

LaSalle - 70477

Lake Michigan
Biological and Chemical Findings

I. Sampling Location

Central Illinois Public Service Company

Coffeen Power Station

Coffeen, Illinois

(See Figure 1 for sampling sites)

II. Date of Survey

May 24-25, 1977

III. Participants

USEPA

Haz A. Anderson - Aquatic Biologist, CBL

Charles S. Steiner, Jr. - Aquatic Biologist, CBL

CIPS

Janet Fanning - Biologist

Allan Guthrie - Laboratory Technician

IV. Purpose of Survey

To gather biological and chemical data for the purpose of evaluating the impact of the power plant on the Lake's phytoplankton and macroinvertebrate populations.

V. Sampling Procedure

1. Chemistry - Chemistry samples were collected from the surface by filling the sample bottles directly at 1 or 2 inches beneath the surface, and from near the bottom by use of a Kemmerer non-metalllic water bottle.
2. Phytoplankton - Same as for chemistry.
3. Macroinvertebrates - Samples were collected from the lake bottom by means of a ponar dredge. Qualitative samples were collected by cleaning rocks and sticks from the shallow littoral areas. Rester-Dendy multiple plate samplers were also installed, for a period of six weeks, on monitoring floats at stations LC 1, 2, 3, and 5.

All samples were properly labeled, preserved and/or stored on ice as necessary.

Table I Lake Coffeen Sampling Station Description

SC 1	Sheal Creek
LC 1A B	Lake Coffeen @ Dam (Surface) Lake Coffeen @ Dam (Bottom)
LC 2	Lake Coffeen East Leg Discharge
LC 3	Lake Coffeen 100 yard. Below Condenser discharge
LC 4A B	Lake Coffeen Under Transmission Line (Surface) Lake Coffeen Under Transmission Line (Bottom)
LC 5	Lake Coffeen @ Reactor Inlet
LC 6	Lake Coffeen @ Rail road Bridge
NC 1	Mc Davids Branch U.S. Hwy 195

Elgar L-Lane Company Surveyor's Notes

5/23/2015

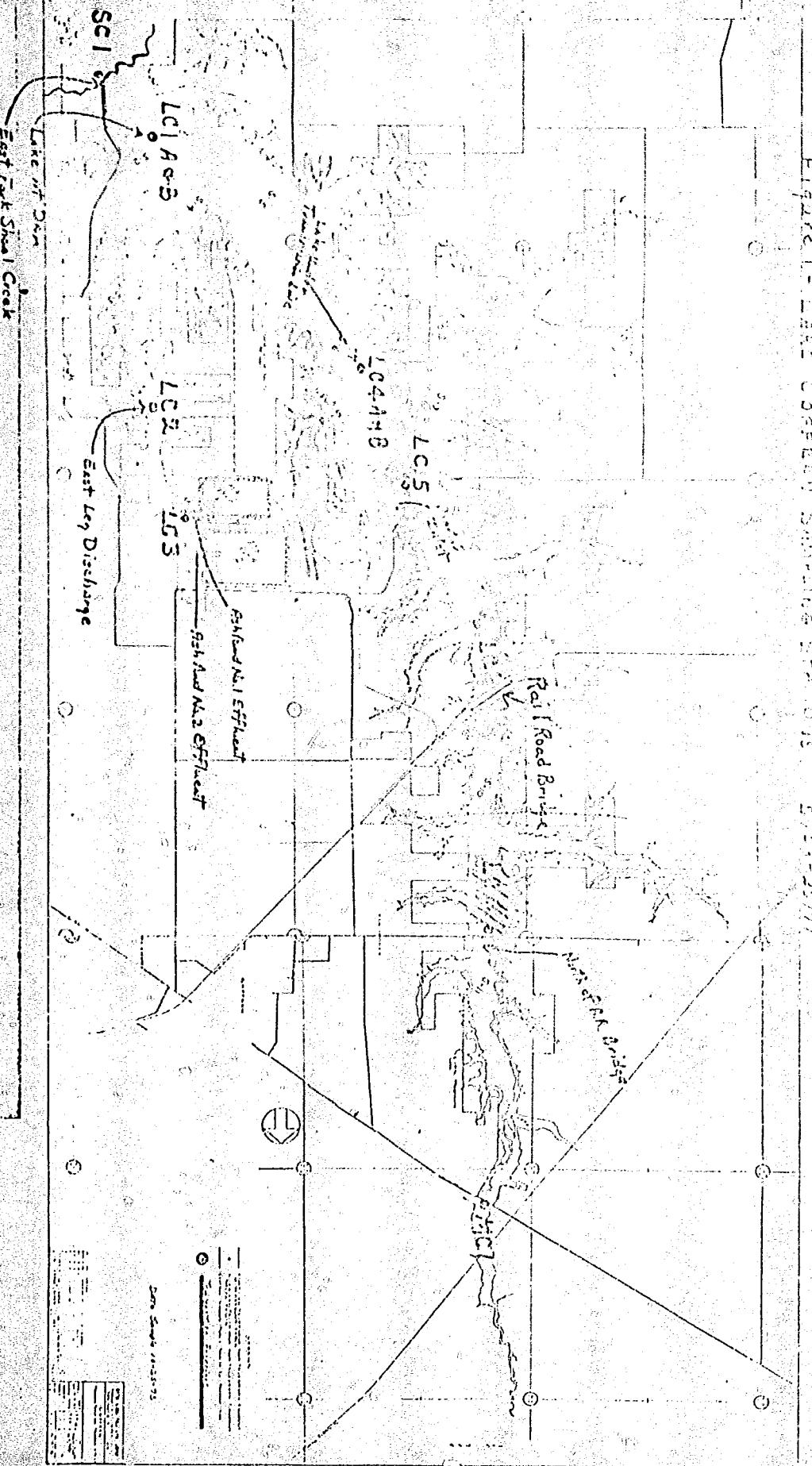


Table 2. LAKE COFFEE CHEMISTRY DATA

N₁ Condenser
Discharge

N₂ Condenser
Discharge

N₂ Slag Tank
Overflow

STP Discharge

Ash Fundus

Parameter	LC 1A	LC 1B	L 2 2	L 2 3	L C 4 P	L C 4 S	L 2 5	L C 6	SC 1	M C 1	
Leaching Time (hr)	See Table 1a	See Table 1b	See Table 2	See Table 3	See Table 4	See Table 5	See Table 6	See Table 7	See Table 8	See Table 9	
Initial Slagline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Final Slagline (cm)	5.2	7.0	8.2	9.3	5.3	6.9	5.2	7.1	3.2	3.4	
Final Slagline (in.)	1550	1560	1580	1580	1550	1550	1550	1550	1550	1550	
Leached Slag	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Leached Solids	11	11	4	9	8	24	6	5	4	10	
Leached Liquids	0.58	0.51	0.60	0.59	0.56	0.54	0.54	0.55	0.72	0.52	
Water	630	690	590	630	650	620	580	630	106	50	
Alumina	24	23	24	24	26	23	23	24	29	18	
Alumina	110	112	126	115	123	120	122	143	62	59	
Alumina	111	119	136	121	135	125	124	156	29	34	
Alumina	10.1	10.6	10.4	10.1	10.5	10.4	10.2	10.5	3.4	2.75	
Phosphorus	0.04	0.02	0.03	< 0.02	0.02	0.02	0.02	0.03	0.16	0.12	
Phosphorus	0.85	0.55	0.29	0.50	0.55	0.53	0.53	0.82	1.15	1.30	
Phosphorus	0.41	1.23	0.41	0.39	0.38	1.17	0.38	0.35	0.06	0.03	
Iron	0.31	0.19	0.20	0.31	0.25	0.15	0.25	0.23	< 0.03	0.22	
Iron	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	10.0	3.50	
Iron	240	525	1310	1110	1930	1030	2120	1140	111	4.0	
Iron	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Cadmium	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	
Cadmium	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Nickel	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	
Nickel	15	39	18	25	34	< 13	< 13	< 13	18	< 13	
Suspended Oxygen	See Table 1a	See Table 1b	See Table 2	See Table 3	See Table 4	See Table 5	See Table 6	See Table 7	See Table 8	See Table 9	
Depth (meters)	14.6	7.0	3.0	12.0	11.5	—	—	—	—	—	

Sampling stations from 10. Temp 5.0m 5.5m 6.0m 6.5m 7.0m 7.5m 8.0m 8.5m 9.0m 9.5m 10m 10.5m 11m 11.5m 12m 12.5m

LC 1 30.5 6.72 25.1 6.50 27.0 6.50 26.5 6.00 26.0 5.90 25.5 5.90 24.2 5.40 21.9 3.69 19.3 2.80 16.2 1.38 15.6 0.88 14.0 0.15
LC 2 32.0 6.39 25.5 5.50 26.5 5.49 25.6 5.10 25.3 4.31 24.3 2.38

LC 3 32.0 6.70 32.2 6.70

LC 4 30.5 7.19 28.3 7.01 27.3 7.01 26.5 6.53 26.3 6.95 25.0 6.29 25.0 5.14 23.3 5.01 25.0 4.91

LC 5 29.9 7.45 28.2 7.39 26.8 6.35 26.1 6.29 25.1 5.10 23.5 4.39 22.3 3.70 19.1 1.55 18.1 0.20
LC 6 28.5 7.99 25.4 8.09 25.3 7.99 25.0 7.99 22.0 7.53 Total depth not determined

SC 1 24.0 12.8

MC 1 22.9 2.57

Temp = °C

Dissolved oxygen: mg/l

14220

14220

14220

14220

14220

14220

14220

14220

14220

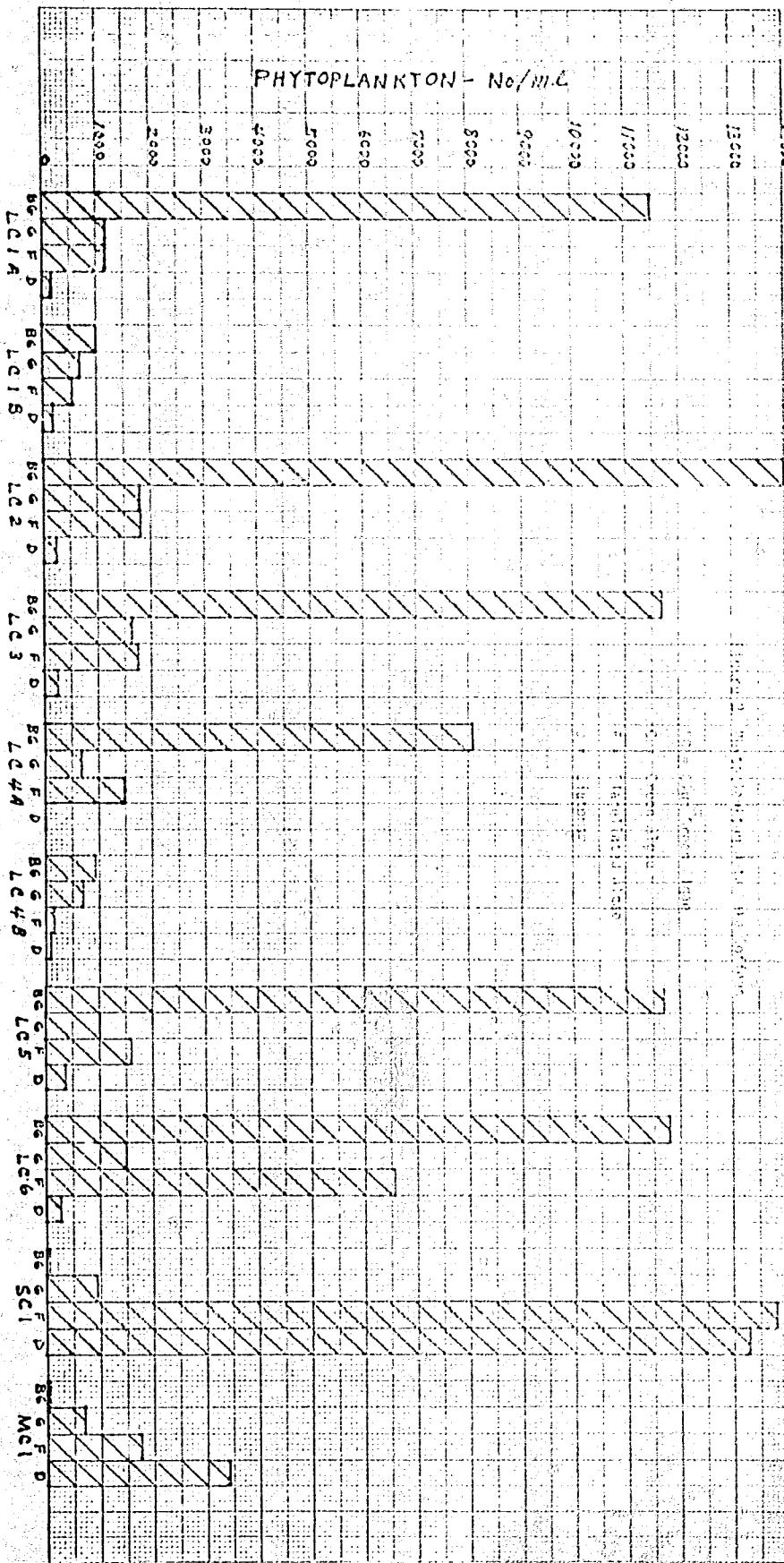
14220

14220

14220

14220

PHYTOPLANKTON - No./MIC



	L.S.	I.E.	I.C.	I.C.S.	I.C.E.	S.C.I.	H.C.
Family	Count	Count	Count	Count	Count	Count	Count
Diptera							
Polydoridipes sp.			1	62	1	19	2
Cricotopus sp.	1	1	12	332	1	137	2
Diastatodipes sp.	2	7	50	3	172	2	100
Chironomus sp.			3	36	28	9	16
Thienemannella sp.					16	169	16
Procladius sp.				12	8	1	6
Diaetella sp.					6	4	12
Pseudochironomus sp.					2	2	6
Stictochironomus sp.							70
Tricletus sp.							56
Ablatescina sp.				1	136	6	5
Glyptotendipes sp.	14			2	40	5	39
Psilothrixberniella sp.				2	33	1	1
Cryptochironomus sp.			1	8	1	1	2
Parachironomus sp.			1	1	7	6	6
Pectinatellus sp.			1		2	7	7
Tanystomus sp.				4			20
Endochironomus sp.						1	95
Phaenocsetta sp.						1	5
Kiefferulus sp.							1
Coelotanypus sp.					3	15	15
Tanyptera sp.						4	4
Tubifera sp.				1			27
Simulium sp.							
Chaoborus sp.	15	8	1	4		20	
Chironomidae	7	5	7	1	45	1	3
Trichoptera					3	15	54
Chemnopsycha sp.							100
Psychomyid Genus B.						58	
Plecoptera							
Perlaea placida							67
Odonata							
Ichnocnema sp.				1			
Baillaginia sp.					5		
Ephemeroptera							
Leptagenia diabasis							25
Stenonema interpunktatum							1
Pseudocloeon sp.							25
Coenia sp.				3			5

Lake Collection Macrourus ecklonii Continued

	LC 1	LC 2	LC 3	LC 4	LC 5	LC 6	SC 1	MC 1
Gnathopeltidae								
Dubiraphia sp.								
Holothuridae							1	2
Hemiptera								
Mesocyclops sp.					1			
Corixidae							1	
Collembola								
Entomobryidae					1		9	
Oligochaeta								
Tubifex sp.							57	27
Limnodrilus sp.		9		28			15	102
Amphipoda								6
Hypogastruridae								11
Gammaridae								
Gastropoda								
Physa integrum				49			4	1
Tubellaria					5			
Total Taxa	3	3	6	7	6	15	3	17
Total Number	18	27	50	73	9	1743	5	145
						570	226	56
						373	233	723
						597		

Lake Ontario PhytoplanktonAlgal Taxa

18.1 15.1 12.1 11.2 10.3 9.8 9.4 8.5 7.6 6.1

Blue-green algae

15.1 13.3 11.5 9.7 8.1 7.0 6.1 5.2 4.1 3.1

Oscillatoria limnetica

16.0 13.0 11.0 9.0 7.0 6.0 5.0 4.0 3.0 2.0

Green algae

18.3 16.0 13.0 11.0 9.0 7.0 6.0 5.0 4.0 3.0

Anabaena falcata

2.0

Ceratium quadratum

2.0

Crucigenia sp.

1.0

Scenedesmus quadrivalvis

1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0

Scenedesmus bijuga

4.0 2.0 1.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5

Scenedesmus sp.

1.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

Selenastrum sp.

0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

Tetraedron minimum

2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Tetradonis sp.

0.5

Flagellates

2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Carteria sp.

4.0 6.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Chloromyxum sp.

4.0 6.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Chrysotococcus sp.

2.0 10.0 1.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0

Cryptomonas crassa

4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0

Cryptomonas crassus

4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0

Cryptomonas sp.

15.0 16.0 5.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Euglena sp.

4.0 6.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Mallomonas sp.

2.0 6.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Trachelomonas sp.

4.0 6.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Unidentified Flagellates

15.0 40.0 11.0 5.0 2.5 2.5 2.5 2.5 2.5 2.5

Centric Diatoms

4.0 6.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Cyclotella sp.

4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0

Melosira sp.

4.0 6.0 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0

Microciphona potamica

4.0 6.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Per cent. Diatoms

6.0 4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Pteromonas formosa

4.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0

Cymbella sp.

2.0

Eunotia sp.

2.0

Gomphonema sp.

1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0

Navicula sp.

2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Nitzschia acicularis

4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Nitzschia palea

4.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Nitzschia sp.

5.0 2.0 100.0 100.0 2.0 100.0 150.0 2.0

Synedra sp.

2.0 4.0

Tabellaria fenestrata

4.0 2.0

Total Taxa

16. 17. 16. 18. 17. 6. 17. 21. 18. 14.

Total Nal/lnl

15.990 13.500 12.600 14.150 16.130 15.700 14.650 23.40 28.150 5.910