THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

DEPARTMENT OF RESEARCH AND DEVELOPMENT

REPORT NO. 77-25-B

1974 ANNUAL SUMMARY REPORT

WATER QUALITY WITHIN THE WATERWAYS SYSTEM OF THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

VOLUME 2

BIOLOGICAL

November 1977

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1974 ANNUAL SUMMARY REPORT WATER QUALITY WITHIN THE WATERWAYS SYSTEM OF THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

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BIOLOGICAL

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November 1977

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SALT CREEK WATER QUALITY STUDY

Salt Creek drains an area of about 160 square miles in Northwestern Cook and Eastern DuPage County. It is approximately 26 miles in length, and the principle natural source of water in the stream is surface drainage and ground water from the surrounding area. The Salt Creek Water Reclamation Plant will be located on a 200-acre plot of land in the Township of Schaumberg. The effluent from the plant will enter Salt Creek below a dam planned for the Ned Brown Preserve.

In order to evaluate any certain possible effects which might result from the discharge of tertiary treated sewage effluent from the Salt Creek Plant on the water quality of Salt Creek, an ecological study was initiated in 1974.

Nine sampling stations were located on Salt Creek and two additional stations on tributary streams (Arlington Heights Branch and West Branch of Salt Creek). Figure 1. Triplicate bottom samples were taken with a Ponar Dredge midstream at each location in May, August, November in 1974 and February, 1975 in order to determine the major taxa and abundance of macro-invertebrate population. Samples were washed, screened and preserved and later counted and identified in the laboratory. Water samples were collected at approximately the same location and time as bottom sampling with a Kemmerer Water Sampler. The samples were analyzed for a number of chemical and physical water quality parameters.

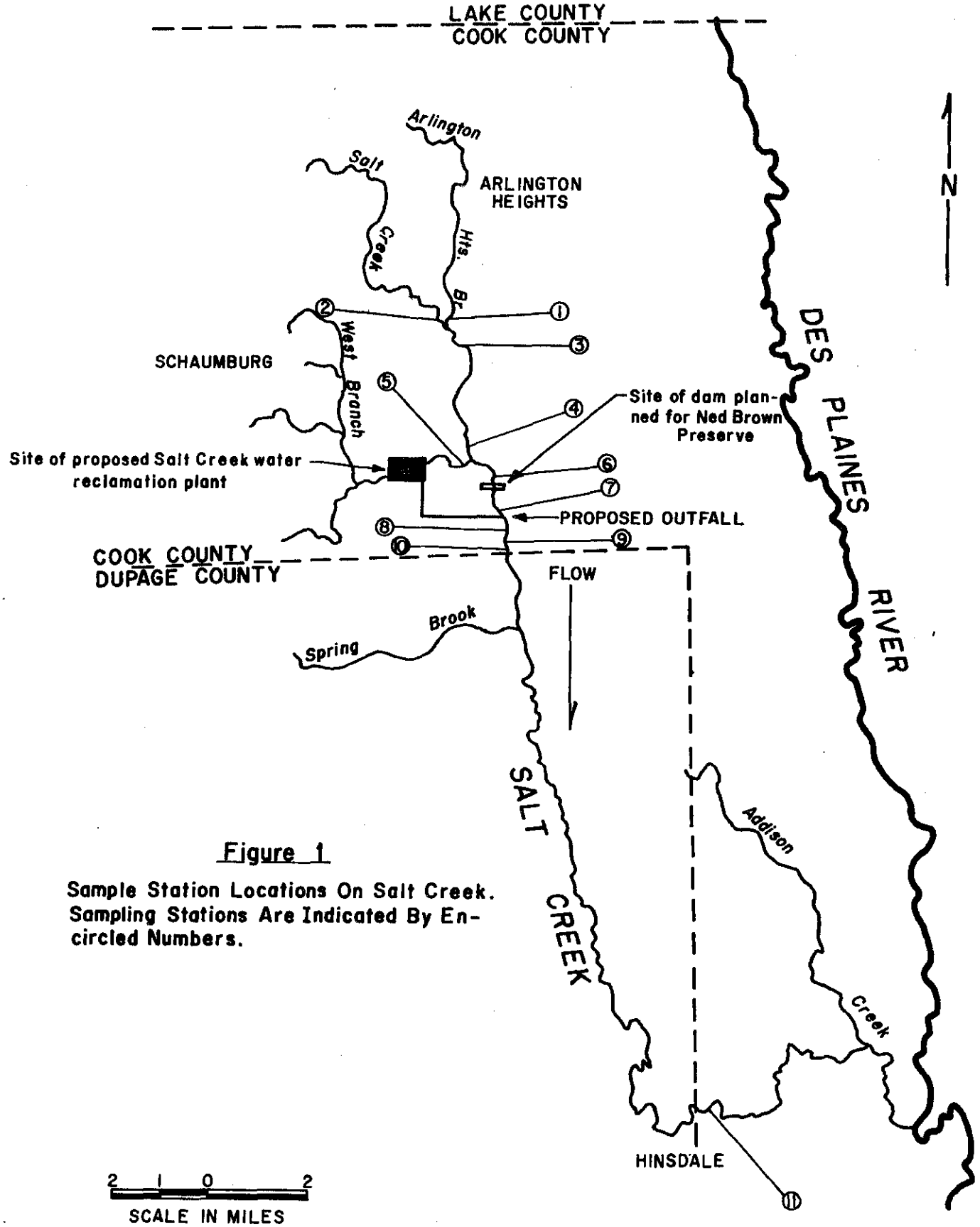

Figure 1

Sample Station Locations On Salt Creek. Sampling Stations Are Indicated By Encircled Numbers.

Appendix A (Tables A1-A8) gives a summary of the chemical and physical water quality of Salt Creek above and below the proposed effluent outfall. Appendix B (Tables B1-B11) contains a listing and abundance of the groups of macroinvertebrate benthic organisms in Salt Creek.

Although the number of samples upon which Tables are based is small, certain generalizations can be made of the water quality of Salt Creek over the period of May, 1974 to February, 1975. Results of the study show the following:

1. The water is slightly alkaline, the pH throughout the system being generally around 7.7.
2. Although the dissolved oxygen concentrations are generally high, the oxygen levels fall during the spring and summer months especially below the proposed outfall.
3. The chemical oxygen demand, ammonia concentrations, biochemical oxygen demand, and phosphorus concentrations all indicate that Salt Creek is mildly organically polluted below the proposed outfall.
4. There is an increase in the average suspended solids and conductivity values in Salt Creek downstream from the proposed outfall compared with the upper reaches of the creek.
5. The water in Salt Creek can be described as considerably hard with a steady increase in the hardness downstream from the source.

6. The macrobenthic invertebrate community was composed almost exclusively of sludgeworms and chironomids, except for Station 11. Sludgeworms and chironomids composed over 90% of the benthic community. The coarse sand bottom, periodic seasonal flooding and high stream velocities in Salt Creek most probably account for the low diversity of benthic organisms.
7. Although there is somewhat of a decline in the number of macroinvertebrates downstream from the upper reaches of the creek, the community composition remains stable downstream to where it again re-enters Cook County.
8. There was bacterial contamination below the proposed outfall, especially where Salt Creek re-enters Cook County after leaving DuPage County.

In summary, the study indicated that the upper reaches of Salt Creek are clean, while the lower parts, especially below the proposed John E. Egan outfall are mildly polluted. However, a marked decrease in water quality does occur in Salt Creek as it passes through DuPage County as indicated by an increase in the ammonia concentration, chemical and biological oxygen demand, phosphorus concentration and total coliforms at Station II.

INSTREAM AERATION ECOLOGICAL STUDY

A program to determine the biological, chemical, and physical conditions of the North Shore Channel and North Branch of the Chicago River prior to instream aeration was initiated in January, 1973 and continued in 1974. The waterways were examined at eleven locations, (Figure 2) once each month during March, April, June, and August in 1974 for various water quality parameters.

Appendix C (Tables-C1-C11) gives a summary of the chemical and physical water quality and Appendix D (Tables D1-D11) the groups and density of benthic macroinvertebrates in the North Shore Channel and North Branch of the Chicago River during 1974.

Results of the study over the period indicated the following:

1. There was a decrease in the dissolved oxygen concentration below the North Side STP of the MSDGC outfall in 1974, especially in the lower reaches of the North Branch of the Chicago River which was essentially the same as in 1973.
2. There was an increase in the biochemical oxygen demand in the Chicago River in 1974 compared with the Channel. These values were the same as in 1973.
3. There was little variation in the hydrogen ion concentration in 1974 as was true in 1973, with the pH throughout the system averaging around 7.4.

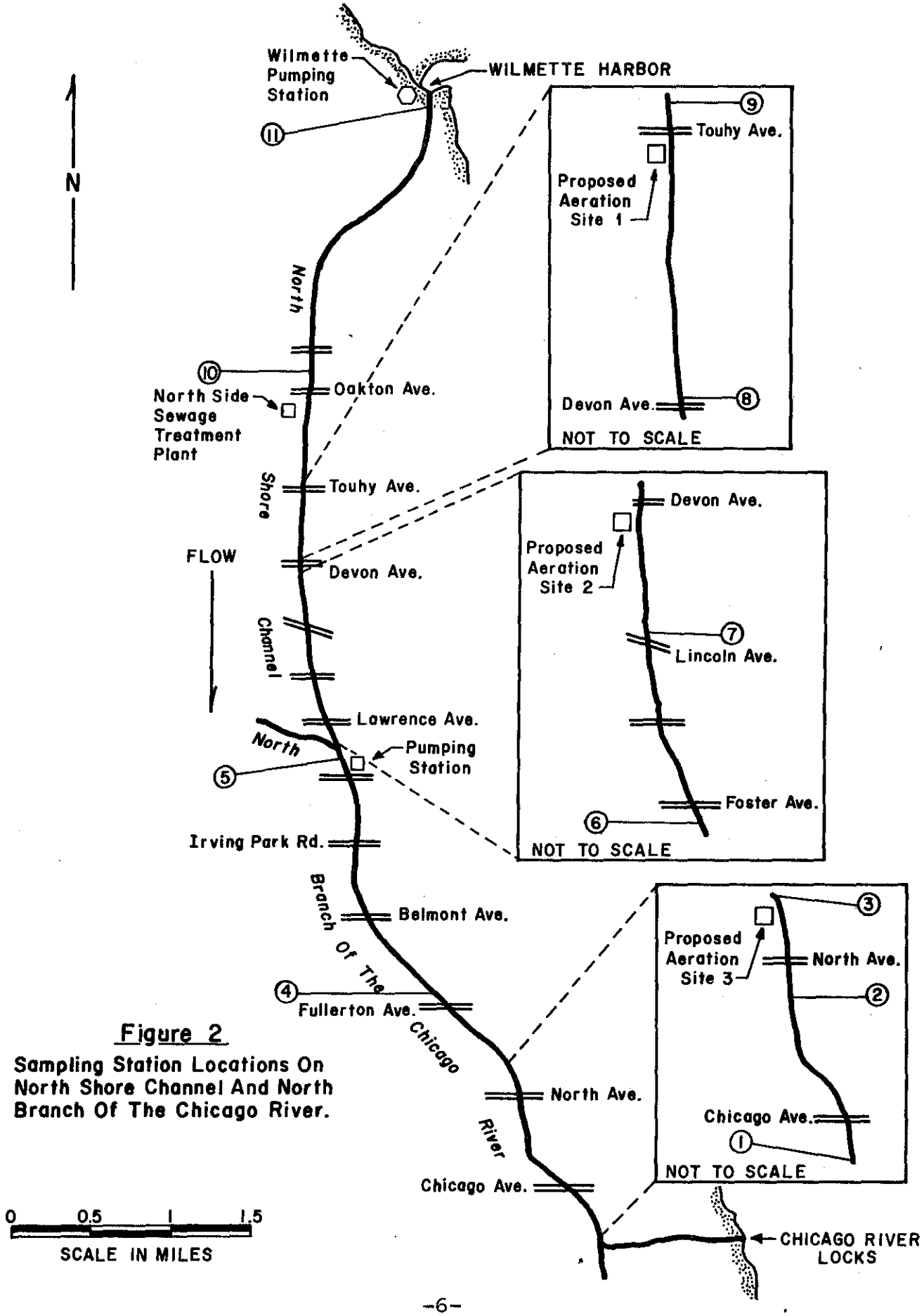

Figure 2

Sampling Station Locations On North Shore Channel And North Branch Of The Chicago River.

4. There was an increase in the ammonia nitrite-nitrate and phosphorus concentrations downstream of the outfall in the channel and river in 1974. Similar conditions occurred in 1973. However, it was noted that the concentration of ammonia was consistently lower and the nitrite-nitrate concentration higher in 1974 in the channel and river. This was probably due to partial nitrification which was occurring at the North Side Plant.

5. There was a steady increase in the suspended solids downstream of the outfall in the channel and river in 1974. Suspended solids were higher in 1974 compared to 1973.

6. Sludgeworms were the most abundant organisms followed by midges and isopods in 1974. A similar situation occurred in 1973.

7. There was a significant difference in the abundance of the total number of organisms above and below the outfall in 1974. The total number of benthic macroinvertebrates increased greatly below the outfall in both the channel and river. Compared to 1973, the number of sludgeworms has increased about 15%, especially in the Chicago River.

8. The community structure changed very little during 1974 except during the summer and fall when there was an increase in the number of midges. Otherwise, oligochaetes were the dominant organisms throughout 1974 as was the case in 1973.

In summary, the data shows that in 1974 the upper reaches of the North Shore Channel are relatively clean, while that part of the channel and river below the North Side Outfall is polluted, with similar water quality conditions occurring in 1973.

Fish Population Estimate: M.S.D.G.C. Waterways

Fish were sampled from the three main channel systems (North Shore Channel, Sanitary and Ship Canal, Cal-Sag Channel) by use of an electric boom shocker during October and November, 1974. The purpose of this sampling was to initiate a study, the goal of which is the identification and enumeration of the fish populations within these waterways.

Ultimately this study will lead to a qualitative description of which species inhabit which areas of each waterway as well as a quantitative enumeration of total numbers and biomass of each major species within selected habitat-typical areas of each waterway. Results of these fish collections are listed in Table 1 .

Diversity indices are useful for measuring the quality of an environment for a community of fish species. Their use is based on the generally observed phenomenon that relatively undisturbed environments support communities having large numbers of species with no individual species present in overwhelming abundance. If the species in such a community are ranked on the basis of their numerical abundance, there will be relatively few species with large numbers of individuals and large numbers of species represented by only a few individuals. Many forms of stress tend to reduce diversity by making the environment unsuitable for some species or by giving other species a competitive advantage.[1]

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE 1

FISH COLLECTIONS FROM THE NORTH SHORE CHANNEL, THE SANITARY AND SHIP CANAL AND THE CAL-SAG CHANNEL (INCLUDING THE CALUMET RIVER) DURING OCTOBER AND NOVEMBER, 1974

Location	Date Sampled	Species Collected
North Shore Channel		
Wilmette	Oct. 16,18,21	127 carp, 266 goldfish, 5 green sunfish, 23 bluntnose minnows, 1 pumpkinseed sunfish, 1 coho salmon, 1 yellow perch, 1 white sucker.
Howard St.	Oct. 17	No fish collected in two complete passes of sides and middle of channel.
Peterson Ave.	Oct. 17	No fish collected in two complete passes of sides and middle of channel.
Sanitary-Ship Canal		
Laramie Ave.	Oct. 24	No fish - 1 complete pass of sides of channel.
Harlem Ave.	Oct. 24	No fish - 1 complete pass of sides of channel.
Willow Springs Road	Oct. 24	No fish - 1 complete pass of sides of channel. (1 carp sighted).
Lockport Lock and Dam		3 carp, 2 goldfish, 1 green sunfish.

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE 1 (Continued)

FISH COLLECTIONS FROM THE NORTH SHORE CHANNEL, THE SANITARY AND SHIP CANAL AND THE CAL-SAG CHANNEL (INCLUDING THE CALUMET RIVER) DURING OCTOBER AND NOVEMBER, 1974

Location	Date Sampled	Species Collected
Des Plaines River near junction with San-Ship Canal		17 carp, 26 goldfish, 5 gizzard shad 2 bluntnose minnows, 2 yellow bass, 1 blk bullhead, 8 big mouth shiner.
Calumet River/Cal-Sag Channel		
O'Brien Lock and Dam	Nov. 6	29 carp, 2 goldfish, 18 yellow perch, 32 gizzard shad, 19 bluntnose minnows, 37 emerald shiners, 1 largemouth bass, 1 alewife
Halsted St.	Nov. 7	1 bluegill sunfish
Ashland Ave.	Nov. 7	1 goldfish

The diversity index, $\bar{d}$; used in this report is a modification of one originally proposed by Shannon and Weaver.[2]

The machine formula presented by Lloyd, Zar, and Karr[3] is:

$$\bar{d} = \frac{C}{N} (N \log_{10} N - \Sigma n_i \log_{10} n_i)$$

where C=3.321928 (converts base 10 log to base 2); N=total number of individuals; and n_i=total number of individuals in the i^{th} species.

Results of the channel fish collections in terms of species diversity at each station are listed in Table 2.

As can be seen in this Table, a great portion of the channel system has a 0.0 species diversity for fish. Indeed only those areas near Lake Michigan (Wilmette and O'Brien Locks) and those near the end of the channel system (Lockport Lock and Desplaines River) have measurable diversity indices.

Though the Wilmette Lock Station had as great a number of actual species collected as the O'Brien Lock collection (8), its diversity index was much lower due to the extremely high proportion of carp and goldfish at Wilmette.

The Wilmette collections allowed a population estimate for carp to be computed as 1933 individuals within the 400 meter section sampled. Using an average weight for carp of 2.45 lb., this yields a biomass for carp of 1573 lb/acre in this area. The computed population estimate for goldfish in the Wilmette sample area was 6650 individuals. Using an average weight for goldfish of 0.61 lb., this yields a biomass for goldfish of 1348 lb/acre in this area.

TABLE 2

Mean Species Diversity, $\bar{d}$, for the Canal Fish Collections During October and November, 1974

Location	$\bar{d}$
North Shore Channel	
Wilmette Lock	1.3
Howard St.	0.0
Peterson Ave.	0.0
Sanitary-Ship Canal	
Laramie Ave.	0.0
Harlem Ave.	0.0
Willow Springs Rd.	0.0
Lockport Lock and Dam	1.5
DesPlaines River Near junction with San-Ship Canal	2.1
Calumet River/Cal-Sag Channel	
O'Brien Lock and Dam	2.5
Halsted Street	0.0
Ashland Ave.	0.0

Salt Creek Fish Collections

Fish were collected from Salt Creek by use of a 25-ft. bag seine in areas above and below the effluent outfall of the new John E. Egan Treatment Plant. The purpose of these collections was to begin a study to characterize the fish populations in Salt Creek before and after the John E. Egan Plant begins operation, as well as before and after the impoundment of the creek upstream from the plant outfall. Results of these collections are listed in Table 3 . These results are listed in terms of species diversity indices at each station in Table 4.

The highest diversity occurred at Station 6 (2.9) which is located within a Cook County Forest Preserve. Station 1 which is located in Arlington Creek just before its junction with Salt Creek is more typical of the lower Salt Creek stations than is Station 2. Station 1 is about 4 feet deep and has a mud bottom, whereas Station 2 was rocky and extremely low in water level (approx. 2-3 inches) at the time of collections.

Between Stations 7 and 10, an increased amount of housing along the banks occurs and there appears to be a concomitant increase in the organic load upon the stream.

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE 3

FISH COLLECTIONS FROM SALT CREEK DURING
AUGUST AND SEPTEMBER, 1974

Station No.	Date Sampled	Species Collected
1	August 12	3 carp, 3 white sucker, 1 yellow bullhead, 5 black bullhead, 2 golden shiner, 7 fathead minnow
2	August 12	1 carp, 2 fathead minnow
2 (fork)	August 12	198 minnows (mostly bigmouth shiners)
6	Sept. 24	5 carp, 6 white sucker 1 yellow bullhead, 8 black bullhead, 1 bluegill, 2 black crappie, 8 green sunfish, 1 hybrid sunfish, 2 largemouth bass, 2 bluntnose minnows, 16 fathead minnows
7	Sept. 24	2 white sucker, 2 yellow bullhead, 4 black bullhead 7 blackcrappie, 1 bluegill, 1 creek chub, 1 fathead minnow.
8	Sept. 24	1 carp, 2 white sucker, 2 green sunfish, 1 bluegill
10	Sept. 24	3 white sucker, 3 black bullheads

*Stations 1 and 2 are approximately 3 miles above the plant outfall, Station 6 - one mile above, Station 7 - 300 ft. above, Station 8 - 300 ft. below and Station 10 is 2 miles below the outfall.

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TABLE 4

Mean Species Diversity, $\bar{d}$, for the Salt Creek Fish Collection Stations During August and September, 1974

Station Number	$\bar{d}$
1	2.4
2 (including fork)	0.1
6	2.9
7	2.4
8	1.9
10	1.0

Stations 1 and 2 are approximately 3 miles above the plant outfall, Station 6 one mile above, Station 7 - 300 ft. above, Station 8-300 ft. below and Station 10 is 2 miles below the outfall.

LITERATURE CITED

1. United States Environmental Protection Agency, "Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents," C. I. Weber, ed., U.S. EPA-670/4-73-001, 1973.

2. Shannon, C.E. and W. Weaver, "The Mathematical Theory of Communication," University of Illinois Press, Urbana, 1963.

3. Lloyd, M., J. J. Zar and J. R. Karr, "On the Calculation of Information-Theoretical Measures of Diversity," American Midland Naturalist 79(2):257-272, 1968.

A P P E N D I C E S

VOLUME II

APPENDIX A

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A1

WATER QUALITY PARAMETERS OF ARLINGTON HEIGHTS BRANCH AT STATION 1 IN mg/l WHERE APPLICABLE

Date	DO	DO SAT %	BOD_5	COD	pH units	NH_3-N	$N-NO_2+NO_3$	TOTAL P
5/27/74	8.3	85.6	1.0	40	7.8	0.3	0.35	0.90
8/12/74	5.4	60.7	5.0	110	7.7	0.1	0.09	0.11
11/18/74	11.3	83.7	5.0	85	7.2	0.4	0.64	0.14
2/3/75	13.1	95.3	4.0	70	7.9	0.3	0.89	0.11
Mean	9.5	81.3	3.8	76	7.65	0.3	0.49	0.32

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A1 (Continued)

WATER QUALITY PARAMETERS OF ARLINGTON HEIGHTS BRANCH AT STATION 1 IN mg/l WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)	Turbidity (JTU)	Hardness
5/27/74	575	79	200	690	48.0	312.64
8/12/74	470	18	180	590	8.3	266.00
11/18/74	788	12	170	1030	17.0	320.96
2/3/74	512	28	190	725	29.0	348.15
Mean	586	34	185	759	25.6	311.94

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A2

WATER QUALITY PARAMETERS OF SALT CREEK UPSTREAM FROM THE EGAN PLANT OUTFALL IN MG/L WHERE APPLICABLE*

Date	DO	DO SAT %	BOD_5	COD	pH units	NH_3-N	$N\text{-}NO_2\text{-}NO_3$	TOTAL P
5/27/74	7.5	77.9	2.6	44	7.6	0.3	0.40	0.41
8/12/74	7.2	84.7	4.0	137	7.8	0.2	0.27	0.08
11/18/74	11.9	100.0	3.4	76	7.7	0.1	0.95	0.10
2/3/75	12.7	89.4	3.0	61	7.5	0.5	1.20	0.15
Mean	9.8	88.0	3.3	80	7.7	0.3	0.70	0.19

*Average of five sampling stations (2,3,4,6,7)

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A2 (Continued)

WATER QUALITY PARAMETERS OF SALT CREEK UPSTREAM FROM THE EGAN PLANT OUTFALL IN MG/L WHERE APPLICABLE*

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)	Turbidity (JTU)	Hardness
5/27/74	506	110	204	636	47.0	302.06
8/12/74	637	89	182	752	32.0	365.00
11/18/74	791	14	186	1012	10.7	353.90
2/3/75	531	30	162	728	31.0	334.78
Mean	616	61	184	782	30.2	338.94

*Average of five sampling stations (2,3,4,6,7)

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A3

WATER QUALITY PARAMETERS OF THE WEST BRANCH OF SALT CREEK AT STATION 5
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT %	BOD_5	COD	pH units	NH_3-N	$N-NO_2+NO_3$	TOTAL P
5/27/74	7.7	81.0	4.0	40	7.3	0.8	0.57	0.08
8/12/74	8.5	100.0	1.0	95	7.8	0.3	0.00	0.01
11/18/74	9.8	80.3	5.0	65	8.0	0.0	0.66	0.10
2/3/75	NA	NA	NA	NA	NA	NA	NA	NA
Mean	8.7	87.1	3.3	67	7.7	0.4	0.41	0.06

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A3 (Continued)

WATER QUALITY PARAMETERS OF THE WEST BRANCH OF SALT CREEK AT STATION 5
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)	Turbidity (JTU)	Hardness
5/27/74	520	100	190	610	58.0	321.83
8/12/74	862	24	200	930	28.0	569.00
11/18/74	527	19	150	730	13.0	264.37
2/3/75	NA	NA	NA	NA	NA	NA
Mean	636	48	180	757	33.0	385.07

NA = No Analysis

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A4

WATER QUALITY PARAMETERS OF SALT CREEK DOWNSTREAM FROM THE EGAN OUTFALL IN MG/L WHERE APPLICABLE*

Date	DO	DO SAT %	BOD_5	COD	pH units	NH_3-N	N-NO_2+NO_3	TOTAL P
5/27/74	5.8	60.8	4.3	58	7.3	0.8	0.38	0.28
8/12/74	6.3	76.8	5.0	155	7.9	1.4	0.43	1.02
11/18/74	11.3	92.6	4.0	61	7.8	0.5	0.87	0.55
2/3/75	12.1	88.3	6.0	80	7.3	1.1	1.21	0.61
Mean	8.9	79.6	4.8	88	7.6	1.0	0.72	0.62

*Average of four sampling locations (8,9,10,11)

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE A4 (Continued)

WATER QUALITY PARAMETERS OF SALT CREEK DOWNSTREAM FROM THE EGAN OUTFALL IN MG/L WHERE APPLICABLE*

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)	Turbidity + (JTU)	Hardness
5/27/74	401	113	202	738	46.0	354.57
8/12/74	658	85	228	948	27.0	431.00
11/18/74	745	27	200	1100	15.0	351.87
2/3/75	583	40	177	770	31.0	347.33
Mean	597	66	202	889	29.8	371.19

*Average of four sampling locations (8,9,10,11)

Jackson turbidity units

APPENDIX B

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B1

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN THE ARLINGTON HEIGHTS BRANCH AT STATION 1

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludge worms	1596	3585	13135	595
Leeches	0	25	0	0
Midges	0	5890	418	101
Snails	0	13	63	51
Clams	89	38	76	51
Sowbugs	0	25	0	0
Mayflies	0	0	0	0
Damselflies	0	13	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/ M^2	1685	9589	13692	798

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B2

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 2

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	240	554	6650	519
Leeches	0	0	0	0
Midges	6016	1224	2141	63
Snails	0	0	1203	0
Clams	13	25	51	13
Sowbugs	89	88	1545	0
Mayflies	0	0	0	0
Damselflies	0	4	13	0
Blackflies	0	0	0	0
Beetles	0	0	13	0
Hydra	0	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	6358	1895	11616	595

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B3

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 3

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	1127	13	317	329
Leeches	0	0	0	0
Midges	114	342	38	937
Snails	38	0	0	0
Clams	51	0	0	0
Sowbugs	0	0	0	0
Mayflies	0	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	1330	355	355	1266

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B4

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 4

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	950	190	4332	937
Leeches	0	0	0	0
Midges	456	291	8309	5473
Snails	13	0	13	0
Clams	0	0	0	0
Sowbugs	228	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	2027	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	3674	481	12654	6410

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B5

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN THE WEST BRANCH OF SALT CREEK AT STATION 5

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	1342	291	0	NA
Leeches	0	0	0	NA
Midges	165	1521	355	NA
Snails	0	0	0	NA
Clams	13	0	0	NA
Sowbugs	13	0	0	NA
Mayflies	0	0	0	NA
Damselflies	0	0	0	NA
Blackflies	0	0	0	NA
Beetles	0	0	0	NA
Hydra	228	0	0	NA
Biting Midge	0	0	0	NA
Water Boatman	0	0	0	NA
Total Number of Organisms/M^2	1761	1812	355	NA

*Average of three samples per station

NA = No Analysis

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B6

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 6

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	1773	608	1533	532
Leeches	0	0	0	0
Midges	266	1026	3357	2812
Snails	114	0	13	13
Clams	64	0	0	0
Sowbugs	13	13	0	0
Mayflies	0	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	13
Hydra	13	0	0	0
Biting Midges	0	0	0	152
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	2243	1647	4903	3522

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B7

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 7

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	1444	101	1875	671
Leeches	0	0	0	0
Midges	405	203	1609	1545
Snails	13	0	0	0
Clams	0	0	0	0
Sowbugs	13	0	0	0
Mayflies	0	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	13	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	1888	304	3484	2216

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B8

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 8

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	481	177	1039	279
Leeches	0	13	0	0
Midges	468	190	1837	1621
Snails	25	0	0	25
Clams	25	0	0	13
Sowbugs	25	0	0	25
Mayflies	0	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	0	0	0	51
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	1024	380	2876	2014

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B9

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 9

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	2115	1305	7799	3939
Leeches	0	0	0	0
Midges	177	1381	1305	1026
Snails	0	0	0	0
Clams	13	0	13	0
Sowbugs	0	0	0	0
Mayflies	0	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	2305	2686	9117	4965

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B10

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 10

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	215	431	3342	1482
Leeches	0	0	13	0
Midges	13	51	621	393
Snails	0	0	51	13
Clams	38	0	0	0
Sowbugs	0	0	0	0
Mayflies	25	0	0	0
Damselflies	0	0	0	0
Blackflies	0	0	0	0
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	0	0	0
Total Number of Organisms/M^2	291	481	4027	1888

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE B11

COMPOSITION AND ABUNDANCE OF THE BOTTOM FAUNA IN SALT CREEK AT STATION 11

Bottom Fauna* (Per Square Meter)	5/27/74	8/12/74	11/18/74	2/3/75
Sludgeworms	2939	720	1761	2558
Leeches	177	567	177	127
Midges	570	939	266	608
Snails	697	14078	1849	1064
Clams	25	399	0	51
Sowbugs	13	3054	253	101
Mayflies	13	0	0	0
Damselflies	0	31	0	0
Blackflies	13	39	33190	16225
Beetles	0	0	0	0
Hydra	0	0	0	0
Biting Midges	0	0	0	0
Water Boatman	0	3	0	0
Total Number of Organisms/M^2	4447	1983	37496	20734

*Average of three samples per station

APPENDIX C

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C1

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 1
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	N-NO_2+NO_3	Total P
3/4/74	7.8	68.1	10.0	5.0	52	7.3	2.3	3.70	2.02
4/15/74	4.2	38.9	12.0	10.5	60	7.3	1.8	1.64	1.07
6/10/74	0.3	3.2	19.8	7.5	34	7.0	1.5	1.70	0.75
8/5/74	0.6	6.1	21.2	5.0	155	7.2	4.4	2.60	1.10
Mean	3.2	29.1	15.1	7.0	75	7.2	2.5	2.41	1.24

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C1 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 1
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	559	15	190	830
4/15/74	248	117	100	575
6/10/74	343	33	110	445
8/5/74	400	34	180	662
Mean	388	50	145	628

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C-2

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 2
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	$N\text{-}NO_2+NO_3$	Total P
3/4/74	7.8	66.8	9.0	16.0	72	7.4	2.5	4.40	1.76
4/15/74	5.0	46.3	12.0	11.0	48	7.4	1.3	2.06	1.08
6/10/74	1.4	15.1	19.0	5.0	35	7.1	1.7	2.29	0.87
8/5/74	0.5	5.6	21.2	5.0	155	7.2	6.2	1.24	2.12
Mean	3.7	33.5	15.3	9.2	66	7.3	2.9	2.50	1.46

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C2 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 2
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	611	677	185	855
4/15/74	312	74	125	605
6/10/74	388	34	130	480
8/5/74	415	34	190	690
Mean	432	205	158	658

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C3

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 3
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	N-NO_2+NO_3	Total P
3/4/74	7.7	66.4	9.0	26.5	98	7.4	3.3	3.75	2.44
4/15/74	6.9	64.8	12.0	8.0	48	7.5	0.9	2.88	1.04
6/10/74	3.0	31.6	18	5.0	35	7.1	1.8	2.99	1.13
8/5/74	1.5	16.6	21	4.5	153	7.2	4.9	3.20	1.64
MEAN	4.8	44.8	15	11.0	84	7.3	2.7	3.21	1.56

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C3 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 3
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	576	94	175	830
4/15/74	373	107	135	670
6/10/74	426	24	155	560
8/5/74	445	31	195	713
Mean	455	64	165	693

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C4

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 4
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	$N-NO_2+NO_3$	Total P
3/4/74	7.0	59.2	8.3	38.5	162	7.4	3.5	2.93	2.59
4/15/74	7.1	63.9	12.0	6.5	68	7.6	0.8	2.94	1.10
6/10/74	3.2	33.2	18.3	5.0	35	7.0	1.4	2.44	1.05
8/5/74	2.3	25.1	21.5	4.0	145	7.2	4.8	4.35	1.60
Mean	4.9	45.35	15.0	13.5	102	7.3	2.6	3.16	1.58

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C4 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 4
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	559	85	160	805
4/15/74	407	116	210	735
6/10/74	391	50	210	545
8/5/74	452	20	200	715
Mean	452	68	195	700

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C5

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 5
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	$N-NO_2+NO_3$	Total P
3/4/74	8.2	69.4	8.3	24	93	7.4	2.6	3.10	2.28
4/15/74	8.6	88.2	12.5	7.0	70	7.6	1.1	3.64	1.27
6/10/74	6.0	63.5	18.5	5.0	31	7.1	1.9	2.79	1.06
8/5/74	5.0	57.8	23.0	5.0	78	7.2	6.6	1.60	2.48
Mean	7.0	69.7	15.6	10.3	68	7.3	3.1	2.78	1.77

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C5 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 5
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	519	84	160	755
4/15/74	310	101	215	780
6/10/74	374	74	155	510
8/5/74	425	12	190	690
Mean	407	68	180	684

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C6

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 6
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	$N\text{-}NO_2+NO_3$	Total P
3/4/74	8.6	74.1	9.0	23.0	80	7.4	4.5	4.53	2.70
4/15/74	8.1	75.7	12.5	7.0	70	7.5	1.1	4.08	1.38
6/10/74	6.3	66.6	18.5	4.5	21	6.9	0.4	4.26	1.63
8/5/74	5.0	56.8	22.0	5.0	77	7.2	6.7	1.76	2.56
Mean	7.0	68.3	15.5	9.9	62	7.3	3.2	3.66	2.07

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C6 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 6
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	554	44	180	805
4/15/74	498	45	200	780
6/10/74	410	15	160	485
8/5/74	402	10	185	665
Mean	466	29	181	684

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C7

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 7
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	$N\text{-}NO_2+NO_3$	Total P
3/4/74	8.7	74.0	9.0	12.0	78	7.4	1.9	4.93	2.45
4/15/74	8.3	78.5	12.5	7.0	78	7.5	1.0	4.14	1.37
6/10/74	6.5	67.7	17.5	2.5	87	7.1	5.3	1.65	1.80
8/5/74	6.8	78.2	23.0	5.5	70	7.2	6.6	3.50	2.40
Mean	7.3	74.6	15.5	6.8	78	7.3	3.7	3.56	2.01

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C7 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 7
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	560	25	185	800
4/15/74	643	39	220	820
6/10/74	515	16	235	725
8/5/74	450	7	190	700
Mean	542	22	208	761

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C8

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 8
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	N-NO_2+NO_3	Total P
3/4/74	9.0	77.1	8.8	11.5	75	7.5	1.7	4.45	1.99
4/15/74	8.7	82.2	12.5	8.5	83	7.5	1.0	4.28	1.34
6/10/74	6.5	67.0	17.0	3.0	90	7.1	5.3	1.61	2.90
8/5/74	6.8	78.6	23.5	2.5	75	6.9	5.9	2.05	2.23
Mean	7.8	76.2	15.5	6.4	81	7.3	3.5	3.10	2.12

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C8 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 8
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	559	28	160	810
4/15/74	554	42	160	840
6/10/74	277	16	230	755
8/5/74	611	7	185	705
Mean	500	23	184	778

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C9

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 9
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{o})	BOD	COD	pH units	NH_3-N	N-NO_2+NO_3	Total P
3/4/74	9.3	79.7	8.8	14.0	89	7.5	1.9	4.85	1.74
4/15/74	8.4	79.4	12.5	8.5	80	7.5	1.2	4.12	1.27
6/10/74	6.7	69.1	17.0	3.0	85	7.3	5.1	1.79	2.33
8/5/74	7.1	82.6	23.5	2.5	75	7.0	5.4	2.60	1.89
Mean	7.9	77.7	15.5	7.0	82	7.3	3.4	3.34	1.81

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C9 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 9
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	594	35	150	865
4/15/74	556	47	175	855
6/10/74	535	15	230	750
8/5/74	636	5	190	715
Mean	580	26	186	796

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C10

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 10
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	$N\text{-}NO_2+NO_3$	Total P
3/4/74	8.4	68.9	7.0	15	95	7.9	4.1	0.97	0.95
4/15/74	3.0	28.3	13.0	4	55	7.6	1.8	0.88	0.67
6/10/74	0.4	4.34	20.0	12.0	75	7.0	3.0	0.08	1.15
8/5/74	0.5	5.70	23.0	10.0	40	6.6	1.4	0.32	0.55
Mean	3.1	26.8	15.8	10.3	66	7.3	2.6	0.56	0.83

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C10 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 10
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	374	64	200	600
4/15/74	246	74	200	480
6/10/74	321	35	130	370
8/5/74	242	46	110	280
Mean	296	55	160	433

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C11

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 11
IN MG/L WHERE APPLICABLE

Date	DO	DO SAT (%)	Water Temp. (C^{O})	BOD	COD	pH units	NH_3-N	N-NO_2+NO_3	Total P
3/4/74	12.0	96.0	6.0	6.0	38	7.9	0.9	0.55	0.18
4/15/74	8.3	73.5	10.0	3.0	35	8.0	0.1	0.25	0.15
6/10/74	7.6	79.2	15.5	4.0	30	7.4	0.3	0.32	0.12
8/5/74	6.5	73.9	25.5	3.0	48	7.6	0.2	0.12	0.10
Mean	8.6	80.7	14.3	4.0	38	7.7	0.4	0.31	0.14

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE C11 (Continued)

WATER QUALITY PARAMETERS OF THE NORTH SHORE CHANNEL AT STATION 11
IN MG/L WHERE APPLICABLE

Date	Dissolved Solids	S.S.	Alkalinity	Conductivity (UMHOS/CM)
3/4/74	251	43	120	460
4/15/74	172	50	250	300
6/10/74	203	9	130	300
8/5/74	734	32	110	250
Mean	340	34	153	328

APPENDIX D

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D1

DENSITY OF BENTHIC MACROINVERTEBRATES IN THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 1 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	3,673	0	0	0	0	3,673
4/15	10,197	0	0	0	0	10,197
6/10	10,108	0	0	38	0	10,146
8/5	709	0	0	0	0	709

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D2

DENSITY OF BENTHIC MACROINVERTEBRATES IN THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 2 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snail	Total
		(Per Square Meter)				
3/4	8,360	25	0	0	0	8,385
4/15	4,940	0	0	0	0	4,940
6/10	48,386	0	0	0	0	48,386
8/5	6,143	0	0	0	0	6,143

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D3

DENSITY OF BENTHIC MACROINVERTEBRATES IN THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 3 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	27,803	127	101	25	38	28,094
4/15	89,743	38	89	165	13	90,048
6/10	207,562	0	0	0	0	207,562
8/5	70,363	0	0	0	0	70,363

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D4

DENSITY OF BENTHIC MACROINVERTEBRATES IN THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 4 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	39,140	215	127	0	190	39,672
4/15	62,193	25	0	38	0	62,256
6/10	202,476	0	0	38	0	202,514
8/5	13,553	0	0	0	0	13,553

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D5

DENSITY OF BENTHIC MACROINVERTEBRATES IN THE NORTH BRANCH OF THE CHICAGO RIVER AT STATION 5 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	67,957	950	38	25	51	69,021
4/15	104,120	595	241	25	0	104,981
6/10	158,194	0	114	0	0	158,308
8/5	122,297	0	0	0	0	122,297

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D6

DENSITY OF MACROINVERTEBRATES IN THE NORTH SHORE CHANNEL AT STATION 6 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	60,357	1,482	456	0	0	62,295
4/15	116,153	621	2,787	0	0	119,561
6/10	159,207	0	11,362	0	0	170,569
8/5	77,583	25	899	0	0	78,507

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D7

DENSITY OF MACROINVERTEBRATES IN THE NORTH SHORE CHANNEL AT STATION 7 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	82,777	2,318	456	0	0	85,551
4/15	66,436	1,266	469	0	0	68,171
6/10	209,785	38	2,394	0	0	212,217
8/5	30,400	165	405	0	0	30,970

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D8

DENSITY OF MACROINVERTEBRATES IN THE NORTH SHORE CHANNEL AT STATION 8 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	55,543	4,965	671	0	0	61,179
4/15	89,680	1,064	139	0	0	90,883
6/10	95,715	0	152	0	0	95,867
8/5	71,503	89	38	0	0	71,630

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D9

DENSITY OF MACROINVERTEBRATES IN THE NORTH SHORE CHANNEL AT STATION 9 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	23,053	7,537	51	0	0	30,641
4/15	27,170	266	0	0	0	27,436
6/10	123,360	38	0	0	0	123,398
8/5	42,687	342	0	0	0	43,029

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D10

DENSITY OF MACROINVERTEBRATES IN THE NORTH SHORE CHANNEL AT STATION 10 IN 1974*

Date	Sludgeworms	Midges	Sowbugs	Leeches	Snails	Total
		(Per Square Meter)				
3/4	1,121	0	0	0	0	1,121
4/15	228	0	0	0	0	228
6/10	260	0	0	0	0	266
8/5	51	25	0	0	0	76

*Average of three samples per station

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE D11

DENSITY OF MACROINVERTEBRATES IN THE NORTH SHORE CHANNEL AT STATION 11 IN 1974*

Date	Sludgeworms	Midges (Per Square Meter)	Sowbugs	Leeches	Snails	Total
3/4	8,867	5,320	0	0	0	14,187
4/15	9,120	2,229	0	0	0	11,349
6/10	7,752	38	0	0	0	7,790
8/5	7,093	0	0	0	0	7,093

*Average of three samples per station