27	49.5	9.7	9.9	.	.	.	.	.	.		.	.	.	.	.	.	.
21	1	53.2	11.8	10.4	.	.	.	.	.	416		.	.	0.5	.	.	.	.
21	2	53.2	11.8	10.4	8.3	8	50	184	8	.	<.1	0.00	80	.	104	.024	0.09	0.00
21	5	51.8	11.0	10.1	.	.	.	.	.	.		.	.	.	.	.	.	.
21	7	51.4	10.8	10.0	.	.	.	.	.	.		.	.	.	.	.	.	.
21	12	50.0	10.0	9.9	.	.	.	.	.	.		.	.	.	.	.	.	.
21	17	50.0	10.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	22	50.0	10.0	9.8	.	.	.	.	.	.		.	.	.	.	.	.	.
21	27	49.3	9.6	9.7	8.2	8	52	176	6	.	<.2	0.00	77	.	104	.022	0.07	0.02

JANUARY 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON	STATION										
FREQUENCY	1	2	3	9	10	11	14	15	16	21	TOTAL
ACTINASTRUM	0	0	0	0	0	0	26	0	26	0	52
ANABAENA	0	26	154	0	26	26	26	51	0	26	335
ANACYSTIS	26	26	0	334	0	26	51	51	26	0	540
ANKISTRODESMUS	308	308	231	693	231	411	3	462	565	174	3391
ASTERIONELLA	0	51	77	0	0	0	51	0	0	77	256
CLOSTERIUM	0	0	51	26	0	0	0	0	0	26	103
CYCLOTELLA	103	0	693	0	899	0	771	1427	237	488	5138
DINOBRYON	0	26	26	0	0	26	0	0	0	0	78
EUGLENA	51	51	0	51	26	51	26	0	0	51	307
FRAGILLARIA	0	0	51	0	0	0	0	0	26	0	77
GYROSIGMA	0	0	0	26	0	0	0	0	0	0	26
KIRCHNERIELLA	0	0	0	26	26	128	0	0	26	103	309
TOTAL	2670	3108	3282	3097	3184	2744	1622	5000	2133	3048	31151

(CONTINUED)

JANUARY 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	5	9	10	11	14	15	16	21	TOTAL
FREQUENCY											
MELOSIRA	209	0	26	13	91	154	436	209	308	514	1912
SYNEDRA	51	51	462	0	0	51	77	51	385	0	1128
NAVICULA	179	231	51	179	539	179	103	77	334	359	1871
DOCILLARIA	77	0	77	0	77	0	26	103	0	77	457
PEDIASTRUM	26	0	51	2	0	0	0	26	26	26	157
SCENEDESMUS	0	26	0	26	0	26	26	26	0	26	156
STEPHANODISCUS	334	848	21	719	1207	796	0	503	0	0	4440
SYNEDRA	77	0	103	7	252	257	0	0	0	257	985
TABELLARIA	0	0	0	0	0	0	0	0	26	0	26
TRIBONEMA	1233	1464	1182	1343	0	642	0	1464	308	1434	9325
VOLVOX	0	0	26	0	0	26	0	0	0	0	52
TOTAL	2670	5108	2282	3647	5154	2794	1622	5008	2155	3648	31151

APRIL 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON	STATION										
FREQUENCY	1	2	3	5	10	11	14	15	16	21	TOTAL
ACTINASTRUM	0	0	0	0	0	51	0	0	0	0	51
ANABAENA	0	26	0	26	0	26	3	0	0	0	81
ANACYSTIS	0	0	0	0	0	0	0	26	3	0	26
ASTERIONELLA	26	26	103	3	154	308	26	51	26	205	1006
CHRODACTUS	0	0	0	0	0	26	0	0	26	0	52
CLADOPHORA	0	0	0	0	0	1	0	0	0	0	1
CLOSTERIUM	0	0	0	0	1	0	26	0	0	0	27
COSMARIUM	0	0	0	0	0	1	0	0	0	0	1
EUGLENA	0	103	0	0	26	0	0	77	0	0	206
FRAGILLARIA	26	0	26	26	0	51	0	26	0	26	181
MELOSIRA	0	0	0	0	26	2	51	0	0	0	79
NITZSCHIA	51	0	1	26	0	0	0	0	26	0	104
TOTAL	334	557	618	418	452	1006	586	517	455	618	5834

(CONTINUED)

TABLE (con't)

APRIL 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON	STATION										
FREQUENCY	1	2	3	5	10	11	14	15	16	21	TOTAL
NAVICULA	0	26	0	0	2	0	0	2	25	0	56
NITZCHIA	0	0	0	0	0	0	0	51	0	0	51
OSCILLATORIA	154	77	180	129	129	154	102	129	129	180	1337
PEDIASTRUM	0	0	0	0	0	1	0	0	0	0	1
PERIDINIUM	0	0	0	0	0	0	26	0	0	0	26
SCENEDESMUS	0	26	0	0	26	51	0	0	0	0	103
SPIROLINA	0	0	26	0	26	51	0	0	0	0	103
SYNEDRA	0	0	0	26	0	0	0	0	0	0	26
TABELLARIA	0	206	180	154	386	180	77	129	180	129	1621
ULOTHIX	51	26	51	0	129	0	0	0	0	0	257
UNID. UNICELLULA	51	51	51	26	26	103	77	26	25	0	437
VOLVOX	0	0	0	0	1	0	0	0	0	0	1
TOTAL	334	507	618	416	932	1006	386	517	488	618	5834

JULY 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	3	5	10	11	14	15	16	21	TOTAL
FREQUENCY											
ACTINASTRUM	594	495	231	693	517	396	495	411	594	66	4026
ANABAENA	411	2514	165	825	253	771	495	396	231	165	6037
ANACYSTIS	0	0	0	66	0	0	198	0	0	33	297
ANKISTRODESMUS	396	1	0	231	0	0	0	0	0	0	628
ANKYRA SPIRA	33	77	0	77	66	66	0	0	66	66	509
ASTERIONELLA	0	0	0	0	0	0	0	0	0	66	66
CHLAMYDOMONAS	1254	4554	1155	2211	0	0	0	0	0	0	7974
CHLORELLA	0	0	66	0	0	0	0	0	0	0	66
CLOSTERIUM	0	0	0	0	0	0	77	0	0	154	231
COCCONEIS	0	0	0	0	0	0	0	0	0	66	66
DIATOMACEOUS	0	77	0	0	0	0	0	0	0	0	77
EUGLENA	0	66	33	0	0	66	0	0	0	0	165
FRAGILLARIA	0	0	0	0	0	66	0	0	0	0	66
GLEOCAPSA	0	0	0	0	0	0	0	0	0	66	66
GYMNODINIUM	66	0	0	0	0	0	66	0	0	0	132
GYRIUM	33	33	66	0	0	0	0	0	0	0	132
STAURASTRUM	0	0	0	0	33	33	33	0	33	66	231
TOTAL	5940	8223	5005	8007	6336	6435	6303	1063	3531	1211	55603

(CONTINUED)

TABLE 22 (con't)

JULY 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON FREQUENCY	STATION 1	2	3	5	10	11	14	15	16	21	TOTAL
ANACYSTIS	0	0	0	0	0	26	0	0	0	0	26
CYANOPHYTA	0	0	0	0	0	0	26	0	51	26	103
MELOSIRA	0	0	77	26	0	0	0	0	0	0	103
MERISMOPEDIA	0	0	0	0	0	0	0	0	0	26	26
NAVICULA	0	0	0	26	0	0	0	0	0	0	26
NITZSCHIA	0	0	103	26	0	0	0	26	0	0	155
OSCILLATORIA	26	77	0	51	51	206	0	257	26	0	694
PANDORINA	2404	129	231	2030	1028	720	745	402	2515	906	11155
PEDIASTRUM	0	51	0	26	0	0	0	0	0	0	77
PERIDINIUM	26	0	0	1	0	0	0	0	0	26	53
SCENEDESMUS	0	0	77	0	0	0	0	0	0	0	77
SCHROEDERIA	51	51	77	103	26	51	0	26	51	0	436
SPHAEROCYSTIS	0	0	0	0	0	0	0	0	26	0	26
TRIBONEMA	0	0	0	26	0	0	0	0	0	0	26
UNID. UNICELLULA	129	1	103	180	103	129	206	231	51	206	1339
TOTAL	0	1	129	0	0	26	26	26	0	51	259
	5956	6225	3006	6607	2256	2445	2263	1865	3751	1211	35805

TABLE 23

OCTOBER 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
PHYTOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON	STATION										
FREQUENCY	1	2	3	5	10	11	14	15	16	21	TOTAL
ACTINASTRUM	0	0	0	0	0	0	0	0	1	0	1
ANACYSTIS	0	51	0	26	0	0	0	0	26	0	103
ANKISTRODESMUS	0	26	0	1	0	0	0	0	0	0	27
CHLAMYDOMONAS	0	0	0	0	0	0	0	0	0	26	26
CHROOCOCCUS	0	0	0	0	0	0	26	26	0	0	52
CLOSTERIUM	0	0	0	0	0	1	0	0	0	0	1
CROOGENIA	0	0	0	0	26	0	0	1	0	0	27
EUGLENA	0	231	0	0	26	0	26	0	0	0	283
KIRCHNERIELLA	26	0	0	0	0	0	0	0	0	0	26
MERISMOPEDIA	26	0	0	0	1	0	0	0	26	0	53
NAVICULA	0	0	0	26	1	0	0	0	0	0	27
NITZCHIA	0	0	0	0	0	0	0	0	0	0	26
OSCILLATORIA	51	51	77	77	26	0	0	5	0	51	339
PEDIASTRUM	26	0	26	51	1	0	51	0	1	0	156
SCENEDESMUS	0	51	1	26	0	51	26	26	103	26	310
SPHAEROCYSTIS	0	0	0	0	0	0	0	1	0	0	1
SYNEDRA	0	0	0	0	0	0	0	0	1	0	1
TRIBONEMA	0	0	0	0	0	0	0	0	1	0	1
UNID. UNICELLULA	0	0	0	0	26	0	0	0	26	0	52
TOTAL	129	410	104	207	107	52	129	39	212	103	1512

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
ZOOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	3	5	10	11	14	15	18	21	TOTAL
ASPLANCHNA	0	51	0	0	0	0	0	0	0	0	51
BOSMINA	0	1	0	1	0	1	2	3	26	26	60
BRACHIONUS	26	0	2	0	0	0	2	0	0	1	31
CYCLOPS	1	0	0	3	26	26	0	51	26	26	159
DAPHNIA	0	0	26	1	0	0	26	0	0	0	53
DIAPTOMUS	0	1	0	0	0	0	0	0	0	0	1
EGGS	179	282	334	462	334	179	205	0	0	154	2135
FILINIA	0	51	0	0	2	26	0	0	0	0	79
KELLICOTTIA	26	0	0	0	0	0	0	0	26	0	52
KERATELLA	179	26	179	128	77	102	77	334	0	77	1183
NAUPLII	3	26	51	51	3	51	26	154	51	51	467
POLYARTHRA	51	128	26	334	411	77	179	359	179	154	1898
TOTAL	465	566	815	980	853	462	517	901	318	469	6169

APRIL 1980

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
ZOOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON	STATION										
FREQUENCY	1	2	3	5	10	11	14	15	16	21	TOTAL
[illegible]	25	0	2	0	0	25	0	0	0	1	55
BRACHIONUS	0	0	0	0	1	25	1	0	25	1	55
[illegible]	0	0	0	0	0	0	0	0	0	2	2
[illegible]	0	0	0	5	1	0	1	0	0	0	5
DAPHNIA	0	1	0	0	0	0	1	2	0	0	4
DIAPTOMUS	25	0	0	0	0	2	0	25	0	0	54
[illegible]	0	0	77	77	105	77	150	105	77	1	645
FILINIA	0	0	1	0	25	1	0	1	0	0	29
KERATELLA	0	51	105	0	77	1	0	25	0	0	258
NAUPLII	51	77	25	51	51	0	0	77	51	25	410
POLYARTHRA	0	25	0	0	25	1	1	25	0	25	106
UNID ROTIFERS	77	25	251	77	500	5	0	0	0	0	774
TOTAL	150	181	440	208	845	137	154	261	154	57	2847

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
ZOOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	3	5	10	11	14	15	16	21	TOTAL
FREQUENCY											
BOSMINA	0	0	0	1	0	0	0	0	0	0	1
BRACHIONUS	231	154	0	334	26	5	103	77	51	103	1082
CYCLOPS	26	26	1	26	3	1	77	0	2	26	188
DAPHNIA	0	0	0	0	0	0	1	26	0	26	53
DIAPTOMUS	1	0	0	0	0	0	0	1	0	0	2
EGGS	154	103	51	51	26	26	51	51	26	124	668
FILINIA	0	0	0	1	1	0	1	0	0	0	3
INSECTA	0	0	0	0	0	0	0	0	0	26	26
KELLICOTTIA	26	0	0	0	0	0	0	0	0	0	26
KERATELLA	0	0	0	26	0	0	0	0	0	0	26
NUNDSTYLA	1	0	0	1	0	0	0	0	0	0	2
NAUPLII	26	26	1	26	5	5	51	26	0	0	166
POLYARTHRA	103	26	1	0	0	0	26	0	26	0	182
POLYPHEMUS	0	0	0	0	0	0	0	0	0	26	26
UNID CLADOCERA	0	0	0	0	26	51	0	26	0	0	103
UNID COPEPODS	0	0	0	0	0	0	6	0	0	0	6
UNID ROTIFERS	154	51	51	77	51	51	1	26	1	0	463
TOTAL	722	386	105	543	138	137	317	255	106	336	3023

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR
ZOOPLANKTON DATA (ORGANISMS/LITER)

TABLE OF TAXON BY STATION

TAXON	STATION										
FREQUENCY	1	2	3	5	10	11	14	15	19	21	TOTAL
BOSMINA	1	0	0	25	0	1	4	25	0	25	80
BRACHIONUS	25	51	1	25	0	1	1	25	1	25	159
CYCLOPS	1	0	51	2	1	1	25	1	25	5	111
DIAPTOMUS	0	0	0	1	0	25	0	0	0	0	27
EGGS	25	103	25	103	25	51	77	51	51	51	565
HOLOPEDIUM	0	25	0	0	0	25	1	0	0	25	79
KERATELLA	0	25	0	25	25	2	51	51	51	25	259
TUNICATTLA	0	0	0	0	0	0	0	0	25	0	25
NAUPLII	77	25	77	25	25	205	180	103	25	103	850
POLYARTHRA	25	0	0	25	51	51	51	0	0	77	202
UNID CLADOCERA	0	0	0	2	0	0	0	0	0	0	2
UNID ROTIFERS	25	25	25	0	77	0	103	25	25	125	438
TOTAL	102	258	101	238	207	365	498	254	207	466	2802

TABLE [illegible]

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR BENTHOS
ORGANISMS/SQUARE METER

JANUARY 1980

TABLE OF TAXON BY STATION

TAXON	STATION										
PHYLUM/CLASS	1	2	3	5	10	11	14	15	16	21	TOTAL
CRUSTACEA	0	0	0	0	0	0	0	0	22	0	22
CHAOBORUS	0	108	172	43	0	43	108	323	0	0	817
CHIRONOMIDAE	22	431	344	280	345	129	517	452	409	258	3185
OLIGOCHAETA	0	151	22	43	22	43	43	108	0	0	430
POLYCHAETA	22	22	302	22	323	237	560	22	65	603	2173
SPHAERIIDAE	129	22	0	22	22	65	172	0	22	0	452
TRICHOPTERA	0	0	0	0	22	0	0	0	0	0	22
TOTAL	172	732	834	430	732	516	1344	904	517	861	7094

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR BENTHOS
ORGANISMS/SQUARE METER

APRIL 1980

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	3	5	10	11	14	15	16	21	TOTAL
CERATOPSYCHIDAE	0	22	0	22	0	22	0	0	0	0	65
CHAOBORUS	0	22	65	0	0	0	65	366	0	0	538
CHIRONOMIDAE	0	345	301	258	559	345	258	904	301	445	3760
CORBICULIDAE	0	0	0	0	22	0	0	0	0	0	22
HEXAGENIA	0	559	0	172	0	22	43	172	65	0	1054
HYDRACARINA	0	0	0	0	0	0	0	22	22	0	43
NEMATODA	0	0	0	0	0	0	22	0	0	0	22
OLIGOCHAETA	0	22	301	0	237	344	280	301	215	302	2040
PECTINATELLA	0	22	0	0	0	0	0	0	0	0	22
SPHAERIIDAE	0	22	0	0	0	0	108	0	0	0	129
TRICHOPTERA	0	0	0	0	22	0	0	0	0	0	22
TOTAL		1012	709	452	894	732	774	1050	624	1077	8326

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR BENTHOS
ORGANISMS/SQUARE METER

JULY 1980

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	3	5	10	11	14	15	16	21	TOTAL
CHAOBORUS	0	129	194	129	280	0	86	86	172	43	1118
CHIRONOMIDAE	0	86	22	172	129	86	151	43	194	0	882
HEXAGENIA	0	22	0	0	22	0	0	0	0	0	43
OLIGOCHAETA	0	43	151	0	237	603	0	43	0	43	1119
SPHAERIIDAE	22	0	0	0	0	0	0	0	0	0	22
TOTAL	22	280	366	301	667	689	237	172	366	86	3185

TABLE 31

ARKANSAS NUCLEAR ONE ENVIRONMENTAL MONITORING PROGRAM
DARDANELLE RESERVOIR BENTHOS
ORGANISMS/SQUARE METER

OCTOBER 1980

TABLE OF TAXON BY STATION

TAXON / STATION	1	2	3	5	10	11	14	15	16	21	TOTAL
CHAOBORUS	0	172	1164	65	151	194	301	1141	22	194	3422
CHIRONOMIDAE	0	172	323	129	0	108	151	258	108	0	1248
HEXAGENIA	0	43	0	0	0	0	0	0	86	0	129
OLIGOCHAETA	0	0	43	22	65	0	0	65	22	215	430
SPHAERIIDAE	0	0	0	0	0	22	0	0	0	0	22
TRICHOPTERA	0	0	0	0	0	0	0	0	0	0	0
TOTAL		387	1550	215	215	323	452	1464	237	409	5250

1980 Report on Larval Fish Entrainment at Arkansas Nuclear One

Entrainment is defined here as the passive movement of small drifting aquatic organisms in water withdrawn from a lake or river and used for industrial cooling purposes. While moving through a power plants' condenser cooling system, the organisms may be injured from turbulent shear forces and sudden changes in water temperature and pressure. Of particular interest to power plant operators and regulatory agencies is the environmental impact entrainment of larval fish has on the lake or river used as a source of cooling water.

In 1980, the entrainment of larval fish by the Arkansas Nuclear One Unit-1 circulating water system was evaluated by monthly sampling in the intake canal (Figure 1) from April to September. Vertical sampling of the water column at the surface, mid-depth and bottom of the 14 feet deep canal was performed on each sampling date at 0800, 1600 and 2400 hours. Three 0.5 m, 782μ mesh, Birge closing nets fitted with General Oceanics flow meters and double-trip mechanisms were used. Nets were fished for 5 minutes and replicate samples were collected within 10 minutes. The volume of samples varied with intake canal water velocities and resulted in a range of 19-71 m^3. Approximately 0.25% of the total flow through the intake canal during sampling was filtered. Fish larvae captured in the nets were preserved in a solution of 4% formalin and 0.001% Rose Bengal stain. Larvae were identified at 40X magnification to the lowest taxon pratical. The

length of each specimen was recorded and the presence of parasites and abnormal growths was noted.

The intake canal water temperature, dissolved oxygen concentration and pH were determined for each sampling effort and are presented in Table 1. The water velocity in the canal was not measured before sampling. Previous calculations indicated the highest velocities occur at the narrow passage in the canal where sampling is performed. At maximum flow conditions, this area has a velocity of approximately 1.0 m/sec; the velocity at the intake structure was calculated to be 0.15 m/sec.

Field and laboratory data were transferred to 80 column computer cards, stored on disk and managed using the Statistical Analysis System (SAS) software. The 363 observations from this program are listed in Appendix 1. Names of variables at the top of each page are defined as follows:

OBS - The observation number

SITE - Lake Dardanelle

STATION - ANO intake canal

SAMDEPTH - Depth of sample (surface, mid-depth, bottom)

REPNUM - Replicate sample number

TOD - Time of day sampling occurred (hours)

TOSM - Duration of sampling (minutes)

TOSS - Duration of sampling (seconds)

NETSIZE - Net Mesh (microns)

STADEPTH - Depth of intake canal (feet)

UNIT1PUMP - Number of Unit-1 circulating water pumps operating during sampling

UNIT2PUMP - Number of Unit-2 circulating water pumps operating during sampling

ANOTOFLO - Volume of ANO circulating water flow on day of sampling (m^3)

GRPCLASS - Larval fish length class (mm)

TORNUM - Number of larvae in observation

DISPARA - Code of disease or parasite in observation

NUMDROP - Number of fish larvae having a disease or parasite in observation

VOLUME - Sample volume (m^3)

DENSITY - Number of larvae/1000 m^3

TAXON - Systematic name of larvae in observation

Over the entire sampling period, 588 larval fish specimens were collected. Major larval fish taxa identified were Atherinidae (Silversides), Catostomidae (Suckers), Cyprinidae (minnows), Clupeidae (Herring/Shad), Aplodinotus grunniens (Freshwater drum), Lepomis spp. (Sunfishes) and Morone spp. (Sea Basses). In order of relative abundance, Clupeidae composed 81.5% of larvae collected, Morone spp. 10.5%, Aplodinotus grunniens 4%, Atherinidae 1%, Catostomidae 1%, Lepomis spp. 1%, Cyprinidae 0.5% and 0.5% of the larvae were damaged and could not be identified. Of the Clupeidae, 80% were in a post larvae size class that would not permit further differentiation, 13% were Dorosoma spp., 3.5% Dorsoma cepedianum (Gizzard Shad), 3.7% Dorsoma petenense (Threadfin Shad) and <1% Alosa chrysochloris (Skipjack Herring). Fifty percent of Atherinidae were identified as Menidia audens (Mississippi

Silverside), and <1% of Morone spp. were identified as Morone saxatilis (White Bass). Larvae ranged in length from 2 to 37 mm.

No significant trend in spatial distribution of larvae in the intake canal water column was detected. Only Clupeidae were consistently more abundant at the surface. Over the study period, 46.8% of the net catch was collected at the surface, 30.6% at mid-depth and 22.6% at the bottom. A consistent temporal distribution of larvae was observed as in previous years. Eighty-five percent of the net catch was collected at 2400 h, 8% at 0800 h and 7% at 1600 h.

Estimates of larval fish densities in the ANO Unit-1 condenser cooling water on each of the sampling dates is presented in Figures 2 and 3. The seasonal occurrence of each taxa closely resembles predicted abundance as well as observations of entrainment monitoring at ANO in 1979. Morone spp. were the only larvae found in the April samples. In May, Morone spp. densities increased sharply with the appearance of Clupeids, catostomids and cyprinids. In late May, Morone spp. and Clupeids reached a maximum density of 39 and 212/1000 m^3, respectively. A. grunniens appeared in late May and reached a peak density of 200/1000 m^3 in late June. Lepomis spp. were first observed in the July samples and slowly decreased in numbers through September. Clupeids numbers dropped to a density of 18/1000 m^3 in July before increasing sharply in August in September.

larvae entrained in 1980, have historically exhibited sufficient compensatory reserves to offset any affect from entrainment losses.

Larval fish entrainment monitoring at Arkansas Nuclear One is performed in compliance of ANO Unit- One Environmental Technical Specification objectives (Section 4.1.2(3)) and reporting requirements (Section 5.6.1).

TABLE 1

1980 Entrainment Monitoring Program
Intake Canal Water Quality

DATE	Time (hrs)	Depth (ft)	D.O. (mg/l)	Temp. (°C)	pH
April 23, 1980	0800	2	12.2	18.0	8.5
	1600	2	12.6	21.5	8.7
	2400	2	14.4	18.0	9.0
May 7, 1980	0800	2	10.0	18.5	8.5
	1600	2	9.2	19.5	8.3
	2400	2	10.0	18.5	8.2
May 27, 1980	0800	2	9.7	24.0	8.5
	1600	2	13.0	27.5	9.2
	2400	2	11.2	26.0	9.1
June 23, 1980	0800	2	7.7	26.0	8.1
	1600	2	12.5	29.5	8.8
	2400	2	8.5	27.5	8.5
July 16, 1980	0800	2	7.0	32.0	8.5
	1600	2	6.3	33.0	8.5
	2400	2	7.3	33.0	8.4
August 13, 1980	0800	2	7.5	30.0	8.5
	1600	2	9.2	31.5	8.6
	2400	2	8.0	30.0	8.6
Sept. 4, 1980	0800	2	6.8	28.0	8.3
	1600	2	3.5	29.0	8.3
	2400	2	7.2	28.0	8.2

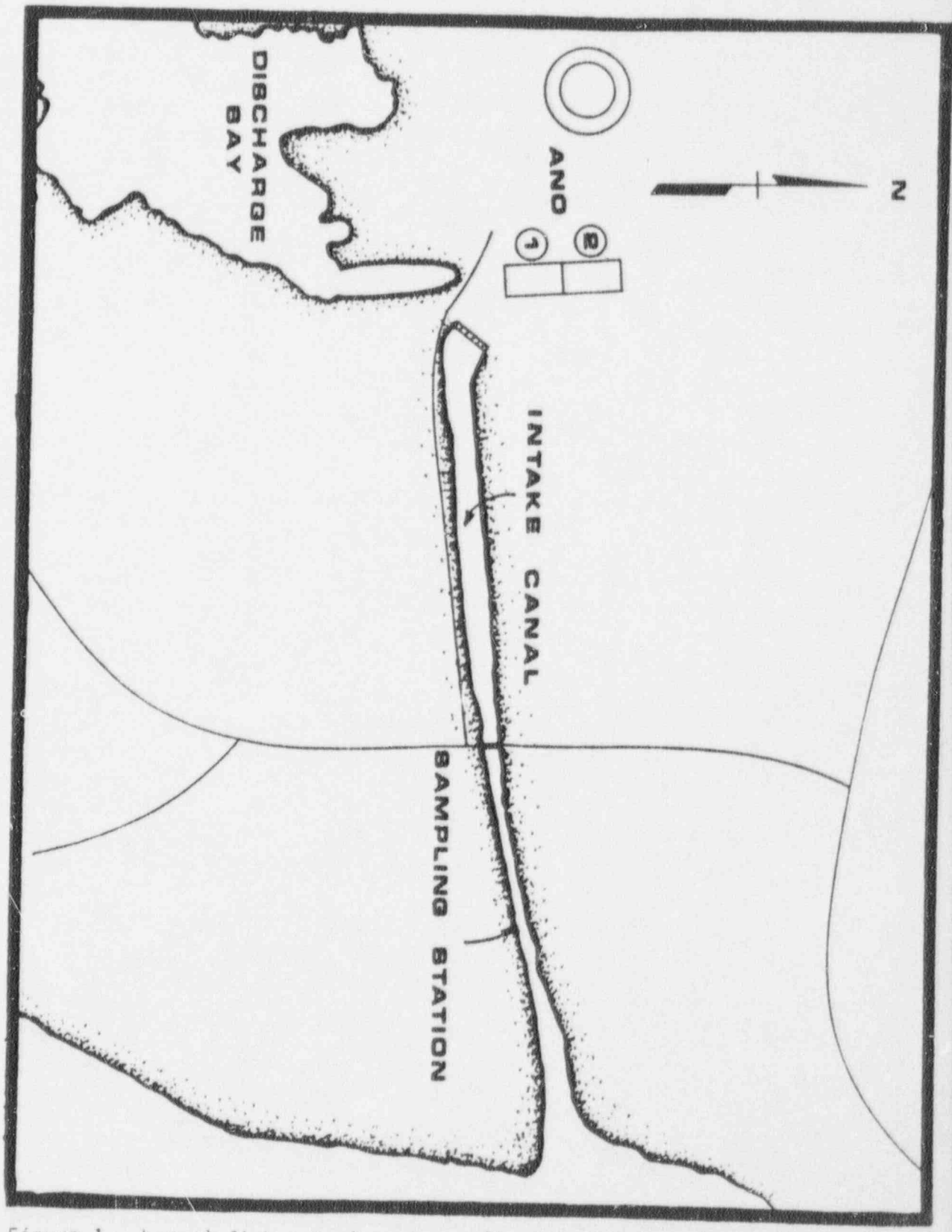

Figure 1. Larval fish entrainment sampling station.

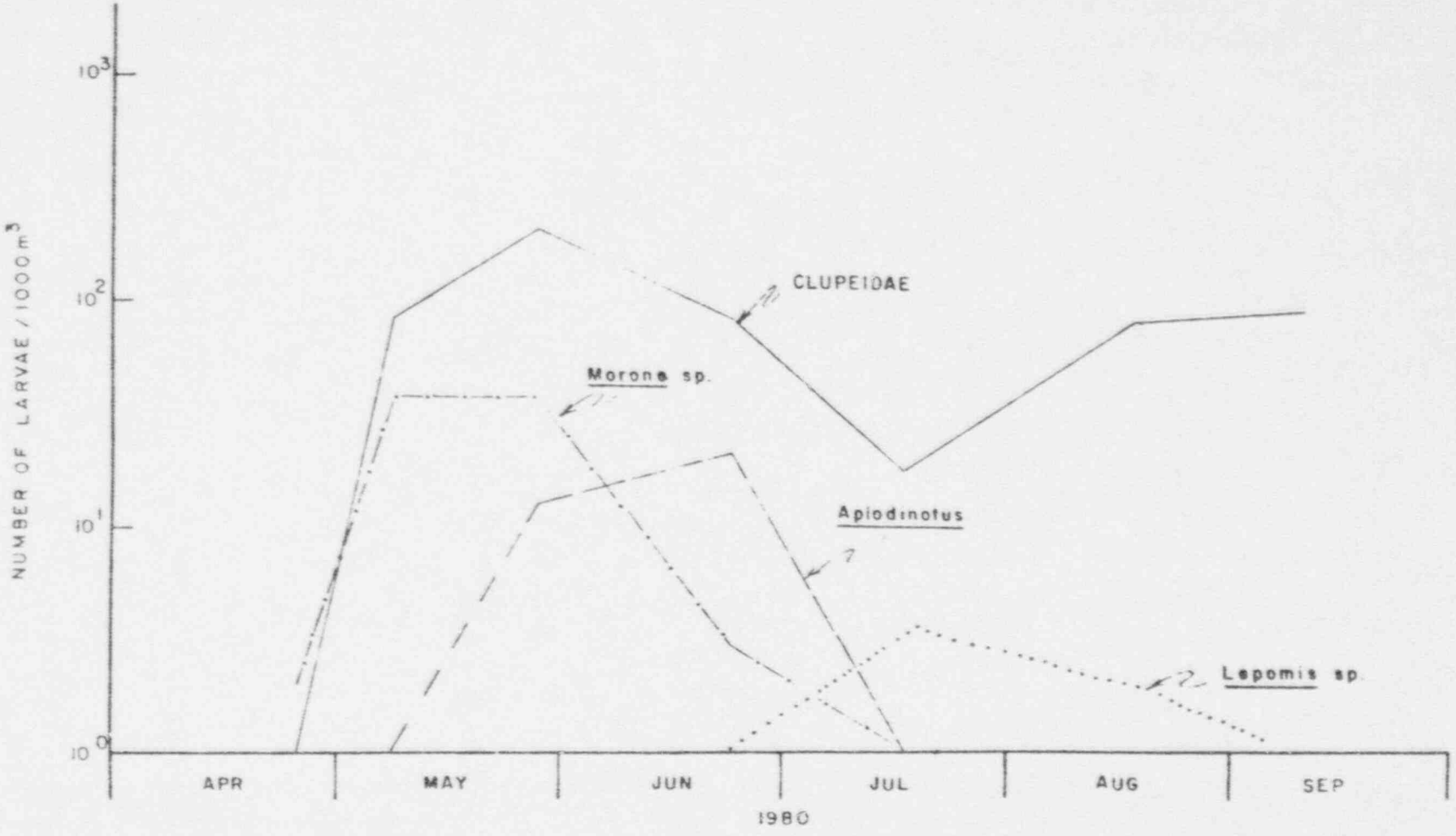

Figure 2. Estimated larval fish densities in the ANO intake canal.

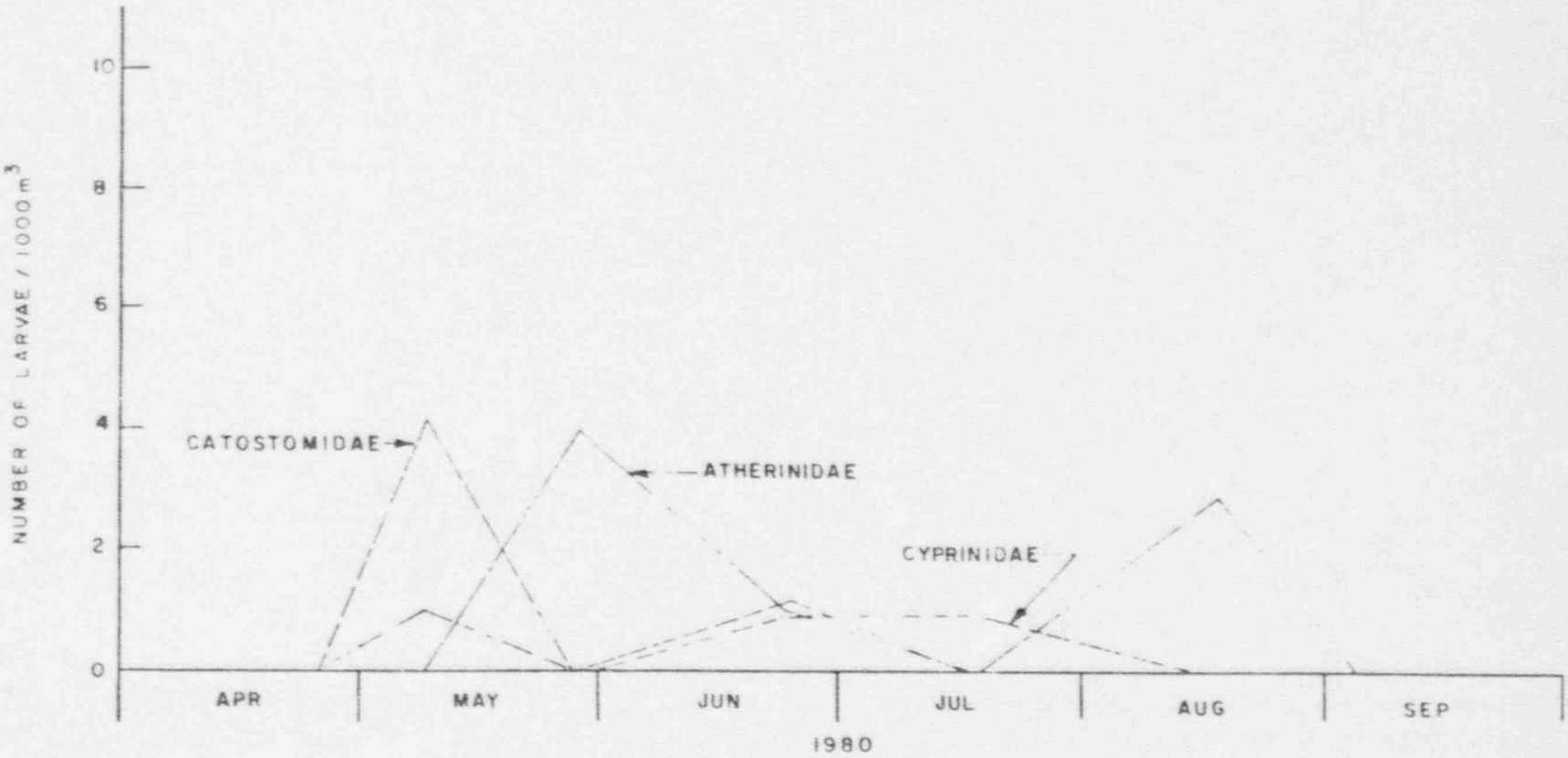

Figure 3. Estimated larval fish densities in the ANO intake canal.

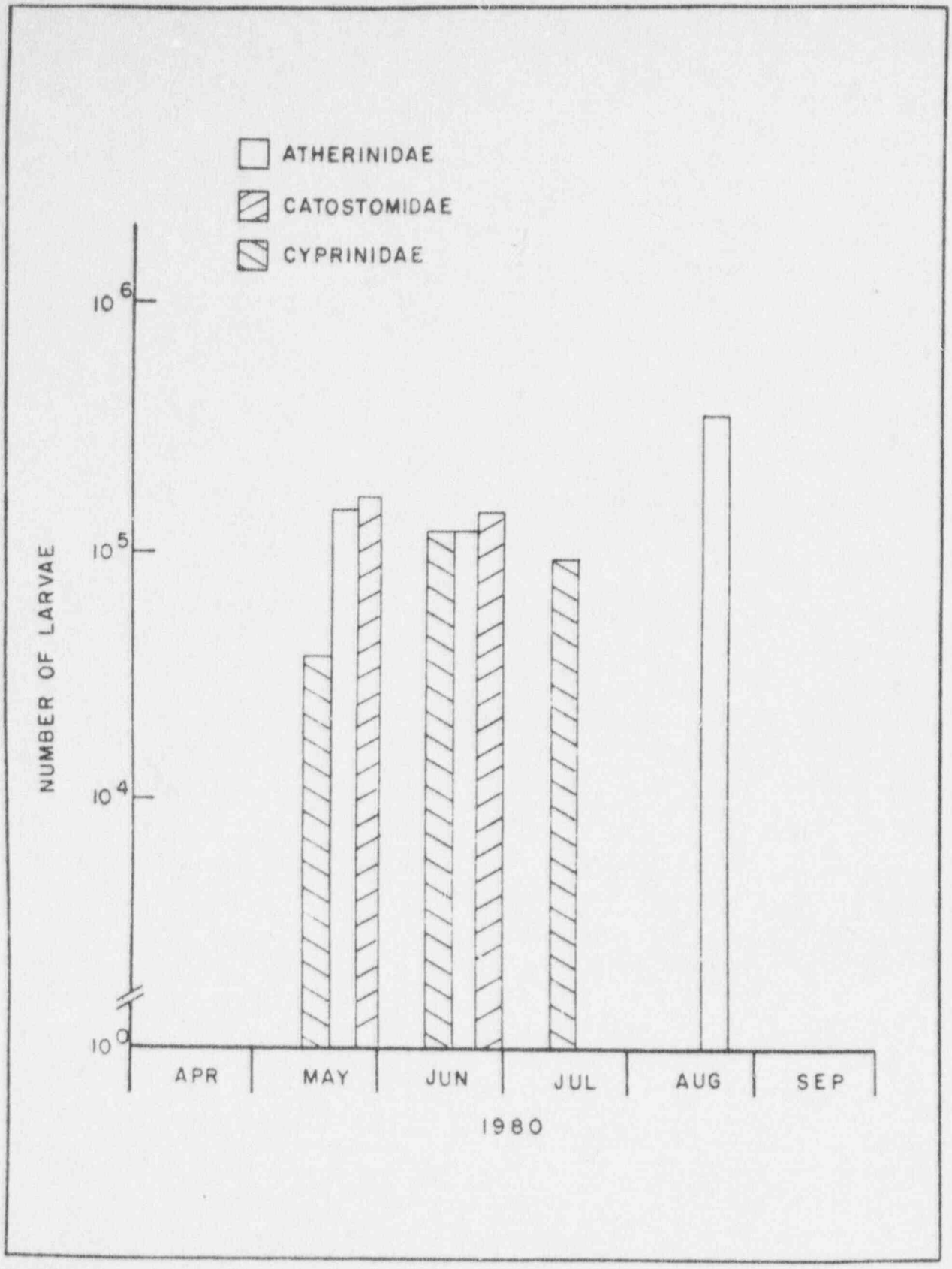

Figure 4. Estimated monthly larval fish entrainment at ANO.

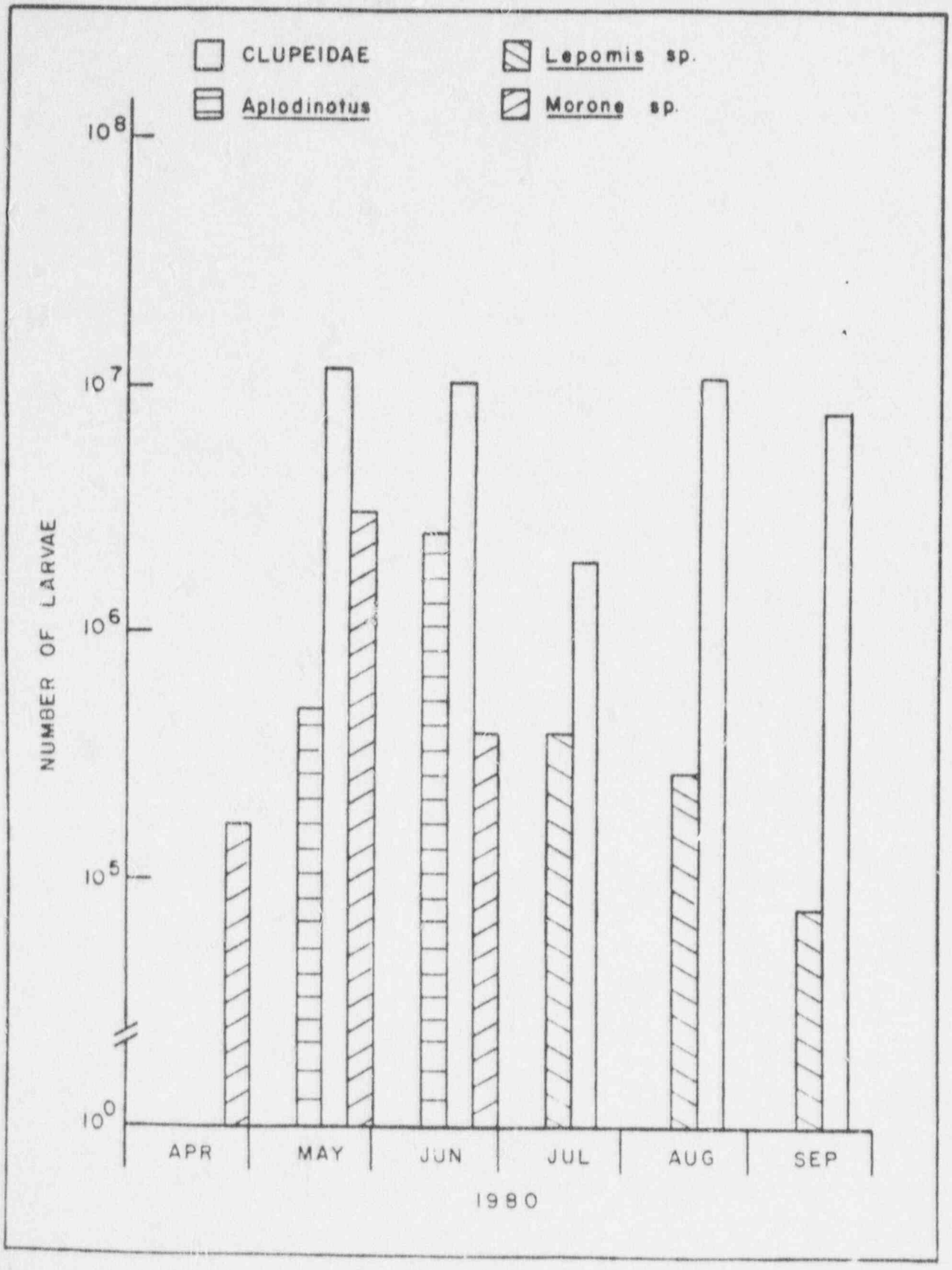

Figure 5. Estimated monthly larval fish entrainment at ANO.

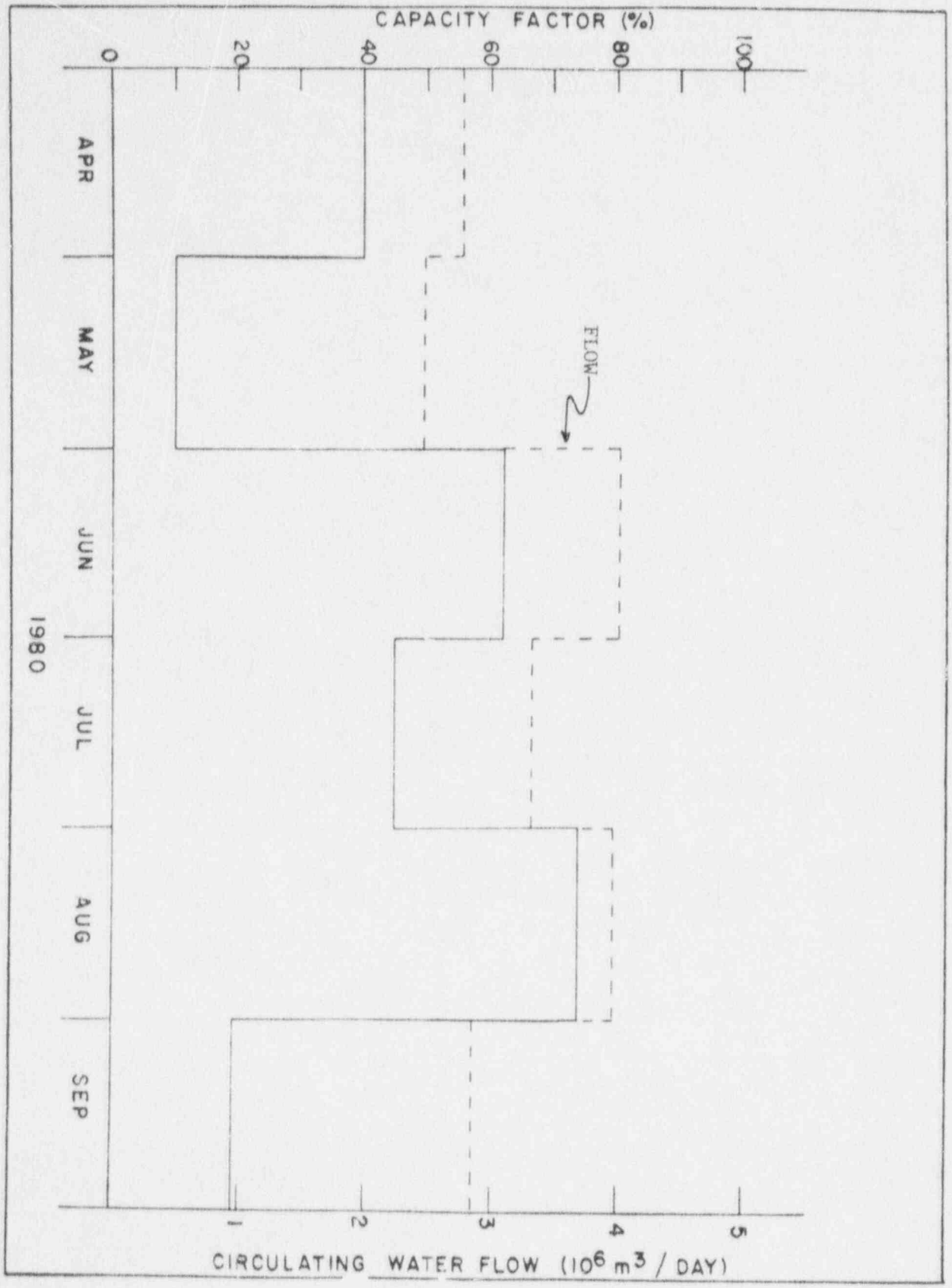

Figure 6. Average monthly circulating water flows and capacity factor for ANO unit during study period.

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

---------- DATE=23APR80 ----------

OBS	SITE	STATION	SAMDEPTH	REPNO	TOD	TUSM	NETSIZE	STADEPT	UNIT1PMP	UNIT2PMP	ANOTUFLO	GRPCLASS	TOTNUM	DISPARA	NUMDURP	END	VOLUME	DENSITY	TAXON
1	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	14	2	2	4755249	.	.		.	.	19.1383	.	NO FISH CAUGHT
2	L DARD	INTAKE CANAL	MIDDEPTH	1	800	5	792	14	2	2	4755249	.	.		.	.	25.3870	.	NO FISH CAUGHT
3	L DARD	INTAKE CANAL	SURFACE	1	800	5	792	14	2	2	4755249	.	.		.	.	31.5550	.	NO FISH CAUGHT
4	L DARD	INTAKE CANAL	BOTTOM	2	800	5	792	14	2	2	4755249	.	.		.	.	23.7122	.	NO FISH CAUGHT
5	L DARD	INTAKE CANAL	MIDDEPTH	2	800	5	792	14	2	2	4755249	.	.		.	.	25.8057	.	NO FISH CAUGHT
6	L DARD	INTAKE CANAL	SURFACE	2	800	5	792	14	2	2	4755249	.	.		.	.	31.4696	.	NO FISH CAUGHT
7	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	792	14	2	2	4755249	3	1	0	0	.	27.1201	36.875	WHITE BASS
8	L DARD	INTAKE CANAL	MIDDEPTH	1	1600	5	792	14	2	2	4755249	.	.		.	.	29.7171	.	NO FISH CAUGHT
9	L DARD	INTAKE CANAL	SURFACE	1	1600	5	792	14	2	2	4755249	.	.		.	.	27.1201	.	NO FISH CAUGHT
10	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	792	14	2	2	4755249	.	.		.	.	27.6024	.	NO FISH CAUGHT
11	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	14	2	2	4755249	.	.		.	.	29.0546	.	NO FISH CAUGHT
12	L DARD	INTAKE CANAL	SURFACE	2	1600	5	792	14	2	2	4755249	.	.		.	.	30.1093	.	NO FISH CAUGHT
13	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	14	2	2	4755249	.	.		.	.	27.0883	.	NO FISH CAUGHT
14	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	14	2	i	4755249	.	.		.	.	28.3868	.	NO FISH CAUGHT
15	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	14	2	2	4755249	.	.		.	.	33.5423	.	NO FISH CAUGHT
16	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	792	14	2	2	4755249	.	.		.	.	27.9310	.	NO FISH CAUGHT
17	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	792	14	2	2	4755249	.	.		.	.	30.6658	.	NO FISH CAUGHT
18	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	14	2	2	4755249	.	.		.	.	31.5442	.	NO FISH CAUGHT

APPENDIX 1-b

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=07/16/80

OBS	SITE	STATION	SAMPLE DEPTH	MESH	TOW	TOW SET	NET SIZE	STATUS	UNIT 1	UNIT 2	ABOVE FALLS	BACK CLASS	TOTAL NUM	DISPOSAL	UNUSED	VOLUME	DENSITY	TAXON
19	L DAM	INTAKE CANAL	BOTTOM	1	800	5	742	13	4	2	4812114	5	5	.	.	35.0670	54.4791	DOROSOMA SP.
20	L DAM	INTAKE CANAL	BOTTOM	1	800	5	742	13	4	2	4812114	4	2	.	.	35.0670	35.3194	DOROSOMA SP.
21	L DAM	INTAKE CANAL	MIDDEPTH	1	800	5	742	13	4	2	4812114	5	1	.	.	35.4254	18.9706	DOROSOMA SP.
22	L DAM	INTAKE CANAL	SURFACE	1	800	5	742	13	4	2	4812114	.	.	.	.	84.7183	.	NO FISH CAUGHT
23	L DAM	INTAKE CANAL	BOTTOM	2	800	5	742	13	4	2	4812114	7	1	.	.	46.4121	21.5461	MORONE SP.
24	L DAM	INTAKE CANAL	BOTTOM	2	800	5	742	13	4	2	4812114	8	1	.	.	46.4121	21.5461	MORONE SP.
25	L DAM	INTAKE CANAL	BOTTOM	2	800	5	742	13	4	2	4812114	8	1	.	.	46.4121	21.5461	CLUPEIDAE
26	L DAM	INTAKE CANAL	BOTTOM	2	800	5	742	13	4	2	4812114	5	11	.	.	46.4121	237.007	DOROSOMA SP.
27	L DAM	INTAKE CANAL	BOTTOM	2	800	5	742	13	4	2	4812114	4	4	.	.	46.4121	86.1344	DOROSOMA SP.
28	L DAM	INTAKE CANAL	MIDDEPTH	2	800	5	742	13	4	2	4812114	8	1	.	.	37.4674	17.401	MORONE SP.
29	L DAM	INTAKE CANAL	MIDDEPTH	2	800	5	742	13	4	2	4812114	5	5	.	.	37.4674	52.2031	DOROSOMA SP.
30	L DAM	INTAKE CANAL	MIDDEPTH	2	800	5	742	13	4	2	4812114	8	1	.	.	37.4674	17.401	CLUPEIDAE
31	L DAM	INTAKE CANAL	SURFACE	2	800	5	742	13	4	2	4812114	.	.	.	.	84.1184	.	NO FISH CAUGHT
32	L DAM	INTAKE CANAL	BOTTOM	1	1600	5	742	13	4	2	4812114	2	1	.	.	45.1678	22.1294	DOROSOMA SP.
33	L DAM	INTAKE CANAL	BOTTOM	1	1600	5	742	13	4	2	4812114	5	2	.	.	45.1678	44.2597	DOROSOMA SP.
34	L DAM	INTAKE CANAL	MIDDEPTH	1	1600	5	742	13	4	2	4812114	7	1	.	.	51.4430	14.2334	MORONE SP.
35	L DAM	INTAKE CANAL	SURFACE	1	1600	5	742	13	4	2	4812114	2	1	.	.	84.0883	13.4398	UNIDENTIFIED LAR
36	L DAM	INTAKE CANAL	BOTTOM	2	1600	5	742	13	4	2	4812114	5	2	.	.	39.8719	50.1603	MORONE SP.
37	L DAM	INTAKE CANAL	BOTTOM	2	1600	5	742	13	4	2	4812114	5	4	.	.	39.8719	100.321	DOROSOMA SP.
38	L DAM	INTAKE CANAL	MIDDEPTH	2	1600	5	742	13	4	2	4812114	5	14	.	.	44.8527	312.272	DOROSOMA SP.
39	L DAM	INTAKE CANAL	MIDDEPTH	2	1600	5	742	13	4	2	4812114	4	1	.	.	44.8527	22.3051	DOROSOMA SP.
40	L DAM	INTAKE CANAL	SURFACE	2	1600	5	742	13	4	2	4812114	5	1	.	.	39.0049	15.4977	DOROSOMA SP.
41	L DAM	INTAKE CANAL	BOTTOM	1	2400	5	742	13	4	2	4812114	5	11	.	.	42.4371	259.207	DOROSOMA SP.
42	L DAM	INTAKE CANAL	BOTTOM	1	2400	5	742	13	4	2	4812114	10	1	.	.	42.4371	23.5543	MORONE SP.
43	L DAM	INTAKE CANAL	BOTTOM	1	2400	5	742	13	4	2	4812114	14	1	.	.	42.4371	23.5543	MORONE SP.
44	L DAM	INTAKE CANAL	BOTTOM	1	2400	5	742	13	4	2	4812114	5	1	.	.	42.4371	23.5543	SKIPJACK HERRING
45	L DAM	INTAKE CANAL	MIDDEPTH	1	2400	5	742	13	4	2	4812114	8	1	.	.	30.8027	14.7354	MORONE SP.
46	L DAM	INTAKE CANAL	MIDDEPTH	1	2400	5	742	13	4	2	4812114	10	1	.	.	30.8027	14.7354	CLUPEIDAE
47	L DAM	INTAKE CANAL	MIDDEPTH	1	2400	5	742	13	4	2	4812114	7	1	.	.	30.8027	14.7354	CATOSTOMIDAE
48	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	7	5	.	.	36.4750	87.7578	MORONE SP.
49	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	8	5	.	.	36.4750	87.7578	MORONE SP.
50	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	4	3	.	.	36.4750	52.9547	MORONE SP.
51	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	10	5	.	.	36.4750	87.7578	MORONE SP.
52	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	11	2	.	.	36.4750	35.1031	MORONE SP.
53	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	12	1	.	.	36.4750	17.5516	MORONE SP.
54	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	8	1	.	.	36.4750	17.5516	CLUPEIDAE
55	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	8	1	.	.	36.4750	17.5516	CLUPEIDAE
56	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	10	1	.	.	36.4750	17.5516	CLUPEIDAE
57	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	11	1	.	.	36.4750	17.5516	CLUPEIDAE
58	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	13	1	.	.	36.4750	17.5516	CLUPEIDAE
59	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	8	1	.	.	36.4750	17.5516	CATOSTOMIDAE
60	L DAM	INTAKE CANAL	SURFACE	1	2400	5	742	13	4	2	4812114	9	1	.	.	36.4750	17.5516	CATOSTOMIDAE
61	L DAM	INTAKE CANAL	BOTTOM	2	2400	5	742	13	4	2	4812114	8	1	.	.	45.8171	21.9216	UNIDENTIFIED LAR
62	L DAM	INTAKE CANAL	BOTTOM	2	2400	5	742	13	4	2	4812114	8	1	.	.	45.8171	21.9216	MORONE SP.

APPENDIX 1-b (con't.)

ARKANSAS NUCLEAR ONE
1980 ENVIRONMENTAL MONITORING PROGRAM

NET CATCH DATA

DATE=6/MAY80

USS	SITE	STATION	SAMPLE DEPTH	REP	TUS	TUBE	SENT	STAT	UNIT	UNIT	ANGLE	GRP	TUBE	DISP	UNK	ENC	VOLUME	DENSITY	TAXON
53	L DAM	INTAKE CANAL	BOTTOM	2	2400	5	792	13	4	2	4812119	7	1		.	.	45.6171	21.9216	DOROSOMA SP.
54	L DAM	INTAKE CANAL	BOTTOM	2	2400	5	792	13	4	2	4812119	8	1		.	.	45.6171	21.9216	DOROSOMA SP.
55	L DAM	INTAKE CANAL	MIDDEPTH	2	2400	5	792	13	4	2	4812119	11	1		.	.	52.1891	19.1611	MORONE SP.
56	L DAM	INTAKE CANAL	MIDDEPTH	2	2400	5	792	13	4	2	4812119	8	1		.	.	52.1891	19.1611	CLUPEIDAE
57	L DAM	INTAKE CANAL	MIDDEPTH	2	2400	5	792	13	4	2	4812119	5	2		.	.	52.1891	38.3222	DOROSOMA SP.
58	L DAM	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	2	4812119	9	1		.	.	53.8795	18.5598	CATOSTOMIDAE
69	L DAM	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	2	4812119	6	1		.	.	53.8795	18.5598	CYPRINIDAE
70	L DAM	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	2	4812119	9	2		.	.	53.8795	37.1197	MORONE SP.
71	L DAM	INTAKE CANAL	SURFACE	2	2400	5	79	13	4	2	4812119	10	2		.	.	53.8795	37.1197	MORONE SP.
72	L DAM	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	2	4812119	12	1		.	.	53.8795	18.5598	MORONE SP.

APPENDIX 1-C

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=27MAY80

OBS	SITE	STATION	SAMDEPTH	REPNUM	TOD	TUSH	NETSIZE	STADEPT	UNIT1PUMP	UNIT2PMP	ANUTUFLO	GRPCLASS	IUINUM	DISPAHA	NUMDUMP	END	VOLUME	DENSITY	TAXON
73	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	13	3	2	3941599	6	1	0	0	.	17.9405	55.7346	MORONE SP.
74	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	13	3	2	3941599	11	1	0	0	.	17.9405	55.7346	UNIDENTIFIED LAR
75	L DARD	INTAKE CANAL	MIDDEPTH	1	800	5	792	13	3	2	3941599	9	2	0	0	.	32.1551	62.1965	CLUPEIDAE
76	L DARD	INTAKE CANAL	MIDDEPTH	1	800	5	792	13	3	2	3941599	11	1	0	0	.	32.1551	31.0993	CLUPEIDAE
77	L DARD	INTAKE CANAL	SURFACE	1	800	5	792	13	3	2	3941599	.	.		.	.	33.9571	.	NO FISH CAUGHT
78	L DARD	INTAKE CANAL	BOTTOM	2	800	5	792	13	3	2	3941599	.	.		.	.	16.9793	.	NO FISH CAUGHT
79	L DARD	INTAKE CANAL	MIDDEPTH	2	800	5	792	13	3	2	3941599	.	.		.	.	26.4822	.	NO FISH CAUGHT
80	L DARD	INTAKE CANAL	SURFACE	2	800	5	792	13	3	2	3941599	.	.		.	.	22.9331	.	NO FISH CAUGHT
81	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	792	13	3	2	3941599	2	1	0	0	.	19.1646	52.179	DOROSOMA SP.
82	L DARD	INTAKE CANAL	MIDDEPTH	1	1600	5	792	13	3	2	3941599	.	.		.	.	31.2412	.	NO FISH CAUGHT
83	L DARD	INTAKE CANAL	SURFACE	1	1600	5	792	13	3	2	3941599	.	.		.	.	31.2486	.	NO FISH CAUGHT
84	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	792	13	3	2	3941599	.	.		.	.	16.0516	.	NO FISH CAUGHT
85	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	13	3	2	3941599	3	1	0	0	.	22.4773	44.4893	DOROSOMA SP.
86	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	13	3	2	3941599	5	1	0	0	.	22.4773	44.4893	CLUPEIDAE
87	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	13	3	2	3941599	7	1	0	0	.	22.4773	44.4893	CLUPEIDAE
88	L DARD	INTAKE CANAL	SURFACE	2	1600	5	792	13	3	2	3941599	.	.		.	.	28.8036	.	NO FISH CAUGHT
89	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	5	1	0	0	.	29.0122	34.4683	FRESHWATER DRUM
90	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	7	1	0	0	.	29.0122	34.4683	FRESHWATER DRUM
91	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	5	2	0	0	.	29.0122	68.9365	CLUPEIDAE
92	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	8	1	0	0	.	29.0122	34.4683	CLUPEIDAE
93	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	9	1	0	0	.	29.0122	34.4683	CLUPEIDAE
94	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	11	1	0	0	.	29.0122	34.4683	CLUPEIDAE
95	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	12	1	0	0	.	29.0122	34.4683	CLUPEIDAE
96	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	18	1	0	0	.	29.0122	34.4683	CLUPEIDAE
97	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	3	2	3941599	7	1	0	0	.	29.0122	34.4683	MORONE SP.
98	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	6	1	0	0	.	24.7934	40.3333	MORONE SP.
99	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	7	1	0	0	.	24.7934	40.3333	MORONE SP.
100	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	11	2	0	0	.	24.7934	80.6666	MORONE SP.
101	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	12	1	0	0	.	24.7934	40.3333	MORONE SP.
102	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	13	1	0	0	.	24.7934	40.3333	MORONE SP.
103	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	6	1	0	0	.	24.7934	40.3333	FRESHWATER DRUM
104	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	5	1	0	0	.	24.7934	40.3333	CLUPEIDAE
105	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	7	1	0	0	.	24.7934	40.3333	CLUPEIDAE
106	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	8	1	0	0	.	24.7934	40.3333	CLUPEIDAE
107	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	9	1	0	0	.	24.7934	40.3333	CLUPEIDAE
108	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	10	2	0	0	.	24.7934	80.6666	CLUPEIDAE
109	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	11	2	0	0	.	24.7934	80.6666	CLUPEIDAE
110	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	12	2	0	0	.	24.7934	80.6666	CLUPEIDAE
111	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	13	1	0	0	.	24.7934	40.3333	CLUPEIDAE
112	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	14	6	0	0	.	24.7934	242	CLUPEIDAE
113	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	15	3	0	0	.	24.7934	121	CLUPEIDAE
114	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	16	3	0	0	.	24.7934	121	CLUPEIDAE
115	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	17	6	0	0	.	24.7934	242	CLUPEIDAE
116	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	3	2	3941599	18	2	0	0	.	24.7934	80.6666	CLUPEIDAE

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=27-MAY80

SAS	SITE	STATION	STATION NAME	SAMPLE TYPE	NET NUMBER	TOW	TUBE SIZE	NET SIZE	BOTTOM 1	BOTTOM 2	AREA TOWED	BACK CLEAN	TOTAL NUMBER	DISCARD NUMBER	NUMBER ENUM	VOLUME	DISCARD VOLUME	TAXON
117	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	3	2	3401599	10	1	0	0	32.8070	30.4813	CLUPEIDAE
118	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	20	1	0	0	20.2138	55.1476	THREADFIN SHAD
119	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	9	2	0	0	20.2138	78.2957	CLUPEIDAE
120	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	15	3	0	0	20.2138	114.444	CLUPEIDAE
121	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	17	2	0	0	20.2138	78.2957	CLUPEIDAE
122	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	10	1	0	0	20.2138	55.1476	CLUPEIDAE
123	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	10	1	0	0	20.2138	55.1476	ATHERINIDAE-SILV
124	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	9	2	0	0	20.2138	78.2957	FRESHWATER DRUM
125	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	11	1	0	0	20.2138	55.1476	FRESHWATER DRUM
126	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	8	2	0	0	20.2138	78.2957	MORONE SP.
127	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	10	1	0	0	20.2138	55.1476	MORONE SP.
128	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	11	1	0	0	20.2138	55.1476	MORONE SP.
129	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	12	1	0	0	20.2138	55.1476	MORONE SP.
130	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	3	2	3401599	15	1	0	0	20.2138	55.1476	MORONE SP.
131	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	7	1	0	0	55.1655	20.437	CLUPEIDAE
132	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	8	2	0	0	55.1655	36.8734	CLUPEIDAE
133	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	9	6	0	0	55.1655	170.622	CLUPEIDAE
134	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	10	6	0	0	55.1655	170.622	CLUPEIDAE
135	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	11	4	0	0	55.1655	113.748	CLUPEIDAE
136	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	12	6	0	0	55.1655	170.622	CLUPEIDAE
137	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	14	4	0	0	55.1655	113.748	CLUPEIDAE
138	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	16	6	0	0	55.1655	170.622	CLUPEIDAE
139	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	17	13	0	0	55.1655	369.601	CLUPEIDAE
140	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	16	2	0	0	55.1655	56.8734	CLUPEIDAE
141	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	12	1	0	0	55.1655	20.437	MORONE SP.
142	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	13	3	0	0	55.1655	93.5104	MORONE SP.
143	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	3	2	3401599	15	1	0	0	55.1655	20.437	MORONE SP.
144	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	3	2	3401599	10	1	0	0	32.8505	31.0073	CLUPEIDAE
145	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	3	2	3401599	14	1	0	0	32.8505	31.0073	MISSISSIPPI SILV

APPENDIX 1-d

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

--- DATE=23JUN80 ---

OBS	SITE	STATION	STADEPTH	REPNUM	TOD	TOSW	NETSIZE	STADEPT	UNT1PUMP	UNT2PUMP	ANUTOFLO	GRPCLASS	TOTNUM	DISPARA	NUMDUMP	END	VOLUME	DENSITY	TAXON
146	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	13	4	3	5408855	7	1	0	0	.	46.7354	21.3971	CLUPEIDAE
147	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	13	4	3	5408855	10	1	0	0	.	46.7354	21.3971	CLUPEIDAE
148	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	13	4	3	5408855	8	1	0	0	.	46.7354	21.3971	CATOSTOMIDAE
149	L DARD	INTAKE CANAL	MIDDEPTH	1	800	5	792	13	4	3	5408855	8	1		0	.	46.4739	21.2884	CLUPEIDAE
150	L DARD	INTAKE CANAL	SURFACE	1	800	5	792	13	4	3	5408855	.	.		.	.	57.5672	.	NO FISH CAUGHT
151	L DARD	INTAKE CANAL	BOTTOM	2	800	5	792	13	4	3	5408855	8	1	0	0	.	47.1753	21.1975	CLUPEIDAE
152	L DARD	INTAKE CANAL	BOTTOM	2	800	5	792	13	4	3	5408855	9	1	0	0	.	47.1753	21.1975	CLUPEIDAE
153	L DARD	INTAKE CANAL	BOTTOM	2	800	5	792	13	4	3	5408855	10	1	0	0	.	47.1753	21.1975	CLUPEIDAE
154	L DARD	INTAKE CANAL	MIDDEPTH	2	800	5	792	13	4	3	5408855	9	1	0	0	.	45.9881	21.7448	CLUPEIDAE
155	L DARD	INTAKE CANAL	MIDDEPTH	2	800	5	792	13	4	3	5408855	11	1	0	0	.	45.9881	21.7448	CLUPEIDAE
156	L DARD	INTAKE CANAL	SURFACE	2	800	5	792	13	4	3	5408855	.	.		.	.	52.0240	.	NO FISH CAUGHT
157	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	792	13	4	3	5408855	12	1	0	0	.	47.4297	21.0838	FRESHWATER DRUM
158	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	792	13	4	3	5408855	10	2	0	0	.	47.4297	42.1677	CLUPEIDAE
159	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	792	13	4	3	5408855	9	1	0	0	.	47.4297	21.0838	UNIDENTIFIED LAR
160	L DARD	INTAKE CANAL	MIDDEPTH	1	1600	5	792	13	4	3	5408855	.	.		.	.	49.6348	.	NO FISH CAUGHT
161	L DARD	INTAKE CANAL	SURFACE	1	1600	5	792	13	4	3	5408855	.	.		.	.	53.0148	.	NO FISH CAUGHT
162	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	792	13	4	3	5408855	10	1	0	0	.	50.5832	19.7694	CLUPEIDAE
163	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	792	13	4	3	5408855	11	1	0	0	.	50.5832	19.7694	CLUPEIDAE
164	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	792	13	4	3	5408855	12	1	0	.	.	50.5832	19.7694	CLUPEIDAE
165	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	13	4	3	5408855	12	1	0	0	.	55.0564	18.1632	CLUPEIDAE
166	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	13	4	3	5408855	3	1	0	0	.	55.0564	18.1632	ATHERINIDAE-SILV
167	L DARD	INTAKE CANAL	SURFACE	2	1600	5	792	13	4	3	5408855	.	.		.	.	56.6940	.	NO FISH CAUGHT
168	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	8	1	0	0	.	44.7585	22.3421	CLUPEIDAE
169	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	9	1	0	0	.	44.7585	22.3421	CLUPEIDAE
170	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	10	3	0	0	.	44.7585	67.0264	CLUPEIDAE
171	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	12	1	0	0	.	44.7585	22.3421	CLUPEIDAE
172	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	15	2	0	0	.	44.7585	44.6842	CLUPEIDAE
173	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	16	2	91	1	.	44.7585	44.6842	CLUPEIDAE
174	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	7	1	0	0	.	44.7585	22.3421	FRESHWATER DRUM
175	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	13	1	0	0	.	44.7585	22.3421	FRESHWATER DRUM
176	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	14	1	0	0	.	44.7585	22.3421	FRESHWATER DRUM
177	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	17	1	0	0	.	44.7585	22.3421	FRESHWATER DRUM
178	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	20	1	0	0	.	44.7585	22.3421	GIZZARD SHAD
179	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	22	1	0	0	.	44.7585	22.3421	GIZZARD SHAD
180	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	5408855	12	1	0	0	.	44.7585	22.3421	MORONE SP.
181	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	5408855	11	1	0	0	.	52.3587	19.099	CLUPEIDAE
182	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	5408855	12	1	0	0	.	52.3587	19.099	CLUPEIDAE
183	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	5408855	13	1	0	0	.	52.3587	19.099	CLUPEIDAE
184	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	5408855	16	1	91	1	.	52.3587	19.099	CLUPEIDAE
185	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	5408855	20	2	91	1	.	52.3587	38.198	GIZZARD SHAD
186	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	5408855	22	1	0	0	.	52.3587	19.099	GIZZARD SHAD
187	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	5408855	5	3	0	0	.	54.9822	54.5631	FRESHWATER DRUM
188	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	5408855	7	2	0	0	.	54.9822	36.3754	FRESHWATER DRUM
189	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	5408855	6	1	0	0	.	54.9822	18.1877	FRESHWATER DRUM

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=25JUN80

JOB	SITE	STATION	SAMPLE TYPE	METHOD	TOW	SIZE	NET SPEED	NET DEPTH	UNIT 1 POWER	UNIT 2 POWER	AGE CLASS	NUMBER COLLECTED	TOTAL DISPOSITION	NUMBER UNMEASURED	ENTRAINED	VOLUME	DENSITY	TAXON
190	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	9	1	0	0	.	54.9822	18.1877	FRESHWATER DRUM
191	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	10	2	0	0	.	54.9822	36.3754	FRESHWATER DRUM
192	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	13	1	0	0	.	54.9822	18.1877	FRESHWATER DRUM
193	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	10	1	0	0	.	54.9822	18.1877	NOTROPIS SP.
194	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	15	1	0	0	.	54.9822	18.1877	NOTROPIS SP.
195	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	13	1	0	0	.	54.9822	18.1877	CYPRINIDAE
196	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	14	2	0	0	.	54.9822	36.3754	GIZZARD SHAD
197	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	20	1	0	0	.	54.9822	18.1877	GIZZARD SHAD
198	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	25	1	0	0	.	54.9822	18.1877	GIZZARD SHAD
199	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	7	1	0	0	.	54.9822	18.1877	CLUPEIDAE
200	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	8	4	0	0	.	54.9822	72.7508	CLUPEIDAE
201	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	8	4	0	0	.	54.9822	72.7508	CLUPEIDAE
202	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	4	3	91	1	.	54.9822	54.5631	CLUPEIDAE
203	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	10	4	0	0	.	54.9822	72.7508	CLUPEIDAE
204	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	12	1	0	0	.	54.9822	18.1877	CLUPEIDAE
205	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	13	1	0	0	.	54.9822	18.1877	CLUPEIDAE
206	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	14	1	91	1	.	54.9822	18.1877	CLUPEIDAE
207	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	15	1	0	0	.	54.9822	18.1877	CLUPEIDAE
208	L DARD	INTAKE CANAL	SURFACE	1	2400	5	192	13	4	5	5408855	17	2	91	1	.	54.9822	36.3754	CLUPEIDAE
209	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	192	13	4	5	5408855	12	2	0	0	.	44.2008	45.1802	CLUPEIDAE
210	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	11	2	91	1	.	53.0636	37.6906	FRESHWATER DRUM
211	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	14	1	0	0	.	53.0636	18.8453	FRESHWATER DRUM
212	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	9	1	0	0	.	53.0636	18.8453	CLUPEIDAE
213	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	10	1	0	0	.	53.0636	18.8453	CLUPEIDAE
214	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	14	1	0	0	.	53.0636	18.8453	CLUPEIDAE
215	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	16	2	91	1	.	53.0636	37.6906	CLUPEIDAE
216	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	17	1	0	0	.	53.0636	18.8453	GIZZARD SHAD
217	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	19	1	0	0	.	53.0636	18.8453	GIZZARD SHAD
218	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	22	1	0	0	.	53.0636	18.8453	GIZZARD SHAD
219	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	192	13	4	5	5408855	34	1	0	0	.	53.0636	18.8453	GIZZARD SHAD
220	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	9	1	0	0	.	60.7380	16.4642	FRESHWATER DRUM
221	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	7	2	0	0	.	60.7380	32.9285	CLUPEIDAE
222	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	7	2	0	0	.	60.7380	32.9285	CLUPEIDAE
223	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	8	1	0	0	.	60.7380	16.4642	CLUPEIDAE
224	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	12	1	0	0	.	60.7380	16.4642	CLUPEIDAE
225	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	13	1	0	0	.	60.7380	16.4642	CLUPEIDAE
226	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	15	1	0	0	.	60.7380	16.4642	CLUPEIDAE
227	L DARD	INTAKE CANAL	SURFACE	2	2400	5	192	13	4	5	5408855	17	1	0	0	.	60.7380	16.4642	CLUPEIDAE

APPENDIX 1-e

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

-- DATE=15JUL80 --

OBS	SITE	STATION	SAMDEPTH	REPNUM	TOD	TOSM	NETSIZE	STADEPT	UNT1PUMP	UNT2PUMP	ANU1DFLD	GRPCLASS	TOTNUM	DISPARA	NUMDUDRP	END	VOLUME	DENSITY	TAXON
228	L DARD	INTAKE CANAL	BOTTOM	1	800	5	792	13	4	3	4830925	.	.		.	.	43.6084	.	NO FISH CAUGHT
229	L DARD	INTAKE CANAL	MIDDEPTH	1	800	5	792	13	4	3	4830925	.	.		.	.	50.1751	.	NO FISH CAUGHT
230	L DARD	INTAKE CANAL	SURFACE	1	800	5	792	13	4	3	4830925	.	.		.	.	55.0617	.	NO FISH CAUGHT
231	L DARD	INTAKE CANAL	BOTTOM	2	800	5	792	13	4	3	4830925	.	.		.	.	46.0570	.	NO FISH CAUGHT
232	L DARD	INTAKE CANAL	MIDDEPTH	2	800	5	792	13	4	3	4830925	.	.		.	.	50.3394	.	NO FISH CAUGHT
233	L DARD	INTAKE CANAL	SURFACE	2	800	5	792	13	4	3	4830925	.	.		.	.	53.0053	.	NO FISH CAUGHT
234	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	792	13	4	3	4830925	.	.		.	.	52.3799	.	NO FISH CAUGHT
235	L DARD	INTAKE CANAL	MIDDEPTH	1	1600	5	792	13	4	3	4830925	.	.		.	.	56.7988	.	NO FISH CAUGHT
236	L DARD	INTAKE CANAL	SURFACE	1	1600	5	792	13	4	3	4830925	.	.		.	.	61.3452	.	NO FISH CAUGHT
237	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	792	13	4	3	4830925	.	.		.	.	49.1257	.	NO FISH CAUGHT
238	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	792	13	4	3	4830925	.	.		.	.	52.7085	.	NO FISH CAUGHT
239	L DARD	INTAKE CANAL	SURFACE	2	1600	5	792	13	4	3	4830925	.	.		.	.	56.5298	.	NO FISH CAUGHT
240	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	792	13	4	3	4830925	.	.		.	.	46.8997	.	NO FISH CAUGHT
241	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	792	13	4	3	4830925	.	.		.	.	56.5569	.	NO FISH CAUGHT
242	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	8	1	0	0	.	62.9799	15.8781	LEPOMIS SP.
243	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	13	1	0	0	.	62.9799	15.8781	LEPOMIS SP.
244	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	9	1	0	0	.	62.9799	15.8781	CYPRINIDAE
245	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	17	1	0	0	.	62.9799	15.8781	THREADFIN SHAD
246	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	20	1	91	1	.	62.9799	15.8781	GIZZARD SHAD
247	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	11	2	0	0	.	62.9799	31.7562	CLUPEIDAE
248	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	13	2	0	0	.	62.9799	31.7562	CLUPEIDAE
249	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	15	2	0	0	.	62.9799	31.7562	CLUPEIDAE
250	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	17	1	0	0	.	62.9799	15.8781	CLUPEIDAE
251	L DARD	INTAKE CANAL	SURFACE	1	2400	5	792	13	4	3	4830925	18	2	0	0	.	62.9799	31.7562	CLUPEIDAE
252	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	792	13	4	3	4830925	22	1	0	0	.	48.9349	20.4353	GIZZARD SHAD
253	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	792	13	4	3	4830925	16	1	0	0	.	48.9349	20.4353	CLUPEIDAE
254	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	792	13	4	3	4830925	17	1	0	0	.	48.9349	20.4353	CLUPEIDAE
255	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	792	13	4	3	4830925	.	.		.	.	57.3990	.	NO FISH CAUGHT
256	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	3	4830925	10	1	0	0	.	58.3583	17.1355	LEPOMIS SP.
257	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	3	4830925	11	1	0	0	.	58.3583	17.1355	LEPOMIS SP.
258	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	3	4830925	14	1	0	0	.	58.3583	17.1355	CLUPEIDAE
259	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	3	4830925	16	1	0	0	.	58.3583	17.1355	CLUPEIDAE
260	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	3	4830925	17	1	91	1	.	58.3583	17.1355	CLUPEIDAE
261	L DARD	INTAKE CANAL	SURFACE	2	2400	5	792	13	4	3	4830925	18	1	91	1	.	58.3583	17.1355	THREADFIN SHAD

APPENDIX 1-F

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=13AUG80

OBS	SITE	STATION	SAMDEPTH	REPNUM	TOD	TOSH	NETSIZE	STADEPT	UNIT1PUMP	UNIT2PUMP	ANUTOFLO	GRPCLASS	TOTNUM	DISPARA	NUMDUMP	END	VOLUME	DENSITY	TAXON
262	L DARD	INTAKE CANAL	BOTTOM	1	800	5	742	12	4	3	48/8621	.	.		.	.	49.1628	.	NO FISH CAUGHT
263	L DARD	INTAKE CANAL	MIDDEPTH	1	800	5	742	12	4	3	48/8621	.	.		.	.	53.0215	.	NO FISH CAUGHT
264	L DARD	INTAKE CANAL	SURFACE	1	800	5	742	12	4	3	48/8621	.	.		.	.	54.2010	.	NO FISH CAUGHT
265	L DARD	INTAKE CANAL	BOTTOM	2	800	5	742	12	4	3	48/8621	.	.		.	.	45.2355	.	NO FISH CAUGHT
266	L DARD	INTAKE CANAL	MIDDEPTH	2	800	5	742	12	4	3	48/8621	.	.		.	.	51.1980	.	NO FISH CAUGHT
267	L DARD	INTAKE CANAL	SURFACE	2	800	5	742	12	4	3	48/8621	.	.		.	.	56.4507	.	NO FISH CAUGHT
268	L DARD	INTAKE CANAL	BOTTOM	1	1600	5	742	12	4	3	48/8621	.	.		.	.	47.1408	.	NO FISH CAUGHT
269	L DARD	INTAKE CANAL	MIDDEPTH	1	1600	5	742	12	4	3	48/8621	.	.		.	.	54.1501	.	NO FISH CAUGHT
270	L DARD	INTAKE CANAL	SURFACE	1	1600	5	742	12	4	3	48/8621	.	.		.	.	61.7547	.	NO FISH CAUGHT
271	L DARD	INTAKE CANAL	BOTTOM	2	1600	5	742	12	4	3	48/8621	.	.		.	.	46.7335	.	NO FISH CAUGHT
272	L DARD	INTAKE CANAL	MIDDEPTH	2	1600	5	742	12	4	3	48/8621	.	.		.	.	56.3420	.	NO FISH CAUGHT
273	L DARD	INTAKE CANAL	SURFACE	2	1600	5	742	12	4	3	48/8621	.	.		.	.	57.4426	.	NO FISH CAUGHT
274	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	742	12	4	3	48/8621	16	1	0	0	.	49.4702	20.2142	THREADFIN SHAD
275	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	742	12	4	3	48/8621	8	2	0	0	.	49.4702	40.4284	CLUPEIDAE
276	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	742	12	4	3	48/8621	9	2	0	0	.	49.4702	40.4284	CLUPEIDAE
277	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	742	12	4	3	48/8621	12	2	0	0	.	49.4702	40.4284	CLUPEIDAE
278	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	742	12	4	3	48/8621	13	1	0	0	.	49.4702	20.2142	CLUPEIDAE
279	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	48/8621	13	1	0	0	.	56.4609	17.7114	LEPOMIS SP.
280	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	48/8621	17	1	0	0	.	56.4609	17.7114	THREADFIN SHAD
281	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	48/8621	10	1	0	0	.	56.4609	17.7114	CLUPEIDAE
282	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	48/8621	12	2	0	0	.	56.4609	35.4227	CLUPEIDAE
283	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	48/8621	13	2	0	0	.	56.4609	35.4227	CLUPEIDAE
284	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	48/8621	14	1	0	0	.	56.4609	17.7114	CLUPEIDAE
285	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	9	1	0	0	.	71.3168	14.0219	ATHERINIDAE-SILV
286	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	17	2	91	1	.	71.3168	28.0439	THREADFIN SHAD
287	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	18	1	91	1	.	71.3168	14.0219	THREADFIN SHAD
288	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	10	4	0	0	.	71.3168	56.0878	CLUPEIDAE
289	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	11	3	0	0	.	71.3168	42.0658	CLUPEIDAE
290	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	12	3	0	0	.	71.3168	42.0658	CLUPEIDAE
291	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	13	5	0	0	.	71.3168	70.1097	CLUPEIDAE
292	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	14	3	0	0	.	71.3168	42.0658	CLUPEIDAE
293	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	15	3	0	0	.	71.3168	42.0658	CLUPEIDAE
294	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	3	48/8621	16	5	0	0	.	71.3168	70.1097	CLUPEIDAE
295	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	742	12	4	3	48/8621	10	1	0	0	.	47.6629	20.9807	MISSISSIPPI SILV
296	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	742	12	4	3	48/8621	13	1	0	0	.	47.6629	20.9807	CLUPEIDAE
297	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	742	12	4	3	48/8621	14	1	0	0	.	47.6629	20.9807	CLUPEIDAE
298	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	742	12	4	3	48/8621	15	1	0	0	.	47.6629	20.9807	CLUPEIDAE
299	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	742	12	4	3	48/8621	17	1	0	0	.	47.6629	20.9807	CLUPEIDAE
300	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	48/8621	6	1	0	0	.	57.4237	17.2641	LEPOMIS SP.
301	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	48/8621	13	1	0	0	.	57.4237	17.2641	CLUPEIDAE
302	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	48/8621	14	1	0	0	.	57.4237	17.2641	CLUPEIDAE
303	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	48/8621	16	1	0	0	.	57.4237	17.2641	CLUPEIDAE
304	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	48/8621	9	1	0	0	.	66.4602	14.9342	MISSISSIPPI SILV
305	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	48/8621	17	2	0	0	.	66.4602	29.3685	THREADFIN SHAD

APPENDIX 1-f (con't.)

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=15AUG80

USS	SITE	STATION	SAMPLE DEPTH	NET	TOW	USED	NET SIZE	STATUS	UNIT 1	UNIT 2	AREA	GROUP	TOTAL NUMBER	DIVERSITY	NUMBER OF TAXON	VOLUME	DENSITY	TAXON
506	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	14	1	0	0	66.9602	14.9342	THREADFIN SHAD
507	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	21	1	0	0	66.9602	14.9342	THREADFIN SHAD
508	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	10	2	0	0	66.9602	29.8685	CLUPEIDAE
509	L	DAM	SURFACE	2	2400	5	792	12	0	3	40736621	11	6	0	0	66.9602	89.6055	CLUPEIDAE
510	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	12	10	0	0	66.9602	149.342	CLUPEIDAE
511	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	13	10	0	0	66.9602	149.342	CLUPEIDAE
512	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	14	2	0	0	66.9602	29.8685	CLUPEIDAE
513	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	15	8	0	0	66.9602	119.474	CLUPEIDAE
514	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	16	3	0	0	66.9602	44.8027	CLUPEIDAE
515	L	DAM	SURFACE	2	2400	5	792	12	0	5	40736621	17	1	0	0	66.9602	14.9342	CLUPEIDAE

APPENDIX 1-g

ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT MONITORING PROGRAM

NET CATCH DATA

DATE=060580

USS	SITE	STATION	SAMDEPTH	REP NUM	TOW NUM	TOW SEC	NET SIZE	STAT PORT	UNIT 1 PUMP	UNIT 2 PUMP	ANAL FAM	GRP CLASS	TOT NUM	DISPAM	NUMPUP	END	VOLUME	DENSITY	TAXON
315	L DARD	INTAKE CANAL	BOTTOM	1	600	5	742	12	4	5	4R67719	.	.		.	.	47.8184	.	NO FISH CAUGHT
317	L DARD	INTAKE CANAL	MIDDEPTH	1	600	5	742	12	4	5	4R67719	.	.		.	.	50.2629	.	NO FISH CAUGHT
316	L DARD	INTAKE CANAL	SURFACE	1	600	5	742	12	4	5	4R67719	.	.		.	.	60.0543	.	NO FISH CAUGHT
319	L DARD	INTAKE CANAL	BOTTOM	2	600	5	742	12	4	5	4R67719	.	.		.	.	53.1525	.	NO FISH CAUGHT
320	L DARD	INTAKE CANAL	MIDDEPTH	2	600	5	742	12	4	5	4R67719	.	.		.	.	54.4928	.	NO FISH CAUGHT
321	L DARD	INTAKE CANAL	SURFACE	2	600	5	742	12	4	3	4R67719	.	.		.	.	58.8166	.	NO FISH CAUGHT
322	L DARD	INTAKE CANAL	BOTTOM	1	1800	5	742	12	4	3	4R67719	.	.		.	.	57.0956	.	NO FISH CAUGHT
323	L DARD	INTAKE CANAL	MIDDEPTH	1	1800	5	742	12	4	5	4R67719	.	.		.	.	50.2545	.	NO FISH CAUGHT
324	L DARD	INTAKE CANAL	SURFACE	1	1800	5	742	12	4	5	4R67719	.	.		.	.	63.2479	.	NO FISH CAUGHT
325	L DARD	INTAKE CANAL	BOTTOM	2	1800	5	742	12	4	5	4R67719	.	.		.	.	47.8866	.	NO FISH CAUGHT
326	L DARD	INTAKE CANAL	MIDDEPTH	2	1800	5	742	12	4	3	4R67719	.	.		.	.	55.3710	.	NO FISH CAUGHT
327	L DARD	INTAKE CANAL	SURFACE	2	1800	5	742	12	4	5	4R67719	.	.		.	.	51.8033	.	NO FISH CAUGHT
328	L DARD	INTAKE CANAL	BOTTOM	1	2400	5	742	12	4	5	4R67719	8	1	0	0	.	56.2542	17.7765	CLUPEIDAE
324	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	5	4R67719	16	1	0	0	.	59.3932	16.7804	THREADFIN SHAD
330	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	5	4R67719	37	1	0	0	.	59.3932	16.7804	THREADFIN SHAD
331	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	4R67719	8	2	0	0	.	59.3932	33.5609	CLUPEIDAE
332	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	5	4R67719	10	1	0	0	.	59.3932	16.7804	CLUPEIDAE
333	L DARD	INTAKE CANAL	MIDDEPTH	1	2400	5	742	12	4	3	4R67719	14	1	0	0	.	59.3932	16.7804	CLUPEIDAE
334	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	18	1	0	0	.	67.8068	14.7914	THREADFIN SHAD
335	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	8	1	0	0	.	67.8068	14.7914	CLUPEIDAE
336	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	4	6	0	0	.	67.8068	88.7485	CLUPEIDAE
337	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	10	5	0	0	.	67.8068	73.9571	CLUPEIDAE
338	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	11	5	0	0	.	67.8068	73.9571	CLUPEIDAE
339	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	12	7	0	0	.	67.8068	103.54	CLUPEIDAE
340	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	13	3	0	0	.	67.8068	44.3742	CLUPEIDAE
341	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	14	1	0	0	.	67.8068	14.7914	CLUPEIDAE
342	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	15	3	0	0	.	67.8068	44.3742	CLUPEIDAE
343	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	16	2	0	0	.	67.8068	29.5828	CLUPEIDAE
344	L DARD	INTAKE CANAL	SURFACE	1	2400	5	742	12	4	5	4R67719	17	4	0	0	.	67.8068	59.1656	CLUPEIDAE
345	L DARD	INTAKE CANAL	BOTTOM	2	2400	5	742	12	4	3	4R67719	14	1	0	0	.	55.1942	18.1178	CLUPEIDAE
346	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	5	4R67719	5	1	0	0	.	62.7096	15.9465	LEPOMIS SP.
347	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	5	4R67719	7	2	0	0	.	62.7096	31.893	CLUPEIDAE
348	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	4R67719	9	2	0	0	.	62.7096	31.893	CLUPEIDAE
349	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	4R67719	10	2	0	0	.	62.7096	31.893	CLUPEIDAE
350	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	4R67719	11	2	0	0	.	62.7096	31.893	CLUPEIDAE
351	L DARD	INTAKE CANAL	MIDDEPTH	2	2400	5	742	12	4	3	4R67719	14	1	0	0	.	62.7096	15.9465	CLUPEIDAE
352	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	20	1	0	0	.	62.4711	16.0074	THREADFIN SHAD
353	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	7	2	0	0	.	62.4711	32.0148	CLUPEIDAE
354	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	5	4R67719	5	8	0	0	.	62.4711	128.059	CLUPEIDAE
355	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	9	2	0	0	.	62.4711	32.0148	CLUPEIDAE
356	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	10	9	0	0	.	62.4711	144.067	CLUPEIDAE
357	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	11	2	0	0	.	62.4711	32.0148	CLUPEIDAE
353	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	12	7	0	0	.	62.4711	112.052	CLUPEIDAE
354	L DARD	INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4R67719	13	6	0	0	.	62.4711	96.0444	CLUPEIDAE

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ARKANSAS NUCLEAR ONE
1980 ENTRAINMENT SAMPLING PROGRAM

NET CATCH DATA

STATION	SITE	STATION NAME	SAMPLE DEPTH	NET NUMBER	TOW DURATION	FISH SIZE	DATE (MO/DA/YR)	UNIT 1	UNIT 2	AGENCY	GROUP	TUBE NUMBER	DISPOSITION	NUMBER	VOLUME	DENSITY	TAXON
350	L	DARD INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4867719	14	2	0	0	62.4711	32.0148	CLUPEIDAE
351	L	DARD INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4867719	15	4	0	0	62.4711	64.0296	CLUPEIDAE
352	L	DARD INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4867719	16	2	0	0	62.4711	32.0148	CLUPEIDAE
353	L	DARD INTAKE CANAL	SURFACE	2	2400	5	742	12	4	3	4867719	17	6	0	0	62.4711	96.0444	CLUPEIDAE

A SUMMARY OF FISH IMPINGEMENT MONITORING
AT ARKANSAS NUCLEAR ONE
FROM JANUARY 1 THROUGH DECEMBER 31, 1980

In reviewing the Impingment data for 1980, it appears that Arkansas Nuclear One is not having a significant impact on the fishery of Dardanelle Reservoir.

There were 124 samples collected in the twelve month period. The plant was off-line for approximately one month; 25 days from September 5 to September 30 and from November 26 to December 3. This gives approximately 333 Reactor Power days for the year and a sampling frequency factor of 2.7 to reasonably estimate the total count and weight of fish impinged for the year.

Dardanelle Reservoir covers approximately 36,600 acres. Using the Rotenone data supplied to us by the Arkansas Game and Fish Commission and Arkansas Tech University, it is estimated that there were 5,238 fish per acre and 556 pounds per acre. The estimated total impingement for 1980 was 2.5 million fish with a weight of 47,000 pounds. The impingement of fish at Arkansas Nuclear One represents approximately 1.3% of the total fish in the Reservior and .24% of the weight in pounds. There were 37 species representing 10 families of fish impinged.

Tables 1 and 2 give the number and weights of species impinged by month and for the year. The most impinged species were Gizzard and Threadfin Shad at 95.9% of the total catch, Freshwater Drum at 1.97%, and Mississippi Silverside at 1.06%. All other species were less than 1.0% of the

total catch. There was a shift in species numbers when compared to 1979 Impingement data. In 1979, Gizzard Shad comprised 96% of the total and Threadfin Shad comprised 2%; 1980 Impingement data indicates 66% and 28% for Gizzard Shad and Threadfin Shad, respectively. It is evident that the Threadfin Shad are increasing in numbers.

TABLE 1 SPECIES NUMBERS IMPINGED BY MONTH AT AND FOR 1980

TABLE OF SPECIES BY MONTH

SPECIES / MONTH FREQUENCY PERCENT	101_JAN	102_FEB	103_MAR	104_APR	105_MAY	106_JUNE	107_JULY	108_AUG	109_SEPT	110_OCT	111_NOV	112_DEC	TOTAL
BULLHEAD MINNOW	0	0	0	0	0	1	1	0	0	0	0	0	2
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHANNEL CATFISH	103	25	19	175	80	520	585	69	14	98	2	13	1329
	0.01	0.00	0.00	0.02	0.01	0.05	0.06	0.01	0.00	0.01	0.00	0.00	0.14
FRESHWATER LAMPREY	0	2	20	12	16	0	0	0	0	0	0	0	55
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
EMERALD SHINER	2	4	0	2	0	0	2	4	0	2	6	2	24
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EUROPEAN CARP	1	3	0	1	0	0	1	3	0	0	0	0	12
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FLATHEAD CATFISH	10	0	7	8	4	0	15	1	0	0	0	1	46
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FRESHWATER DRUM	374	225	350	4677	3285	3442	3245	1301	149	495	252	206	14524
	0.04	0.02	0.04	0.50	0.35	0.41	0.35	0.14	0.02	0.05	0.02	0.03	1.47
GIZZARD SHAD	21415	157302	77527	12004	1060	884	2025	627	2654	64571	105622	90610	622567
	2.55	16.75	8.25	1.28	0.11	0.09	0.30	0.07	0.28	7.40	19.75	9.64	66.24
GOLDEN SHINER	11	25	11	46	17	5	0	1	1	3	10	4	132
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
BLACK BULLHEAD	41	0	0	4	4	1	0	0	0	0	0	0	50
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
GREEN SUNFISH	7	27	14	6	15	6	0	1	0	6	0	14	96
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
LARGEMOUTH BASS	1	3	0	0	2	4	1	0	0	0	1	0	12
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LARGEMOUTH BUFFALO	0	0	0	0	1	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	29045	199015	80483	18333	4814	6018	7634	2607	5008	135579	266616	183293	939069
	3.15	21.18	8.57	1.97	0.51	0.64	0.81	0.28	0.53	14.43	28.39	19.51	100.00

(CONTINUED)

TABLE 1
cont.

SPECIES NUMBERS IMPINGED BY MONTH AT ANO FOR 1980

TABLE OF SPECIES BY MONTH

SPECIES MONTH FREQUENCY PERCENT	101_JAN	102_FEB	103_MAR	104_APR	105_MAY	106_JUNE	107_JULY	108_AUG	109_SEPT	110_OCT	111_NOV	112_DEC	TOTAL
LONGEAR SUNFISH	9	0	10	15	15	15	13	3	1	7	4	9	93
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
LARGEMOUTH BASS	0	0	1	0	0	0	2	1	0	0	0	0	4
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISSISSIPPI SILVERSIDE	1118	4425	1142	105	15	18	25	15	41	810	936	795	9997
	0.12	0.52	0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.09	0.10	0.08	1.05
MOUTH SHAPPIE	0	5	0	1	5	0	0	0	0	0	0	1	8
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UNIDENTIFIED SUNFISH	5	0	5	9	1	2	0	1	0	0	0	0	24
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RED SHINER	0	0	0	0	0	2	0	0	0	0	0	0	2
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WARMOUTH SUNFISH	0	0	0	1	0	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIVER CARPSUCKER	1	0	1	9	3	0	0	1	0	1	1	2	19
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIVER SHINER	0	0	1	2	0	5	5	0	0	0	0	0	9
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAUGER	0	0	0	0	0	0	0	1	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHORTNOSE GAR	0	1	0	0	0	0	0	0	0	0	0	1	2
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLUE CATFISH	443	47	291	1209	166	75	75	59	8	86	100	45	2584
	0.05	0.01	0.03	0.13	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.27
SHAD/ALEWIFE HERRING	0	2	0	1	0	0	0	5	11	44	143	116	322
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03
TOTAL	29849	199015	80483	18555	4814	6014	7634	2807	5003	155579	266816	183243	939869
	3.18	21.18	8.57	1.97	0.51	0.64	0.81	0.29	0.53	16.43	28.39	19.51	100.00

(CONTINUED)

TABLE 1 SPECIES NUMBERS IMPINGED BY MONTH AT ANO FOH 1980
cont.

TABLE OF SPECIES BY MONTH

SPECIES MONTH FREQUENCY PERCENT	101_JAN	102_FEB	103_MAR	104_APR	105_MAY	106_JUNE	107_JULY	108_AUG	109_SEPT	110_OCT	111_NOV	112_DEC	TOTAL
SMALLMOUTH BUFFALO	2	1	4	1	2	0	0	0	0	0	2	0	12
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STRIPED BASS	137	58	35	41	3	22	77	85	19	78	34	140	765
	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.03
FRESHWATER DRUM	5555	35317	945	10	2	4	54	80	1414	63456	79411	90406	278415
	0.24	3.06	0.07	0.00	0.00	0.00	0.01	0.01	0.20	6.75	8.45	9.68	29.63
WHITE BASS	31	33	27	75	23	845	734	232	120	723	173	46	2472
	0.00	0.00	0.00	0.01	0.00	0.07	0.05	0.02	0.01	0.07	0.02	0.01	0.32
BLUE GILL SUNFISH	54	15	21	41	20	85	121	24	13	36	43	37	590
	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.05
WHITE CRAPPIE	3	3	4	40	62	45	41	84	23	155	79	45	504
	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.01	0.01	0.05
CARP SUCK	2	3	5	1	12	4	12	0	1	0	0	0	40
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YELLOW BULLHEAD	2	0	0	0	0	0	0	0	0	0	0	0	2
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLUE [illegible]	0	0	0	0	1	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIVER DARTER	0	0	0	0	2	0	0	0	0	0	0	0	2
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDIAN SILVERSIDE	2	2	2	3	0	0	0	0	1	10	10	5	35
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	29648	144815	50483	10555	4814	6014	7659	2607	5008	135579	266816	183243	939669
	3.15	21.18	8.57	1.47	0.51	0.64	0.81	0.28	0.53	14.43	28.39	19.51	100.00

Table 2 SPECIES WEIGHTS IMPINGED BY MONTH AT AND FOR 1980

TABLE OF SPECIES BY MONTH

SPECIES MONTH

FREQUENCY PERCENT	101_JAN	102_FEB	103_MAR	104_APR	105_MAY	106_JUNE	107_JULY	108_AUG	109_SEPT	110_OCT	111_NOV	112_DEC	TOTAL
BULLHEAD MINNOW	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHANNEL CATFISH	2	4	1	10	5	17	23	7	1	14	1	3	85
	0.01	0.02	0.01	0.05	0.01	0.10	0.14	0.04	0.01	0.07	0.00	0.01	0.48
CHESTNUT LAMPREY	0	0	3	1	2	0	0	0	0	0	0	0	5
	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
EMERALD SHINER	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EUROPEAN CARP	2	3	0	1	0	0	2	6	0	0	0	0	14
	0.01	0.05	0.00	0.01	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.11
FLATHEAD CATFISH	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
FRESHWATER DRUM	14	10	30	135	88	43	75	23	9	45	27	35	587
	0.11	0.08	0.17	0.77	0.50	0.25	0.42	0.13	0.05	0.26	0.15	0.20	3.36
GIZZARD SHAD	445	3373	1768	278	41	25	22	18	84	1313	3422	1926	12735
	2.55	19.30	10.11	1.59	0.23	0.15	0.12	0.10	0.48	7.51	19.58	11.03	72.85
GOLDEN SHINER	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
BLACK BULLHEAD	1	0	0	0	0	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
GREEN SUNFISH	0	0	0	0	0	0	0	0	0	1	0	1	3
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
LARGEMOUTH BASS	3	0	0	0	4	2	0	0	0	0	0	0	9
	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05
LARGEMOUTH BUFFALO	0	0	0	0	3	0	0	0	0	0	0	0	3
	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
TOTAL	646	4352	1865	537	191	186	167	128	110	2106	4570	2025	17483
	3.70	24.89	10.67	3.07	1.09	1.06	0.95	0.73	0.63	12.05	26.14	16.16	100.00

(CONTINUED)

TABLE 2 SPECIES WEIGHTS IMPINGED BY MONTH AT ANO FUR 1980

cont.

TABLE OF SPECIES BY MONTH

SPECIES MONTH

FREQUENCY / PERCENT	01_JAN	02_FEB	03_MAR	04_APR	05_MAY	06_JUNE	07_JULY	08_AUG	09_SEPT	10_OCT	11_NOV	12_DEC	TOTAL
LONGEAR SUNFISH	0	0	1	1	1	1	1	0	0	0	0	1	5
	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.04
BLUEGILL BAR	0	0	1	0	0	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISSISSIPPI SILVER SIDE	14	81	14	1	0	0	0	0	0	8	9	9	117
	0.05	0.33	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.05	0.67
BLACK CRAPPIE	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
ORANGESPOTTED SUNFISH	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RED SHINER	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REDEAR SUNFISH	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIVER LAMPSULKER	1	0	1	10	5	0	0	1	0	1	1	4	25
	0.01	0.00	0.01	0.06	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.03	0.15
RIVER SHINER	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAUGER	0	0	0	0	0	0	0	1	0	0	0	0	1
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
SHORTNOSE GAR	0	1	0	0	0	0	0	0	0	0	0	1	3
	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
BLUE CATFISH	4	18	10	37	10	16	7	8	1	17	6	3	141
	0.03	0.10	0.06	0.21	0.06	0.09	0.04	0.04	0.01	0.10	0.03	0.02	0.81
SKIPJACK HERRING	0	0	0	0	0	0	0	0	0	1	5	6	12
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.07
TOTAL	646	4352	1865	537	191	166	167	125	110	2106	4370	2865	17483
	3.70	24.89	10.67	3.07	1.09	1.06	0.95	0.73	0.63	12.05	24.99	16.38	100.00

(CONTINUED)

TABLE 2 SPECIES WEIGHTS IMPINGED BY MONTH AT ANO FOR 1980

cont.

TABLE OF SPECIES BY MONTH

SPECIES / MONTH / FREQUENCY / PERCENT	101_JAN	102_FEB	103_MAR	104_APR	105_MAY	106_JUNE	107_JULY	108_AUG	109_SEPT	110_OCT	111_NOV	112_DEC	TOTAL
SMALLMOUTH BUFFALO	6	3	6	4	5	0	0	0	0	0	5	0	29
	0.03	0.02	0.03	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.17
STRIPED BASS	7	2	2	2	1	1	1	18	6	22	5	6	74
	0.04	0.01	0.01	0.01	0.00	0.00	0.01	0.11	0.03	0.12	0.03	0.04	0.42
THREADFIN SHAD	77	858	17	0	0	0	0	0	13	542	654	767	3109
	0.44	4.91	0.10	0.00	0.00	0.00	0.00	0.00	0.07	3.10	4.77	4.39	17.79
WHITE BASS	3	5	1	28	12	11	12	55	25	125	29	96	552
	0.02	0.03	0.04	0.16	0.07	0.06	0.07	0.20	0.15	0.73	0.16	0.31	2.01
BLUEGILL SUNFISH	2	1	0	4	2	10	14	5	0	3	3	2	46
	0.01	0.01	0.00	0.02	0.01	0.05	0.08	0.01	0.00	0.02	0.02	0.01	0.25
WHITE CRAPPIE	2	3	3	24	18	6	4	6	2	12	21	6	114
	0.01	0.02	0.02	0.14	0.10	0.04	0.03	0.04	0.01	0.07	0.12	0.03	0.65
MAMMOUTH	0	0	1	0	0	0	0	0	0	0	0	0	2
	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
YELLOW BULLHEAD	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SILVER REDHORSE	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIVER DARTER	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROOK SILVERSIDE	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	645	4352	1855	537	191	166	167	128	110	2106	4370	2563	17485
	3.70	24.89	10.67	3.07	1.09	1.06	0.95	0.73	0.63	12.05	24.99	16.15	100.00

Impingement data for Threadfin Shad for the winter months (October through March) for the years 1977 through 1980, Table 3, shows that with the warmer temperatures seen in the first part of 1980, the Threadfin Shad has been able to regain some of its dominance in the Reservoir and it is hoped that the mild temperatures this winter will further enhance the reproductive rate of this important forage fish.

Table 3

Threadfin Shad Impingement Numbers for Winter Months
(October through March) and Average Monthly Water Temperature

Year	October	November	December	January	February	March
1977-1978	54722 68F	**65372 ** 61F	**1560118 ** 43F	23743 38F	* 0 * 35F	* . * .
1978-1979	1269 68F	1676 59F	9413 46F	42645 34F	0 37F	0 50F
1979-1980	181 70F	***12948 53F	149529 46F	5556 44F	36317 41F	645 48F
1980	52101 67F	**79411 ** 56F	90966 47F			

* Plant off-line all or most of month.
** Plant off-line about one week.
*** Plant off-line about 2 weeks.

Relative impingement rates for the important species of fish for 1978 through 1980 are found in Table 4. The ranges shown are High to Low for that particular species; thus, if there was only one Largemouth Bass and it was impinged in the Winter, then its rate would be High for that season.

Table 4

RELATIVE IMPINGEMENT RATES PER SEASON
BY SPECIES FOR 1978 THROUGH 1980

Species	Winter (Dec.-Feb)	Spring (Mar.-May)	Summer (June-Aug.)	Fall (Sept.-Nov.)
Catfish (Blue, Channel, Flathead)	Medium	High	Low	Medium
Drum	Low	High	Medium	Low
Shad (Gizzard & Threadfin)	High	Medium	Low	Medium
Bass (Stripped & White)	High	Low	Medium	Medium
Crappie (Black & White)	Medium	High	Medium	Low
Sunfish (Large-mouth Bass, Green, Longear, Bluegill)	Medium	High	Medium	Low

Shad and Bass impingement rates are highest in the winter, lowest in summer and spring, respectively. Catfish, Drum, Crappie, and Sunfish have their highest impingement rate in the spring; lowest impingement rates are in the summer and fall seasons for these species.

THERMAL IMPACT EVALUATION AFTER A SCHEDULED ANO UNIT-1 SHUTDOWN

The purpose of this investigation was to evaluate the rate of thermal decrease in the outfall of Arkansas Nuclear One Unit-1 after a scheduled reactor shutdown during the months of November through April. This investigation was performed according to Environmental Technical Specification objectives, Appendix B Section 2.1.4, and Arkansas Power & Light Company procedure 1608.02 R2.

Circulating water discharge flume thermal data were recorded hourly during power reduction utilizing the average of the computer output RTD (Resistance Temperature Detector) readings. These data are listed in Appendix 1. RTD's have a 0-150 F range and a ± 0.5% margin of accuracy. Reactor power level was recorded as an average daily percentage.

Discharge embayment stations (Figure 1) were monitored for meteorlogical conditions, water temperature at 20% and 80% depth, and occurences of fish exhibiting conditions of thermal stress,e.g., disorientation, immobility or death (Appendix 2).

Discharge flume thermal readings on April 18, 1980 and before the scheduled shutdown began on April 19 ranged from 68.69 F to 71.42 F. Power reduction began at 1830 hours and by 2000 hours the first significant change in temperature was observed with a reading of 65.11 F. A constant decrease in temperature continued for the next few hours at the rate of approximately 1 F/hour. ANO Unit-1 went off line at 2256 hours and the discharge flume temperature dropped 3.84 F by 2400 hours. This

decrease in temperature approached, but did not exceed,the maximum specified limit of 5 F/hour. Discharge temperatures varied little over the following 24 hours (Figure 2), and were approximately equal to ambient conditions of about 59 F.

During this investigation, no fish were observed in the discharge embayment which exhibited any obvious signs of trauma resulting from thermal stress. Historically, there has been a low incidence of adverse environmental impact on Dardanelle Reservoir due to a sudden decrease in water temperature following a scheduled shutdown of Arkansas Nuclear One Unit-1. The limited impacts of such activities have been primarily limited to portions of the discharge embayment when Dorosoma petenense (Threadfin Shad) are present. This introduced warm water fish has a minimum threshold temperature of approximately 40 F. When lake temperatures drop below this value, whether from activities at ANO or seasonal conditions, mortalities of Dorosoma petenense have been detected. Because ambient lake temperatures were above the minimum threshold for this organism following this shutdown, no thermal stress was detected.

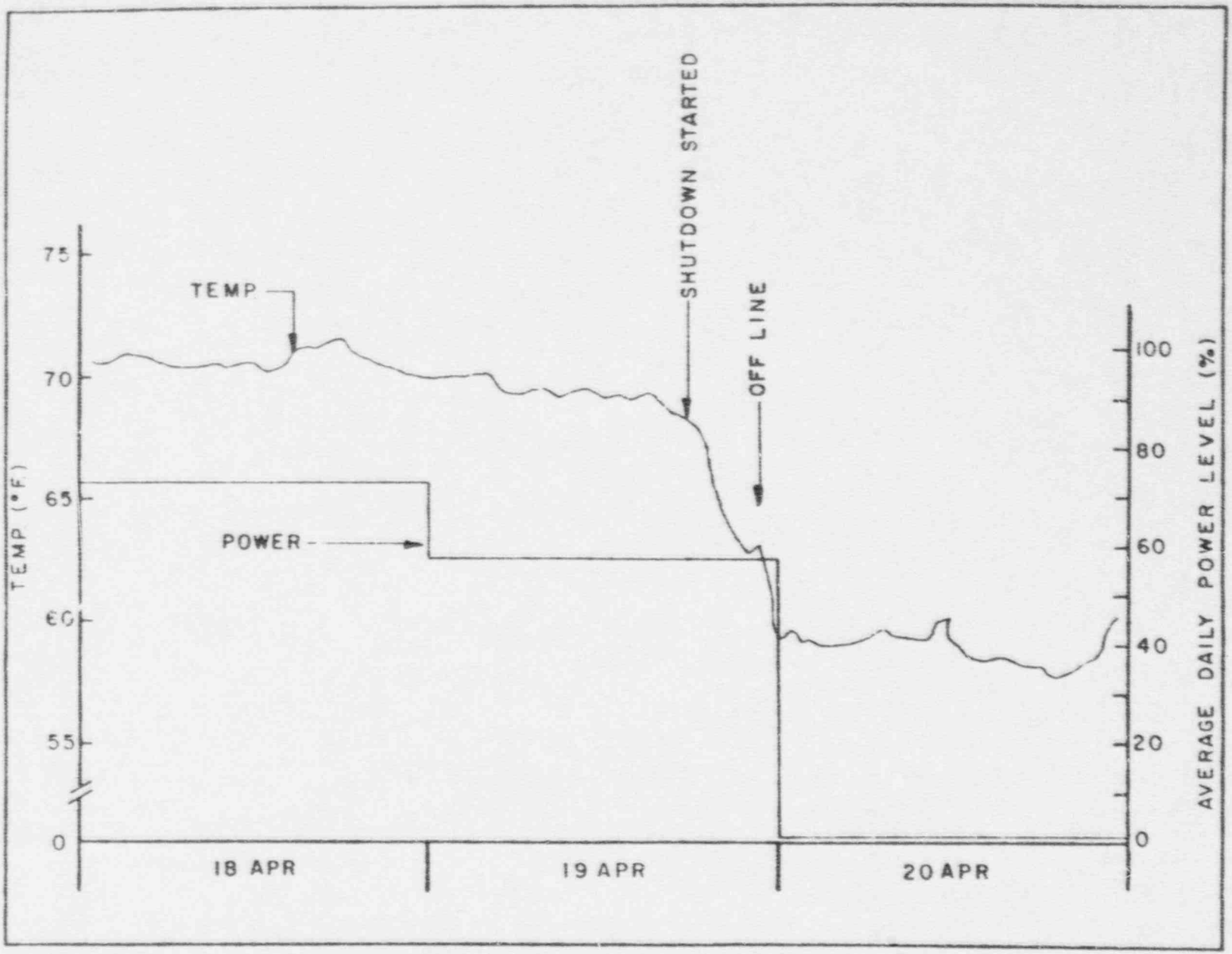

Figure 2. ANO discharge flume temperature and reactor power level during a scheduled shutdown in 1980.

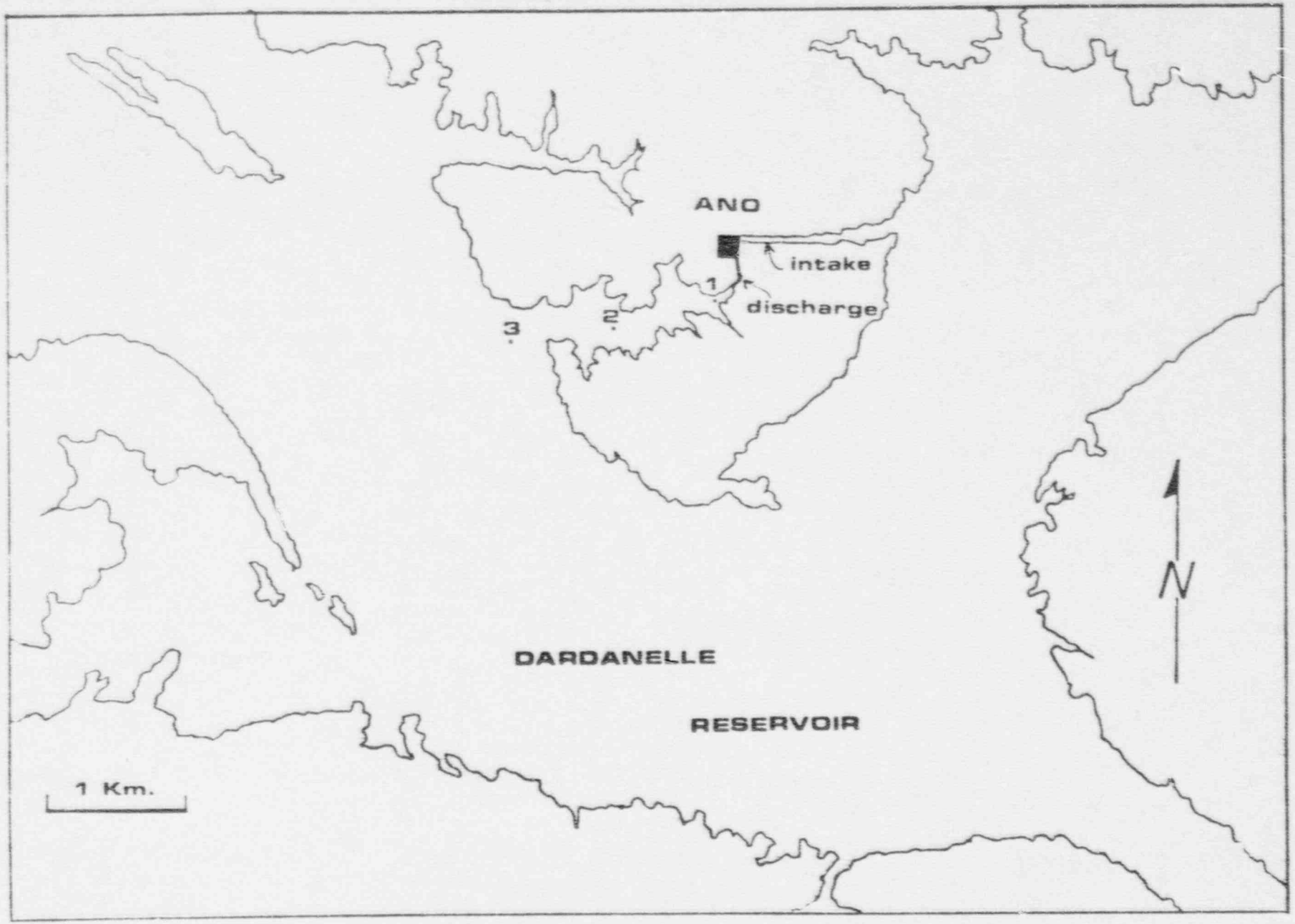

Figure 1. Location of stations monitored during the thermal impact evaluation in 1980.

APPENDIX 1A

DATA SHEET

1A

DATE April 18, 1980 POWER LEVEL 73.62% (Daily Average)

TIME	DISCHARGE TEMPERATURE (°F)	TIME	DISCHARGE TEMPERATURE (°F)
0100	70.65	1300	70.10
0200	70.80	1400	70.50
0300	70.97	1500	71.15
0400	70.97	1600	71.27
0500	70.63	1700	71.42
0600	70.48	1800	71.42
0700	70.68	1900	71.00
0800	70.40	2000	70.67
0900	70.60	2100	70.35
1000	70.55	2200	70.35
1100	70.55	2300	70.13
1200	70.67	2400	70.03

APPENDIX 1B

DATA SHEET

1A

DATE April 19, 1980 POWER LEVEL 57.50% (Daily Average)

TIME	DISCHARGE TEMPERATURE (°F)	TIME	DISCHARGE TEMPERATURE(°F)
0100	70.23	1300	69.31
0200	70.35	1400	69.14
0300	70.33	1500	69.51
0400	70.15	1600	69.06
0500	69.63	1700	68.69
0600	69.46	1800[a]	68.24
0700	69.46	1900	67.72
0800	69.43	2000	65.11
0900	69.68	2100	64.02
1000	69.68	2200	62.96
1100	69.53	2300[b]	63.10
1200	69.18	2400	59.26
a - power reduction started at 1830			
b - Unit 1 off line at 2256			

APPENDIX 1C

DATA SHEET

1A

DATE April 20, 1980 POWER LEVEL C.0% (Daily Average)

TIME	DISCHARGE TEMPERATURE (°F)	TIME	DISCHARGE TEMPERATURE (°F)
0100	59.83	1300	58.81
0200	59.33	1400	58.45
0300	59.22	1500	58.76
0400	59.07	1600	58.54
0500	59.19	1700	58.29
0600	59.56	1800	58.17
0700	59.93	1900	57.75
0800	59.69	2000	57.98
0900	59.19	2100	58.55
1000	59.12	2200	58.77
1100	60.03	2300	59.46
1200	59.61	2400	60.13

APPENDIX 2A

DATA SHEET

2A

DATE: April 19, 1980 TIME: 1855

WATER TEMP: at 2.5 ft. 68F
at 9.5 ft. 68F AIR TEMP: 62F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 1

- Barometric pressure 30.05
- Clear sky
- Calm wind

FIELD OBSERVATIONS:

- Station depth - 12 ft.
- Water visibility - 1 ft.
- No abnormal fish activity observed.

APPENDIX 2B

DATA SHEET

2A

DATE: April 19, 1980 TIME: 1910

WATER TEMP: at 2 ft. 69F
at 8 ft. 67F AIR TEMP: 64F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 2

- Barometric Pressure 30.05
- Clear sky
- Calm wind

FIELD OBSERVATIONS:

- Station depth - 10 ft.
- Water visibility - 1 ft.
- No abnormal fish activity observed.

APPENDIX 2C

DATA SHEET

2A

DATE: April 19, 1980 TIME: 1920

WATER TEMP: at 2.5 ft. 70F
at 9.5 ft. 58F AIR TEMP: 65F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 3

- Barometric pressure 30.05
- Clear sky
- Calm wind

FIELD OBSERVATIONS:

- Station depth - 12 ft.
- Water visibility - 1 ft.
- No abnormal fish activity observed.

APPENDIX 2D

DATA SHEET

2A

DATE: April 20, 1980 TIME: 0205

WATER TEMP: at 2.5 ft. 60F
at 9.5 ft. 60F AIR TEMP: 55F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 1

- Barometric pressure 30.02
- Clear sky
- Wind from the west at 5-10

FIELD OBSERVATIONS:

- Station depth 12 ft.
- Water visibility 1 ft.
- No abnormal fish activity observed

APPENDIX 2E
DATA SHEET

2A

DATE: April 20, 1980 TIME: 0215

WATER TEMP: at 2 ft. 63F
at 8 ft. 60F AIR TEMP: 55F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 2

- Barometric pressure 30.02
- Clear sky
- Wind from the west at 5-10

FIELD OBSERVATIONS:

- Station depth 10 ft.
- Water visibility 1 ft.
- No abnormal fish activity observed

APPENDIX 2F

DATA SHEET

2A

DATE: April 20, 1980 TIME: 0225

WATER TEMP: at 2.5 ft. 61F
at 9.5 ft. 58 ft. AIR TEMP: 56F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 3

- Barometric pressure 30.02
- Clear sky
- Winds from the west at 5-10

FIELD OBSERVATIONS:

- Station depth 12 ft.
- Water visibility 1 ft.
- No abnormal fish activity observed.

APPENDIX 2G

DATA SHEET

2A

DATE: April 20, 1980 TIME: 2244

WATER TEMP: at 2 ft. 58F
at 8 ft. 58F AIR TEMP: 56

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 1

- Barometric pressure 30.07
- Clear sky
- Calm wind

FIELD OBSERVATIONS:

- Station depth 10 ft.
- Water visibility 1 ft.
- No abnormal fish activity observed

APPENDIX 2H

DATA SHEET

2A

DATE: April 20, 1980 TIME: 2251

WATER TEMP: at 2 ft. 60F
at 8 ft. 58F AIR TEMP: 56F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 2

- Barometric pressure 30.07
- Clear sky
- Calm wind

FIELD OBSERVATIONS:

- Station depth - 10 ft.
- Water visibility - 1 ft.
- No abnormal fish activity observed

APPENDIX 2I

DATA SHEET

2A

DATE: April 20, 1980 TIME: 2259

WATER TEMP: at 2.5 ft. 60F
at 9.5 ft. 58F AIR TEMP: 58F

GENERAL METEOROLOGICAL CONDITIONS:

Station No. 3

- Barometric pressure 30.07
- Clear sky
- Calm wind

FIELD OBSERVATIONS:

- Station depth 12 ft.
- Water visibility 1 ft.
- No abnormal fish activity observed

1980 ANNUAL ENVIRONMENTAL RADIOLOGICAL MONITORING REPORT FOR ANO-1 & ANO-2

1.0 INTRODUCTION

The following report summarizes the Environmental Radiological Monitoring conducted for the Arkansas Nuclear One Unit 1 and 2 during the calendar year 1980. All sample analyses and data interpretation were performed by the staff of Arkansas Power and Light Company.

1.1 Plant and Location

Arkansas Nuclear One - Unit 1 and 2 are both light-water cooled pressurized water nuclear reactors located approximately 5.0 miles west of Russellville, Arkansas. ANO- Unit 1 entered commercial operation December 1974 and the second unit at the same site ANO - Unit 2, reached criticality in December 1978. Lake Dardanelle is the source of the circulating cooling water for ANO - Unit 1, and ANO - Unit 2 utilizes a cooling tower that depends upon Lake Dardanelle water also.

1.2 Environmental Monitoring Program

The Environmental Monitoring Program was established based upon the Environmental Technical Specifications for ANO - Unit 1. These specifications have remained essentially the same, although several changes are planned to be implemented which would basically agree with the Standardized Environmental Technical Specifications issued by the U.S. Nuclear Regulatory Commission in NUREG-0472. The 1980 Environmental Radiological Monitoring Report is governed by present

environmental technical specifications and is patterned after the environmental radiological monitoring program summary found in NUREG-0472. The 1980 report includes summaries, interpretations, and statistical evaluation of the results of the radiological environmental surveillance activities, which are resultant of Amendment 37 to ANO-1 Technical Specifications. Table 1-1 details the surveillance program listing sample type, frequency of collection, and the method of analysis used. Table 1-2 lists the sample location and type of samples collected at each location.

1.3 Control Locations

During the calendar year 1980, the following locations were designated as control stations along with the respective sample type and analysis.

a) AP&L's Substation at Danville, Arkansas (Station #7)
   1) Air Particulate
   2) Air Iodine
   3) Precipitation
   4) Vegetation
   5) Soil
   6) TLD

b) Piney Creek Area (Station #16)

1) Lake Water

2) Bottom Sediment

3) Aquatic Biota (including fish)

c) R. A. Young's Dairy (Station #23)

1) Milk

2) Vegetation

TABLE 1-1

SAMPLE TYPE AND ANALYSIS

I. AIR

A. Particulate

1. Continuous 7-day samples, filters changes weekly (Eberline Model RAP-1 sample pumps, Gelman 47 mm glass fiber filters, calibrated to one cubic foot per minute ($0.028 m^3$/min) air sampling rate), seven (7) locations.

2. Analyses:

a. Gross alpha
b. Gross beta
c. Gamma isotope on a monthly composite (each station) and on high beta levels ($\geq$100 DPM/sample)
d. Radiostrontium on quarterly composite if gamma isotopic analysis shows presence of Cs-137.

B. Iodine-131

1. Continuous 7-day samples, activated charcoal filter trap on inlet of air sampler downstream of particulate filter, changed weekly, seven (7) locations.

2. Analyses:

a. Iodine-131

C. Direction Radiation

1. Four (4) thermoluminescent dosimeters (LiF), seven (7) locations.

a. Two (2) thermoluminescent dosimeters (LiF), thirty-seven (37) locations.

2. Analyses:

a. Change and readout one set dosimeters quarterly at all 44 locations and one set semi-annually at the first 7 locations.

D. Precipitation

1. Four (4) locations, samples collected weekly (as available).

2. Analyses:

a. Gross beta
b. Gamma Isotopic

II. WATER

A. Lake Water

1. Samples (one gallon) monthly from five (5) locations (discharge canal, intake canal, and lake south of plant between discharge and intake). (Sample stations 8, 9, 10, 15, 16)

2. Analyses:

a. Gross beta (monthly)
b. Gamma isotopic (monthly if gross beta exceeds 30 pCi/L and on quarterly composites)
c. Tritium (quarterly composites)
d. Radiostrontium (quarterly composites)

B. Bottom Sediments

1. Samples (≈Kg) semi-annually from near the same locations as lake water. Station 15 sample to be taken in pool above dam.

2. Analyses:

a. Gamma isotopic
b. Radiostrontium (annual composites)

C. Ground Water

1. Samples (one gallon) quarterly from one onsite and one offsite wells.

2. Analyses:

a. Gross alpha
b. Gross beta
c. Gamma isotopic
d. Tritium

D. Russellville City Water

1. Samples (one gallon) monthly from system intake.

2. Analyses:

a. Gross alpha
b. Gross beta

c. Gamma isotopic
d. Tritium (quarterly composite)
e. Radiostronium (quarterly composite)

E. Aquatic Biota

1. Semi-annual samples are taken as available at or near the same sample points as lake water and bottom sediments. Samples will be as large as practicable not to exceed 2Kg.

2. Analyses:

a. Gross beta (plankton)
b. Gamma isotopic (fish flesh, plankton, benthic organisms, aquatic plants)
c. Radiostrontium (benthic organisms, aquatic plants)

F. Fish Bone

1. Annual sample (≈500g bone) in the Fall. Sampled as in E.1 above.

2. Analyses:

a. Strontium 89-90

III TERRESTRIAL

A. Milk

1. One gallon samples will be taken monthly from farms or dairies within a ten-mile radius of plant.

2.

Analyses	Frequency
a. Iodine-131	Monthly
b. Strontium 89,90	Quarterly
c. Gamma isotopic	Monthly

B. Vegetation

1. Samples (≈1Kg) of grass and leafy portions of other vegetation in the vicinity of the seven air sampling locations are taken in the Spring, Summer, and Fall seasons.

2. Similar samples of pasturage vegetation of dairies of farms sampled for milk within a ten-mile radius of the plant will be taken at time coinciding with those of 1 above.

3. Analyses:

   a. Radioiodine (upon collection) by gamma analysis
   b. Gamma isotopic

C. Soil

1. Samples (≈1.5 liters) are taken at each of the air sampler sites semi-annually.

2. Analyses:

   a. Gamma isotopic
   b. Strontium 89-90 are determined annually.

BLE 1-2

SAMPLE LOCATION AND SCHEDULE

Sample Station #	Direction and Distance from Plant	Sample Station Location	Sample Types	Sample Frequency	Remarks
1	92° - 0.5 miles	Near Meteorology tower on site	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation 5) Precipitation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year 5) Weekly, as available	1) 7-day continuous-weekly 2) Readout and record at stated frequency 3) Spring and Fall 4) Spring, Summer and Fall
2	235° - 0.5 miles	Near APAL lodge on site	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year	1) 7-day continuous-weekly 2) Readout and record at stated frequency 3) Spring and Fall 4) Spring, Summer and Fall
3	4° - 0.4 miles	South of Hershel Bennet home	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation 5) Precipitation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year 5) Weekly, as available	1) 7-day continuous-weekly 2) Readout and record at stated frequency 3) Spring and Fall 4) Spring, Summer and Fall
4	171° - 0.4 miles	Near the May Cemetery	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year	1) 7-day continuous-weekly 2) Readout and record at stated frequency 3) Spring and Fall 4) Spring, Summer and Fall

TABLE 1-2 (Contd)

SAMPLE LOCATION AND SCHEDULE

Sample Station #	Direction and Distance from Plant	Sample Station Location	Sample Types	Sample Frequency	Remarks
5	298° - 8.5 miles	At Ray Walter's residence, Knoxville, Johnson County	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation 5) Precipitation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year 5) Weekly, as available	1) 7-day continuous-weekly 2) Readout and record at state frequency 3) Spring and Fall 4) Spring, Summer and Fall
6	109° - 6.8 miles	At APSL's Russellville Local Office	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year	1) 7-day continuous-weekly 2) Readout and record at stated frequency 3) Spring and Fall 4) Spring, Summer and Fall
7	209° - 15.3 miles	At APSL's Sub-station in Danville, Yell County	1) Air Sample 2) TLD 3) Soil Sample 4) Vegetation 5) Precipitation	1) Weekly 2) Quarterly 2) Semi-annually 3) Semi-annually 4) 3 times/year 5) Weekly, as available	1) 7-day continuous-weekly 2) Readout and record at stated frequency 3) Spring and Fall 4) Spring, Summer and Fall
8	180° - 0.1 miles	Mouth of Discharge Canal	1) Lake Water 2) Aquatic Biota 3) Bottom Sediments	1) Monthly 2) Semi-annually 3) Semi-annually	1) Record status of plant discharge operations 2) Summer and Winter 3) Summer and Winter

TABLE 1-2 (Contd)

SAMPLE LOCATION AND SCHEDULE

Sample Station #	Direction and Distance from Plant	Sample Station Location	Sample Types	Sample Frequency	Remarks
9	160° - 1.6 miles	South of Bunker Hill near main river channel	1) Lake Water	1) Monthly	1) Record status of plant discharge operations
			2) Aquatic Biota	2) Semi-annually	2) Summer and Winter
			3) Bottom Sediments	3) Semi-annually	3) Summer and Winter
10	90° - 1.0 miles	Mouth of inlet canal	1) Lake Water	1) Monthly	1) Record status of plant discharge operations
			2) Aquatic Biota	2) Semi-annually	2) Summer and Winter
			3) Bottom Sediments	3) Semi-annually	3) Summer and Winter
11	240° - 0.5 miles	Near AP&L Lodge	1) Ground Water	1) Quarterly	
12	310° - 2.0 miles	London Water Co. off U.S. Highway 64, 0.5 mile west of London, Pope County	1) Ground Water	1) Quarterly	(NOTE: Sample unavailable because well is no longer used.)
13	95° - 2.0 miles	Ouita Lake Recreation Area on Illinois Bayou off Dyke Road	1) Ground Water	1) Quarterly	
14	65° - 5.8 miles	Inlet to City Water System from Illinois Bayou	1) City of Russellville Water Supply	1) Monthly	
15	150° - 5.0 miles	Discharge of Dardanelle Dam Pool above Dardanelle Dam	1) Lake Water	1) Monthly	1) Record status of plant discharge operations
			2) Bottom Sediments	2) Semi-annually	
			3) Aquatic Biota	3) Semi-annually	

TABLE 1-2(Contd)

SAMPLE LOCATION AND SCHEDULE

Sample Station #	Direction and Distance from Plant	Sample Station Location	Sample Types	Sample Frequency	Remarks
16	295° - 6.0 miles	Piney Creek Area	1) Lake Water 2) Bottom Sediment 3) Aquatic Biota	1) Monthly 2) Semi-annually 3) Semi-annually	
19	99° - 5.0 miles	Arkansas Tech. Herd	1) Milk 2) Pasturage	1) Monthly 2) 3 times/year	2) Spring, Summer and Fall
20	29° - 8.0 miles	Odom-Meyers Dairy	1) Milk 2) Pasturage	1) Monthly 2) 3 times/year	2) Spring, Summer and Fall
23	73° - 12 miles	R. A. Young Dairy	1) Milk 2) Pasturage	1) Monthly 2) 3 times/year	2) Spring, Summer and Fall
26	21° - 7.75 miles	Harms Dairy	1) Milk 2) Pasturage	1) Monthly 2) 3 times/year	2) Spring, Summer and Fall
28	295° - 2.0 miles	Don Adkins Farm	1) Milk 2) Pasturage	1) Monthly 2) 3 times/year	

TABLE 1-3

TLD Locations

AP&L TLD No.	Location
1	0.5 miles 92°
2	0.5 miles 235°
3	0.4 miles 4°
4	0.4 miles 171°
5	8.5 miles 298°
6	6.8 miles 109°
7	19.3 miles 209°
8	1.8 miles 313°
9	1.2 miles 308°
10	0.8 miles 136°
11	2.3 miles 108°
12	3.3 miles 60°
13	1.4 miles 48°
14	1.4 miles 24°
15	1.5 miles 343°
16	1.9 miles 315°
17	17.2 miles 305°
18	5.8 miles 291°
19	4.8 miles 313°
20	4.2 miles 338°
21	5.5 miles 338°
22	3.5 miles 12°
23	3.5 miles 48°
24	3.3 miles 62°

TABLE 1-3

TLD Locations (Cont'd)

AP&L TLD No.	Location
25	9.2 miles 47°
26	5.6 miles 78°
27	5.7 miles 103°
28	8.5 miles 115°
29	7.5 miles 118°
30	4.6 miles 245°
31	2.7 miles 253°
32	4.8 miles 274°
33	3.8 miles 231°
34	2.8 miles 207°
35	3.1 miles 186°
36	4.3 miles 166°
37	8.5 miles 152°
38	5.8 miles 195°
39	19.2 miles 178°
40	21.8 miles 151°
41	3.3 miles 134°
42	5.2 miles 127°
43	17.5 miles 106°
44	13.0 miles 314°

2.0 INTERPRETATIONS AND CONCLUSIONS

Data collected from radiological analyses of environmental samples collected in the area surrounding ANO-1 and ANO-2 indicate no significant impact caused by liquid and gaseous discharges from the ANO site during 1980. Also, no non-routine environmental radiological monitoring reports resulting from analyses of environmental samples were submitted to the U.S. NRC during 1980.

Sample types that indicated activation or fission-produced radioisotopes present are discussed in the paragraphs below:

2.1 Samples Associated with Air Monitoring

None of the 324 indicator location samples for iodine in air (using activated charcoal filters) indicated iodine-131 activities greater than the lower limit of detection which is 0.050 pCi/m^3 of air.

Of the 84 monthly composites for particulates in air collected in the calendar year 1980, nine monthly composite samples at the seven air sample locations, including the control air particulate samples from Danville, Arkansas indicated some fission products present. The fission products were detected in the November and December 1980 monthly composites.

Gamma spectroscopy analysis indicated the presence of zirconium-95, niobium-95, ruthenium-103 and cerium-141. Also gross beta activity of individual air particulate samples in December 1980 was approximately twice that observed during the rest of 1980. These increases in radioactivity levels are attributable to fallout from a nuclear test conducted by the People's Republic of China on October 15, 1980.

Other environmental radiation labs in the western United States also detected increased levels of fission and activation radioisotopes in late 1980 which were also attributed to the People's Republic of China atmospheric nuclear test.

TLD data collected for the calendar year 1980 was divided into two categories. The first category includes the lithium floride (LiF) TLDs which were collected and read quarterly and the second category include LiF which were collected and read semi-annually in 1980. The quarterly TLD data indicated a total yearly average dose for the indicator locations to be 54 mrem per year at each location compared to the total yearly average dose of 56 mrem for 1979. The control location at Danville, Arkansas (209^{o} - 19.3 miles) indicated a total dose, based upon quarterly TLD's of 47 mrem per year compared to 49 mrem per year for 1979. These data are statistically equivalent because the TLDs used during 1978

and 1979, although "matched" TLDs, respond to the same radiation exposure at these levels at variations to fifteen percent between all TLDs. Other factors that may affect the variation in recorded dose include the immediate environment of the TLD chip, exposure to dust particules, and distance the TLD is from the ground.

The TLDs collected every six months during 1980 indicated slightly lower readings than the quarterly TLDs. The TLDs collected every six months indicated a total yearly average dose for the indicator locations of 44 mrems per location, compared to 42 mrem per year for 1979. The control location indicated a total dose, based upon TLDs collected and read semi-annually, of 41 mrems. These data are also statistically equal, since there is a fifteen percent variability among the "matched" TLDs. The TLDs collected and read every six months have lower dose values than the quarterly TLDs, probably due to the lithium fluoride chips experiencing some "fading".

2.2 Samples Associated with Water Monitoring

As in 1979, bottom sediments collected from the mouth of the discharge canal (0.1 mile 180°) and from the pool above the Dandanelle Dam (5.0 miles 150°) were the major stations which indicated

several radioisotopes attributable to operations at ANO. Also, as in 1979, dose calculations performed according to the mathematical model for determining external dose from sediment given by U. S. Nuclear Regulatory Commission Regulatory Guide 1.109 indicated the dose from sediment collected at the mouth of the ANO discharge canal for all measurable radioisotopes to be approximately 0.3 mrem per year, the calculated maximum external dose to skin of a teen. The table below details the calculation of these dose measurements.

CALCULATION OF MAXIMUM ANNUAL DOSE
TO MAN FROM BOTTOM SEDIMENT SAMPLE
021680BS08

Isotope	Activity (pCi/g)	Dose to Skin (mrem/yr)
Mn-54	0.26	0.047
Co-58	2.04	0.045
Co-60	2.62	0.140
Cs-134	0.75	0.028
Cs-137	3.50	0.046
		0.306*

*Maximum external dose to skin of a teen.

Note: Dose calculations made according to the guidance of Nuclear Regulatory Commission Regulation Guide 1.109, using the equation

$R(mrem/yr) = C\ (pCi/kg)\ (40\ Kg/m^2) \cdot U\ (hr/yr) \cdot D\ (mrem/hr\ per\ pCi/m^2)$

Where: R is the annual dose to an organ,

C is concentration of a particular nuclide

U is the exposure time (56 hrs for teen)

D is the dose factor

According to standardized technical specifications, the design objectives for the dose to skin of an individual is 15 mrem per year per unit. The value of 0.31 mrem per year for maximum external dose to skin of a teen is well within the design objective criteria for external dose to skin.

The highest level of fission and activation radioisotopes found in fish attributed to operations at ANO were the bottom feeder fish collected February 15, 1980 from the mouth of the ANO discharge canal (0.1 mile 180°). Bottom feeder fish are generally composed of carp and buffalo fish. Dose calculations were performed according to the mathematical model for determining maximum total dose to total body from fish consumption given by U. S. NRC Regulatory Guide 1.109. The table below identifies the isotopes found in the bottom feeder fish, the amount of activity present, and the contribution of the total dose calculated according to either whole body or specific body organs.

Isotopes in Bottom Feeder Fish	Activity (pCi/kg)	Maximum Dose to Man (mrem/yr)
Co-58	83.3	0.026 (GI-LLI)
Co-60	21.8	0.018 (GI-LLI)
Cs-134	18.9	0.059 (Liver)
Cs-137	51.3	0.020 (Liver)
	Total	0.123 mrem/yr.

According to the above calculations, the maximum dose to adults to total body from fish consumption

is 0.123 mrem per year. The value of 0.123 mrem per year is well within the design objective criteria of 3 mrem per year per unit as defined in U.S. NRC Regulatory Guide 1.109.

In the analysis of edible portions of carnivorous fish (catfish, bass, crappie) collected by and split with the Arkansas Department of Health in May 1980, the only fission-produced radioisotope detected was cesium-137, with an activity of 12 pCi/Kg. In comparison, in edible portions of carnivorous fish collected by and split with the Arkansas Department of Health in 1978 and 1979, cobalt-58, cesium-134, and cesium-137 were detected. Because of the small sample populations collected during 1978, 1979, and 1980, no conclusions can be made as to whether any decrease in uptake of radionuclides in fish populations in the discharge canal has occurred.

No data was available to compare gamma spectral analysis performed on the split sample of edible portions of carnivorous fish by the Arkansas Department of Health Radiochemistry Lab.

Lake Water samples, including monthly samples collected from the mouth of the ANO discharge canal and the Russellville City water supply, and ground water samples indicated no gamma emitters attributable to

reactor-produced isotopes, and gross alpha and gross beta analyses of lake water and ground water have not varied from pre-operational data or the data collected since ANO-1 has been in commercial operation.

Whole mollusks samples were collected in May and October 1980. Two samples collected in May 1980, the mollusks caged in the discharge canal (0.1 mile 180°) and the mollusks caged at Station No. 9 (1.8 miles 160°) indicated fission and activation radioisotopes present. Radioisotopes found in mollusks included Mn-54, Co-58, Co-60, I-131, Cs-134 and Cs-137. Most of these isotopes were adsorbed to the shell of the mollusks with minimal activity in mollusk soft tissue. The mollusk samples are not ordinarily found in the discharge canal, and many died in the cage, probably because of the elevated temperature of the discharge canal water.

2.3 Samples Associated with Terrestrial Monitoring

Three permanent milk sampling stations remained at the end of 1980. The Don Adkins Farm, sample Station No. 28, was discontinued after January 1980 because the single dairy cow stopped producing milk for human consumption. The Harms dairy, sample Station No. 26 (7.75 miles 21°,, requested that the Arkansas Department of Health discontinue milk sampling for environmental radiological analysis in May 1980.

Iodine-131 was detected in all three permanent milk sampling stations in November and December 1980, including the control dairy, the R.A. Young dairy (12 miles 73°). Iodine-131 activity ranged from 0.22 pCi/l to 0.64 pCi/l.

The iodine-131 activity detected in all the milk samples collected in November and December 1980 is attributed to the People's Republic of China atmospheric nuclear test conducted in October 15, 1980.

Cesium-137 was also detected in one indicator milk sample, the Don Adkins station milk sample collected January 7, 1980. The value of 48 pCi/l of Cs-137 found in this milk sample is the likely result of the high pasturage diet of the single family cow. No other reactor-produced gamma emitters were detected in samples from indicator locations, although small amounts of cesium-137 were detected in four samples collected from the R. A. Young control dairy (12 miles 73°).

In a vegetation sample collected in October 1980 from Knoxville, AR, approximately 8.5 miles west of ANO, 7100 pCi of Xe-133 per Kg of dry vegetation was observed. In another vegetation sample collected at Odom-Meyer dairy near Knoxville, AR, no activation or fission produced gamma emitters

were detected. The Xe-133 activity probably resulted from contamination of the plastic bag used for collection, or contamination of the sample after it was returned to ANO prior to shipment to the off site laboratory for analysis.

Vegetation samples indicated only small quantities of Cs-137 present, with 140 pCi/Kg the highest value observed in an indicator location. No other gamma emmitters were detected in vegetation samples.

In soil samples, Cs-137 was detected in all samples, including the control station samples. Two indicator samples also contained Mn-54, but the activity present was 20 pCi/Kg in each sample.

2.4 Samples Not Collected in 1980

Samples not collected during the calendar year of 1980 included aquatic plant and benthic organisms because sufficiently large samples need to perform a useful analysis were not available to sample collectors. Milk samples collected from the Harms Dairy, Station No. 26, were discontinued after May 1980 because the owners of the dairy refused to allow milk sampling for radiological analysis by the Arkansas Department of Health. Another milk sampling station, the Don Adkins Fram, Station No. 28, was discontinued after January 1980 because the single family cow was no longer producing milk for human consumption.

SURVEY OF MILK-PRODUCING ANIMALS WITHIN AN

AREA OF TEN (10) MILES OF ARKANSAS NUCLEAR ONE

In accordance with Environmental Technical Specification 4.2.10, a survey was conducted March 24-25, 1980 to determine the location of animals which produce milk for human consumption. Milk producing animals (milk cows) are divided into two categories defined as:

1. Class A Dairies - Dairies in which milk is intended primarily for human consumption as Grade A.
2. Individual Milk Cows - Family cows in which the milk is intended primarily for home use.

CLASS A DAIRIES WITHIN A 10-MILE RADIUS OF ANO

	Dairy	No. of Cows	Azimuth-Distance
1.	Ark. Tech Univ. Dairy	60	105° - 5.5
2.	Bill Harms Dairy	100	21° - 7.75
3.	J. Odom - R. Meyer Dairy	100	287° - 9.0
4.	Elmer Zackary Dairy	65	309° - 10.5
5.	R. A. Young Dairy (CONTROL)	100	74° - 12
6.	Harold Steuber	80	22° - 7.0
7.	Lawrence Steuber	70	358° - 7.5
8.	Buddy Boxnick	50	23° - 7.0
9.	Robberson Dairy	60	183° - 10.5

INDIVIDUAL MILK COWS

Name	No. of Cows	Azimuth-Distance
1. J. D. Henderson	1	70° - 1.5
2. Bobby Steuber	1	346° - 8.3
3. Ted M. Melton	1	300° - 8.5
4. B. W. Troglin	1	296° - 8.3
5. J. Robinson	1	45° - 9.0
6. J. M. Motley	1	110° - 9.5
7. Ken Cash	2	312° - 7.5
8. Carl Roden	1	300° - 8.3
9. Tom Willis	1	19° - 7.8
10. Jess Austin	1	22° - 7.1

SURVEY OF MILK-PRODUCING ANIMALS WITHIN AN AREA OF TEN (10) MILES OF ARKANSAS NUCLEAR ONE

In accordance with Environmental Technical Specification 4.2.10, a survey was conducted September 18-19, 1980 to determine the location of animals which produce milk for human consumption. Milk producing animals (milk cows) are divided into two categories defined as:

1. Class A Dairies - Dairies in which milk is intended primarily for human consumption as Grade A milk.
2. Individual Milk Cows - Family cows in which the milk is intended primarily for home use.

CLASS A DAIRIES WITHIN A 10-MILE RADIUS OF ANO

	Dairy	No. of Cows	Azimuth-Distance
1.	Ark. Tech Univ. Dairy	60	105° - 5.5
2.	Bill Harms Dairy	100	21° - 7.75
3.	J. Odom - R. Meyer Dairy	100	287° - 9.0
4.	Elmer Zackary Dairy	65	309° - 10.5
5.	R. A. Young Dairy (CONTROL)	100	74° - 12
6.	Harold Steuber	80	22° - 7.0
7.	Lawrence Steuber	70	358° - 7.5
8.	Buddy Boxnick	50	23° - 7.0
9.	Robberson Dairy	60	183° - 10.5

INDIVIDUAL MILK COWS

Name	No. of Cows	Azimuth-Distance
1. J. D. Henderson	1	70° - 1.5
2. Bobby Steuber	1	346° - 8.3
3. B. W. Troglin	1	296° - 8.3
4. J. Robinson	1	45° - 9.0
5. J. M. Motley	1	110° - 9.5
6. Ken Cash	2	312° - 7.5
7. Carl Roden	1	300° - 8.3
8. Jess Austin	1	22° - 7.1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
I. Air A. Particulate (pCi/m^3) (E-3)	Gross α 378	3.0	17.6 (323/324) (3.6 - 145.)	#6 Russellville AP&L Local Office 6.8 miles 109°	20.0 (54/54) (3.9 - 145)	17.9 (54/54) (5.4 - 75.6)	0
	Gross β 378		30.0 (323/324) (8.2 - 249.)	#3 South of H. Bennett Homesite 0.4 mile 4°	33.3 (53/54) (8.2 - 178)	34.8 (54/54) (14.2 - 158.)	0
	Gamma 84						
	^{141}Ce	15	16 (7/72) (8 - 23)	#3 South of H. Bennett Homesite 0.4 mile 4°	23 (1/12)	17 (1/12)	0
	^{95}Nb	10	27 (8/72) (10 - 61)	#4 Near the May Cemetary (0.4 mile 171°)	61 (1/12)	27 (1/12)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec. 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
I. Air B. ^{131}I (pCi/M^3)	^{131}I by Gamma 364	0.050	<LLD	-	<LLD	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
I. Air C. Direct Radiation (mrem/quarter)	TLDs 114	5 mrem	17 (103/103) (12 - 27)	TLD location #28 Near Russellville Airport 9.5 miles 114°	23 (2/2) (19 - 27)	17 (11/11) (12 - 21)	
I. Air C. Direct Radiation (mrem/6 months)	TLDs 21	5 mrem	26 (18/18) (22 - 30)	#2 Near AP&L Lodge Site 0.5 mile 235°	28 (3/3) (27 - 29)	24 (3/3) (22 - 25)	

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec. 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
I. Air D. Precipitation (pCi/ℓ)	Gross α 89	3	4.1 (18/65) (2.5-7.4)	#1 Near ANO Met. Tower on Site 0.5 mile 92°	4.8 (5/22) (2.9-7.4)	3.8 (5/24)	0
	Gross β 89	2	5.2 (46/65) (1.9-14.7)	#3 South of H. Bennett Homesite 0.4 mile 4°	5.9 (15/21) (2.2-14.7)	5.3 (15/24) (2.0-12.5)	0
	Gamma 89		<LLD	-	-	<LLD	0

[a]Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b]Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water A. Lake Water	Gross α 60	3	7.0 (10/48) (4.2 - 17)	#9 South of Bunker Hill 1.8 miles 160°	10.8 (2/12) (4.6 - 17.)	3.6 (1/12)	0
(pCi/l)	Gross β 60	2	5.9 (49/48) (2.6 - 14.6)	#15 Pool above Dardanelle Dam 5.0 miles 150°	6.6 (12/12) (3.2 - 14.6)	4.5 (9/12) (2.1 - 11.3)	0
	Gamma 37						
	133 Xe		480 (1/37)	#8 Mouth of Discharge Canal 0.1 mile 180°	480 (1/37)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (†)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (†)[b] Range[b]	Control Location Mean (†)[b] Range[b]	Number of Reportable Occurrences
II. Water (Cont.) A. Lake Water (pCi/l)	89 Sr 20	5	3.3 (4/16) (2.7 - 4.7)	#8 Mouth of Discharge Canal 0.1 mile 180°	3.7 (2/4) (2.7 - 4.7)	<LLD	0
	90 Sr 20	2	1.5 (3/15) (1.1 - 1.8)	#8 Mouth of Discharge Canal 0.1 mile 180°	1.8 (1/4)	<LLD	0
	3 H 20	230	260 (2/16) (250 - 260)	#10 Mouth of Intake Canal 1.0 90°	260 (2/4) (250 - 260)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (†)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limi of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
II. Water	Gamma 10						
B. Bottom Sediments	54 Mn	60	100 (4/8) (40 - 260)	#8 Mouth of Discharge Canal 0.1 mile 180°	150 (2/2) (40 - 260)	<LLD	0
(pCi/Kg)	58 Co	80	510 (5/8) (35 - 2040)	#8 Mouth of Discharge Canal 0.1 mile 180°	1110 (2/2) (180 - 2040)	68 (1/2)	0
	60 Co	60	710 (7/8) (50 - 2620)	#8 Mouth of Discharge Canal 0.1 mile 180°	1580 (2/2) (540 - 2620)	<LLD	0
	144 Ce	80	260 (1/8)	#15 Pool above Dardanelle Dam 5.0 miles 150°	260 (1/2)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water B. Bottom Sediments	134 Cs	80	440 (7/8) (90 - 750)	#8 Mouth of Discharge Canal 0.1 mile 180°	540 (2/2) (320 - 750)	<LLD	0
(pCi/Kg)	137 Cs	60	1460 (8/8) (190 - 3500)	#8 Mouth of Discharge Canal 0.1 mile 180°	2800 (2/2) (2090 - 3500)	140 (2/2) (134 - 146)	0
	89 Sr	500	<LLD	----	<LLD	<LLD	0
	90 Sr	200	250 (1/4)	#10 Mouth of Intake Canal 1.0 mile 90°	250	580 (1/1)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (†)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas Reporting Period Jan. - Dec., 1980
(County, State)

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
II. Water B. Bottom Sediments	134 Cs	80	440 (7/8) (90 - 750)	#8 Mouth of Discharge Canal 0.1 mile 180°	540 (2/2) (320 - 750)	<LLD	0
(pCi/Kg) (dry weight)	137 Cs	60	1460 (8/8) (190 - 3500)	#8 Mouth of Discharge Canal 0.1 mile 180°	2800 (2/2) (2090 - 3500)	140 (2/2) (134 - 146)	0
	89 Sr	500	LLD	----	LLD	<LLD	0
	90 Sr	200	250 (1/4)	#10 Mouth of Intake Canal 1.0 mile 90°	250	580 (1/1)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec. 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (†)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (†)[b] Range[b]	Control Location Mean (†)[b] Range[b]	Number of Reportable Occurrences
II. Water C. Ground Water	Gross α 8	3	<LLD	-	<LLD	<LLD	
(pCi/ℓ)	Gross β 8	2	9.4 (3/4) (3.8 - 17.6)	#11 Near AP&L Lodge Site 0.5 mile 240°	9.4 (3/4) (3.4 - 17.6)	10.3 (1/4)	
	Gamma 8		<LLD	-	<LLD	<LLD	
	^{3}H 8	280	<LLD	-	<LLD	240	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (†)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water D. Russellville City Water	Gross α 12	3	4.1 (1/12)	#14 Inlet to City water at Illinois Bayou 5.8 miles 65°	4.1 (1/12)	3.6 (1/12)	0
(pCi/l)	Gross β 12	2	4.0 (4/12) (2.1 - 5.9)	#14 Inlet to City water at Illinois Bayou 5.8 miles 65°	4.0 (4/12)	4.5 (9/12) (2.1 - 11.3)	0
	Gamma 14		<LLD		<LLD	<LLD	0

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ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas Reporting Period Jan. - Dec. , 1980
(County, State)

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A' Indicator Locations Mean (-)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
II. Water							
D. Russellville City Water	^{89}Sr 4	5	<LLD	-	<LLD	<LLD	0
	^{90}Sr 4	2	<LLD	-	<LLD	<LLD	0
(pCi/l)	^{3}H 4	230	<LLD	-	<LLD	<LLD	0

[a]Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b]Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
II. Water E. Aquatic Biota 1) Whole Carnivorus Fish	Gamma 10 134 Cs	80	13 (2/8) (12 - 15)	#9 South of Bunker Hill 1.8 miles 160°	15 (12)	<LLD	0
(Wet Weight) (pCi/Kg)	137 Cs	50	25 (8/8) (7 - 48)	#8 Mouth of Discharge Canal 0.1 mile 180°	31 (2/2) (20 - 43)	24 (1/2)	0

[a]Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b]Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec. 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A' Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
II. Water E. Aquatic Biota	Gamma 11 ^{58}Co	20	39 (3/9) (3-83)	#8 Mouth of Discharge Canal 0.1 miles 180°	57 (2/3) (31-83)	<LLD	0
2. Whole Bottom Feeder Fish	^{60}Co	30	22 (2/9) (22-23)	#8 Mouth of Discharge Canal 0.1 miles 180°	22 (2/3) (22-23)	<LLD	0
(Net Weight) pCi/Kg	^{95}Nb	20	33 (1/9)	#15 Pool Above Dardanelle Dam 5.0 miles 150°	33 (1/2)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

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ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water (Contd) E. Aquatic Biota	Gamma 11 134 Cs	80	26 (4/10) (12 - 58)	#8 Mouth of Discharge Canal 0.1 miles 180°	30 (3/3) (14 - 58)	<LLD	0
2. Whole Bottom Feeder Fish (Net Weight) pCi/Kg	137 Cs	50	45 (9/9) (9 - 200)	#8 Mouth of Discharge Canal 0.1 miles 180°	96 (3/3) (40 - 200)	9 (1/2)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

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ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec. 1980

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II. Water E. Aquatic Biota 3.) Whole Plankton Feeder Fish (Net Weight) (pCi/Kg)	Gamma 10						
	^{58}Co	20	30 (17-43) (2/8)	#8 Mouth of Discharge Canal 0.1 mile 180°	30 (17-43) (2/2)	<LLD	0
	^{134}Cs	80	28 (11-60) (3/8)	#8 Mouth of Discharge Canal 0.1 mile 180°	36 (11-60) (2/2)	<LLD	0
	^{137}Cs	50	49 (13-220) (8/8)	#8 Mouth of Discharge Canal 0.1 mile 180°	128 (36-220) (2/2)	14 (1/2)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water E. Aquatic Biota 4) Edible portions of carnivorous fish split with Ark. Dept. of Health (Wet Weight) pCi/Kg	Gamma 1 137 Cs	10	12 (1/1)	#8 Mouth of Discharge Canal 0.1 mile 180°	12 (1/1)	-	0

[a]Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b]Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A` Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
III. Water E. Aquatic Biota 5) Mollusks	Gamma 8 54 Mn	50	60 (1/6)	#8 Mouth of Discharge Canal 0.1 mile 180°	60 (1/2)	<LLD	0
Wet Weight of whole mollusks	58 Co	20	80 (4/6) (32 - 175)	#8 Mouth of Discharge Canal 0.1 mile 180°	100 (2/2) (34 - 175)	<LLD	0
(pCi/Kg	60 Co	30	30 (2/6) (35 - 40)	#8 Mouth of Discharge Canal 0.1 mile 180°	30 (1/2)	<LLD	0
	131 I	80	880 (1/6)	#8 Mouth of Discharge Canal 0.1 mile 180°	880 (1/2)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

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ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
(Cont'd) II. Water	Gamma 8						
E. Aquatic Biota 5) Mollusks	134 Cs	80	26 (2/6) (9 - 43)	#8 Mouth of Discharge Canal 0.1 mile 180°	43 (1/2)	<LLD	0
Wet Weight of whole mollusks (pCi/Kg)	137 Cs	50	90 (4/6) (20 - 290)	#8 Mouth of Discharge Canal 0.1 mile 180°	160 (2/2) (30 - 290)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean		Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
				Name Distance and Direction	Mean (+)[b] Range[b]		
II. Water E. Aquatic Biota 6. Plankton	Gross β 10	5	10 (8/8) (6 - 13)	#8 Mouth of Discharge Canal 0.1 mile 180°	12 (2/2) (10 - 13)	16 (2/2) (14 - 18)	0
filtered and dried (pCi/g)	Gamma 10		<LLD		<LLD	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water	89 Sr 4	2.0	<LLD	-	<LLD	<LLD	0
E. Aquatic Biota							
Mollusk Shells	90 Sr 4	0.3	7.2 (3/3) (1.9 - 11.4)	#8 Mouth of Discharge Canal 0.1 mile 180°	11.4 (1/1)	2.9 (1/1)	

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water F. Fish Bone	89 Sr 5	2.0	<LLD	-	<LLD	<LLD	0
1) Carnivorous Fish (pCi/g) of ash	90 Sr 5	0.3	2.4 (4/4) (1.4 - 4.0)	#8 Mouth of Discharge Canal 0.1 mile 180°	4.0 (1/1)	1.7 (1/)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
II. Water F. Fish Bone	89 Sr 4	2.0	<LLD	-	<LLD	<LLD	0
2) Bottom Feeder Fish (pCi/g) of ash	90 Sr 4	0.3	2.6 (3/3) (2.3 - 2.8)	#8 Mouth of Discharge Canal 0.1 mile 180°	2.8 (1/1)	2.3 (1/1)	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-638

Location of Facility Pope, Arkansas Reporting Period Jan. - Dec., 1980
(County, State)

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	A Indicator Locations Mean (†)[b] Range[b]	Location with Highest Annual Mean Name Distance and Direction	Location with Highest Annual Mean Mean (†)[b] Range[b]	Control Location Mean (†)[b] Range[b]	Number of Reportable Occurrences
II. Water							
F. Fish Bone	89 Sr 5	2.0	<LLD		<LLD	<LLD	0
3) Plankton							
Feeder Fish	90 Sr 5	0.	1.3 (4/4) (1.0 - 1.7)	#10 Mouth of Intake Canal 1.0 mile 90°	1.7 (1/1)	1.6 (1/1)	0
(pCi/g) of ash							

[a]Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b]Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (†)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas (County, State) Reporting Period Jan. - Dec., 1980

Medium or Pathway Sampled (unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
III. Terrestrial	Gamma 43						
A. Milk	137 Cs	15	48 (1/31)	#28 Don Adkins Farm 2.0 miles 295°	48 (1/1)	6 (4/12) (3 - 9)	0
	131 I 43 By chemical extraction	0.5	0.4 (5/31) (0.2 - 0.6)	#19 Ark. Tech Dairy 5.0 miles 99°	0.4 (2/12) (0.2 - 0.6)	0.3 (2/12) (0.3 - 0.4)	0
	89 Sr	5	4.4 (14/31) (2.9 - 9.8)	#20 Odom-Meyer Dairy 8.0 miles 29°	4.6 (6/13) (2.9 - 9.8)	4.2 (6/13) (2.6 - 7.0)	0
	90 Sr	2	5.0 (31/31) (1.5 - 12.4)	#28 Don Adkins Farm 2.0 miles 295°	10.7 (1/1)	6.6 (12/12) (4.8 - 11.7)	

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (+)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility ANO-1 and ANO-2 Docket No. 50-313 and 50-368

Location of Facility Pope, Arkansas Reporting Period Jan. - Dec., 1980
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (†)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (†)[b] Range[b]	Control Location Mean (†)[b] Range[b]	Number of Reportable Occurrences
III. Terrestrial	Gamma 33						
B. Vegetation							
pCi/Kg (dry weight)	137 Cs	50	90 (7/27) (50 - 140)	#5 Ray Walters' Residence at Knoxville 8.5 miles 298°	120 (2/3) (100 - 140)	60 (1/6)	0
	133 Xe	200	7100 (1/27)	#5 Ray Walters' residence at Knoxville 8.5 miles 298°	7100 (1/3)	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (†)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

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Location of Facility Pope, Arkansas Reporting Period Jan. - Dec., 1980
(County, State)

Medium or Pathway Sampled (unit of measurement)	Type and Total Number of Analysis Performed	Lower Limit of Detection[a] (LLD)	Indicator Locations Mean (+)[b] Range[b]	Location with Highest Annual Mean: Name, Distance and Direction	Location with Highest Annual Mean: Mean (+)[b] Range[b]	Control Location Mean (+)[b] Range[b]	Number of Reportable Occurrences
III. Terrestrial C. Soil (pCi/Kg)	Gamma 14 54 Mn	60	20 (2/12) (16 - 23)	#2 Near AP&L Lodge on site 0.5 mile 235°	20 (1/2)	<LLD	0
(Dry Weight)	137 Cs	60	360 (12/12) (20 - 690)	#6 Russellville AP&L local office 6.8 miles 109°	530 (2/2) (510 - 540)	680 (2/2) (340 - 1030)	0
	89 Sr	500	<LLD	-	<LLD	<LLD	0
	90 Sr	200	<LLD	-	<LLD	<LLD	0

[a] Nominal Lower Limit of Detection (LLD) as defined in table notation.

[b] Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis. (†)

LOW LEVEL DETECTION LIMITS

TABLE #1-4

	Air Particulate µCi/ml (E-15)	Fish µCi/g (E-9)	Veg. Terrest µCi/g (E-9)	Soil µCi/m^2 (E-3)	Bot. Sed. µCi/g (E-9)	Milk µCi/ml (E-9)	Water µCi/ml (E-9)	Plankton µCi/g (E-6)
^{3}H (a)							320	
^{7}Be	25	90	500	10	50	90	20	65
^{40}K	100	100	600	20	2000	100	20	250
^{54}Mn	5	5	30	0.5	100	15	15	15
^{58}Co	2	2	10	5	80	15	15	5
^{59}Fe	3	3	20	5	80	30	30	10
^{60}Co	3	3	20	3	40	15	15	10
^{65}Zn	5	5	30	5	80	30	30	15
^{89}Sr (b)	3	2000	--	50	500	10	10	--
^{90}Sr (b)	0.6	300	--	20	200	2	2	--
^{95}Zr - ^{95}Nb	6	8	50	5	20	10	10	15
^{106}Ru	20	33	200	5	50	30	30	50
^{131}I	5	8	80	5	80	20	20	15
^{131}I (b)	--	--	--	--	--	0.5	0.5	--
^{134}Cs	5	8	50	5	80	15	15	15
^{137}Cs	3	5	50	2	60	15	15	10
^{140}Ba - ^{140}La	10	8	50	8	80	15	15	25
^{144}Ce	10	8	50	7	80	80	80	25
^{226}Ra + Dau	3	10	50	3	70	20	20	10
^{234}Th + Dau	3	10	50	3	70	20	20	10

a) Liquid Scintillation Analysis.

b) Radiochemical Separation - All others for gamma isotopic analysis.

SUMMARY OF ARKANSAS NUCLEAR ONE

CHEMICAL USAGE FOR 1980

ANO CHEMICAL USAGE

1980

Chemical (lbs.)	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Unit #1												
Sulfuric Acid 66° Baume'	12,789	53,765	63,536	65,793	13,140	84,954	66,158	84,345	18,353	33,567	18,353	51,387
Sodium Hydroxide 50%	12,548	79,530	84,265	95,382	8,407	89,998	89,115	113,590	7,204	62,436	45,672	62,259
Ammonium Hydroxide	384	7,465	5,984	5,236	2,431	6,171	9,911	13,651	4,577	8,602	10,098	11,781
Hydrazine 35%	900	2,250	3,150	1,800	1,350	1,800	2,250	5,400	900	1,800	2,250	2,700
Sodium Nitrite	75	150	100	225	250	75	100	200	400	75	125	125
Boric Acid	1,338	57	398	1,024	1,308	9,286	626	445	909	228	114	284
Lithium Hydroxide	1	4.5	0	0	4.6	0	0	0	0	0	0	0
Unit #2												
Sulfuric Acid 66° Baume'	67,058	46,509	37,393	54,604	68,729	112,836	17,865	18,048	7,820	11,036	12,149	12,987
Cooling Tower Sulfuric Acid	140,473	1,387	72,622	135,458	171,129	298,843	377,480	486,283	6,173	394,423	294,773	136,159
Sodium Hydroxide 50%	33,922	61,562	25,387	59,853	91,120	124,910	46,494	20,968	10,788	16,789	17,511	13,003
Ammonium Hydroxide	980	0	523	0	598	1,353	0	0	0	0	0	0
Hydrazine 35%	3,600	0	3,600	1,800	5,400	3,600	6,750	5,400	1,350	3,600	2,250	3,150
Sodium Nitrite	50	425	150	300	400	25	200	200	300	100	200	200
Cooling Tower Calgon CL-246W	7,137	0	3,113	7,185	9,101	6,706	8,143	7,185	1,916	6,227	9,101	4,790
Cooling Tower Calgon CL-95	0	0	0	0	0	0	3,640	4,420	260	2,860	2,860	1,820
Boric Acid	5,688	740	569	1,308	626	39,000	1,308	455	796	114	455	683
Lithium Hydroxide	1	0	1.4	2.2	2.2	0	0	0	0	0	0	0
Unit #1 & Unit #2												
Chlorine	8,000	0	2,000	0	4,000	2,000	6,000	0	2,000	2,000	2,000	2,000
Detergents	270	275	210	200	235	180	165	110	150	150	140	447

SUMMARY

Enclosed are monthly computer plots of Iodine Dose Equivalent (DE) values and listings of Iodine Dose Equivalent (DE) values for both Unit 1 and Unit 2 Reactor Coolant Systems. The values are in μ Ci/ml.

PLOT OF UNIT#1 I-131 DOSE EQUIVALENT ACTIVITY
FOR: 7/80 THROUGH 12/80

DATE	TIME	UCI/ML 1E-1 ! 1E+0 ! 1E+1 ! 1E+2	VALUE
7/ 4/80	1615		0.759
7/ 5/80	1127		0.774
7/ 7/80	858		0.793
7/ 7/80	900		0.793
7/14/80	910		0.691
7/18/80	1318		6.98
7/21/80	855		5.98
7/28/80	930		0.945
8/ 3/80	430		0.605
8/ 4/80	910		0.533
8/ 5/80	1252		0.222
8/11/80	912		0.617
8/12/80	1315		1.02
8/15/80	1650		0.949
8/18/80	910		0.743
8/18/80	1315		1.03
8/22/80	855		19.8
8/23/80	1505		2.57
8/25/80	943		0.945
8/29/80	755		0.829
9/ 1/80	840		0.757
9/ 5/80	1105		19.9
9/ 8/80	855		2.18
9/12/80	835		0.729
9/15/80	755		0.246
9/19/80	755		0.105
9/22/80	515		0.171
9/26/80	510		0.116
9/27/80	845		0.157
9/28/80	915		0.258
9/29/80	830		0.135
10/ 3/80	735		0.611
10/ 6/80	805		0.699
10/ 8/80	1038		2.44
10/10/80	847		0.544
10/13/80	940		0.614
10/17/80	800		2.26
10/20/80	800		0.791
10/24/80	1025		0.824
10/27/80	1045		0.760
10/31/80	830		0.725
11/ 1/80	722		0.802
11/ 3/80	803		0.751
11/ 5/80	820		0.737
11/ 6/80	810		0.719
11/ 7/80	805		0.709
11/10/80	815		0.708
11/14/80	830		0.687
11/17/80	905		0.671
11/21	830		0.621
11/24	910		0.591
11/28/80	815		0.594
12/ 1/80	840		0.578
12/ 5/80	900		0.506

12/ 9/80	445	.			.			*	.			8.54
12/10/80	755	.			.	*			.			1.77
12/12/80	830	.		*	.				.			0.333
12/15/80	900	.		*	.				.			0.246
12/19/80	825	.		*	.				.			0.207
12/22/80	918	.	*		.				.			0.175
12/26/80	830	.		*	.				.			0.215
12/29/80	827	.		*	.				.			0.196

NOTE: For Unit 1 the values above 3.5 UCI/ML are due to plant transients.

PLOT OF UNIT#2 I-131 DOSE EQUIVALENT ACTIVITY
FOR: 7/80 THROUGH 12/80

DATE	TIME	UCI/ML (1E-4 · 1E-3 · 1E-2 · 1E-1 · 1E+0 · 1E+1)	VALUE
7/ 4/80	925		9.791E-02
7/ 7/80	1345		0.403
7/11/80	900		0.142
7/18/80	920		0.212
7/24/80	315		0.698
7/25/80	905		0.547
8/ 1/80	905		0.192
8/ 8/80	1315		0.202
8/12/80	600		0.287
8/12/80	1250		0.211
8/15/80	920		0.279
8/15/80	1650		0.949
8/16/80	620		0.940
8/16/80	1620		0.709
8/21/80	1810		0.352
8/21/80	2111		0.411
8/22/80	110		0.688
8/22/80	935		0.456
8/23/80	1050		3.60
8/23/80	1440		0.262
8/25/80	912		0.215
8/27/80	950		0.219
8/29/80	823		0.227
9/ 3/80	825		0.245
9/ 4/80	200		0.938
9/ 5/80	830		0.604
9/ 8/80	815		0.454
9/12/80	838		8.979E-02
9/15/80	800		1.462E-02
9/19/80	805		1.728E-03
9/22/80	510		1.280E-03
9/26/80	505		8.862E-04
9/29/80	950		6.590E-02
10/ 1/80	755		2.470E-02
10/ 1/80	1315		3.500E-02
10/ 3/80	835		8.578E-02
10/ 6/80	840		0.229
10/ 8/80	930		2.910E-04
10/ 8/80	938		0.142
10/10/80	900		0.163
10/14/80	840		0.632
10/17/80	810		0.221
10/20/80	745		0.176
10/24/80	955		0.184
10/27/80	1055		0.203
11/ 3/80	2210		0.359
11/ 7/80	755		0.158
11/ 9/80	1530		0.273
11/10/80	805		0.208
11/14/80	840		7.822E-02
11/17/80	840		5.643E-02
11/18/80	1452		0.104
11/19/80	830		0.142
11/21/80	1035		6.098E-02

11/24/80	835	*	3.776E-02
11/28/80	820	*	7.750E-02
12/ 1/80	827	*	0.279
12/ 5/80	830	*	7.844E-02
12/ 5/80	1840	*	0.440
12/12/80	815	*	6.184E-02
12/15/80	840	*	3.960E-03
12/18/80	340	*	3.997E-02
12/19/80	815	*	4.893E-02
12/20/80	915	*	0.155
12/22/80	830	*	6.868E-02
12/26/80	810	*	7.666E-02
12/29/80	832	*	7.892E-02

NOTE: For Unit 2 the values above 1.0 UCI/ML are due to plant transients.

SUMMARY OF ENVIRONMENTAL NON-COMPLIANCES AND CHANGES

There were no violations of the Environmental Technical Specification (ETS) during 1980.

There were no changes to State or Federal permits or certificates.

There were no changes to procedures or designs affecting either the Environmental Impact Statement or the Environmental Technical Specifications.

There was one change to the Environmental Technical Specification (ETS) during 1980. This was a change in which the X/Q in the formula in ETS 2.4.2.3 was changed from 1.5E-5 sec/m^3 to 4.0E-6 sec/m^3. This amendment was issued by the Nuclear Regulatory Commission (NRC) on September 6, 1980.

BIRD IMPACTION MONITORING AT ARKANSAS NUCLEAR ONE - UNIT 2

The bird impaction program was set up to detect and assess significant episodes of bird impaction upon the natural draft cooling tower during periods of peak migration at Arkansas Nuclear One.

This program commenced following the issuance of the ANO-2 operating license and was to be in operation for two years. ANO-2 was issued its operating license in July 1978.

During the period of study, inspections were conducted twice weekly during the period of October 15 to April 15. The area around the base of the cooling tower out to the far edge of the surrounding road (approximately 100 feet) was surveyed for impacted birds.

A log was kept and entries were made each day the survey was conducted. Information recorded in the log included species found, compass quadrant in which the bird was found, general meteorological conditions (overcast, clear, etc.), wind direction, and the number of each species found.

No bird mortalities attributable to the operation or presence of the Unit 2 cooling tower were noted during the two year program.

Arkansas Power & Light Company fulfilled its two year commitment in 1980 and the U. S. Nuclear Regulatory Commission was informed that no further action would be taken.

ARKANSAS NUCLEAR ONE SITE:

REMOTE SENSING AND VEGETATION GROUND TRUTH PROGRAM

FINAL REPORT

Prepared for

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Prepared by

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February 1981

FOREWORD

Texas Instruments Incorporated (TI) is pleased to submit this report summarizing the methodology and results of the third year (1980) of the remote sensing and ground truth program in the prescribed area near the site of Arkansas Nuclear One on Dardanelle Reservoir, Arkansas. This is the final report and completes the requirements of Environmental Technical Specification 3.3.

EXECUTIVE SUMMARY

The Arkansas Nuclear One (ANO) vegetation stress surveillance program is designed to fulfill Nuclear Regulatory Commission requirements for monitoring the effects of natural draft cooling tower operation on surrounding vegetation. Information obtained from aerial color infrared photography, ground truthing, and cooling tower drift analysis are incorporated into a series of annual reports describing the status of vegetation in the study area during preoperational and operational phases of the power plant. This report establishes conditions present in August 1980, which were documented through aerial infrared photography, 35-millimeter color photography, and an update of the vegetation cover map. This is the first report since ANO-2 began commercial operation.

Vegetation stress was prevalent throughout the study area in August 1980, primarily due to prolonged drought and above-normal summer temperatures. Compared with those of 1978 and 1979, 1980 acreage estimates of stressed vegetation showed a substantial increase in total extent. The majority of herb, shrub, and tree species observed within the ANO study area showed some symptoms of drought stress. Extensive fire, also attributable to the dry conditions, contributed significantly to vegetation stress.

Compared with drought-induced stress, the damage to vegetation caused by other agents was relatively insignificant. Insect damage appeared heavier than in recent years, but no species was present in outbreak numbers. Stress due to fungal, viral, and bacterial diseases appeared minimal. Mechanical damage to plants was primarily caused by landscaping and construction activities on the ANO site.

Commercial operation of the ANO-2 generating facility began in mid-March of 1980. Vegetation stress areas showed no correlation with expected salt drift deposition patterns and no evidence of radiation damage was observed within the study area.

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ILLUSTRATIONS

ILLUSTRATIONS (CONTD)

TABLE

SECTION I
INTRODUCTION

A. PROGRAM OBJECTIVES

The specific objectives of the Arkansas Nuclear One (ANO) remote sensing and vegetation ground-truthing program respond to Nuclear Regulatory Commission (NRC) requirements that prescribe development and installation of a monitoring program for determining the existence or absence of vegetation stress caused by operation of the ANO-2 natural draft cooling tower. This program was designed to meet NRC requirements through documentation of the existing vegetation cover types and vegetation stress in the vicinity of the ANO-2 Generating Station and to provide reference information necessary to monitor the potential effects of cooling tower operation and salt deposition on local vegetation.

B. PROGRAM SCHEDULE AND STATUS

The completion dates for each major task are listed below.

Aerial color infrared photography	31 July 1980
Photointerpretation	15 August 1980
Ground truth investigation	29 August 1980
Reports	
Draft	30 November 1980
Final	

Methods of data collection, reduction, and analysis are documented in Section II — Methodology; data are summarized in Section III — Results and Discussion.

SECTION II
METHODOLOGY

The objectives of this study have been addressed through application of appropriate methods of data acquisition, handling, analysis, and interpretation. The three major tasks proposed to fulfill the program objectives included:

- Aerial color infrared photography
- Vegetation cover type mapping
- Vegetation stress delineation

Methods applied to each task are described below.

A. AERIAL COLOR INFRARED PHOTOGRAPHY

Aerial color infrared (CIR) photographs were obtained in July 1980. Nine north-south flight lines were required to cover the designated area (Figure II-1) and maintain a 30-percent side lap. Color infrared photographs using Kodak Aerochrome infrared film 2443 (Estar base) were obtained with a 6-inch focal length lens from an altitude of 3,300 feet to ensure a working scale of 1:6000 (1 inch = 550 feet). A Kodak Wratten No. 12 (yellow) filter was employed to enhance color differences in the red and near infrared portion of the spectrum (500 to 900 nanometers) (Kodak 1972). The forward overlap attained was 60 percent, which provided the specified stereoscopic viewing conditions. Film was processed to positive transparencies; these were encased in plastic sleeves for protection during the mapping phase of the study and for marking during the ground-truthing phase of the study.

B. MAPPING VEGETATION TYPES

Methods for delineating vegetation cover types were presented in the 1978 report (Texas Instruments 1979). Cover-type nomenclature and boundary delineations used in 1980 were essentially the same as those used in previous reports.

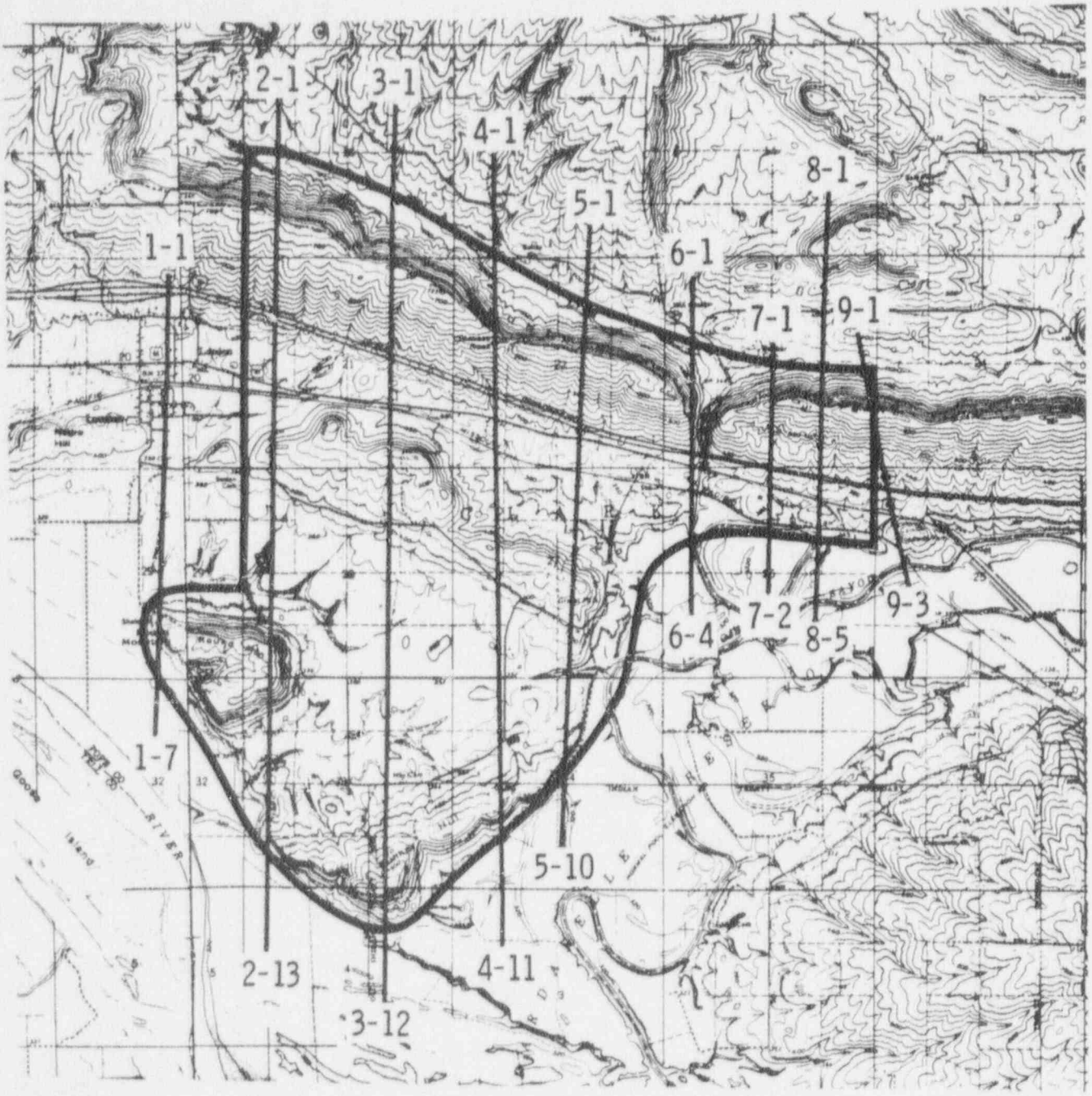

Figure II-1. Arkansas Nuclear One Site Study Area and Flight-Line Map of Color Infrared Photographic Coverage, July 31, 1980

C. MAPPING VEGETATION STRESS

Vegetation stressed from disease, insects, weather, or other factors were detected on color infrared transparencies as areas lacking infrared reflectance (Figure II-2). The reddish photographic rendition of healthy vegetation grades to magenta, purple, green, and yellow as the loss of infrared reflectance progresses due to increased stress. Areas of apparent vegetation stress were delineated on plastic sleeves containing the CIR transparencies, by a photointerpreter in Dallas, and verified by a field botanist during ground truth reconnaissance. Locations of stressed vegetation were recorded and causal agents identified when possible. These locations were then plotted on the current ANO vegetation cover-type map.

To further document vegetation stress, plant specimens and insects were collected and color photographs taken. Plant specimens were prepared following procedures outlined in Radford et. al. (1974). Insects were preserved in alcohol.

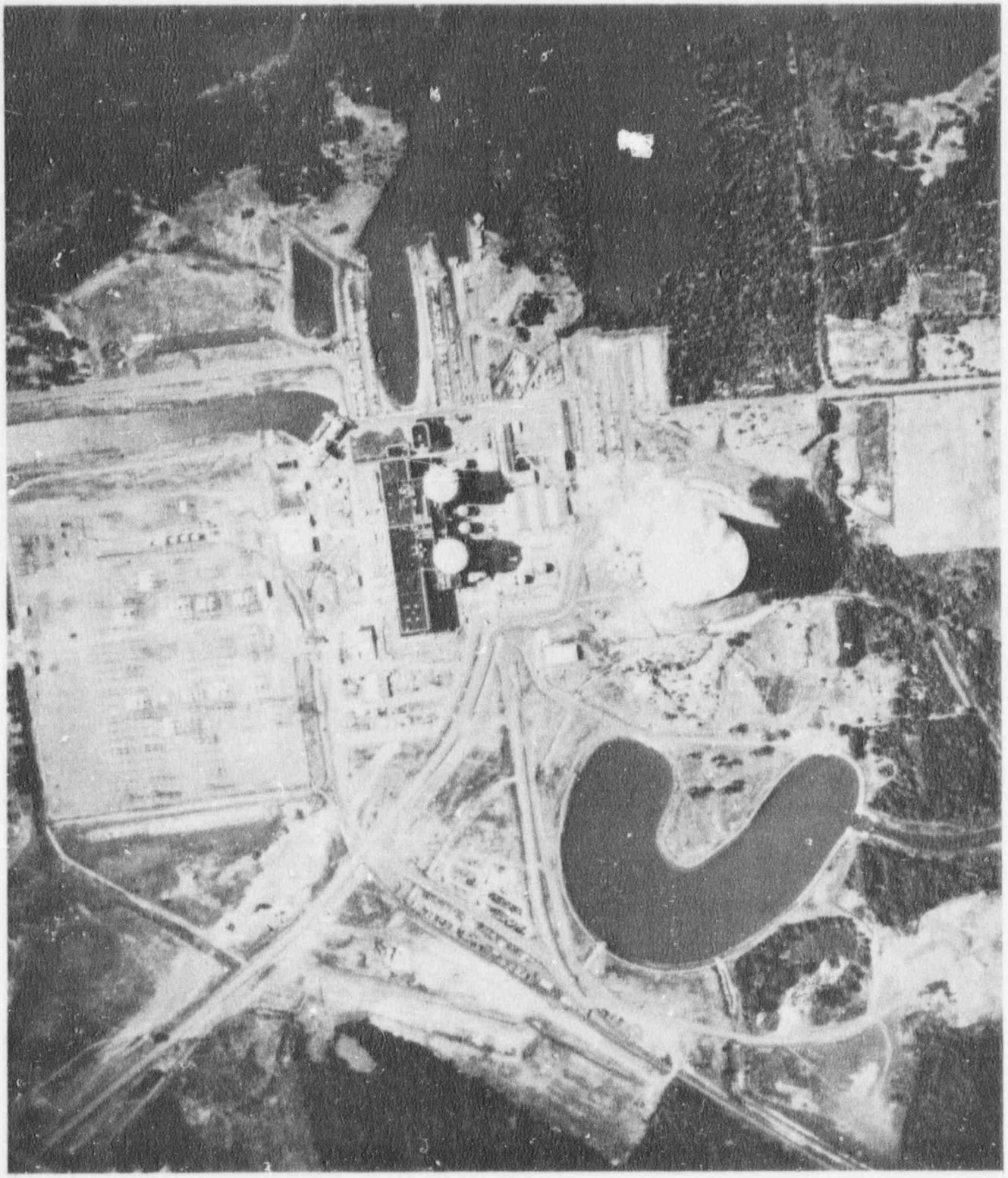

Figure II-2. Color Infrared Photograph of a Portion of the ANO Site Property, Showing the Generating Station and Associated Cooling Tower, July 31, 1980

SECTION III

RESULTS AND DISCUSSION

A. COVER TYPE AND LAND USE DESCRIPTIONS

Descriptions of the study area's cover types and land uses, together with descriptions of the regional vegetation of the Arkansas River Valley, were presented in 1978 (Texas Instruments Incorporated 1979). The horizontal acreage of the survey area was estimated by dot count to be 3,543 acres. Acreages by map unit for 1978, 1979, and 1980 are presented in Table III-1.

Table III-1

Estimated Horizontal Acreage for Each Cover Type (Map Unit), ANO Survey Area, August 1978, 1979, and 1980

Code	Cover Type	Acreage 1978	1979	1980
	Deciduous forest			
1a	Mature	327	325	325
1b	Mixed	915	909	907
1C	Xeric	192	192	190
	Total	1,434	1,426	1,424
	Coniferous forest			
2a	Mature	19	19	19
2b	Mixed	432	432	430
	Total	451	451	449
	Successional stages			
3a	Early	409	398	334
3b	Advanced	85	84	76
	Total	494	482	410
4	Orchards	33	33	33
5	Pasture and cropland	449	446	403
	Rights-of-way			
6a	Electrical transmission	114	114	114
6b	Transportation	235	240	244
	Total	349	354	358
7	Residential	192	192	195
8	Industrial	112	125	240
9	Water	29	34	33
	Total	3,543	3,543	3,543

No major changes in land use occurred during the past year within the ANO site boundary. Construction of a new building is in progress just northeast of the power plant (across Route 333), and ANO access roads are being widened and improved.

B. VEGETATION STRESS

No evidence of vegetation stress resulting from operation of the ANO generating facility was detected. Areas of expected maximum salt deposition did not exhibit any unique or increased amounts of stress compared with other areas within a 2-mile radius of the ANO plant. However, because of extensive drought-induced stress in the area, it is unlikely that such a pattern could be discerned. Inspection of plant meristems showed no evidence of radiation damage.

Vegetation stress, primarily caused by drought, was widespread within the study area, affecting a large number of species in many different cover types. Although vegetation stress typically results from interaction of more than one agent, 1980 stress was largely or entirely weather-induced. The combined effects of drought, high ambient temperatures, and fire obscured virtually all other stress factors, so that discrete areas and total extent of insect damage, disease, and other stress agents were impossible to fully identify and assess. All of the stress locations plotted on Figure III-1 (pocket map) were drought-stressed, although some insect and other damage was noted among the drought-stressed vegetation, as discussed in this section.

Stress agents identified during this year's survey were grouped into five categories: 1) meteorological; 2) insect; 3) fungal, viral, and bacterial; 4) mechanical; and 5) miscellaneous.

1. Meteorological Factors

During the summer of 1980, much of the central and south-central United States suffered an unusually severe drought. Above-normal temperatures in June, July, and August and below-normal rainfall for several months stressed thousands of acres of vegetation. Climatological data from the Clarksville, Arkansas, recording station, approximately 40 miles northwest of the ANO site,

show below-normal precipitation for the first eight months of 1980 and abov - normal temperatures for June, July and August 1980 (U.S. Department of Commerce 1980). This extreme weather has increased the susceptibility of many individuals to other stress agents, which will probably result in high levels of vegetation stress in the future.

Within the ANO study area, a total of 775 acres of severely stressed vegetation was recorded by aerial color infrared photography and field-checked during ground truthing (Figure III-1). This represents 22 percent of the total acreage of the study area and is a substantial increase (approximately 300 percent) over that recorded in 1978 and 1979. The majority of the plant species in the ANO study area exhibited symptoms of drought stress. Symptoms ranged from wilting and burning of leaf tips to mortality.

The combination of prolonged drought and high ambient temperatures presents two major problems to vascular plants: 1) desiccation and 2) cell death due to high temperatures. The physiological response of a particular plant depends on a multitude of interdependent factors, but maintaining a satisfactory balance between water loss and absorption is critical to the survival of all plants. Growth occurs only when absorption exceeds transpiration, and most plants, even those rooted in moist soil, lose more water during daylight hours than can be absorbed. If this water deficit is not replenished at night when transpiration rates are negligible, wilting results. If this condition persists, most annual and young perennial plants die within two weeks (Daubenmire 1974), although many perennial herbs can estivate and survive long periods of drought in a desiccated condition. High temperatures alone can injure plants by destroying components of protoplasm (Daubenmire 1974).

Aerial photography and subsequent ground-truthing revealed that location, age, and species-specific adaptations were the most important variables influencing levels of drought stress within the ANO study area. Stress history of an individual undoubtedly was important, but was more difficult to assess. Within locations affected by the drought, species-specific adaptations favored certain species over others, and within a species, older individuals generally appeared more drought-tolerant than younger plants.

The southern slopes of London and Pleasant View mountains were the most extensive and intensely stressed locations within the study area. Shallow soils, sparse canopy and ground cover, and lengthy exposure to solar radiation characterize the xeric woodland communities occupying these locations. On these slopes the majority of herbaceous vegetation, as well as seedlings and saplings of woody plants, appeared dead or dormant. Their shallow root systems and unfavorable root-to-shoot ratio coupled with the poor water-holding capacity of the soils render these individuals especially sensitive to drought.

Among more mature woody vegetation, the coniferous species, particularly red cedar (Juniperus virginiana) and shortleaf pine (Pinus echinata), appeared conspicuously less stressed than broad-leaved species. Due to their smaller, more heavily cutinized leaves with sunken stomata and lower transpiration rates, conifers generally are more drought-resistant than deciduous trees of this region (Barrett 1962). However, at several locations individuals of these drought-resistant species were noticeably stressed — young pines more so than young red cedars (Figure III-2). The majority of deciduous trees and shrubs on these dry slopes showed moderate to severe stress symptoms. Post oak (Quercus stellata) and winged elm (Ulmus alata), both abundant, exhibited the greatest amounts of foliage browning and premature leaf drop. Even the leaves of farkleberry (Vaccinium arboreum), a semi-evergreen shrub, had turned color or, in a few cases, had fallen off.

Figure III-2. Drought Scorch on Young Shortleaf Pine and Various Broadleaf Species (South Slope of London Mountain), ANO Study Area, August 1980

Vegetation occurring on the north side of London and Pleasant View mountains, and especially along the Mill Creek ravine, was notably less stressed than south-facing vegetation just discussed. These locations are less exposed and have deeper soils and greater amounts of organic litter. Consequently, soils at these locations are subject to lower temperatures and have greater moisture-holding capacity. Because of more favorable soil conditions and denser canopy, the shrub understory of these relatively mature communities appeared considerably healthier than that of any other location except riparian areas. Leaf scorch was commonly observed on many shrub species, especially flowering dogwood (Cornus florida) (Figure III-3), but complete discoloration was rarely encountered. Among canopy species, oaks (Quercus alba, Q. rubra, Q. velutina, and Q. falcata) appeared to be the most drought-sensitive and green ash (Fraxinus pennsylvanica) and white ash (Fraxinus americana) the least sensitive species. Deep root systems (4 to 8 feet) are characteristic of these two ashes and are at least one factor in their greater tolerance of drought conditions (Fowells 1965).

Figure III-3. Leaf Scorch on Flowering Dogwood (on Shaded Slope along Mill Creek Just Northeast of ANO Site), ANO Study Area, August 1980

Drought stress was also considerable within the ANO site boundary, chiefly in areas south and southeast of the power plant in the vicinity of Bunker Hill (location 8-D Figure III-1). Components of early and advanced successional communities had the greatest amounts of stress. Thickets of young winged elm in open areas were particularly hard hit, and mortality is likely to be high for this species (Figure III-4). At these same locations, winged sumac (Rhus copallina) showed less severe stress symptoms, primarily foliage wilting and leaf scorch (Figure III-5). Red cedar and pines again appeared to be the most drought-tolerant species, displaying only minor amounts of needle browning. Young pines were more heavily stressed, and the majority of pine seedlings recently planted around the ANO generating plant were dead. Sweetgum (Liquidambar styraciflua) was one of the few deciduous woody plants of this area that did not exhibit extensive leaf turn.

Figure III-4. Drought Effects on Winged Elm Thicket (in Vicinity of Bunker Hill on ANO Site), ANO Study Area, August 1980

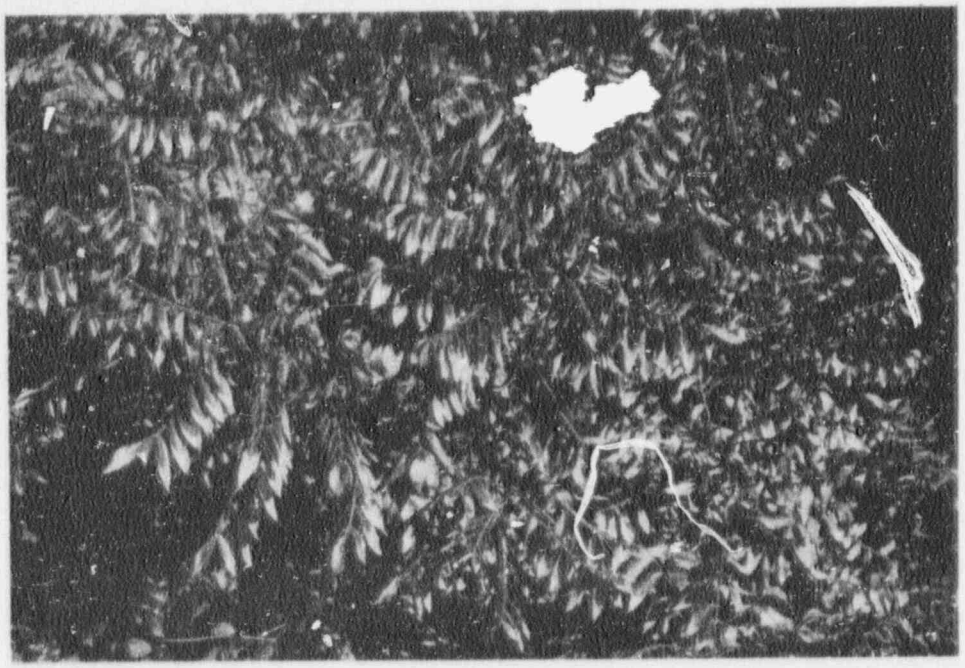

Figure III-5. Foliage Wilting and Leaf Scorch on Winged Sumac (in Vicinity of Bunker Hill on ANO Site), ANO Study Area, August 1980

On drier sites, both cottonwood (Populus deltoides) and sycamore (Platanus occidentalis) exhibited extensive leaf drop. Post oaks in these areas generally were less stressed than those occurring on the exposed slopes of London and Pleasant View mountains, but southern red oaks (Quercus falcata) of all ages were highly stressed (Figure III-6). In contrast, willow oak (Quercus phellos) and water oak (Quercus nigra) appeared relatively unstressed, although foliage browning was frequently noted on younger individuals. The effects of the drought on acorn and other fruit production were not evident during the time of ground truth reconnaissance but most fruit crops produced during drought conditions are typically of inferior quality and decreased quantities (Smith 1974). Fruits maturing late in the growing season (oaks and hickories) are the most adversely affected. Peach orchards in the area were also stressed, although not significantly more than native vegetation.

Range grasses and local garden crops were highly stressed within the study area due to the dry conditions. The only herbaceous species present in pastures and old fields, not dead or suffering severe die-back, were a number of weedy species. The most notable of these were trumpet vine (Campsis radicans), partridge pea (Cassia chamaecrista), and several species of bush clover (Lespedeza sp.).

Figure III-6. Drought Effects on Large Southern Red Oak (in Vicinity of Bunker Hill Just South of ANO Plant), ANO Study Area, August 1980

Vegetation along the margins of Dardanelle Reservoir and Mill Creek largely escaped drought effects (Figure III-7). Black willow (Salix nigra), cottonwood, green ash, and other species growing in these soils of higher moisture appeared healthy. A number of dead trees, some recently killed, were noted along the edges of the Dardanelle Reservoir within the study area. Prolonged flooding during past years probably caused this mortality (Texas Instruments 1978 and 1979). Dead species included cottonwood, southern red oak, willow oak, and green ash.

In conjunction with the dry conditions, several fires broke out in the study area during 1980 ground truthing. The most damaging fire burned approximately 100 acres of various forest types, pasture, and residential property in less than five hours. Most of the fire was confined to an area on London Mountain that bordered Chimney Rock on the west, Mill Creek to the north and east, and Highway 40 to the south. Several acres south of Highway 40 and north and northeast of the ANO generating plant also burned.

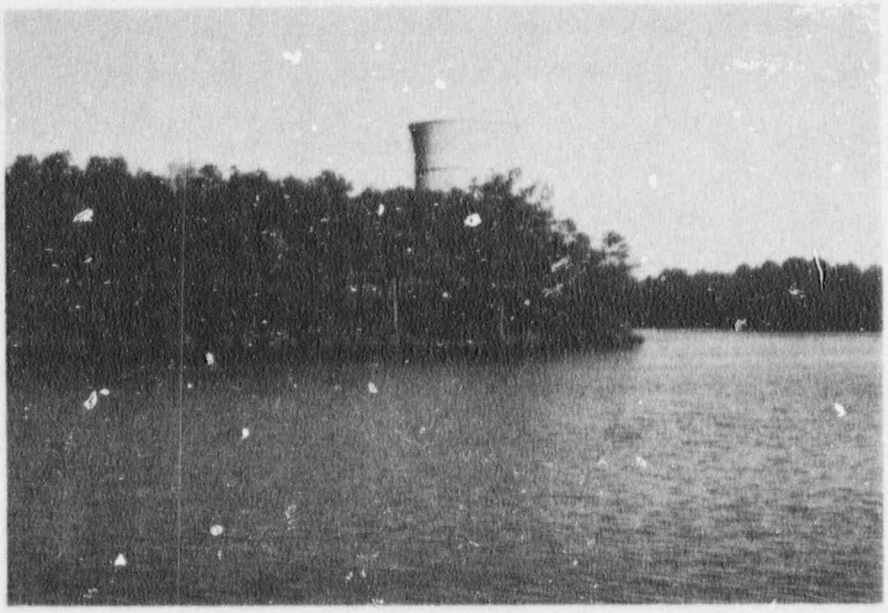

Figure III-7. Healthy Vegetation along the Dardanelle Reservoir, ANO Study Area, August 1980

The net effect of a fire on vegetation and wildlife ranges from devastating to beneficial, depending on fire intensity, soil characteristics, prevailing weather. and other factors. Fire kills and injures plants by subjecting tissues to lethal temperatures, and alters numerous other ecological aspects of an area (Daubenmire 1974).

Within the burned areas, ground cover and some shrubby vegetation were consumed. Remaining trees and shrubs were severely charred, with only the uppermost branches of large trees (taller than 40 feet) left unburned (Figure III-8). Most plants less than 15 feet tall are not likely to survive. Survival of larger trees depends on the fire tolerance of the particular species and individual and on the degree of injury to the tree.

The physical, chemical, and biological characteristics of soil are altered by fire. Nitrogen and a number of other essential nutrients are lost by volatilization. Soil pH increases immediately after burning, resulting in greater availability of phosphorus, potassium, and calcium (Wells et. al. 1970). Organic litter is consumed and soil organisms are killed by surface fires of the type observed within the study area. As a consequence of decreased plant

cover, increased erosion is expected in burned areas, especially on the steep slopes of London Mountain. The combined effects of fire selectively favor the survival, establishment, and reproduction of certain plant species, especially grasses and other monocots (Shelford 1963). Many grasses occurring within the study area, such as needle grass (Aristida sp.), bermuda grass (Cynodon dactylon), and big bluestem (Andropogon gerardi) are stimulated by fire to extensive sucker propagation and production of abnormally high seed crops. Among woody plants of this region, pines are generally more fire tolerant than broad-leaved species, and many pine species flourish in fire-disturbed areas. Shortleaf pine, the most abundant pine species in the burned areas, is especially fire resistant. Most trees of this species over 4 inches in diameter are likely to survive with little adverse effect on growth, and even severely burned trees sprout readily from the tree bole and root collar (Fowells 1965).

Figure III-8. Fire Effects within ANO Study Area (South Slope of London Mountain, August 1980

The effects of fire favor the establishment and growth of pines. Burning provides a mineral substrate required by pine seeds to germinate and opens the canopy, reducing competition from hardwood species and creating ideal growth conditions. Oaks, hickories, sweetgum, and many other hardwoods are

considerably less fire tolerant. Even large trees generally are killed or burned back to the ground. Although most species are capable of vigorous stump suckering from remaining living tissue, initial growth generally is much slower for these hardwood species than for pine. Fire damage often reduces tree vigor and wounds bark, allowing entrance of insects, fungi, and other plant pathogens.

2. Insect Damage

Weakening of trees by drought predisposes them to insect attack. Insect damage did appear heavier in 1980 than in recent years, but no species were present in outbreak numbers. Grasshopper populations were relatively high, causing damage to local garden crops and some loss in hay production (Waitfield 1980).

Both shortleaf and loblolly pine (Pinus taeda) showed evidence of bark beetle damage (Figure III-9). Galleries of the southern pine beetle (Dendroctonus frontalis) and a species of pine engraver (Ips sp.) were observed. These beetles usually attack dead or dying trees, although outbreak populations may attack healthy, living trees as well. Large areas of pine forest can be killed by these species during major outbreaks. Drought and fire are among factors favoring population buildups of these beetles (Baker 1972).

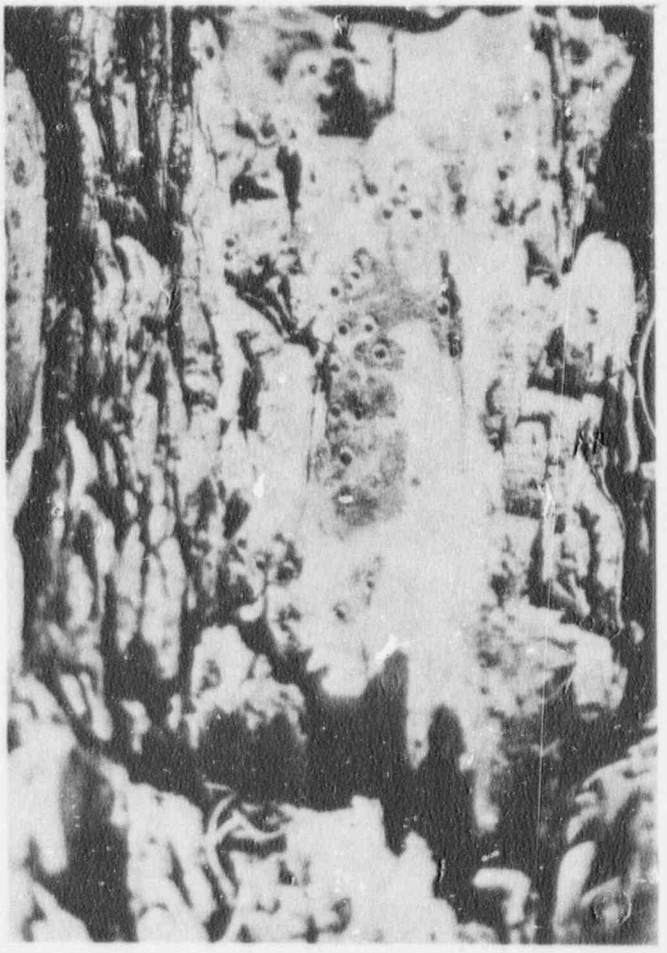

Figure III-9. Bark Beetle Exit Holes on Shortleaf Pine (London Mountain), ANO Study Area, August 1980

Damage from Nantucket pine tip moth larvae (Rhyacionа frustrana) was sporadically encountered on young pines (Figure III-10). This insect is a major pest of young pines in the eastern United States, causing forking of main stems, reduction of cone crops, and occasionally tree mortality (Baker 1972).

Figure III-10. Damage Due to Nantucket Pine Tip Moth on Shortleaf Pine (on ANO Site), ANO Study Area, August 1980

Conspicuous amounts of leaf damage by insects was present on the majority of oaks examined. The variable oak leaf caterpillar (Heterocampa maneto) was observed feeding on both oaks and hickories during a nighttime insect search. This species has occasionally defoliated large areas of oaks and other hardwoods (Johnson and Lyon 1976). The oak lacebug (Corthucha arcuata) was commonly found on white oak and post oak. On some trees, heavy infestations caused foliage to appear grayish white due to the characteristic stippling pattern caused by this minute insect which feeds on leaf tissue fluids.

The elm lacebug (Corthucha ulmi) and its signs (stippling pattern, cast skins, frass) were frequently observed on winged elm. Lacebugs usually do not cause serious injury, but heavy infestations can occasionally result in defoliation of the host tree (Baker 1972). Oak leaf galls were ubiquitous throughout the study area, and twig galls were present in large numbers on several post oaks and southern red oaks within the ANO site boundary (Figure III-11). These galls, caused by a gall wasp, split bark tissue and can occasionally cause tree mortality (Baker 1972).

Figure III-11. Twig Gall on Southern Red Oak (in Vicinity of Bunker Hill on ANO Site), ANO Study Area, August 1980

3. Fungal, Viral, and Bacterial Diseases

Disease usually is less visible than are the stress agents already discussed. In general, disease-related stress appeared to be less frequent than reported in the last two years. Populations of disease agents undoubtedly were affected by the drought. Fungi, in particular, require moist conditions for growth and reproduction. Powdery mildew, the most common fungal disease reported in 1978 and 1979, was not observed in 1980. Two species of fungi were frequently encountered: tar spot (Rhystima sp.), which was on the leaves of red maple (Acer rubrum) (Figure III-12), and leaf blotch (Mycosphaerella diospryi), which was on persimmon (Diospryos virginiana). Signs of bacterial or viral diseases were not detected. Tar spot has minimal impact on tree health, and leaf blotch can cause reduced vigor but rarely causes serious injury or death to its hosts (Wescott 1971).

4. Mechanical Damage

Mechanical damage to vegetation in the study area was due chiefly to road and building construction within the ANO site boundary. Vehicles and soil compaction caused root disturbance and bark wounds to vegetation adjacent to construction areas. Several acres of woody vegetation have been cleared in the area immediately east of the plant as part of site landscaping.

Figure III-12. Tar Spot on Red Maple (Mill Creek Ravine), ANO Study Area, August 1980

Other mechanical damage included felling and girdling of trees by beaver. This was largely confined to sweetgum, red cedar, and shortleaf pine (Figure III-13) and was most commonly seen in the vicinity of the Illinois Bayou. Total damage was minor.

Evidence of mechanical damage from lightning strikes was present on several trees located on high ridges of London Mountain.

5. Other Stress Agents

Leafy mistletoe (Phoradendron serotinum) was found on a number of hardwood trees, although it was most often observed on southern red oak. Severe infestations of this hemi-parasitic seed plant can reduce tree vigor and predispose trees to attack by other stress agents (Tattar 1978).

Figure III-13. Beaver Girdling of Shortleaf Pine (Just East of ANO Site Boundary near Illinois Bayou), ANO Study Area, August 1980

SECTION IV

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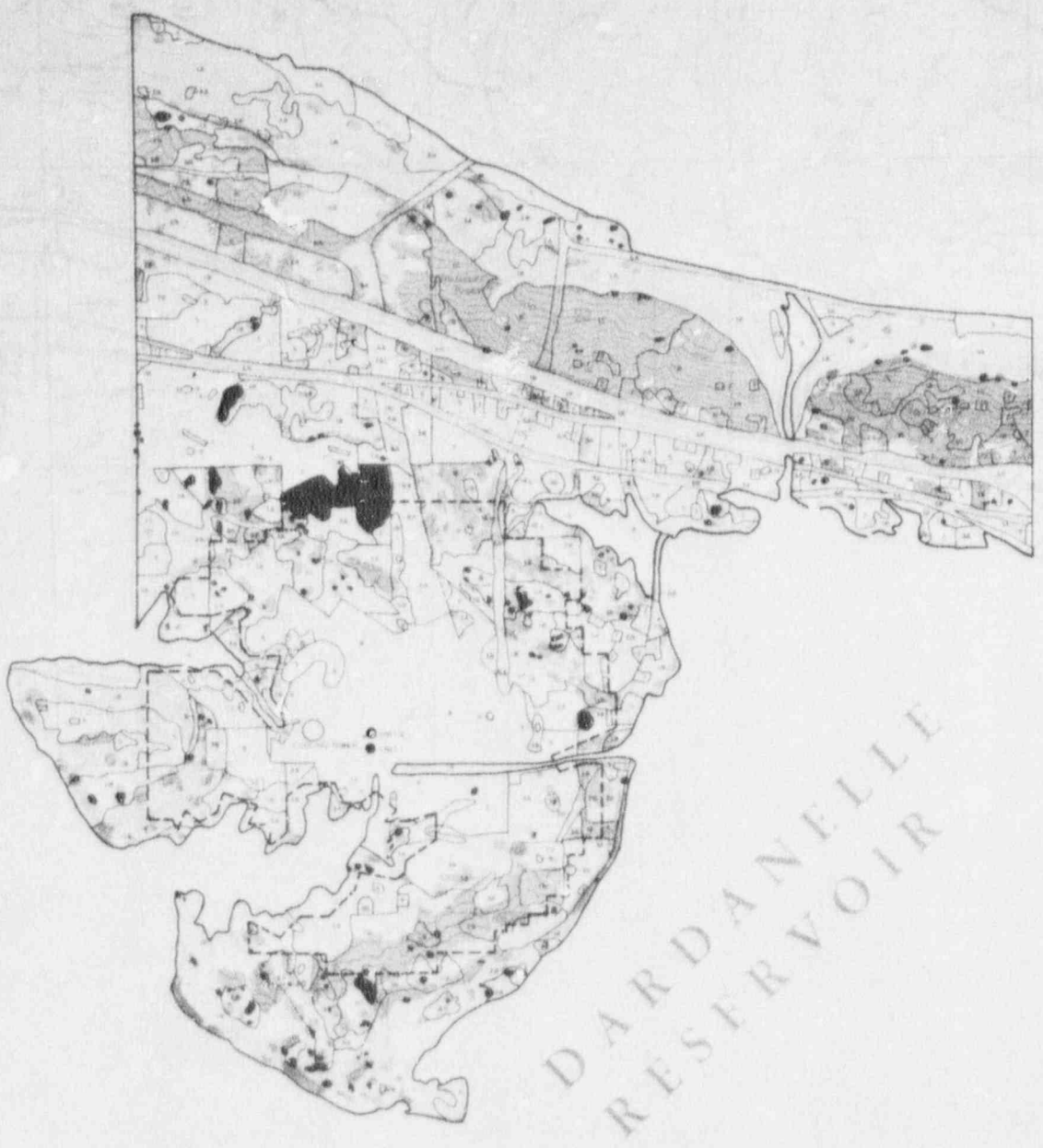

LEGEND

COVER TYPE	SYMBOL	COVER TYPE	SYMBOL
Deciduous Forest	1	Orchard	4
Mature	1A	Maintained Pasture and Cropland	5
Mixed	1B	Rights-of-way	6
Xeric	1C	Transmission Line	6A
Coniferous Forest	2	Transportation	6B
Mature	2A	Residential	7
Mixed	2B	Industrial	8
Successional Communities	3	Water	9
Early	3A	Stressed Vegetation note: red	
Advanced	3B	ANO Site Boundary	

N

SCALE

1980

VEGETATION COVER TYPES
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Prepared for
ARKANSAS POWER AND LIGHT COMPANY
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