

P.O. BOX 505 HALIFAX N.S. 424-3940 PLANNING COMMITTEE

February 29, 1972

Matropolitan Area Planning Committee, Hollis Building, Halifax, N.S.

ATTENTION: Mr. M.E. Lloyd, P.Eng. Executive Secretary

Dear Sirs:

On behalf of the Task Group on Water Supply and Waste Disposal, I am pleased to present a report "Water Quality Survey for Selected Metropolitan Area Lakes". The study herein presented details the results of the Metro Lakes survey showing the existing chemical, physical and biological characteristics of lakes in the Halifax-Dartmouth area. The information in this report is intended primarily to provide an information base on which future decisions necessary for the proper management of lakes and watersheds can be made. It was not the intention of this study to provide specific recommendations for specific lakes, rather, this study will be of value for a long time as a background to land and water management related to metropolitan lakes. As such it is a first step, hopefully, in a continuing monitoring program of lakes and watersheds in the Halifax-Dartmouth area.

Each lake is unique in its physical characteristics and the nature of existing and potential development by which it is or may be affected. It would be impractical to make recommendations about individual lakes, or attempt to predict water quality in each lake, without a detailed study of projected development and consideration of the effects of alternate methods of water quality control.

This report does provide a clear guide to the direction of lake management policies. The report classifies laker into three broad categories. Many

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other lakes in the region can be recognized as falling into one of these categories. Lakes that are in the least satisfactory condition are those that should be considered carefully; first, to determine if their quality can be improved, and second, to ensure that they do not deteriorate further. The lakes in this category provide examples of what other lakes may category provide examples of what other lakes may become if care is not taken to protect them. The information, then, in this report describes the existing conditions of each lake as a base-line against which future improvement or deterioration can be measured.

Water quality in a given lake with fixed physical characteristics depends largely on inputs of materials that reach the lake in surface runoff or sewage, or of materials (such as garbage) that are discharged directly to the lake. Water quality control may consist of diverting runoff, effluent, or nutrients from the lake, or treating runoff and sewage, or controlling development to prevent deterioration of runoff quality. Some measures may be adopted as a matter of policy for all watersheds, such as control of garbage dumping, provision for sewage treatment, septic tank regulations and sediment control measures. However, the nature of existing and proposed development will affect the amount and composition of sewage and runoff, and the amount of discharge each lake can accept without damage will depend on its characteristics. Although much remains to be learned about critical levels of materials, particularly nutrients, that a lake can accept without detrimental effects, evaluation of information about existing concentrations and physical characteristics of an individual lake can provide a basis for better decisions about the inputs that the lake can accept. Alternative water quality control methods can then be evaluated in terms of the levels of input they will produce.

This Task Group extends special thanks to Dr. J.G. Ogden III who was instrumental in having the

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necessary data collected and who prepared this report.

Yours very truly,

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WILLIAM C. LEE, P. Eng. Chairman, Task Group on Water Supply and Waste Disposal.

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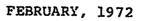
METROPOLITAN AREA PLANNING COMMITTEE

1971 - 1972

WATER QUALITY SURVEY

FOR SELECTED

METROPOLITAN AREA LAKES



TASK GROUP ON WATER SUPPLY AND WASTE DISPOSAL METROPOLITAN AREA PLANNING COMMITTEE

REPORT

METROPOLITAN AREA PLANNING COMMITTEE

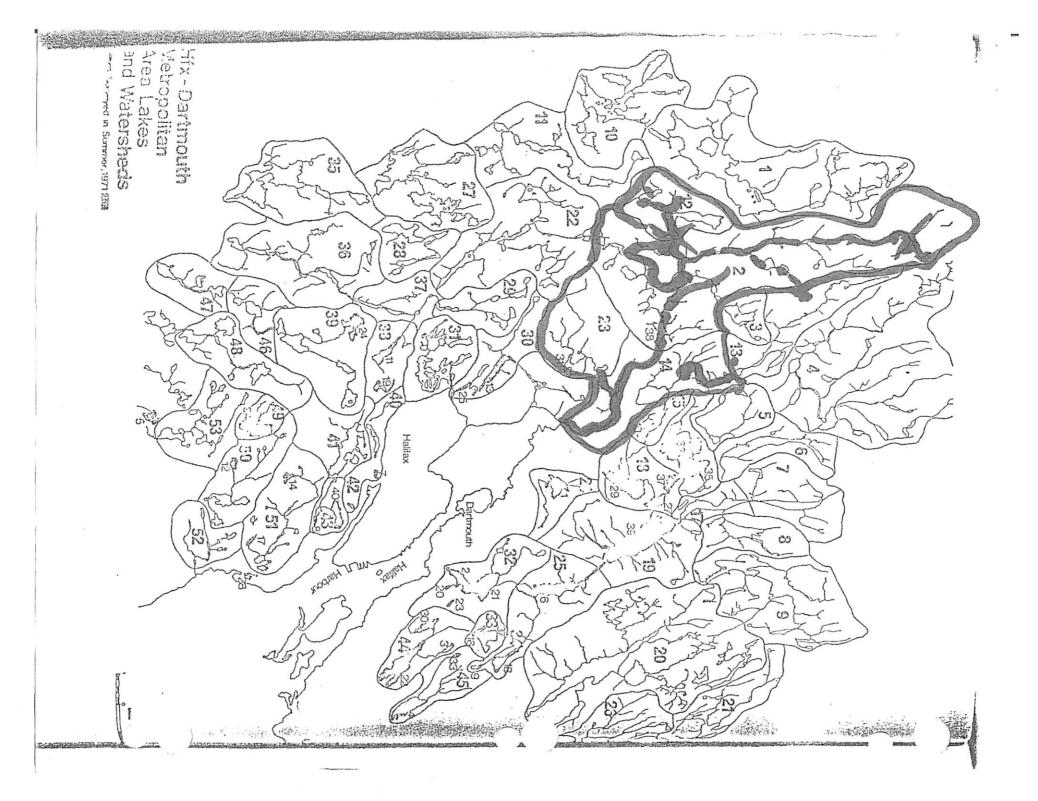
WATER QUALITY SURVEY OF

SELECTED

METROPOLITAN AREA LAKES

FEBRUARY, 1972

J. GORDON OGDEN, III



Lake No. 31

SANDY LAKE

Extensive shallow areas with depths of less than 5 feet provide ample surface for warming of the lake waters to temperatures near 70° at the surface in the summer. The deep part of the lake where the water temperature rarely rises above 5°C. shows evidence of a substantial amount of dissolved oxygen (5 parts per million) in the bottom waters. Despite the presence of a number of summer cottages, there appears to be a complete vegetation belt around the lake and there appears to be no considerable influx of nutrients from domestic vaste. Only about 55 acres of the more than 4,000 acres in the watershed are under development at the present There is little or no evidence of road salt in the water chemistry of the lake. Much of the lake shore is bordered by alder scrub with black spruce and mixed woodland behind the lake margin.

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... ... Watershed number: 23

Location: 44°44'25" N, 63°42'30" W

Elevation above sea level: 95 feet

Lake area: 165 acres

Watershed area: 4142 acr

Smoreline length: 20,800 feet

Shoreline development: 2.19

Maximum depth: 63 feet

Mean depth: 24.99 feet

Volume: $1.798 \times 10^8 \text{ ft}^3$

Capacity: 1119 x 10⁶ Imp. gallons

Flushing time: 6 months

Date sampled: 30 August, 1971	N.Inlet	S.Inlet	Surface	59 feet	Outlet
Sodium	3.8	4.1	2.3	4.5	2.6
Potassium	•	.24	.16	.33	.12
Calcium	1.26	1.60	1.46	1.73	1.40
Magnesium	.51	.52	.46	.59	.46
Manganese	.04	•	-	-	_
Iron		.57		<u>.</u>	-
dissolved O2	8.75	7.5	7.25	5.0	8.25
Temperature	•	•	21.0°C.	•	•
рН .		•	•	•	
Conductivity	57.0	57.0	37.0	39.0	39.0
Total alkalinity	8.0	11.0	10.0	19.0	9.0
Carbon dioxide	9.2	12.0	8.0	15.2	7.6
C.O.D.	4.7	16.9	8.6	3.4 .	7.9
Chloride	9.0	11.0	7.5	12.0	7.5
Sulfate	9.0	11.0	8.0	7.0	7.0
Ammonia Nitrogen	.135	.84	.37	.37	.43
Nitrite Nitrogen	0	0	0	O	0
Nitrate Nitrogen	.47	1.82	.79	.49	.72
soluble Phosphate	01	.013	.013	.013	.011

Secchi disc transparency 6.9 feet

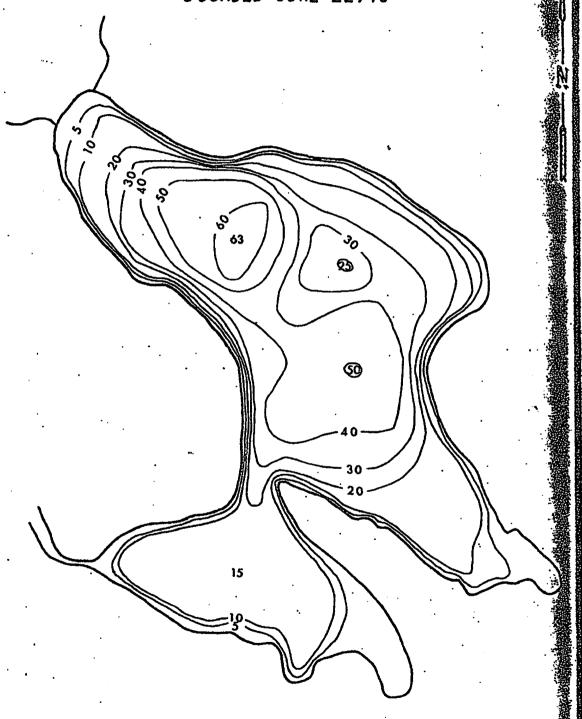


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SANDY LAKE

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DEPTH CONTOURS
SOUNDED JUNE 22/70



CONDUCTIVITY 50 PPM. SEPT TEMP. SURFACE 68° F.

LAKE	LAND + WATER (ACRES)	WATER (ACRES)	LAND (ACRES)	DEVELOPED (ACRES)
23. t Hill	91.5	10.4	81.1	. 33
24. Otter	853	232	621	0
25. Paper Mill	•	•		
Includes:			22.52	23
Kearney	7315	158	7157	1
Paper Mil	554	. 78	476	
	7869	236	7633	24
26. Penhorn	49	. 11	38	15
27. Powder Mill Includes:			·	•
Three Mil	e 372	40	332	9
First Lak		200	. 690	254
Second La		256	1324	5 :5
Third Lak		227	· 653	23.8
Rocky Lak		461	1139	17.8
Powder Mi		58	. 933	25
•	631.3	1242	5071	335.1
28 wer Pond		•		
Includes:	• •			•
Long Lake	3350	. 506	2844	27
Kidston	209	30	179	24
McIntosh Run-9		1	154	23
McIntosh Run-1		1.4		98.5
. McIntosh Run-7		11	756	230 30.5
Three Corner P	ond 541	3.3		19.5
Big Sheehan Po	and 270	14.6		10
Long Pond	196	15	181.0	20
McIntosh Run-3	2741	86	2655 49.5	0
Mud Pond	51	1.5 18	70	4
Power Pond	88 8500	687.8		486.5
	8300	0070	,	
29. Rocky Lake Includes:	•	·	· •	3EA
First Lal	ke 890	200	690	254 17.8
Rocky Lal		461	1139	T1.0
	2490	661	1829	271.8
30. Russell	784	83	701	386
3. andy Lake	4142	165	3977	54.8

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