

CITY OF BLOOMINGTON, INDIANA

UTILITIES DEPARTMENT

LAKE LEMON SURVEY, SUMMER 1973

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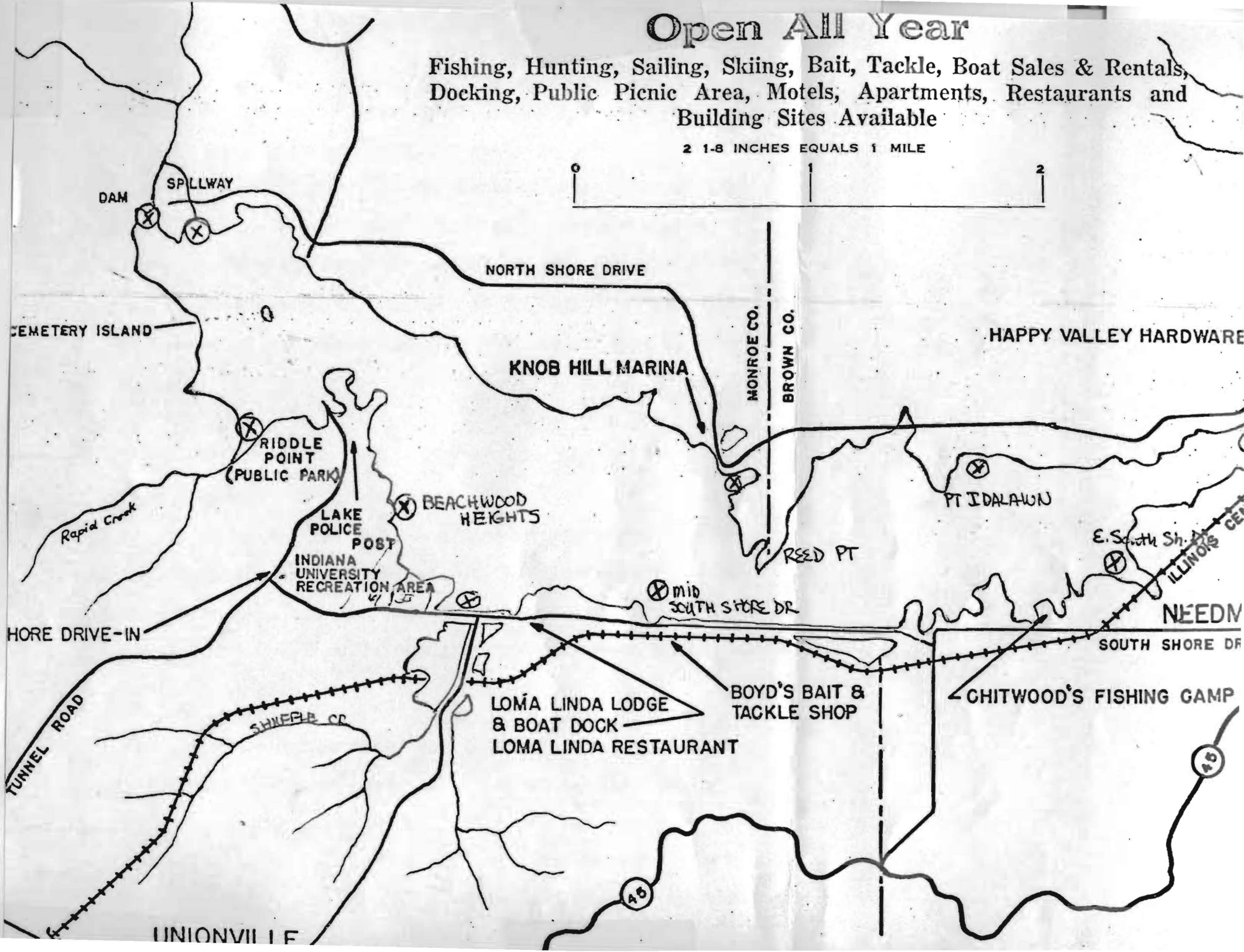
February 1, 1974

Report prepared by the Central Laboratory with assistance from the following personnel: Mary Konovsky, Assistant Chemist; June Humphrey, Anale Hughes, and Bill Chasteen, laboratory technicians and assistant. Assistance also given by Monty McDaniel and Ron Hughett.

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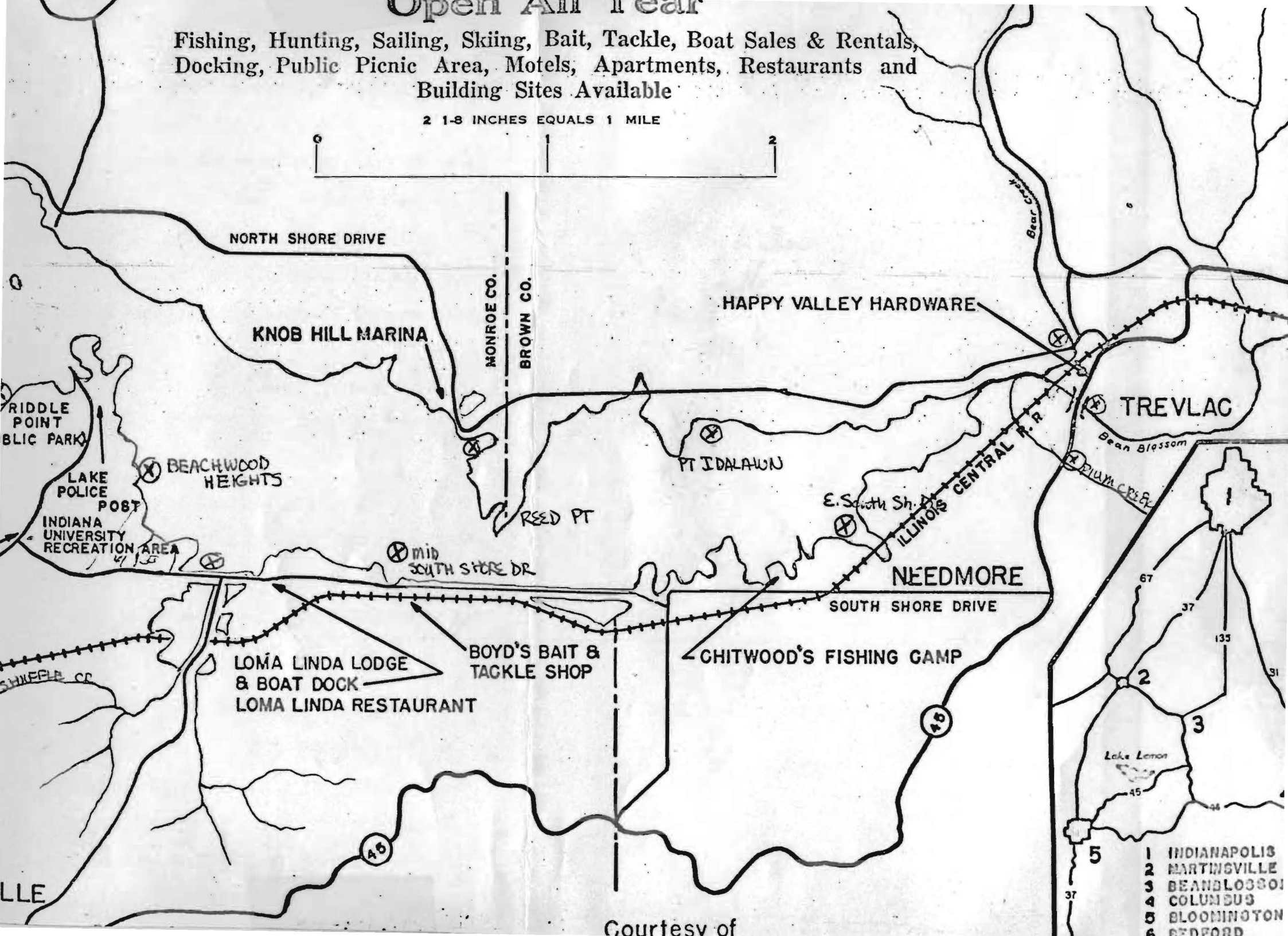
2 1-8 INCHES EQUALS 1 MILE



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Courtesy of

LAKE LEMON SURVEY

Introduction:

A limnological survey of Lake Lemon, located in north eastern Monroe and western Brown counties, was conducted from June 26, 1973, to October 23, 1973, by the Central Laboratory of the City of Bloomington Utilities. The tests conducted were to attempt to locate and identify points of effluent pollution, if any, to the reservoir; as well as a general status report of the lake over the summer period (the highest recreational use period).

Materials and Methods:

Corning 10 pH meter, YSI D.O. and Temperature probe for BOD testing, Mercuric Nitrate Method for Chloride determinations, HACH turbidimeter, and Membrane filter Technique for both Total and Fecal Coliform determinations; BOD bottle sampler and NASCO Whirl bags.

Grab samples in sterile NASCO Whirl Pac Bags were taken over boat side at a depth of about .3 m. A BOD bottle sampler was used to take samples for the BOD test. On rainy or adverse weather days, samples were taken from shore, approximately 2-3 m out. All sampling and testing were conducted as per STANDARD METHODS FOR WATER & WASTEWATER, 13TH ED.

Data Interpretation and Discussion:

Data:

Averages at each site.

SITE	pH	COLIFORM TOTAL/FECAL	BOD	CHLORIDES	TURBID
Dam	7.92	144 /0	2.2	4.16	12.3
Spillway	7.99	41.3/0	2.35	5.69	15.7
Rapid Crk.	7.85	49.3/5	2.26	4.75	11.43
Bchwd. Hts.	7.94	154.7/36	2.2	4.48	15.48
Shuffle Crk.	7.89	303/.8	2.08	4.48	14.92
Mid SS Dr.	8.0	99.12/32	2.28	5.14	16.75
East SS Dr.	7.89	102.9/12	2.87	4.5	23.58
Pt. Idalawn	8.29	33.3/6	2.99	4.58	22.9
Reed Pt.	7.89	25.7/1	2.27	4.49	16.3
Averages	7.962	106./3.2	2.39	4.73	16.59
Plum Crk.	7.69	414/36.4	1.38	6.85	9.65
Bear Crk.	7.57	1568.7/28.21	3.68	6.64	15.2
B.B. Crk.	7.78	492.8/31.5	3.29	7.35	16.16
Averages	7.68	825.2/32.1	2.79	7.01	13.67

1. pH throughout the lake is, as in most lakes, slightly alkaline due to a CO₂ deficiency near the surface and at the shores, where most of the samples were taken. This CO₂ deficiency is caused mainly by photosynthesis carried on by the surface plankton during the daylight hours. The streams are a bit more acidic, due to the incidence of falling leaves and phenolic/humic acid formation.

2. The coliform counts at the lake points sampled are all well within the limits set by the State Board of Health (Reg. SPC-IR). It states "The coliform group not to exceed 1000 organisms per 100 mls as a monthly-average value during any month of the recreational season for whole body contact." It further stipulates the months April - October as the recreational season.

The streams show a higher coliform count, probably due to some form of incoming pollution; whether it be water shed runoff of violative sewage outfall. Bear Creek, a slow moving stream, stagnates to some extent offering an excellent environment for bacterial growth.

It should be explained that fecal coliform count differs from total coliform count in that fecal coliform are those bacteria originating in the guts of warm blooded animals, whereas the total coliform test shows bacteria of a type originating in both warm and cold blooded animals as well as some soil bacteria which exhibit the positive result in the membrane

filter test. The presence of fecal coliform in samples, as explained above, shows the occurrence of fecal material from warm blooded animals, of which man is one. The fact that the lake samples are lower than those from the streams in both Total & Fecal shows a dilution effect in the lake of the influent streams.

3. The BOD (Biological Oxygen Demand) exhibited by the samples is negligible in both the streams and the lake. This low BOD shows a low concentration of organic matter in the water being oxidized by the biological and biochemical components in the water. Raw sewage shows a BOD of between 150-250 mg/L. The normal BOD exhibited by the Downstream sampling points of the sewage plant effluent streams is between 5-10 ppm.
4. The Chloride content of water is caused primarily by Sodium Chloride - common table salt - also to some extent by naturally occurring potassium and magnesium chlorides. The almost two-fold difference between the stream and lake samples is another indication of pollution of the streams, although slight.
5. Turbidity, as an empirical test, is mainly for cloudiness of a liquid; whether caused by silt, clay, bacteria, small amorphous colloidal particals, or algae. As an indication of pollution incidence, turbidity is not too useful of a parameter.

The data does not conclusively identify any points of pollution on the lake itself. The marked difference between the

lake sampling points and stream sampling points, shows a possible problem generated in the streams.

	PH	DO	TEMP	TURB	CL	TURBIDITY
June 21	8.4	30	27.7	1.0	4.74	
July 6						
July 11	7.9	0	-	1.0	4.80	
July 17						
July 27						
Aug. 1						
Aug. 9						
Aug. 16						
Aug. 21	7.8	150	-	1.8	-	14
Aug. 23						
Aug. 28	7.8	-	-	1.0	1.38	11
Aug. 30						
Sep. 4	8.0	190	-	2.8	3.54	10
Sep. 6						
Sep. 11	7.75	-	-	2.4	4.04	14
Sep. 13	8.2	540	-	5	2.73	23
Sep. 18						
Sep. 20	7.55	10/0	-	2.8	3.5	11
Sep. 23	8.2	70	-	2.4	3.13	9
Sep. 27						
Oct. 2	7.8	70	-	1.1	3.30	10
Average	7.92	144/0	-	2.2	4.75	12.5

DAM

DATE	pH	COLIFORM	TEMP.	BOD	CL.	TURBIDITY
June 26	8.4	30	28.7	1.0	4.74	-
July 6						
July 11	7.9	0	-	1.6	4.89	-
July 17						
July 22	8.0	10	3.9		8.5	-
Aug. 1						
Aug. 9	7.7	10	1.1		3.46	12
Aug. 16						
Aug. 21	7.5	160	-	1.8	-	14
Aug. 23						
Aug. 28	7.8	-	-	1.8	1.0	2.78 11
Aug. 30						
Sep. 4	8.0	190	-	2.8	3.54	10
Sep. 6						
Sep. 11	7.75	-	-	2.4	4.04	14
Sep. 13	8.2	640	-	5	3.75	23
Sep. 18						
Sep. 20	7.55	10/0	-	3.8	3.5	11
Sep. 25	8.2	-/0	-	2.4	3.12	9
Sep. 27						
Oct. 2	7.9	-/-	-	1.1	3.79	10
Averages	7.92	144/0	-	2.2	4.16	12.3
Oct. 15	7.85	130/0	1.8		4.85	21
Oct. 16						
Oct. 18	8.1	100/0	1.6		4.75	20
Oct. 22	7.71	0/0	1.6		4.32	3
Averages	7.97	420/0	2.33		5.41	15.7

SPILLWAY

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	8.2	143	-	3.06	-
July 6	8.0	8	2.2	12.2	-
July 11	8.0	8	1.9	4.87	-
July 17	8.0	10	3.9	8.57	-
July 22					
Aug. 1	7.7	10	1.1	3.44	15
Aug. 9					
Aug. 16	7.6	6	.9	4.95	13
Aug. 21	7.4	34	2.3	1.1	14
Aug. 23	7.7	4	1.8	8.74	12
Aug. 28	8.2	-	1.3	3.74	18
Aug. 30	8.4	62	3.1	4.62	12
Sep. 4	8.2	18	2.3	4.43	13
Sep. 6	7.8	34	2.2	4.1	23
Sep. 11					
Sep. 13					
Sep. 18	8.5	40	1.6	4.12	34
Sep. 20	7.8	20/0	2.7	3.2	23
Sep. 25	8.0	70	2.3	3.41	13
Sep. 27	7.4	-	6.2	3.73	8
Oct. 2	7.33	1	3	4.77	11
Oct. 9	7.95	180/0	1.8	4.67	11
Oct. 16					
Oct. 18	8.1	100/0	1.8	4.75	20
Oct. 23	7.75	0/0	1.6	4.51	9
Averages	7.99	413/0	2.35	5.69	15.7

RAPID CREEK

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	8.2	165	-	3.06	-
July 6	7.85	62	3.6	9.8	-
July 11	8.0	0	.9	4.89	-
July 17	7.8	18	3.7	7.89	-
July 22					
Aug. 1	7.8	TNTC	.7	3.24	18
Aug. 9	7.7			6.43	11
Aug. 16	7.59	4	1.2	4.95	10
Aug. 21	7.6	36	2.5	-	14
Aug. 23	7.8	16	2.0	6.73	13
Aug. 28	8.2	-	1.3	3.74	10
Aug. 30	8.45	2	2.7	4.72	11
Sep. 4	8.0	19	2.3	4.45	11
Sep. 6	8.4	130	2.1	4.1	18
Sep. 11	8.25	-	3.6	3.34	17
Sep. 13	7.75	10	2.7	4.1	20
Sep. 18	7.73	17.30	4.1	3.43	17
Sep. 20	7.6	10/0	2.7	3.5	11
Sep. 25	8.0	- / 8	2.3	3.41	10
Sep. 27	7.05	-	5.4	3.98	7
Oct. 2	7.95	- / -	.5	4.77	11
Oct. 9	7.9	260/12	1.1	4.72	10
Oct. 16	7.85	7	0	4.31	13
Oct. 18	7.8	25/0	1.4	4.3	16
Oct. 23	7.9	0 / 0	1.5	3.52	7
Averages	7.85	49.5/5	2.26	4.75	11.43

BEECHWOOD HEIGHTS

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	8.1	210	1.5	3.56	-
July 6	8.2	124	2.1	9.78	-
July 11	7.9	350	6.7	2.94	-
July 17	8.1	22	3.7	7.45	-
July 22	8.03	TNTC	3.7	3.35	-
Aug. 1	7.85	1030	.7	3.4	16
Aug. 9	7.7	40	.8	8.49	21
Aug. 16	7.6	42	.9	1.49	13
Aug. 21	7.8	34	2.1	-	19
Aug. 23	8.1	36	1.6	6.73	16
Aug. 28	8.1	-	1.5	3.74	11
Aug. 30	8.4	98	2.5	4.72	13
Sep. 4	7.7	66	2.6	3.81	16
Sep. 6	8.4	138	2.1	4.1	16
Sep. 11	8.25	-	3.0	3.94	17
Sep. 13	7.75	10	1.7	4.1	28
Sep. 18	7.92	20	2.2	3.68	18
Sep. 20	7.75	40/2	2.6	3.5	13
Sep. 25	8.0	0/16	2.2	3.36	15
Sep. 27	7.8	-	5.9	3.83	10
Oct. 2	7.8	-	.7	3.66	16
Oct. 9	7.85	260/0	1.4	4.45	12
Oct. 16	7.85	- / -	0	4.31	15
Oct. 18	7.8	20/0	2.4	4.5	16
Oct. 23	7.9	400/0	1.9	3.44	8.5
Averages	7.94	154.7/3.6	2.2	4.48	15.48

SHUFFLE CREEK

DATE	pH	COLIFORM TOTAL/FECAL	BOD	CHLORIDES	TURBIDITY
June 26					
July 6	8.25	34	2.6	7.3	-
July 11	8.1	4	.8	7.34	-
July 17	7.8	16	3.8	4.8	-
July 22	6.95	TNTC	3.7	3.35	-
Aug. 1	7.81	2	1.0	3.78	15
Aug. 9	7.65	470	1.0	4.72	23
Aug. 16	7.85	34	1.1	5.44	10
Aug. 21	8.1	4	2.0	-	16
Aug. 23	8.7	4	2.6	9.13	17
Aug. 28	7.95	-	1.0	3.26	10
Aug. 30	7.5	226	1.5	4.81	11
Sep. 4	7.9	38	2.4	3.5	15
Sep. 6	8.35	TNTC	2.2	3.58	18
Sep. 11	8.1	-	3.1	3.73	17
Sep. 13	7.85	1275	1.5	3.75	18
Sep. 18	7.97	TNTC	1.7	3.82	19
Sep. 20	7.55	180/0	2.7	3.75	11
Sep. 25	7.95	-/4	2.3	3.1	14
Sep. 27	7.9	-	5.5	3.73	19
Oct. 2	7.95	-/-	.6	3.88	14
Oct. 9	7.65	280/0	1.55	4.45	14
Oct. 16	8.0	-/-	1.6	4.31	16
Oct. 18	7.85	1940/0	1.8	4.0	12
Oct. 23	7.85	40/0	1.8	3.44	9.4
Averages	7.89	303/.8	2.08	4.48	14.92

MID SOUTH SHORE DRIVE

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	8.0	175	2.0	3.95	-
July 6	8.25	6	2.0	9.7	-
July 11	7.9	430	1.3	7.83	-
July 17	7.8	14	3.6	7.45	-
July 27	7.75	30	5.0	3.95	-
Aug. 1	7.75	18	.9	3.68	15
Aug. 9	7.85	4	1.0	9.91	18
Aug. 16	7.6	0	1.5	4.95	13
Aug. 21	8.0	0	1.4	-	19
Aug. 23	8.55	0	3.0	6.73	18
Aug. 28	8.25	-	1.6	3.74	13
Aug. 30	8.3	8	3.1	4.72	14
Sep. 4	7.8	TNTC	2.4	3.5	16
Sep. 6	8.4	560	2.3	4.15	15
Sep. 11	7.3	-	2.5	4.74	18
Sep. 13	7.7	3095	-	3.75	18
Sep. 18	7.75	10	2.4	3.77	34
Sep. 20	7.75	10/0	3.2	3.75	13
Sep. 25	8.0	-/16	2.3	3.5	15
Sep. 27	8.0	-	5.1	3.73	13
Oct. 2	7.9	11	1.2	3.79	15
Oct. 9	7.9	420/0	1.5	4.62	16
Oct. 16	8.1	- / -	.9	4.31	20
Oct. 18	7.7	0/0	2.3	6.0	19
Oct. 23	7.7	0/0	2.1	3.48	13
Averages	8.00	99.12/32	2.28	5.14	16.75

EAST SOUTH SHORE DRIVE

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	7.8	315	3.6	4.05	-
July 6	8.5	58	3.0	9.7	-
July 11	7.9	12	2.2	4.4	-
July 17	7.6	80	5.0	7.98	-
July 22	7.9	8	5.1	2.98	-
Aug. 1	7.65	92	2.8	3.34	23.5
Aug. 9	7.5	48	2.1	9.91	26
Aug. 16	7.7	6	2.6	3.46	15
Aug. 21	7.95	6	3.2	-	28
Aug. 23	8.1	8	4.1	4.32	24
Aug. 28	8.15	-	1.5	3.74	15
Aug. 30	8.05	52	2.6	3.88	20
Sep. 4	7.7	102	3.3	3.5	23
Sep. 6	8.1	76	2.9	4.5	23
Sep. 11	8.0	-	3.4	4.04	25
Sep. 13	7.8	TNTC	1.3	3.47	26
Sep. 18	7.95	580	2.8	2.63	27
Sep. 20	7.9	10/4	3.6	3.75	13
Sep. 25	7.6	-/24	2.3	3.36	25
Sep. 27	8.25	-	5.3	3.73	11
Oct. 2	7.85	-/-	1.3	3.88	18
Oct. 9	8.0	160/20	1.6	4.18	18
Oct. 16	7.85	-/-	1.7	4.31	58
Oct. 18	7.7	220/12	3.3	4.5	39
Oct. 23	7.9	20/0	1.6	3.39	14
Averages	7.89	102.9/12	2.87	4.5	23.58

PT. IDALAWN

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26					
July 6	8.35	42	3.1	-	-
July 11	7.9	2	2.4	3.91	-
July 17	8.1	8	5.3	9.04	-
July 22					
Aug. 1	7.68	184	2.1	3.39	24.5
Aug. 9					
Aug. 16	7.85	0	2.6	2.48	17
Aug. 21	7.9	4	2.7	-	29
Aug. 23	8.4	0	1.4	9.13	24
Aug. 28	8.1	-	1.7	3.74	16
Aug. 30	7.9	TNTC	3.6	4.81	24
Sep. 4	8.1	20	3.4	4.45	22
Sep. 6					
Sep. 11	8.65	-	4.6	3.99	15
Sep. 13	7.95	TNTC	2.2	4.16	26
Sep. 18	7.89	40	3.8	3.92	38
Sep. 20	7.9	20/0	3.8	4.0	18
Sep. 25	8.0	-/12	3.4	3.46	26
Sep. 27	8.0	-	5.3	3.73	16
Oct. 2	7.9	-/-	1.6	3.88	32
Oct. 9	7.9	80/0	2.3	4.62	15
Oct. 16	8.25	-/-	1.9	4.83	26
Oct. 18	7.85	0/12	2.7	4.5	21
Oct. 23					
Averages	8.29	33.3/6	2.99	4.58	22.9

REED PT.

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	8.0	700	1.5	3.65	-
July 6	8.4	14	1.9	-	-
July 11	7.8	0	1.4	6.85	-
July 17	8.1	10	3.9	8.51	-
July 22	7.65	225	2.2	2.23	-
Aug. 1	7.8	8	1.5	4.16	17
Aug. 9	7.55	102	2.1	8.20	10
Aug. 16	7.7	2	1.2	5.44	13
Aug. 21	8.2	0	2.5	-	19
Aug. 23	7.59	0	1.9	4.8	17.5
Aug. 28	7.75	-	1.0	3.74	11
Aug. 30	8.2	132	3.2	4.72	16
Sep. 4	8.0	38	2.4	3.54	14
Sep. 6	7.8	TNTC	1.4	7.37	11
Sep. 11	7.6	-	2.3	4.14	18
Sep. 13	7.95	TNTC	-	3.75	18
Sep. 18	8.1	20	1.25	3.77	29
Sep. 20	7.75	10/0	3.2	3.75	14
Sep. 25	7.85	-/0	2.1	3.46	13
Sep. 27	7.2	-	5.4	3.73	16
Oct. 2	8.0	-/-	1.9	3.61	18
Oct. 9	8.0	100/4	3.3	4.83	20
Oct. 16	7.95	-	3.1	8.20	9
Oct. 18	7.8	180/40	1.5	8.2	4
Oct. 23	7.95	0/0	1.5	4.61	7.5
Averages	7.89	25.7/	2.27	4.49	16.3

PLUM CREEK

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	8.0	700	.8-.58	3.65	-
July 6	8.1	118	1.3-.08	14.7	-
July 11	8.0	94	.4-.98	4.89	-
July 17	7.75	240	3.64-2.26	10.11	-
July 27	7.45	225	2.3-.92	2.23	-
Aug. 1	7.55	340	.2-1.18	3.34	2.7
Aug. 9	7.55	182	.2-1.18	8.96	10
Aug. 16	7.75	196	.6-.78	4.95	10
Aug. 21	7.6	212	1.6-.22	-	4.6
Aug. 23	7.5	352	.9-.48	8.65	10
Aug. 28	7.6	-	1.0-.38	5.66	9
Aug. 30	7.65	TNTC	2.4-1.02	7.5	8
Sep. 4	7.2	112	2.0-.62	5.81	11
Sep. 6	7.6	TNTC	1.6-.22	7.27	11
Sep. 11	7.65	TNTC	1.4-.02	8.48	12
Sep. 13	7.9	1870	.1-1.28	7.1	13
Sep. 18	7.85	240	1.0-.38	7.74	12
Sep. 20	7.65	120/30	2.8-1.42	8.25	8
Sep. 25	7.5	- / 52	2.1-.72	8.5	11
Sep. 27	7.05	-	4.12-.72	8.58	7
Oct. 2	7.75	- / -	.9-.48	7.85	8
Oct. 9	7.8	1800/48	1.0-.38	9.88	15
Oct. 16	7.95	- / -	.3-1.08	8.58	5
Oct. 18	7.8	180/40	.8-.58	8.5	4
Oct. 23	8.1	60/12	1.0-.38	3.14	12
Averages	7.692	414/36.4	1.38	6.85	9.65

BEAN BLOSSOM CREEK

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26	7.8	450	5.8	5.53	
July 6	7.9	TNTC	2.7	14.7	
July 11	7.7	410	3.7	7.34	
July 17	8.5	50	6.3	7.45	
July 22	7.4	545	3.1	4.22	
Aug. 1	-	320	1.3	6.63	21
Aug. 9	-	-	2.0	-	
Aug. 16	7.7	100	.5	10.9	15
Aug. 21	8.5	148	4.5	-	25
Aug. 23	7.7	132	3.6	9.6	1.6
Aug. 28	8.05	-	2.4	6.62	14
Aug. 30	8.15	296	5.7	7.07	13
Sep. 4	7.45	496	3.2	6.31	14
Sep. 6	7.7	848	3.5	7.17	18
Sep. 11	7.5	-	3.2	6.99	14
Sep. 13	7.5	TNTC	2.75	6.25	20
Sep. 18	7.71	1730	2.8	6.86	18
Sep. 20	7.55	20/18	4.1	6.5	13
Sep. 25	7.6	- / 32	3.0	6.3	14
Sep. 27	7.05	-	4.9	5.67	13
Oct. 2	7.5	- / -	3.8	6.11	14
Oct. 9	7.8	2020/44	3.3	7.71	14
Oct. 16	7.7	- / -	2.0	6.98	18
Oct. 18	7.1	220/20	1.3	7.9	28
Oct. 23	7.55	100/12	3.0	8.29	19
Averages	7.78	492.8/31.5	3.29	7.35	16.16

BEAR CREEK

DATE	pH	COLIFORM TOTAL/FECAL	BOD.	CHLORIDES	TURBIDITY
June 26					
July 6	8.0	TNTC	2.5	9.2	
July 11	7.9	452	2.1	4.89	
July 17	8.1	415	5.1	8.78	
July 22	7.65	335	3.2	1.29	
Aug. 1	7.5	335	1.6	3.19	12.5
Aug. 9	7.6	392	2.7	8.96	13
Aug. 16	7.6	172	4.4	5.44	14
Aug. 21	7.6	312	3.0	-	3
Aug. 23	7.58	104	4.0	21.15	14
Aug. 28	7.9	-	5.0	5.66	11
Aug. 30	7.7	TNTC	6.3	6.6	12
Sep. 4	7.2	896	5.4	5.58	11
Sep. 6	7.5	100	5.3	7.1	18
Sep. 11	7.5	TNTC	5.6	6.24	15
Sep. 13	7.6	5000	5.5	6.02	15
Sep. 18	7.77	2380	5.5	6.96	21
Sep. 20	7.25	100/22	6.8	6.5	13
Sep. 25	7.35	- / 56	2.2	4.94	11
Sep. 27	7.05	TNTC	3.1	5.67	13
Oct. 2	7.5	- / -	3.5	4.77	16
Oct. 9	7.4	2360/20	1.2	5.32	14
Oct. 16	7.5	- / -	1.6	4.53	44
Oct. 18	7.2	11660/36	1.8	4.9	21
Oct. 23	7.65	80/8	1.7	8.63	14
Averages	7.5	1568.7/28.4	3.68	6.64	15.3

Conclusion:

It is the conclusion of the Central Lab that Lake Lemon is limnologically and bacteriologically sound and definitely safe for swimming and other recreational activities.

The influent streams (Bean Blossom Creek, Plum Creek, and Bear Creek) are, in our opinion, being slightly polluted. The somewhat high coliform counts, both total and fecal, due to influent raw sewage and runoff; seem to justify our opinion.

In the future, a comprehensive investigation of both lake-side and streamside dwellings is recommended. The major question to be answered is whether to provide an adequate sewerage system to handle the lake and stream dweller's sewage, thus eliminating the inevitable pollution problem. The secondary question to be considered is where septic systems, if any, drain; whether they be toward the stream or lake (causing possible leaching of sewage to the water) or away from the water.

A greater understanding of the causes and resulting problems of pollution by both the citizens and the City will result in a well-managed body of water for many years.

RSP:jf

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