U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

WORKING PAPER SERIES

REPORT

ON

SALINE LAKE

LASALLE PARISH

LOUISIANA

EPA REGION VI

WORKING PAPER No. 542

CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON

and

ENVIRONMENTAL MONITORING & SUPPORT LABORATORY - LAS VEGAS, NEVADA

☆G.P.O. 699-440

REPORT
ON
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WITH THE COOPERATION OF THE
LOUISIANA WILD LIFE AND FISHERIES COMMISSION
AND THE
LOUISIANA NATIONAL GUARD
MARCH, 1977

REPORT ON SALINE LAKE

LASALLE PARISH, LOUISIANA

EPA REGION VI

by

National Eutrophication Survey

Water and Land Quality Branch
Monitoring Operations Division
Environmental Monitoring & Support Laboratory
Las Vegas, Nevada

and

Special Studies Branch
Corvallis Environmental Research Laboratory
Corvallis, Oregon

Working Paper No. 542

OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY

March 1977

CONTENTS

FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point source discharge reduction and nonpoint source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by the U.S. Environmental Protection Agency and to augment plans implementation by the states.

ACKNOWLEDGMENTS

The staff of the National Eutrophication Survey (Office of Research and Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the Louisiana Wild Life and Fisheries Commission, Division of Water Pollution Control for professional involvement, to the Louisiana National Guard for conducting the tributary sampling phase of the Survey, and to those Louisiana wastewater treatment plant operators who provided effluent samples and flow data.

Robert A. Lafleur, Chief; J. Dale Givens, Assistant Chief; Lewis R. Still, Biologist; Louis Johnson, Biologist; Lee Caubarreaux, Biologist; Darrell Reed, Engineer; Dempsey Alford, Biologist; and Elwood Goodwin, Water Quality Control Technician, all of the Louisiana Wild Life and Fisheries Commission, Division of Water Pollution Control reviewed the preliminary reports and provided critiques most useful in the preparation of this Working Paper Series.

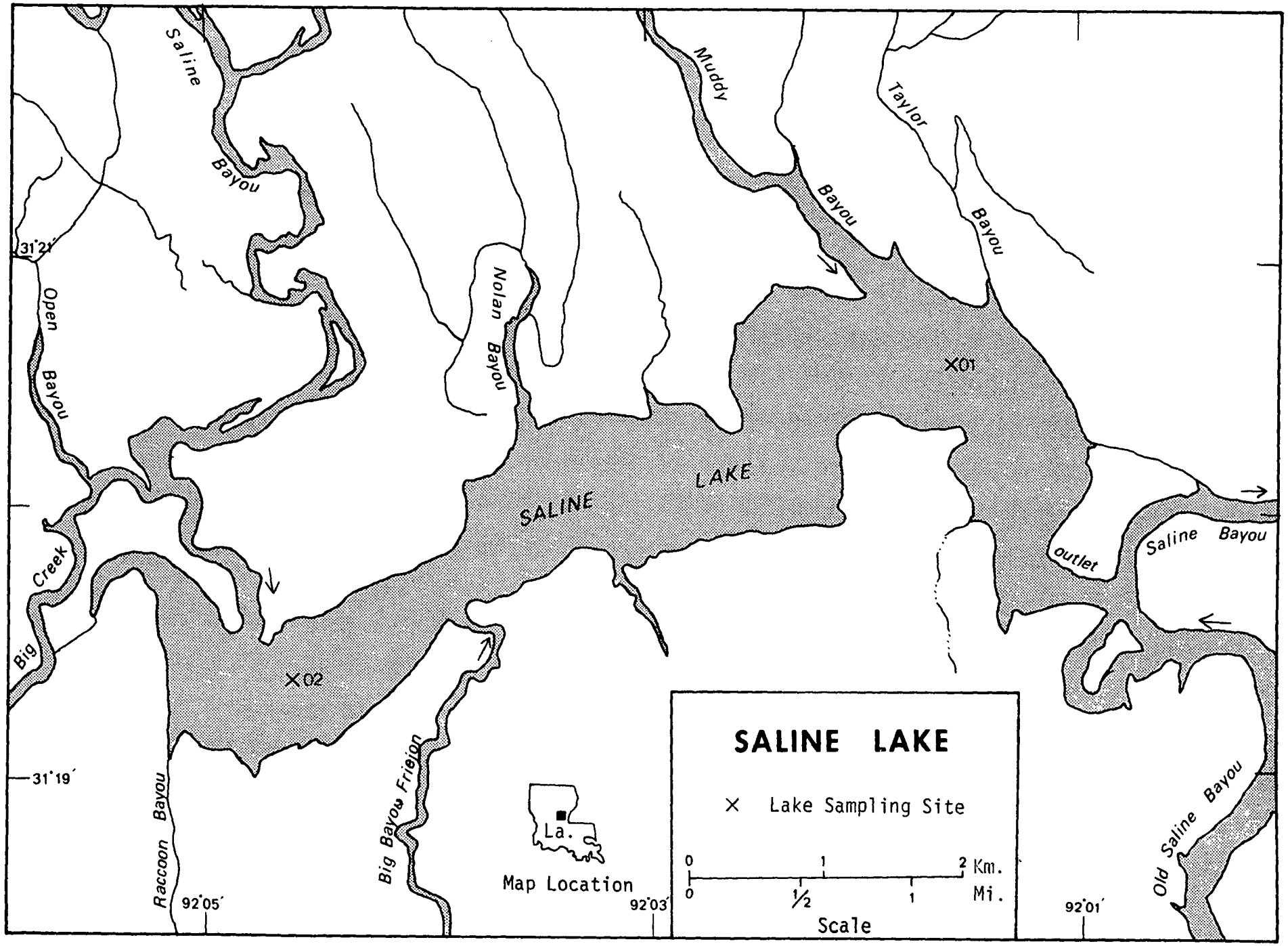
Major General O'Neil Daigle, Jr., the Adjutant General of Louisiana, and Project Officer Colonel Lawrence P. Dupre, who directed the volunteer efforts of the Louisiana National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF LOUISIANA

LAKE NAME	PARISH
Anacoco Lake	Vernon
Lake Bistineau	Bienville, Webster
Black Bayou	Caddo
Black Lake	Natchitoches and Red River
Bruin Lake	Tensas
Bundick Lake	Beauregard
Caddo Lake	Caddo (Menon and Harrison in Texas)
Cocodrie Lake	Concordia
Cocodrie Lake (Lower)	Rapides
Concordia Lake	Concordia
Cotile Lake	Rapides
Cross Lake	Caddo
D'Arbonne Lake	Union
False River Lake	Pointe Coupee
Indian Creek Reservoir	Rapides
Saline Lake	LaSalle
Turkey Creek Lake	Franklin
Lake Vernon	Vernon
Lake Verret	Assumption


Saline Bayou
Muddy Bayou
Taylor Bayou
Nolan Bayou
Open Bayou
Big Creek
SALINE LAKE
X01
X02
outlet
Saline Bayou
Old Saline Bayou
Raccoon Bayou
Big Bayou Freigon
31°21'
31°19'
92°05'
92°03'
92°01'
La.
Map Location
SALINE LAKE
X Lake Sampling Site
0 1 2 Km.
0 ½ 1 Mi.
Scale

REPORT ON SALINE LAKE, LOUISIANA

STORET NO. 2214

I. INTRODUCTION

Saline Lake was included in the National Eutrophication Survey (NES) as a water body of interest to the Louisiana Stream Control Commission and Louisiana Wild Life and Fisheries Commission. Tributaries and nutrient sources were not sampled, and this report relates only to the data obtained from lake sampling.

II. CONCLUSIONS

A. Trophic Condition:*

Survey data indicate that Saline Lake is eutrophic, i.e., nutrient rich and highly productive. Whether such nutrient enrichment is to be considered beneficial or deleterious is determined by its actual or potential impact upon designated beneficial water uses.

Potential for primary production as measured by algal assay control yield was high. Chlorophyll a values ranged from 4.6 µg/l in the fall to 34.9 µg/l in the summer, with a mean of 15.3 µg/l. Of the 19 Louisiana lakes sampled in 1974, 3 had higher median total phosphorus, 4 had higher orthophosphorus, 1 had higher median inorganic nitrogen and none had lower Secchi disc visibility than Saline Lake.

*See Appendix C.

Survey limnologists did not report any nuisance conditions in the lake.

B. Rate-Limiting Nutrient:

Autumn algal assay results suggest that Saline Lake was growth limited by available phosphorus levels. Spikes with phosphorus, or nitrogen and phosphorus simultaneously resulted in increases in assay yield. No growth response accompanied the addition of nitrogen. The lake inorganic nitrogen to ortho-phosphorus (N/P) ratios indicate phosphorus limitation in summer and fall, and nitrogen limitation in the spring. However, production in the highly turbid waters was more likely limited by available light, at least during spring and fall sampling periods, than by nutrients.

III. LAKE CHARACTERISTICS

A. Lake Morphometry:*

A. Surface area: 7.98 km^2.
B. Mean depth: 2.7 meters.
C. Maximum depth: 5.3 meters.
D. Volume: 21.546 x 10^6 m^3.

B. Precipitation:

A. Year of sampling: 165.8 cm.
B. Mean annual: 151.6 cm.

*Provided by the State of Louisiana.

IV. LAKE WATER QUALITY SUMMARY

Saline Lake was sampled three times during the open-water season of 1974 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from two stations on the lake and from one or more depths at each station (see map, page v). During each visit, depth-integrated samples were collected from each station for chlorophyll a analysis and phytoplankton identification and enumeration. During the first and last visits, 18.9-liter depth-integrated samples were composited for algal assays. Maximum depths sampled were 4.3 meters at Station 01 and 3.0 meters at Station 02. For a more detailed explanation of NES methods, see NES Working Paper No. 175.

The results obtained are presented in full in Appendix C and are summarized in IV-A for waters at the surface and at the maximum depth for each site. Results of the phytoplankton counts and chlorophyll a determinations are included in IV-B. Results of the limiting nutrient study are presented in IV-C.

SALINE LAKE
STORET CODE 2214

PHYSICAL AND CHEMICAL CHARACTERISTICS

PARAMETER	(3/19/74) S*** = 2 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(5/29/74) S*** = 2 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(11/12/74) S*** = 2 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)
TEMPERATURE (DEG CENT)												
0.-1.5 M DEPTH	3	19.6- 19.7	19.6	0.0- 1.5	3	27.2- 28.6	28.3	0.0- 1.5	4	15.5- 15.8	15.7	0.0- 1.5
MAX DEPTH**	2	19.4- 19.6	19.5	3.0- 4.3	2	27.2- 28.2	27.7	1.8- 2.4	2	15.5- 15.8	15.7	1.5- 2.4
DISSOLVED OXYGEN (MG/L)												
0.-1.5 M DEPTH	2	5.6- 5.6	5.6	1.5- 1.5	1	6.4- 6.4	6.4	1.5- 1.5	4	8.6- 9.0	8.8	0.0- 1.5
MAX DEPTH**	2	5.6- 6.0	5.8	3.0- 4.3	2	5.4- 6.0	5.7	1.8- 2.4	2	8.8- 9.0	8.9	1.5- 2.4
CONDUCTIVITY (UMHOS)												
0.-1.5 M DEPTH	3	72.- 78.	74.	0.0- 1.5	3	77.- 101.	99.	0.0- 1.5	4	115.- 143.	131.	0.0- 1.5
MAX DEPTH**	2	71.- 76.	74.	3.0- 4.3	2	78.- 100.	89.	1.8- 2.4	2	115.- 142.	129.	1.5- 2.4
PH (STANDARD UNITS)												
0.-1.5 M DEPTH	4	6.1- 6.5	6.2	0.0- 1.5	3	6.9- 7.2	7.1	0.0- 1.5	4	6.7- 6.8	6.7	0.0- 1.5
MAX DEPTH**	2	6.1- 6.4	6.2	3.0- 4.3	2	6.8- 7.1	7.0	1.8- 2.4	2	6.7- 6.8	6.7	1.5- 2.4
TOTAL ALKALINITY (MG/L)												
0.-1.5 M DEPTH	4	11.- 14.	13.	0.0- 1.5	3	14.- 16.	16.	0.0- 1.5	4	10.- 29.	28.	0.0- 1.5
MAX DEPTH**	2	12.- 13.	13.	3.0- 4.3	2	13.- 15.	14.	1.8- 2.4	2	10.- 29.	20.	1.5- 2.4
TOTAL P (MG/L)												
0.-1.5 M DEPTH	4	0.080-0.108	0.094	0.0- 1.5	3	0.111-0.112	0.111	0.0- 1.5	4	0.233-0.247	0.239	0.0- 1.5
MAX DEPTH**	2	0.081-0.100	0.090	3.0- 4.3	2	0.105-0.134	0.119	1.8- 2.4	2	0.233-0.251	0.242	1.5- 2.4
DISSOLVED ORTHO P (MG/L)												
0.-1.5 M DEPTH	4	0.022-0.056	0.029	0.0- 1.5	3	0.019-0.026	0.020	0.0- 1.5	4	0.019-0.051	0.022	0.0- 1.5
MAX DEPTH**	2	0.028-0.036	0.032	3.0- 4.3	2	0.019-0.023	0.021	1.8- 2.4	2	0.019-0.087	0.053	1.5- 2.4
NO2+NO3 (MG/L)												
0.-1.5 M DEPTH	4	0.130-0.200	0.165	0.0- 1.5	3	0.160-0.190	0.160	0.0- 1.5	4	0.620-0.650	0.625	0.0- 1.5
MAX DEPTH**	2	0.150-0.170	0.160	3.0- 4.3	2	0.160-0.200	0.180	1.8- 2.4	2	0.620-0.680	0.650	1.5- 2.4
AMMONIA (MG/L)												
0.-1.5 M DEPTH	4	0.100-0.120	0.115	0.0- 1.5	3	0.170-0.210	0.190	0.0- 1.5	4	0.070-0.080	0.070	0.0- 1.5
MAX DEPTH**	2	0.100-0.110	0.105	3.0- 4.3	2	0.190-0.220	0.205	1.8- 2.4	2	0.060-0.080	0.070	1.5- 2.4
KJELDAHL N (MG/L)												
0.-1.5 M DEPTH	4	0.600-0.800	0.700	0.0- 1.5	3	0.800-1.200	1.000	0.0- 1.5	4	0.900-1.000	1.000	0.0- 1.5
MAX DEPTH**	2	0.600-0.800	0.700	3.0- 4.3	2	0.900-0.900	0.900	1.8- 2.4	2	0.800-1.000	0.900	1.5- 2.4
SECCHI DISC (METERS)												
	1	0.3- 0.3	0.3		2	0.1- 0.2	0.2		2	0.1- 0.2	0.2	

* N = NO. OF SAMPLES
** MAXIMUM DEPTH SAMPLED AT EACH SITE
*** S = NO. OF SITES SAMPLED ON THIS DATE

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera		Algal Units per ml
03/19/74	1.	Flagellates	1,244
	2.	Dactylococcopsis	474
	3.	Melosira	237
	4.	Crucigenia	237
	5.	Dinobryon	118
		Other genera	531
		Total	2,841
05/29/74	1.	Flagellates	909
	2.	Melosira	795
	3.	Ankistrodesmus	625
	4.	Kirchneriella	454
	5.	Nitzschia	454
		Other genera	1,423
		Total	4,660
11/12/74	1.	Melosira	287
	2.	Nitzschia	172
	3.	Cryptomonas	115
	4.	Flagellates	57
	5.	Trachelomonas	57
		Other genera	--
		Total	688

2. Chlorophyll a

Sampling Date	Station Number	Chlorophyll a (µg/l)
03/19/74	01	7.4
	02	10.1
05/29/74	01	34.9
	02	29.7
11/12/74	01	4.6
	02	5.3

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked - 11/12/74

Spike(mg/l)	Ortho P Conc.(mg/l)	Inorganic N Conc.(mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.035	0.739	5.2
0.05 P	0.085	0.739	17.6
0.05 P + 1.0 N	0.085	1.739	26.6
1.00 N	0.035	1.739	6.0

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that the potential for primary production in Saline Lake was high at the time of autumn assay sample collection. The increase in yield with the addition of phosphorus as well as the lack of significant response to the addition of nitrogen indicates phosphorus limitation. Maximum yield was achieved with the simultaneous addition of both nutrients.

It should be noted that significant chemical changes took place in Louisiana lake samples between collection and assay analysis. The assay data should be considered in this context and until such differences are resolved, used with caution for any predictions of actual lake conditions. Such chemical changes are likely to alter the control yield as well as modifying the N/P ratio. The spring algal assay results have not been included as these substantial changes in nutrient levels have removed their information value.

The N/P ratios in the summer and fall lake chemistry samples were respectively 17/1 and 19/1, indicating phosphorus limitation at those times. The spring N/P ratio was 8/1, suggesting nitrogen limitation (a mean N/P ratio of 14/1 or greater generally reflects phosphorus limitation).

V. LITERATURE REVIEWED

U.S. Environmental Protection Agency. 1975. National Eutrophication Survey Methods 1973-1976. Working Paper No. 175. National Environmental Research Center, Las Vegas, Nevada, and Pacific Northwest Environmental Research Laboratory, Corvallis, Oregon.

VI. APPENDICES

APPENDIX A

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX B

PHYSICAL AND CHEMICAL DATA

STORET RETRIEVAL DATE 75/12/11
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

221401
31 51 02.0 092 56 47.0
SALINE LAKE
22 LOUISIANA

11EPALES
4

2111202
0019 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/03/19	15 05	0000	19.6		10	74	6.50	14	0.120	0.700	0.200	0.056
	15 05	0005	19.6	5.6		78	6.35	13	0.120	0.800	0.190	0.029
	15 05	0014	19.4	6.0		76	6.40	12	0.110	0.800	0.170	0.028
74/05/29	15 30	0000	28.6		8	99	7.20	16	0.190	1.000	0.160	0.020
	15 30	0005	28.3	6.4		101	7.10	16	0.210	0.800	0.190	0.026
	15 30	0008	28.2	6.0		100	7.10	15	0.220	0.900	0.200	0.023
74/11/12	09 10	0000	15.8	8.6	4	143	6.74	10K	0.070	1.000	0.630	0.051
	09 10	0005	15.8	8.6		142	6.75	28	0.070	0.900	0.650	0.020
	09 10	0008	15.8	8.8		142	6.79	10K	0.060	0.800	0.680	0.087

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
74/03/19	15 05	0000	0.108	7.4	
	15 05	0005	0.107		
	15 05	0014	0.100		
74/05/29	15 30	0000	0.112	34.9	50.0
	15 30	0005	0.111		
	15 30	0008	0.134		
74/11/12	09 10	0000	0.233	4.6	
	09 10	0005	0.247		
	09 10	0008	0.251		

— K VALUE KNOWN TO BE LESS THAN INDICATED —

STORET RETRIEVAL DATE 75/12/11
NATL EUTROPHICATION SURVEY
EPA-LAS VEGAS

221402
31 51 02.0 092 56 47.0
SALINE LAKE
22 LOUISIANA

11EPALES
4

2111202
0015 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/03/19	15 30	0000					6.15	11	0.100	0.600	0.130	0.022
	15 30	0005	19.7	5.6		72	6.10	13	0.110	0.700	0.140	0.030
	15 30	0010	19.6	5.6		71	6.10	13	0.100	0.600	0.150	0.036
74/05/29	15 45	0000	27.2		5	77	6.90	14	0.170	1.200	0.160	0.019
	15 45	0006	27.2	5.4		78	6.85	13	0.190	0.900	0.160	0.019
74/11/12	09 30	0000	15.5	9.0	8	119	6.68	28	0.070	1.000	0.620	0.024
	09 30	0005	15.5	9.0		115	6.70	29	0.080	1.000	0.620	0.019

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
74/03/19	15 30	0000	0.080	10.1	
	15 30	0005	0.081		
	15 30	0010	0.081		
74/05/29	15 45	0000	0.111	29.7	50.0
	15 45	0006	0.105		
74/11/12	09 30	0000	0.245	5.3	
	09 30	0005	0.233		

APPENDIX C

PARAMETRIC RANKINGS OF LAKES SAMPLED BY NES IN 1974

STATE OF LOUISIANA

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
2201	ANACOCO LAKE	0.031	0.080	455.833	8.700	10.400	0.007
2202	BRUIN LAKE	0.057	0.250	450.333	16.350	15.000	0.012
2203	LAKE BISTINEAU	0.061	0.100	458.000	12.933	13.200	0.018
2204	BLACK BAYOU	0.046	0.090	453.417	17.818	12.200	0.009
2205	BUNDICK LAKE	0.157	0.135	469.667	20.467	10.600	0.073
2207	COCODRIE LAKE	0.090	0.400	479.000	35.300	7.700	0.026
2208	COTILE LAKE	0.037	0.100	442.333	12.650	14.000	0.011
2209	CONCORDIA LAKE	0.076	0.080	468.333	32.950	14.800	0.009
2210	CROSS LAKE	0.057	0.080	475.250	38.385	11.400	0.010
2211	D'ARBONNE LAKE	0.038	0.100	458.250	6.800	13.200	0.011
2212	FALSE RIVER LAKE	0.082	0.130	442.500	24.550	14.900	0.023
2213	INDIAN CREEK	0.031	0.150	458.333	21.467	14.800	0.010
2214	SALINE LAKE	0.111	0.350	493.000	15.333	9.600	0.025
2215	TURKEY CREEK LAKE	0.176	0.170	477.833	21.967	14.600	0.033
2216	LAKE VERRET	0.163	0.100	481.428	62.028	12.000	0.056
2217	LAKE VERNON	0.018	0.120	436.667	4.900	14.400	0.007
2219	BLACK LAKE	0.077	0.150	454.000	12.733	11.600	0.015
2220	COCODRIE	0.106	0.050	478.333	33.433	11.800	0.014
4807	CADDO LAKE	0.049	0.070	463.562	20.125	10.000	0.008

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
2201	ANACOCO LAKE	92 (16)	83 (14)	67 (12)	89 (16)	83 (15)	94 (17)
2202	BRUIN LAKE	61 (11)	11 (2)	83 (15)	61 (11)	0 (0)	50 (9)
2203	LAKE BISTINEAU	50 (9)	58 (9)	61 (11)	72 (13)	42 (7)	33 (6)
2204	BLACK BAYOU	72 (13)	72 (13)	78 (14)	56 (10)	50 (9)	81 (14)
2205	BUNDICK LAKE	11 (2)	33 (6)	33 (6)	44 (8)	78 (14)	0 (0)
2207	COCODRIE LAKE	28 (5)	0 (0)	11 (2)	11 (2)	100 (18)	17 (3)
2208	COTILE LAKE	83 (15)	58 (9)	94 (17)	83 (15)	33 (6)	61 (11)
2209	CONCORDIA LAKE	44 (8)	83 (14)	39 (7)	22 (4)	14 (2)	81 (14)
2210	CROSS LAKE	56 (10)	83 (14)	28 (5)	6 (1)	72 (13)	69 (12)
2211	D'ARBONNE LAKE	78 (14)	58 (9)	56 (10)	94 (17)	42 (7)	56 (10)
2212	FALSE RIVER LAKE	33 (6)	39 (7)	89 (16)	28 (5)	6 (1)	28 (5)
2213	INDIAN CREEK	92 (16)	28 (5)	50 (9)	39 (7)	14 (2)	69 (12)
2214	SALINE LAKE	17 (3)	6 (1)	0 (0)	67 (12)	94 (17)	22 (4)
2215	TURKEY CREEK LAKE	0 (0)	17 (3)	22 (4)	33 (6)	22 (4)	11 (2)
2216	LAKE VERRET	6 (1)	58 (9)	6 (1)	0 (0)	56 (10)	6 (1)
2217	LAKE VERNON	100 (18)	44 (8)	100 (18)	100 (18)	28 (5)	100 (18)
2219	BLACK LAKE	39 (7)	22 (4)	72 (13)	78 (14)	67 (12)	39 (7)
2220	COCODRIE	22 (4)	100 (18)	17 (3)	17 (3)	61 (11)	44 (8)
4807	CADDO LAKE	67 (12)	94 (17)	44 (8)	50 (9)	89 (16)	89 (16)