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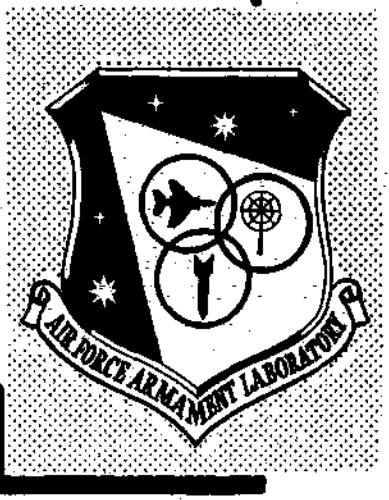
WATER QUALITY: STREAMS AND PONDS ON SELECTED TEST AREAS ON EGLIN AIR FORCE BASE, FLORIDA

ENVIRONICS OFFICE

MAY 1977

FINAL REPORT FOR PERIOD
NOVEMBER 1974-NOVEMBER 1976



AIR FORCE ARMAMENT LABORATORY
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EGLIN AIR FORCE BASE, FLORIDA

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Nitrate
Eglin AFB Reservation Test Area Streams

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Baseline information on water quality was derived for streams and ponds draining or located on 10 test areas on Eglin Air Force Base Reservation, Florida, from November 1974 to November 1976.

The water temperature displayed seasonal trends (mean seasonal range 15.5°C to 22.9°C). The dissolved oxygen (DO) values were inversely related to the water temperature. The mean seasonal DO range was 7.6 ppm to 9.0 ppm.

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Item 20 Concluded: The mean seasonal pH was low, range 5.6 to 5.7,displaying no seasonal trends. Also remaining consistently low and displaying no seasonal trends were the calcium, chemical oxygen demand (COD), phosphates, and turbidity. The water was very soft with a mean seasonal hardness range of 3.3 mg/l to 4.4 mg/l.

The water quality at the 10 selected test areas on Eglin AFB was good. It was typified by an acid pH, hardness of 0.30 mg/l to 5.69 mg/l, a temperature range of 9.5°C to 31.0°C, a DO range of 3.8 ppm to 11.1 ppm, and relatively low levels of other naturally occurring constituents.

PREFACE

This technical report discusses a portion of the work performed at the Air Force Armament Laboratory, Armament Development and Test Center, Eglin Air Force Base, Florida, under Exploratory Development Project 50660101 during the period November 1974 to November 1976.

The sources and manufacturers of materials and equipment used in this study are identified for reference only and do not constitute endorsement of the companies or products by the United States Air Force.

This report has been reviewed by the Information Officer (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

FOR THE COMMANDER:

Joe A. Farmer
Chief, Environics Office

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SECTION I

INTRODUCTION

Between November 1974 and November 1976 a water quality study was conducted by Air Force Armament Laboratory (AFATL) personnel on the following Eglin AFB Test Areas (TA): TA B-70, TA B-71, TA C-64(A), TA C-72, TA C-74(L), and TA C-52(N,C,A). These test areas are utilized for the testing of conventional munitions developed by the AFATL. Since many streams and ponds are located either on or traverse these areas, a study was needed to establish background levels of the naturally occurring constituents for future use in monitoring possible changes in the water quality to detect pollutants which could be potentially dangerous to aquatic life. Of additional importance is the fact that several streams studied serve as the habitat for an endangered fish.

Water quality on Eglin AFB Reservation is influenced by a wide range of climatological, geological, and land-use patterns. Because these bodies of water are dynamic systems, naturally occurring constituents must be evaluated seasonally. This study was conducted using 6 seasonal periods to include: autumnal (Nov-Dec), hibernal (Jan-Feb), prevernal (Mar-Apr), vernal (May-mid-Jun), aestival (mid-Jun-mid-Sep), and serotinal (mid-Sep-Oct).

Establishment of water quality baseline data and subsequent monitoring of such stream parameters as temperature, pH, dissolved oxygen, hardness, etc., could give indications of what effects the introduction of a pollutant could have on a particular stream. For example, pH, hardness, and various naturally occurring constituents of the water can influence the toxicity of metallic substances.

This study was designed to establish baseline data and to compare seasonal water quality parameters for streams and ponds associated with the test areas previously mentioned.

SECTION II

DESCRIPTION OF THE STUDY AREA

Eglin AFB Reservation is located in Northwest Florida and extends into Walton, Okaloosa, and Santa Rosa Counties. The study areas encompassed portions of the eastern and western ranges and four major stream drainages. They include Yellow River, East Bay River, Rocky Creek, and Alaqua Creek drainages.

Most of the watersheds are sand hills with a pine-oak association. The streams studied were generally clear with moderate to swift flowing water. The bottoms were generally sandy with detritus and leaf litter collecting in eddy areas and around patches of vegetation. Stream depths varied from 6 inches (15.2 cm) to 4 feet (121.9 cm) and were 4 feet (121.9 cm) to 20 feet (609.6 cm) wide. Most of the streams studied were relatively undisturbed except for small bridges or culverts, or where the stream crossed a cleared test area.

Eight ponds were sampled during the course of this study. One pond, Allison Pond, is managed by the Natural Resources Division (DEN), Eglin AFB. All others are impounded by culverts due to road construction except Pocosin Pond (70-3) which is a natural formation. Most of the ponds studied were generally clear stream-fed systems margined with aquatic vegetation. The exception to the above description was Pocosin Pond (70-3) which was clear but had a dull orange tint.

The three factors most significantly affecting water quality on Eglin AFB are climate, geomorphology and soil condition, and land use patterns.

CLIMATE

Annual temperatures at Eglin AFB are significantly influenced by the Gulf of Mexico. During the summer the mean daily temperature range is 21.1° to 26.7°C. The winter mean daily temperature range is 10.0° to 21.1°C.

The mean monthly precipitation ranges from as low as 3.2 inches (8.1 cm) to as high as 7.2 inches (18.3 cm) for an average of 60 inches (152.4 cm) annually.

GEOMORPHOLOGY AND SOIL CONDITION

The bedrock at Eglin AFB consists of limestone with the uppermost limestone bedrock occurring at approximately 400 feet (121.9 m).

Soils on Eglin AFB are predominately yellow-brown sand of the Lakeland

association with a slightly acid pH. Soil of the Lakeland association makes up approximately 78 percent of the Eglin AFB Reservation and the remaining 22 percent is as follows:

a.	St Lucie - Paola association	2 percent
b.	Troup - Lakeland association	10 percent
c.	Chipley - Lakeland - Rutledge association	4 percent
d.	Dorovan - Pamlico association	6 percent

Soils of the Lakeland association have a limited capacity to hold water and a low natural fertility causing a low productivity level.

LAND USE EFFECTS ON WATER QUALITY

A relatively large amount of land on Eglin AFB Reservation has remained undeveloped. The exception is scattered installations, roads, test areas, and reforestation areas. The most significant impact on the water quality at Eglin AFB results from production and transportation of sediment through land-use practices. The major source of sediment is from clay and sand transported by runoff during heavy rains on the numerous clay roads crossing streams on Eglin AFB Reservation. During periods of heavy rains complete washouts have occurred causing immense amounts of sediment to be transported downstream and eventually settle on the stream bottom.

Clearing operations for reforestation and preparation of test areas pose no serious problem. Generally when clearing large tracts of land, the creek flood plains are left undisturbed. This minimizes the threat of water quality degradation from sedimentation during periods of excessive rainfall.

SECTION III

MATERIALS AND METHODS

DESIGN OF THE INVESTIGATION

This water quality study was originally planned for a 1-year duration with the year being divided on a six-season basis. Because of sampling interruptions the study was later extended to a 2-year period in order to adequately cover all 6 seasons. Fifty sampling stations were selected on streams draining 10 test areas in which the water quality could be influenced by test area activities (Figure 1).

Two basic types of water environments exist on these test areas, viz., lotic (running water) and lentic (standing water). Water of the lotic environment was monitored before entering and after leaving the test area. Streams originating on the test area were monitored after leaving only. In some instances, streams which originate just off the perimeter of a test area were included in the study due to the potential effects produced from drainage of the test area.

Water in the lentic environment was monitored only in permanent lakes and ponds. Semipermanent ponds such as those caused by excessive rainfall were not monitored.

All samples from an individual test area were collected on the same day except from TA C-72 and TA C-52 (N,C,A) which were large test areas with numerous streams. Because of the great number of stations on these two test areas, only half could be done on any one day. However, samples from any stream which crossed the test area and had multiple sampling sites were collected on the same day.

No monitoring or collecting was performed earlier than 2 days after a rain. This 2-day period was considered to be a minimum time and in some instances it was extended to a much longer time as necessitated by high water levels at the sample site.

FIELD PROCEDURE

Five water samples were collected from each station using 300 milliliter (ml) borosilicate glass bottles. The bottles were then closed with ground glass stoppers and placed in an ice chest for transport to the laboratory. Dissolved oxygen (DO), pH, and temperature were determined in the field. The DO and temperature were determined directly from the stream using a Yellow Springs Instrument (YSI) Company Model 51A DO meter with a YSI Model 5419 Oxygen/Temperature Compensating Probe. The pH of the water was determined by the use of a field portable Sargent-Welch Model PBX pH meter with a Sargent-Welch Number S-30072-15 pH electrode.

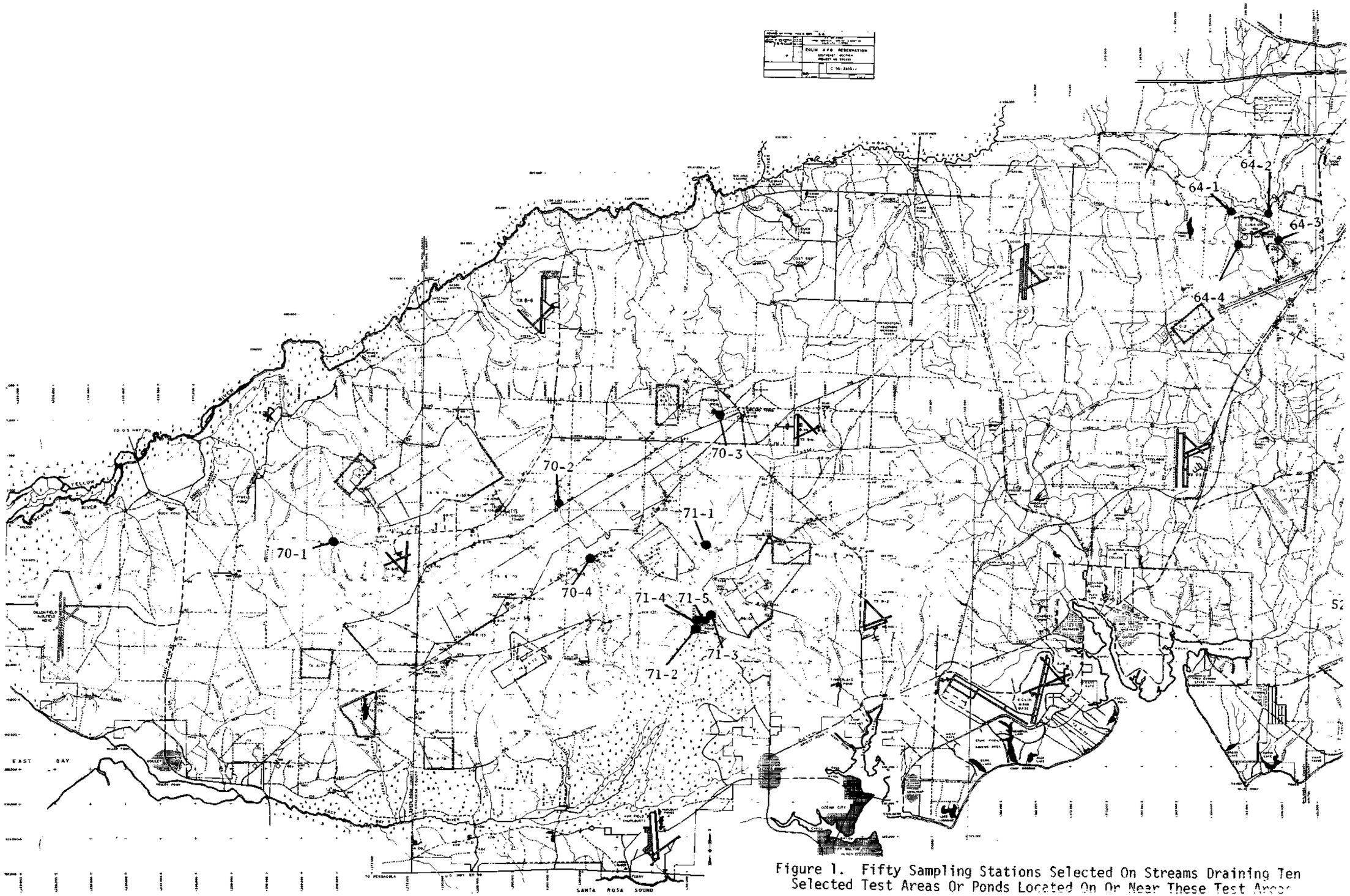

Figure 1. Fifty Sampling Stations Selected On Streams Draining Ten Selected Test Areas Or Ponds Located On Or Near These Test Areas

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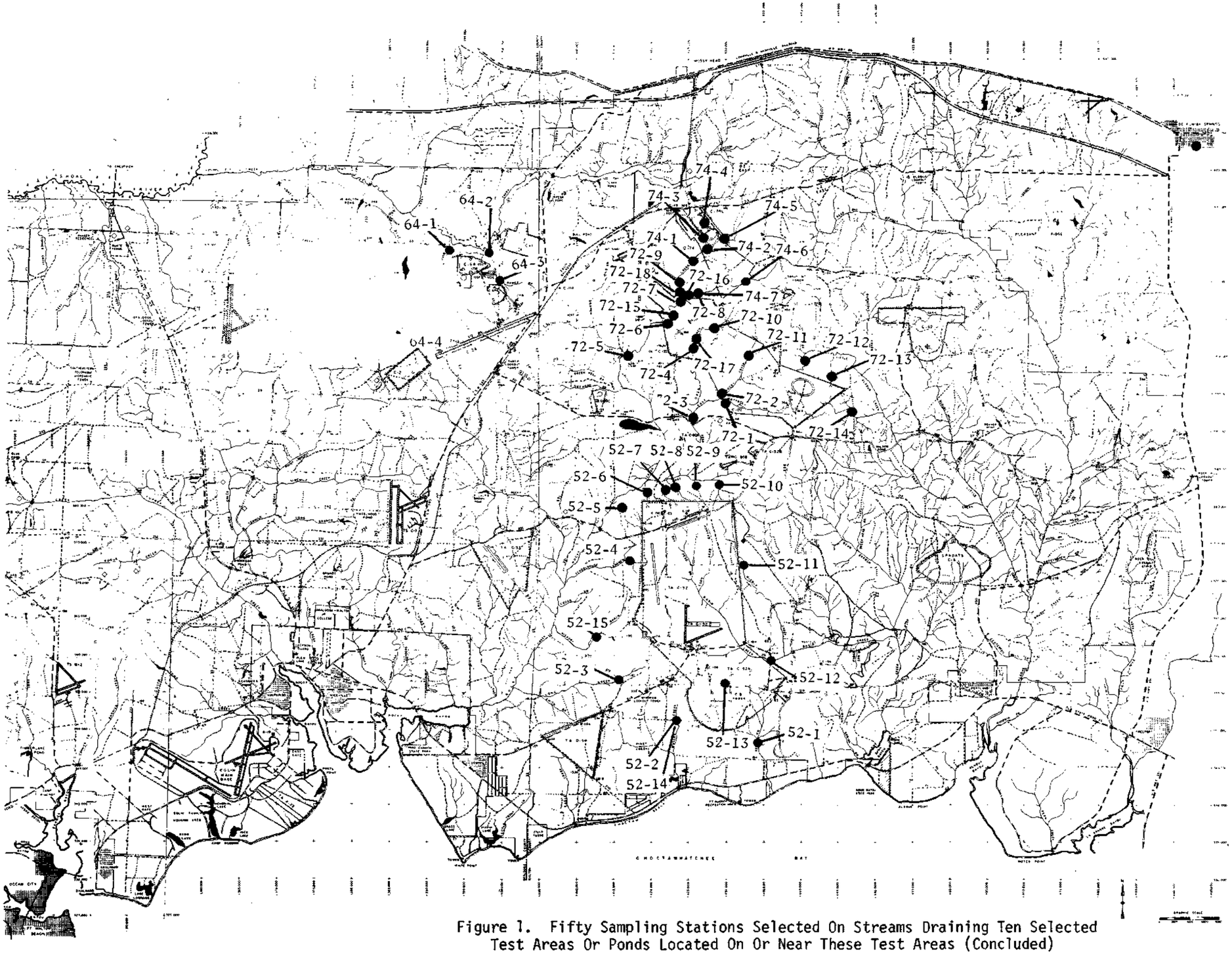

Figure 1. Fifty Sampling Stations Selected On Streams Draining Ten Selected Test Areas Or Ponds Located On Or Near These Test Areas (Concluded)

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LABORATORY ANALYSIS

Water samples collected from the streams and transported to the laboratory were stored in a refrigerator (about 4°C) until all analyses were completed. Seven water quality parameters were monitored to include: phosphate, salinity, hardness, calcium, nitrate, chemical oxygen demand (COD), and turbidity. The methods of analysis are as follows:

1. Phosphate (all forms) was determined by the Single Reagent method. The results are expressed in milligrams per liter (mg/l) (Reference 1).

2. Salinity (chloride) was determined by the Argentometric method. The results are expressed as parts per million (ppm) (Reference 2).

3. Hardness (total) was determined by the EDTA Titration method. The results are expressed in mg/l (Reference 2).

4. Calcium (as calcium carbonate [$CaCO_3$]) was determined by the EDTA Titrimetric method. The results are expressed in mg/l (Reference 3).

5. Nitrate (nitrogen) was determined by the Brucine method. The results are expressed in mg/l (Reference 1).

6. Chemical Oxygen Demand was determined by the use of the low level procedure. The results are expressed in mg/l (Reference 1).

7. Turbidity was determined by the use of the Hellige Turbidimeter. The results are expressed in ppm (Reference 1).

SECTION IV

RESULTS

Data from all sampling stations are presented in the Appendix. Seasonal maximum, minimum, and mean values for temperature, DO, pH, salinity, hardness, calcium, and turbidity are shown graphically in Figures 2 through 8.

The water temperatures followed a seasonal trend and varied within an individual season depending upon the time of day when the temperature reading was taken. The seasonal high temperatures ranged from 20.0° to 31.0°C while the seasonal lows ranged from 9.5° to 19.0°C. The seasonal mean went as high as 22.9°C during the aestival season and as low as 15.5°C during the autumnal season. All high-temperature extremes were recorded from ponds. As would be expected the DO showed an inverse relationship with the water temperature (Figure 9). As the water temperature increased, the oxygen holding capacity of the water was reduced. The DO ranged from a high of 11.1 ppm during the autumnal season (water temperature 10.5°C) to a low of 3.8 ppm during the vernal and aestival seasons (water temperatures 31.0° and 25.5°C respectively). Samples from ponds accounted for all low values recorded. Diurnal fluctuations in atmospheric temperature caused corresponding fluctuations in water temperature and DO, thus making these readings generally dependent upon time of day that the readings were taken.

The seasonal mean pH ranged from 5.6 to 5.7, the high was 6.6 to 7.1, and the low was 3.7 to 3.9. The low remained extremely constant throughout all seasons and in all cases was recorded at Pocosin Pond (Station 70-3) on the northeast tip of TAB-70.

The salinity showed no seasonal trends with the seasonal mean ranging between 15.67 and 23.41 ppm. A seasonal high of 42.48 ppm was recorded from Pocosin Pond (Station 70-3) during the vernal season while a low of 9.77 ppm was recorded from Indigo Creek (Station 70-1) during the autumnal season.

The water was found to be extremely soft ranging between 1.3 and 13.1 mg/l with the seasonal mean ranging between 3.3 and 4.4 mg/l. The hardness showed marked variation between sampling sites but for any given site it remained relatively constant throughout the seasons.

The mean seasonal calcium also remained quite constant throughout the reporting period at 1.05 to 1.13 mg/l. The seasonal highs ranged between 3.56 and 5.69 mg/l while the lows ranged between 0.30 and 0.43 mg/l.

The COD had a broad range of values from 168.20 mg/l to lows below the limits of detectability for this procedure. The COD was generally low with the exception of a few erratic highs.

The phosphates overall were low with a range between 0.61 and 0.01 mg/l. Most of the values were less than 0.18 with over half the determinations during the entire study being less than 0.01 mg/l.

The turbidity of the streams remained generally low and constant throughout the entire study. (It should be remembered that samples were not taken until 2 or more days after heavy rains). Three extremely high values were recorded from Stations 74-2 and 74-3 which were subjected to large amounts of siltation from heavy equipment operations on TAC-74. The seasonal mean ranged between 1.70 and 2.39 ppm.

The nitrate concentrations remained consistently low throughout the entirety of the study.

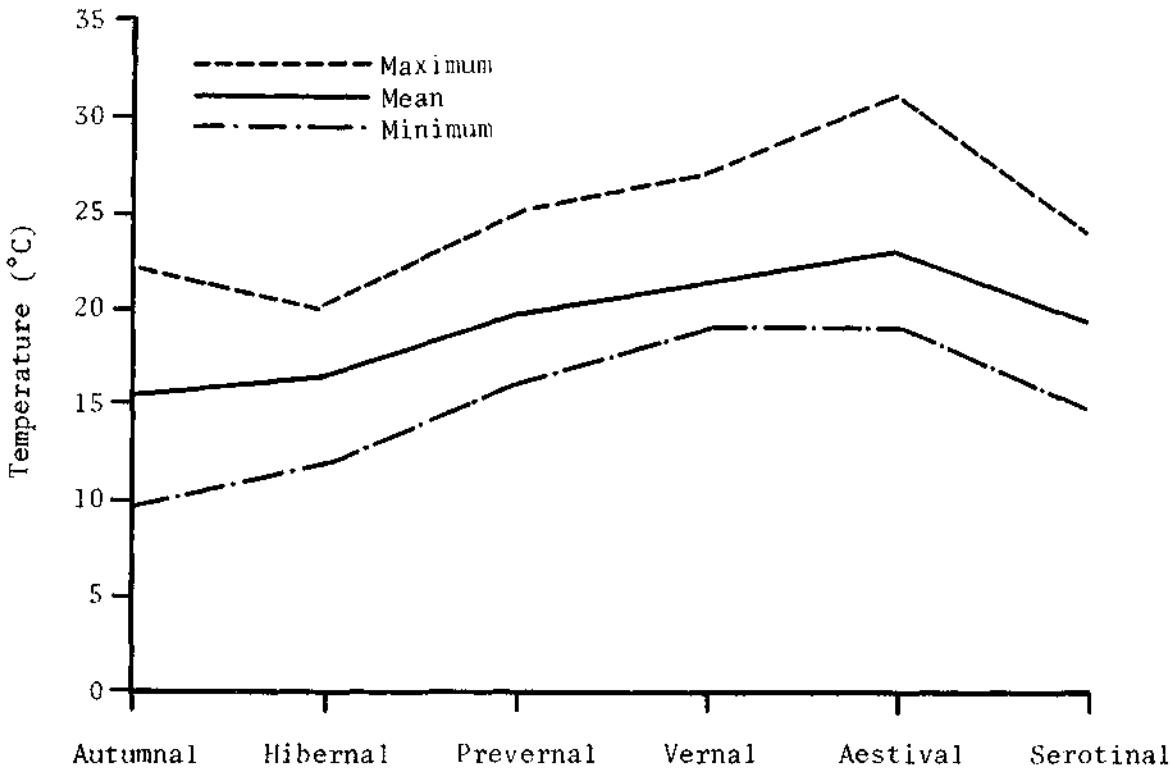

Figure 2. Maximum, Minimum, and Mean Temperatures By Season

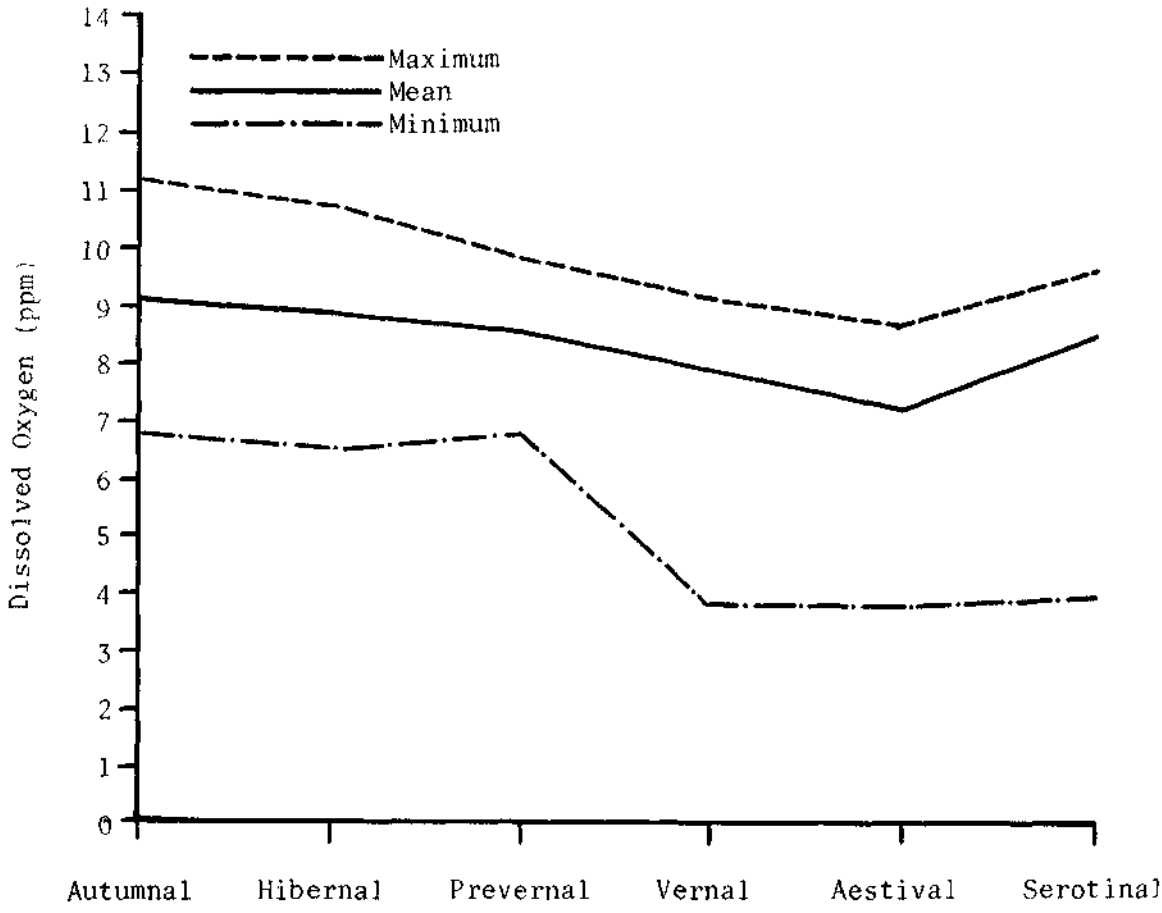

Figure 3. Maximum, Minimum, and Mean Dissolved Oxygen By Season

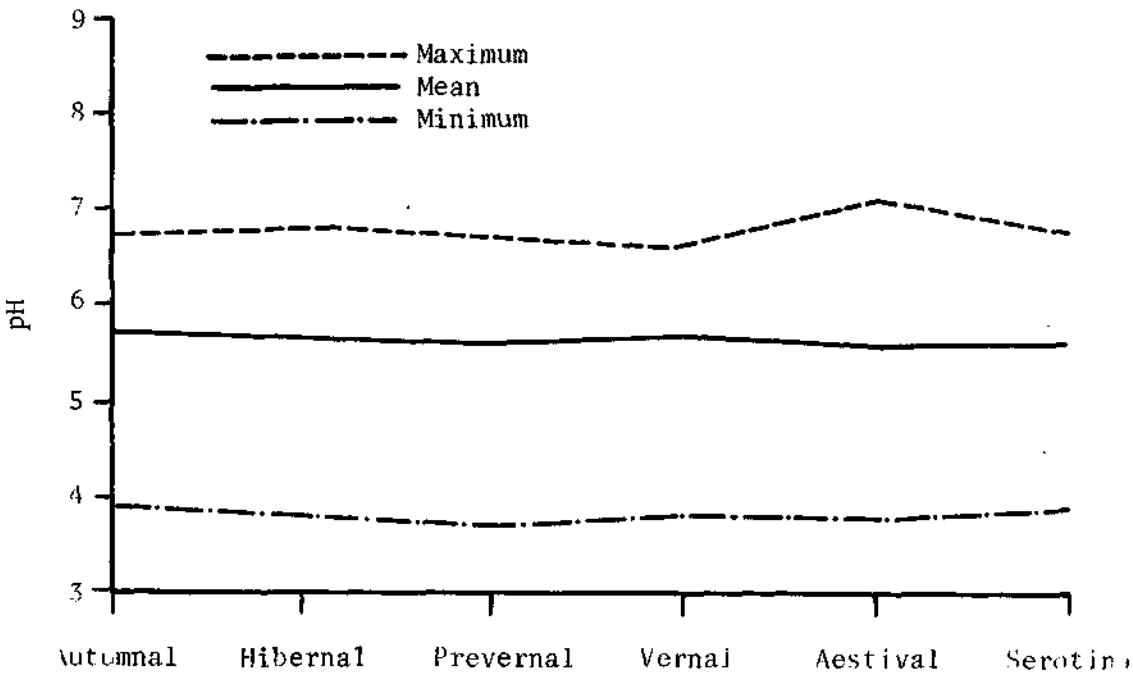

Figure 4. Maximum, Minimum, and Mean pH By Season

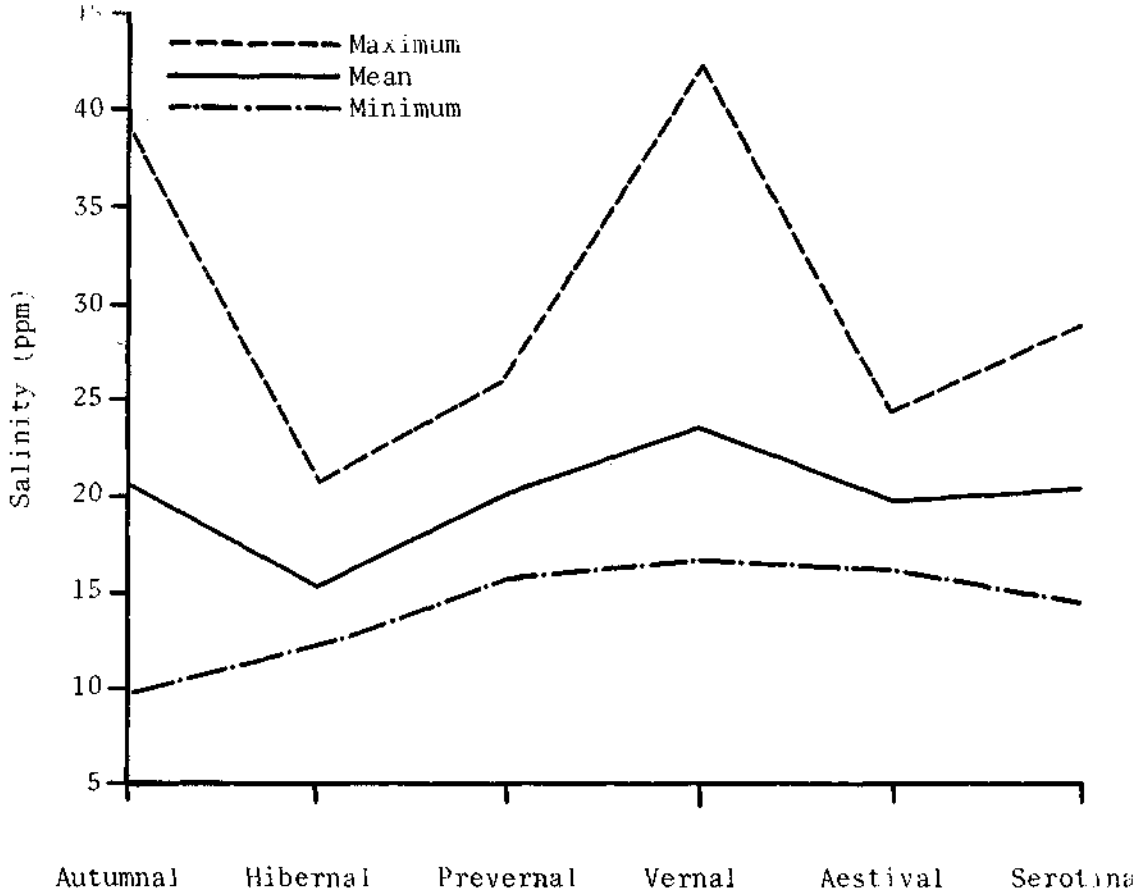

Figure 5. Maximum, Minimum, and Mean Salinity By Season

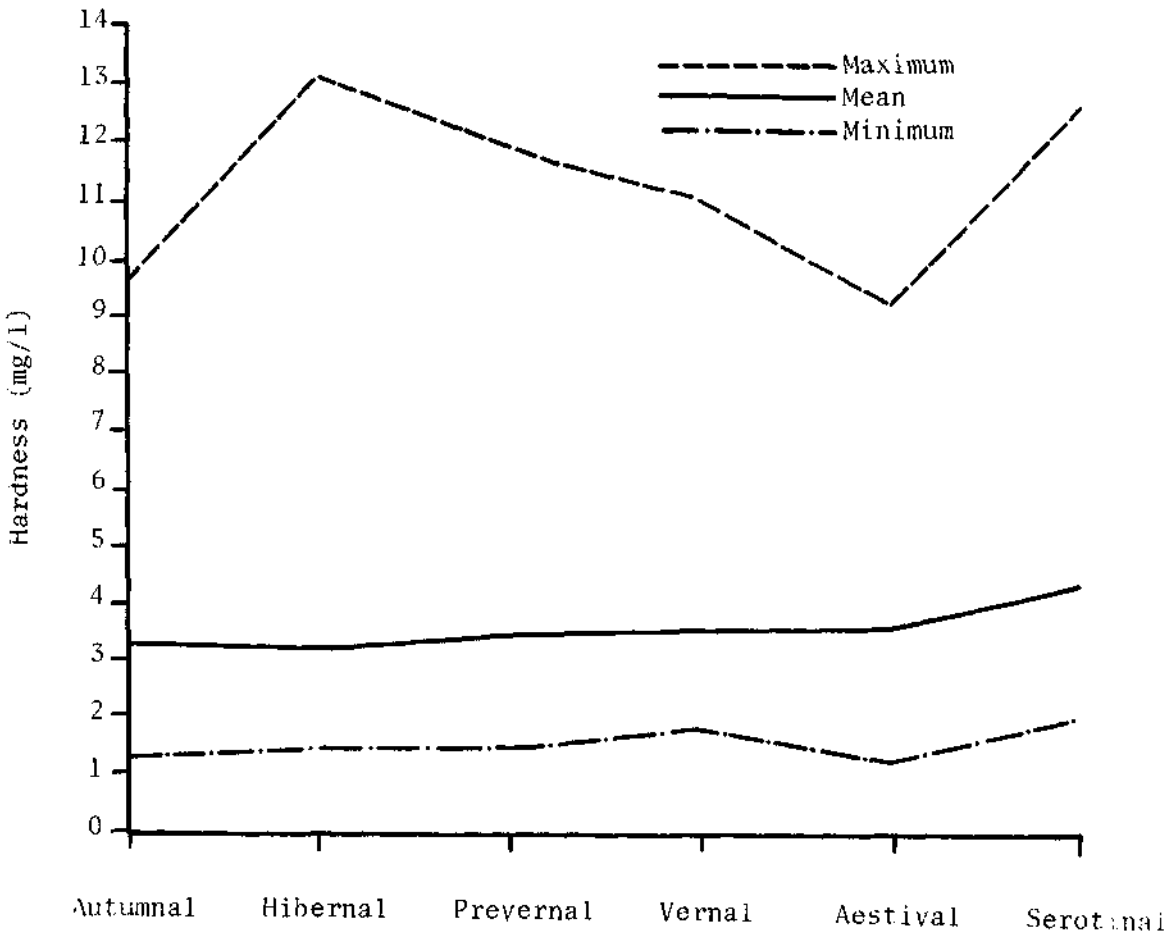

Figure 6. Maximum, Minimum, and Mean Hardness By Season

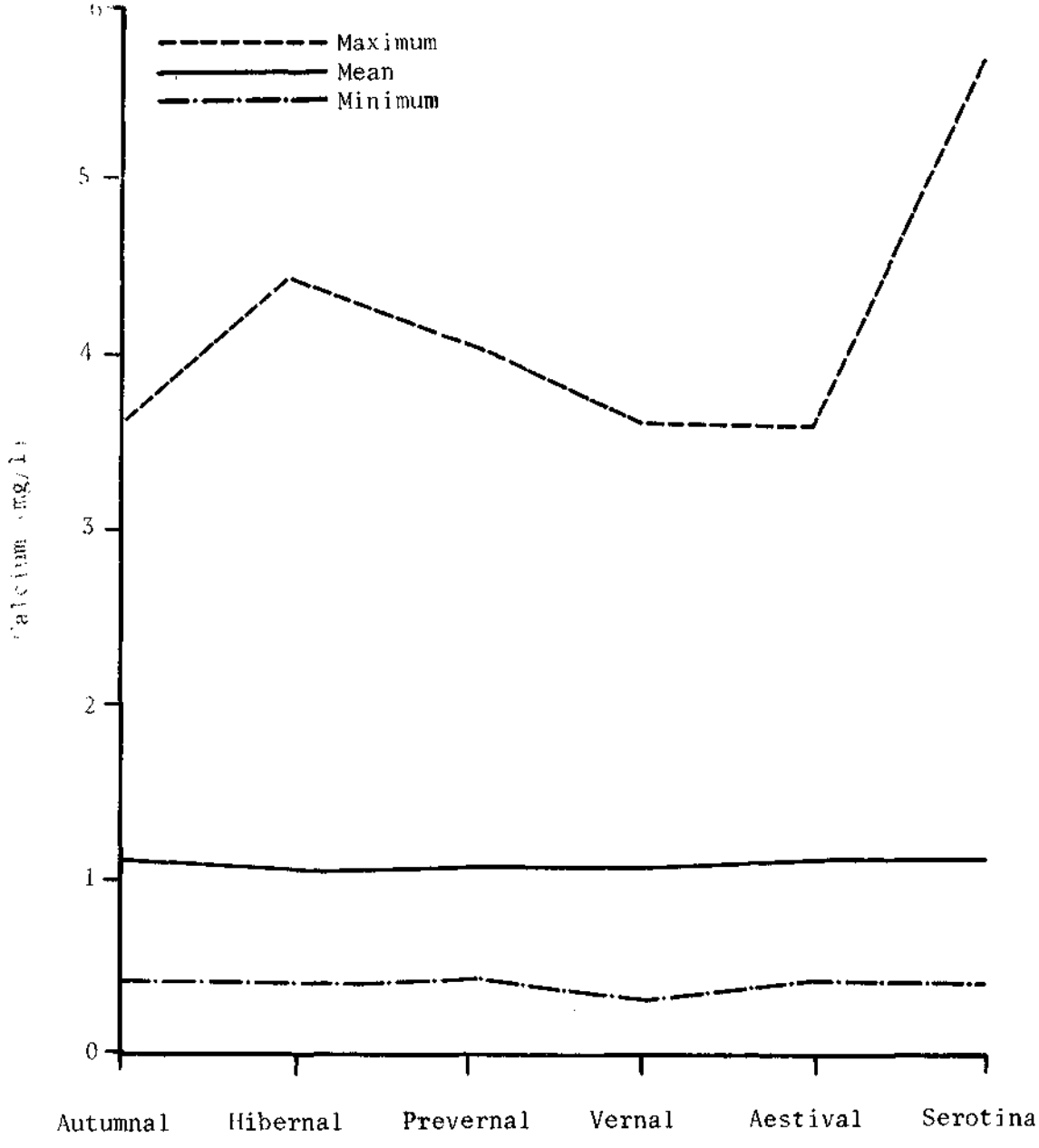

Figure 7. Maximum, Minimum, and Mean Calcium By Season

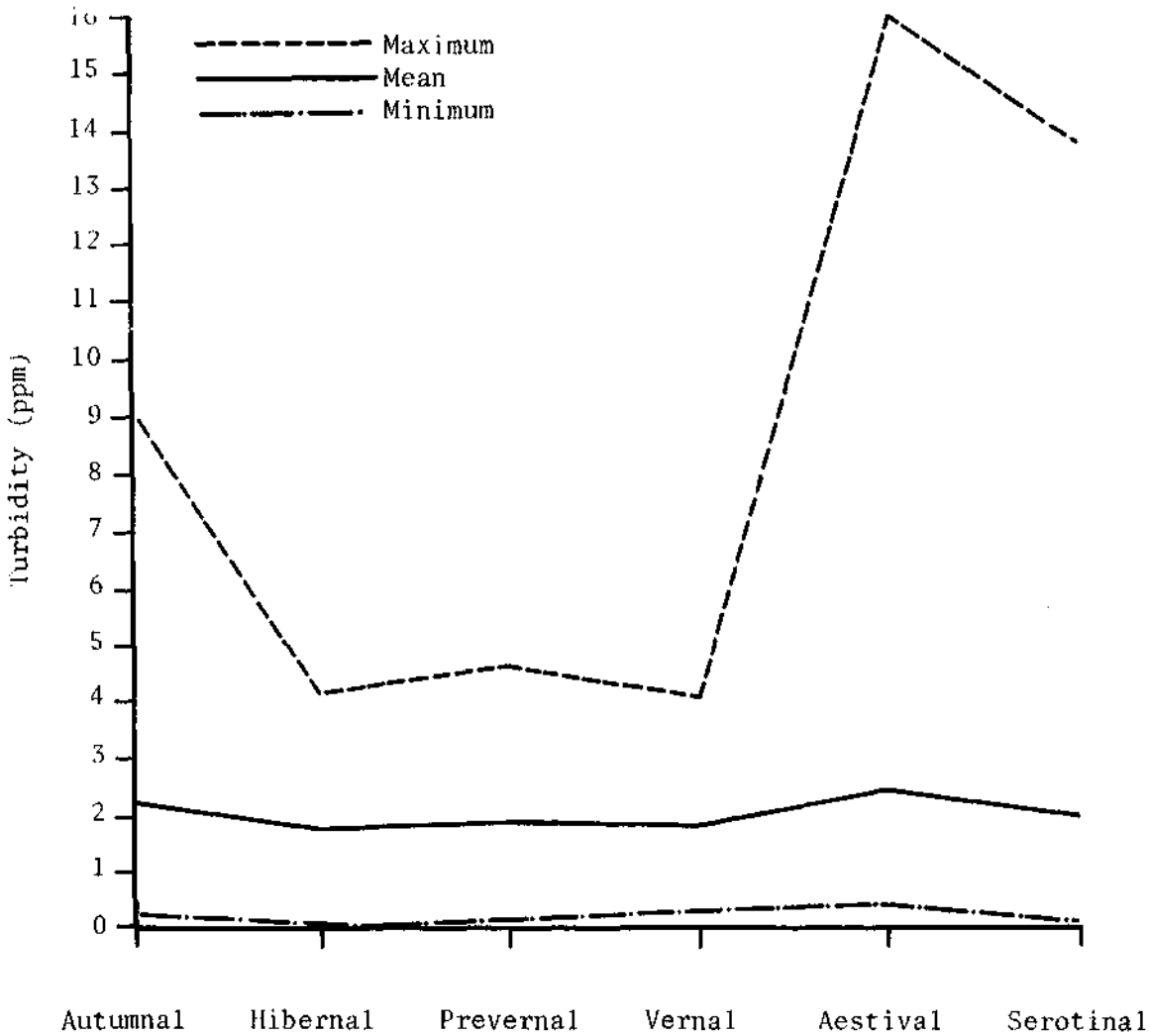

Figure 8. Maximum, Minimum, and Mean Turbidity By Season

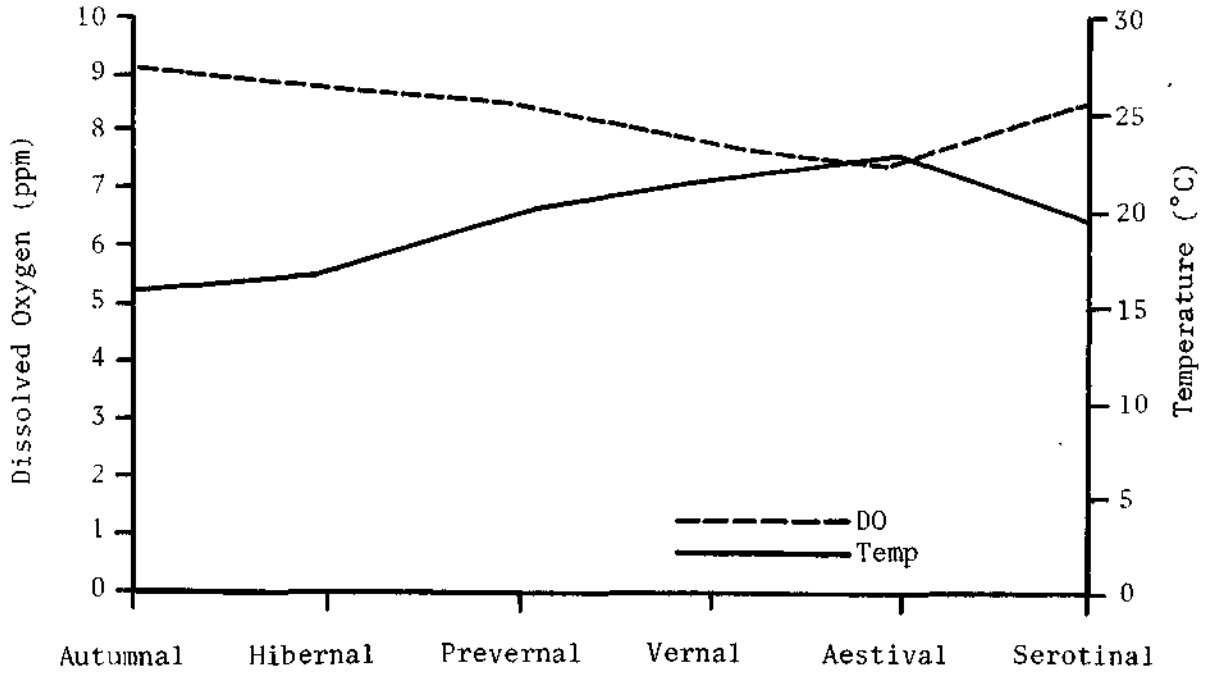

Figure 9. Comparison of the Mean Dissolved Oxygen (ppm) and Water Temperature (°C) By Seasons

SECTION V

SUMMARY

Although the water sample collections and analyses were planned for a 1-year period the actual time to complete the project was 25 months. Many delays occurred due to the scheduling of missions on the test areas which prevented sampling when the proper conditions existed. Inclement weather and high water levels also caused many delays in the program. The great amounts of rain experienced during July and August 1975 caused very high water levels which along with fallen trees due to Hurricane Eloise temporarily closed many of our access roads. However, those sampling stations for which samples were not collected during a particular season the first year were collected during the same season the following year.

Generally the water quality was good. The water temperature and DO demonstrated seasonal trends. The waters were acid having a mean seasonal pH range of 5.6 to 5.7.

The salinity, calcium, phosphate, and nitrates demonstrated no seasonal trends but remained relatively constant and at low levels throughout the reporting period.

The waters were very soft showing a slight seasonal trend with seasonal means higher during the vernal, aestival, and serotinal seasons. However, the mean seasonal hardness did remain relatively constant with a range of 3.3 to 4.4 mg/l.

The stream waters, being clear sand-filtered systems, had a low turbidity which remained relatively constant during the entire study.

The COD was generally low except for the determinations from Station 70-3 (Pocosin Pond) which were excessively high considering the data from all stations. Besides COD, many high and low values were recorded from Pocosin Pond. The pond is considered a special test area and is utilized for airdrops and static detonations of conventional munitions. Consequently, the pond area has been somewhat disturbed which might account for some of the extreme values recorded.

Sample Station 52-14 was a duplicate collection of Station 52-2 and was used as a quality control site.

REFERENCES

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2. Standard Methods for the Examination of Water and Wastewater, 13th Edition, American Public Health Association Inc., 1971.

3. Standards Methods for the Examination of Water and Wastewater, 12th Edition, American Public Health Association Inc., 1965.

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APPENDIX

SAMPLING STATIONS DATA

Station	Temp (°C)						DO (ppm)						pH					
	A	H	P	V	A_e	S	A	H	P	V	A_e	S	A	H	P	V	A_e	S
52-1	21.5	19.0	21.0	22.0	22.0	18.0	7.1	8.4	8.4	8.2	7.9	8.4	5.2	5.3	5.0	5.6	5.3	6.0
52-2	20.0	17.0	20.0	22.0	22.0	16.0	7.4	8.4	8.2	7.4	7.9	9.0	6.2	6.7	6.5	6.6	6.4	6.0
52-3	21.0	17.0	20.0	20.0	21.0	17.0	7.6	8.6	8.3	---	7.8	8.9	6.6	6.8	6.2	6.6	6.8	6.0
52-4	17.0	17.5	20.0	21.0	22.0	19.0	8.8	8.6	8.5	7.8	8.1	8.6	6.7	5.7	5.4	5.8	5.7	5.4
52-5	17.0	16.0	19.5	21.0	22.5	20.0	9.0	8.8	8.1	7.0	7.9	8.8	5.7	5.2	4.8	5.4	5.7	5.5
52-6	17.0	16.0	21.0	21.0	24.0	20.0	8.8	8.6	8.2	7.9	7.6	8.6	6.3	5.7	5.5	5.9	5.5	5.7
52-7	15.0	15.0	21.0	22.0	24.5	19.5	9.6	9.1	8.2	8.4	7.7	8.7	6.2	5.9	5.9	6.3	6.4	6.2
52-8	15.0	15.0	21.5	22.0	25.0	20.0	9.7	9.4	8.4	8.6	8.0	9.0	6.3	5.8	5.8	6.1	7.1	6.7
52.9	15.0	16.0	21.5	22.0	25.0	22.0	8.8	8.4	7.6	7.7	7.6	8.2	5.8	5.2	4.9	5.7	5.0	5.9
52-10	16.5	17.0	22.0	22.0	25.0	22.0	8.8	8.9	8.0	8.0	7.6	8.4	5.9	5.3	5.4	5.7	5.8	5.8
52-11	18.0	18.0	22.0	23.0	25.0	22.0	8.4	8.4	8.2	8.0	7.4	8.6	6.2	5.2	5.0	5.5	5.4	5.8
52-12	21.0	19.0	22.0	21.0	22.0	16.5	7.4	9.0	8.5	8.4	7.3	8.8	6.1	6.6	6.3	6.5	7.1	6.0
52-13*	22.0	16.5	23.0	25.0	25.0	15.0	9.0	7.3	7.3	5.6	7.7	4.0	5.3	5.2	5.0	5.1	4.9	5.7
52-14	20.0	17.0	20.0	22.0	22.0	16.0	7.4	8.4	8.2	7.4	7.9	9.0	6.2	6.7	6.5	6.6	6.4	6.0
52-15	16.5	19.5	19.0	20.0	21.0	16.0	8.4	8.9	8.4	---	7.8	9.4	6.0	5.7	6.3	6.6	6.8	6.0
64-1	12.5	18.0	17.0	20.0	19.5	17.0	9.6	9.2	9.0	8.4	8.0	8.8	5.7	5.7	5.8	5.4	6.3	5.8
64-2	14.3	18.5	18.0	20.5	20.0	18.0	9.4	9.2	8.6	8.4	8.2	8.7	5.7	5.5	5.6	5.3	6.4	5.6
64-3	15.0	18.5	18.0	20.0	20.0	18.5	8.8	8.2	8.2	7.9	7.8	7.8	4.8	5.5	5.6	5.3	6.2	5.6
64-4	12.5	17.7	17.5	20.0	19.0	17.0	9.5	9.0	9.4	8.2	7.8	8.3	5.7	5.6	5.8	5.4	6.4	5.9
70-1	16.5	19.0	20.5	20.5	22.0	20.5	8.5	8.4	8.1	8.0	7.8	8.6	5.5	5.5	5.4	5.3	5.4	5.5
70-2	18.0	20.0	21.0	20.0	22.0	21.0	8.8	8.4	8.8	8.6	8.4	8.8	5.4	5.4	5.2	5.4	5.2	5.4
70-3*	12.0	14.0	25.0	24.0	31.0	22.0	9.4	9.6	7.4	3.8	5.2	6.5	3.9	3.8	3.7	3.8	3.8	3.9
70-4	16.0	19.0	21.0	22.0	22.0	22.0	8.6	8.1	8.0	8.2	8.4	8.4	5.6	5.4	5.4	5.5	5.2	5.5
71-1	17.0	19.0	21.5	21.0	22.0	22.0	9.0	8.6	8.6	---	8.0	8.6	5.6	5.5	5.4	5.5	5.0	5.6
71-2	16.0	18.0	21.0	20.5	21.5	21.0	9.2	9.0	8.3	7.6	7.3	8.4	5.6	5.5	5.6	5.6	5.0	5.9
71-3	17.5	19.0	21.5	22.0	22.5	22.0	6.6	8.0	6.7	7.0	6.0	7.6	5.3	5.3	5.2	5.2	4.7	5.5
71-4	14.5	16.5	25.0	24.0	25.5	23.5	8.8	8.6	---	5.6	3.8	8.4	6.0	6.0	6.1	5.9	5.8	6.3
71-5*	14.5	17.0	25.0	23.0	25.5	24.0	9.6	6.4	7.6	4.4	7.7	9.4	6.0	6.0	6.1	6.0	5.8	6.3
72-1	12.0	12.0	18.0	20.0	24.0	17.0	10.2	10.6	9.4	9.0	7.8	9.6	5.5	5.4	5.8	5.4	5.3	5.6
72-2	14.0	14.0	21.0	22.0	24.0	19.0	9.8	9.8	9.0	8.8	7.8	9.2	6.0	5.6	5.9	5.7	5.2	5.9
72-3	11.0	12.0	18.0	20.0	23.5	17.0	10.6	10.4	9.0	9.0	8.0	9.6	5.9	5.5	5.9	5.7	5.3	5.8
72-4	13.0	13.5	21.0	21.5	23.3	17.5	9.9	9.6	8.8	8.8	7.7	8.8	5.7	5.6	5.7	5.6	5.1	5.5
72-5	10.5	16.0	17.0	21.5	22.0	21.0	11.1	9.5	9.1	8.4	8.4	8.8	5.8	5.9	5.1	6.2	6.1	6.3
72-6	10.0	16.0	17.0	21.0	22.0	21.0	10.6	9.3	9.4	8.0	8.4	9.0	6.3	6.0	5.6	6.2	6.0	6.1
72-7	9.5	15.0	17.0	20.0	21.0	19.0	11.0	10.0	9.8	8.4	8.6	8.5	5.9	5.9	5.6	6.0	5.9	6.0
72-8	12.0	16.0	17.0	20.0	21.5	21.0	10.0	8.8	8.8	8.2	7.8	8.6	5.5	5.7	4.8	5.5	5.3	5.7
72-9	10.0	16.0	17.0	20.0	21.0	20.0	10.2	8.4	8.8	8.7	8.0	8.8	5.8	5.9	5.4	6.0	5.8	6.2
72-10	14.0	15.0	19.0	20.0	22.0	19.0	9.2	8.9	7.8	8.2	7.2	8.6	5.5	5.5	5.6	5.2	5.0	5.3
72-11	17.0	16.0	20.0	20.0	22.0	19.5	8.6	8.4	8.5	7.8	7.0	8.4	5.3	5.3	5.4	5.2	4.9	5.2
72-12	14.0	18.5	19.0	21.5	23.0	19.0	9.6	8.0	8.4	7.4	6.3	8.6	5.4	5.2	5.6	5.0	5.4	5.2
72-13	16.0	20.0	22.0	23.0	24.8	20.0	9.2	7.8	8.0	7.4	6.4	8.4	5.7	5.3	5.8	5.4	5.7	5.4
72-14	21.0	14.0	16.0	20.0	22.0	21.0	8.2	9.2	9.4	9.1	8.0	8.4	5.4	5.4	4.7	5.6	5.4	5.6
72-15*	20.0	16.0	17.0	21.0	22.0	21.0	8.5	8.6	9.0	7.6	7.6	8.8	5.3	6.0	5.5	6.1	5.9	5.9
72-16*	19.0	15.0	18.0	19.0	21.5	20.0	7.9	7.8	9.0	7.6	7.6	9.0	5.5	5.9	4.9	5.5	5.3	6.2
72-17*	13.0	13.5	21.0	22.0	23.5	17.5	9.8	9.0	8.4	8.6	7.2	8.6	5.7	5.6	5.7	5.6	4.9	5.6
72-18*	19.5	15.0	---	20.0	21.0	19.5	8.0	7.9	---	7.8	7.6	8.2	5.3	5.7	---	6.1	6.1	5.3
74-1	14.0	18.0	19.0	21.0	25.0	19.0	9.7	9.5	8.8	8.6	8.2	9.2	5.5	6.4	6.3	5.9	5.9	6.1
74-2	15.3	15.0	21.0	25.0	28.0	19.5	8.5	9.6	8.6	7.0	7.2	8.2	6.1	6.5	6.7	6.4	6.1	6.8
74-3*	12.0	14.0	21.0	27.0	29.0	19.0	9.9	8.8	8.0	7.8	6.5	7.9	6.2	6.0	6.1	5.9	5.3	5.5
74-4	14.0	17.0	18.0	22.0	23.5	18.0	8.6	8.4	8.0	6.6	7.4	8.4	5.3	5.3	5.3	5.1	4.8	5.0
74-5	15.0	17.0	19.0	21.0	22.0	17.5	9.6	9.8	9.0	8.8	8.4	9.5	5.6	5.5	5.6	5.4	4.8	5.5
74-6	----	15.5	19.0	21.5	22.5	18.0	---	8.8	8.8	8.4	7.4	8.8	---	5.3	5.3	5.2	4.6	5.1
74-7	----	15.0	19.5	20.0	22.0	18.0	---	9.4	8.8	8.4	7.6	9.1	---	5.6	5.5	5.5	4.8	5.7

Temperature, DO, and pH values of each sample station for the A-Autumnal, H-Hibernal, P-Prevernal, V-Vernal, A_e-Aestival, and S-Serotinal Seasons. Sampling stations marked with asterisks are ponds while those unmarked are streams.

Station	Phosphate (mg/l)						Salinity (ppm)						Hardness (mg/l)					
	A	H	P	V	A_e	S	A	H	P	V	A_e	S	A	H	P	V	A_e	S
52-1	0.01	0.17	0.03	0.01	<0.01	0.01	23.83	16.20	21.56	27.09	17.82	15.61	2.3	4.0	4.0	3.2	3.6	4.8
52-2	0.01	0.17	0.01	0.02	<0.01	0.02	24.97	16.20	20.43	21.85	21.11	17.84	6.6	10.5	9.9	9.3	7.6	10.6
52-3	0.01	0.17	<0.01	0.01	<0.01	0.02	22.92	16.20	21.56	27.42	19.06	17.84	6.3	12.1	11.2	11.0	9.0	12.6
52-4	0.01	0.17	0.16	0.01	<0.01	0.01	14.85	13.41	18.72	24.53	18.16	22.30	2.2	4.2	3.1	2.7	3.0	4.0
52-5	0.01	0.17	0.18	0.01	<0.01	0.01	19.98	13.41	16.76	25.42	21.56	23.41	2.1	2.2	2.2	2.5	2.8	3.6
52-6	0.01	0.33	0.12	0.01	<0.01	0.01	19.44	13.41	16.76	23.08	16.76	22.30	2.1	2.2	2.2	2.9	2.8	3.6
52-7	0.01	0.20	0.16	<0.01	<0.01	0.01	19.71	15.08	20.67	24.86	18.72	23.41	3.3	2.9	2.8	4.1	5.0	4.6
52-8	0.02	0.35	0.14	<0.01	0.02	0.01	22.68	13.41	22.13	23.41	16.20	20.07	2.4	2.2	2.5	2.5	4.0	7.2
52-9	0.01	0.48	0.14	0.01	0.02	0.01	22.41	13.41	22.70	25.53	16.20	20.07	3.1	2.9	2.5	3.3	4.2	4.0
52-10	0.03	0.17	0.12	<0.01	0.03	<0.01	15.66	12.29	19.55	24.53	16.76	22.30	1.9	1.6	2.5	2.1	3.0	3.4
52-11	0.02	0.10	<0.01	<0.01	<0.01	0.01	22.95	14.52	21.56	24.86	18.72	23.40	2.5	2.3	2.8	2.6	3.7	4.2
52-12	0.01	0.17	0.03	0.01	<0.01	0.01	22.01	12.85	19.29	22.85	20.88	18.96	3.8	6.3	6.1	5.4	4.2	6.4
52-13*	0.01	0.27	0.03	<0.01	<0.01	0.05	24.97	16.20	17.02	27.31	20.65	18.96	2.4	4.1	3.9	4.6	2.6	4.4
52-14	0.01	0.55	<0.01	0.02	<0.01	0.01	26.10	16.20	21.56	22.30	21.33	16.68	6.7	10.4	10.2	9.7	7.4	9.8
52-15	0.01	0.61	<0.01	<0.01	<0.01	0.01	25.65	20.11	21.56	25.75	19.97	18.96	9.6	13.1	11.4	10.6	8.7	11.2
64-1	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	18.85	13.59	21.74	23.83	21.74	21.19	3.0	1.6	1.9	3.7	2.4	3.6
64-2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	21.65	15.03	20.63	23.83	20.07	23.41	3.0	1.4	1.4	3.9	2.1	2.6
64-3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	19.55	14.58	21.19	24.97	18.40	21.19	3.0	1.7	1.9	4.0	2.4	3.2
64-4	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	21.65	15.30	21.74	24.97	18.96	22.30	2.0	1.9	1.9	4.4	2.4	2.8
70-1	<0.01	<0.01	0.02	<0.01	0.07	0.02	9.77	14.85	20.43	22.18	19.55	14.50	4.0	2.2	2.2	3.5	4.0	3.2
70-2	0.08	<0.01	0.02	<0.01	<0.01	0.01	11.16	15.30	21.56	27.31	20.11	17.84	4.0	2.2	1.4	2.2	3.9	3.0
70-3*	0.02	0.02	0.04	0.03	0.02	0.04	33.48	17.10	26.10	42.48	19.29	22.30	6.0	2.2	4.2	2.4	4.2	3.4
70-4	0.02	<0.01	<0.01	<0.01	0.07	0.01	13.95	15.35	24.97	23.52	19.29	17.84	4.0	2.0	2.2	2.5	5.1	4.2
71-1	<0.01	0.01	<0.01	<0.01	0.02	<0.01	12.56	13.95	19.29	23.63	18.72	16.68	4.0	2.2	1.4	2.2	3.2	3.2
71-2	0.03	<0.01	<0.01	<0.01	----	<0.01	29.33	15.30	18.16	23.86	18.72	17.84	3.5	2.2	1.8	2.0	3.7	3.2
71-3	<0.01	<0.01	0.02	0.03	0.05	<0.01	39.11	14.85	18.16	25.31	18.16	22.30	3.0	2.2	1.8	2.2	3.2	3.6
71-4	0.03	<0.01	0.04	0.04	0.07	0.01	19.55	16.65	19.29	23.63	18.72	18.96	4.0	3.7	4.1	5.0	9.2	5.4
71-5*	0.09	<0.01	0.04	<0.01	0.03	0.02	22.34	16.65	18.16	23.08	18.16	17.84	4.0	3.5	5.4	4.7	6.3	5.4
72-1	<0.01	<0.01	<0.01	0.08	0.03	0.01	26.76	17.32	17.84	19.29	20.67	23.41	4.4	2.5	2.3	1.7	2.9	2.8
72-2	<0.01	<0.01	<0.01	0.10	<0.01	0.01	22.30	13.97	17.84	22.70	19.55	22.30	3.6	2.5	2.6	2.0	2.3	3.2
72-3	0.01	0.14	<0.01	0.07	<0.01	0.01	22.30	16.20	19.57	19.55	20.67	20.07	3.4	2.5	2.3	2.1	2.6	3.0
72-4	0.02	<0.01	<0.01	0.14	<0.01	0.01	21.18	17.32	20.63	24.97	19.29	28.99	3.2	2.8	2.3	2.0	2.3	2.6
72-5	0.16	<0.01	<0.01	<0.01	<0.01	0.01	13.85	15.39	17.02	24.53	22.24	21.19	1.8	2.6	2.2	2.3	2.2	2.6
72-6	0.18	<0.01	<0.01	0.01	0.02	<0.01	17.32	15.66	17.02	22.07	23.83	21.19	2.1	2.4	1.9	3.0	2.1	3.8
72-7	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	13.97	16.20	15.89	20.07	23.83	18.96	1.8	2.5	2.3	3.2	2.4	4.4
72-8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	13.97	17.10	18.16	22.30	22.69	16.68	1.3	1.8	2.2	2.0	1.3	3.6
72-9	<0.01	<0.01	0.03	<0.01	<0.01	0.01	13.97	17.64	19.29	23.41	21.56	18.96	1.8	2.2	2.4	2.6	1.7	3.6
72-10	<0.01	<0.01	<0.01	0.07	<0.01	0.02	21.18	19.55	20.07	23.83	20.67	21.19	4.0	2.5	2.5	2.2	2.2	2.2
72-11	<0.01	<0.01	<0.01	0.03	<0.01	0.01	21.18	16.76	20.63	20.11	20.11	22.30	3.4	2.1	2.0	2.9	2.1	3.6
72-12	<0.01	<0.01	0.01	0.05	<0.01	0.01	20.07	15.43	20.63	19.55	20.11	20.07	4.0	2.3	2.1	2.2	2.8	3.8
72-13	<0.01	0.45	<0.01	0.08	<0.01	0.01	22.30	20.67	22.30	19.29	19.29	23.41	3.4	2.8	2.3	2.4	2.6	3.6
72-14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	28.37	15.93	18.16	25.08	24.51	17.84	1.5	2.2	1.9	2.1	1.8	3.0
72-15*	<0.01	<0.01	<0.01	<0.01	0.02	0.01	22.69	15.21	18.16	23.86	24.28	16.68	2.2	2.4	11.9	2.7	2.2	3.6
72-16*	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	23.83	15.84	19.29	25.19	23.83	18.96	1.9	1.8	1.7	2.1	1.3	4.6
72-17*	0.01	<0.01	<0.01	0.10	<0.01	0.01	22.30	17.32	21.19	18.72	19.29	23.41	3.6	2.5	2.7	2.3	2.2	3.8
72-18*	<0.01	<0.01	----	<0.01	<0.01	<0.01	23.83	15.66	-----	23.41	23.83	14.50	2.0	2.4	---	3.0	2.5	3.8
74-1	<0.01	<0.01	0.03	<0.01	<0.01	0.02	18.13	15.30	26.20	20.11	17.32	21.19	3.0	3.0	3.1	3.0	3.2	4.2
74-2	<0.01	0.02	<0.01	<0.01	0.03	0.04	18.85	15.12	20.07	16.76	18.72	24.53	7.0	5.5	6.4	6.7	6.8	8.8
74-3*	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	18.13	15.39	20.63	17.32	19.29	23.41	3.0	3.0	2.9	3.0	3.6	4.4
74-4	<0.01	<0.01	<0.01	<0.01	0.03	0.01	19.55	16.20	21.19	22.70	16.76	21.19	2.0	2.4	2.8	1.9	2.8	4.2
74-5	<0.01	0.02	<0.01	<0.01	0.01	0.01	18.13	17.10	18.40	19.55	16.76	21.19	3.0	1.9	2.2	3.5	2.8	3.4
74-6	----	<0.01	0.01	<0.01	0.02	0.01	-----	17.10	20.63	22.13	18.16	22.30	---	1.7	1.6	2.8	2.4	2.0
74-7	----	<0.01	0.01	<0.01	<0.01	0.06	-----	13.59	18.96	20.67	17.32	24.53	---	2.3	2.0	1.8	2.1	2.8

Phosphate, Salinity, and Hardness of each sample station for the A-Autumnal, H-Hibernal, P-Prevernal, V-Vernal, A_e-Aestival, and Serotinal Seasons. Sampling stations marked with asterisks are ponds while those unmarked are streams.

	Calcium (mg/l)						Nitrate (mg/l)						COD (mg/l)					
Station	A	H	P	V	A_e	S	A	H	P	V	A_e	S	A	H	P	V	A_e	S
52-1	0.79	1.24	1.08	0.85	1.07	1.12	0.01	0.50	0.26	0.28	0.03	0.30	3.14	1.66	4.30	LTB*	3.60	2.88
52-2	2.29	3.36	3.33	2.94	2.97	3.37	0.01	0.11	0.12	0.02	0.03	0.07	3.92	2.50	6.00	1.33	3.60	5.04
52-3	2.90	4.44	4.05	3.59	3.59	5.69	0.01	0.23	0.12	0.02	0.04	0.07	3.14	4.58	6.50	0.38	8.80	3.60
52-4	0.72	1.00	1.00	0.85	0.72	0.64	----	0.26	0.18	0.11	0.19	0.16	LTB	5.83	1.50	3.75	17.10	4.27
52-5	0.56	0.80	1.24	0.58	0.63	0.64	----	0.06	0.23	0.05	0.15	0.09	0.34	7.13	18.00	5.83	10.20	5.63
52-6	0.56	0.48	0.88	1.09	0.63	0.72	----	0.08	0.16	0.05	0.19	0.11	LTB	1.33	LTB	2.50	5.20	4.08
52-7	1.16	0.72	1.36	1.24	1.25	1.20	----	0.13	0.16	0.05	0.13	0.09	LTB	2.00	LTB	3.75	6.10	3.30
52-8	0.84	0.64	1.08	0.82	0.95	0.56	----	0.08	0.21	0.05	0.13	0.08	LTB	2.70	3.30	2.50	5.90	3.30
52-9	0.68	0.56	1.36	1.08	1.54	0.88	----	0.08	0.16	0.05	0.13	0.10	7.07	11.23	12.30	10.42	25.40	8.93
52-10	0.52	0.64	1.12	0.44	1.06	0.80	----	0.08	0.24	0.05	0.13	0.14	LTB	4.99	3.10	5.83	10.20	3.88
52-11	0.84	0.60	0.84	0.80	0.67	0.72	----	0.15	0.06	0.05	0.17	0.10	LTB	1.25	2.70	2.92	----	2.14
52-12	1.38	1.82	2.04	1.84	1.56	1.84	0.01	0.32	0.12	0.10	0.03	0.09	3.92	LTB	6.60	0.19	4.80	4.32
52-13*	0.98	1.08	1.88	0.92	0.90	1.44	0.01	0.08	0.13	0.02	0.02	0.05	5.49	10.60	20.20	0.81	5.60	16.21
52-14	2.33	3.44	3.53	2.95	2.98	3.21	0.01	0.16	0.05	0.02	0.02	0.05	3.92	4.08	4.00	1.71	5.60	5.04
52-15	2.77	4.21	3.77	3.57	3.19	4.17	----	0.17	0.11	0.02	0.02	0.05	LTB	0.70	19.20	4.93	7.20	7.57
64-1	0.80	0.63	0.56	1.50	0.60	0.56	0.30	0.01	0.05	0.24	0.02	0.09	81.40	3.22	61.68	LTB	2.66	41.76
64-2	0.80	0.53	0.55	1.27	0.40	0.64	0.24	0.02	0.13	0.26	0.14	0.16	76.60	2.92	53.85	1.40	0.38	35.39
64-3	1.20	0.67	0.49	0.90	0.48	0.56	0.18	0.02	0.15	0.16	0.06	0.16	64.40	3.38	68.76	26.90	LTB	61.23
64-4	1.20	0.42	0.58	0.91	0.44	0.64	0.06	0.01	0.04	0.18	0.13	0.09	81.40	1.69	33.37	1.90	1.90	49.55
70-1	1.60	0.51	0.76	0.72	0.50	0.40	0.39	0.03	0.14	0.19	0.09	0.18	LTB	LTB	LTB	LTB	LTB	0.37
70-2	1.60	0.64	0.80	0.30	0.55	0.56	0.35	0.04	0.07	0.20	0.09	0.17	LTB	LTB	LTB	LTB	LTB	1.85
70-3*	2.40	1.25	1.44	1.28	2.42	3.29	2.25	0.01	0.05	0.03	0.10	0.20	LTB	41.60	168.20	108.83	----	100.75
70-4	1.60	1.01	0.84	0.84	0.64	0.64	0.36	0.04	0.03	0.13	0.19	0.16	LTB	6.72	LTB	LTB	0.02	2.41
71-1	1.60	0.40	0.88	0.55	0.58	0.72	0.34	0.02	0.12	0.09	0.14	0.16	LTB	3.20	LTB	LTB	1.20	0.74
71-2	1.60	0.53	1.36	0.79	0.59	0.64	0.36	0.03	0.13	0.19	0.16	0.20	LTB	5.20	LTB	LTB	8.90	1.85
71-3	1.20	0.66	0.60	0.64	0.69	0.64	0.39	0.01	0.12	0.23	0.10	0.06	LTB	2.88	LTB	LTB	2.10	2.22
71-4	1.60	1.15	1.36	1.46	2.93	1.20	0.30	0.01	0.03	0.11	0.12	0.08	LTB	5.20	----	7.80	11.40	4.82
71-5*	2.40	1.15	1.48	1.28	1.65	1.04	0.29	0.02	0.11	0.22	0.06	0.06	LTB	4.16	LTB	5.60	11.60	5.93
72-1	0.56	0.52	0.43	0.76	0.66	0.56	0.09	0.06	0.04	0.00	0.12	0.08	4.52	39.40	6.83	5.20	8.90	2.52
72-2	0.56	0.92	0.48	0.80	0.79	0.48	0.14	0.13	0.06	0.00	0.15	0.11	2.78	5.93	4.17	2.00	6.70	3.96
72-3	0.64	0.78	0.48	0.60	0.66	0.48	0.12	0.22	0.04	0.02	0.05	0.11	1.74	68.90	4.42	3.80	10.00	LTB
72-4	0.64	0.60	0.42	0.76	0.71	0.40	0.18	0.29	0.06	0.06	0.12	0.14	LTB	62.90	3.54	1.20	43.50	2.52
72-5	0.64	0.87	0.72	0.66	0.88	0.72	0.36	0.02	0.22	0.10	0.02	0.13	91.10	0.96	LTB	2.00	5.60	4.45
72-6	0.80	1.38	0.64	0.79	0.80	0.56	0.15	0.01	0.18	0.15	0.03	0.13	5.19	20.80	LTB	LTB	4.40	4.82
72-7	0.56	0.69	0.60	0.75	0.91	0.56	0.16	0.01	0.18	0.15	0.03	0.06	81.80	2.24	LTB	LTB	6.00	3.70
72-8	0.40	0.64	0.56	0.57	0.64	0.64	0.33	0.02	0.18	0.09	0.02	0.07	LTB	4.48	LTB	8.91	6.00	3.70
72-9	0.48	0.80	0.80	0.64	0.74	0.64	0.19	0.03	0.18	0.16	0.04	0.13	0.97	4.48	LTB	3.98	LTB	LTB
72-10	0.56	0.48	0.47	0.60	0.47	0.72	0.09	0.09	0.02	0.05	0.10	0.06	LTB	1.26	0.51	1.70	6.90	5.40
72-11	0.80	0.40	0.51	0.60	0.47	0.56	0.33	0.27	0.04	0.05	0.30	0.18	LTB	59.40	0.51	0.60	6.90	4.68
72-12	0.80	0.92	0.53	0.56	2.45	0.48	0.17	0.02	0.02	0.05	0.15	0.08	1.04	LTB	3.54	4.00	16.70	2.16
72-13	0.80	1.12	0.56	0.56	2.08	1.44	0.28	0.17	0.03	0.01	0.10	0.03	LTB	LTB	0.25	3.70	4.50	2.16
72-14	0.58	0.63	0.76	0.62	0.79	0.48	0.01	0.01	0.18	0.05	0.04	0.07	5.00	6.72	LTB	5.88	8.40	4.82
72-15*	0.69	0.71	0.60	0.86	0.88	0.80	0.08	0.02	0.11	0.09	0.04	0.07	5.00	4.48	21.50	2.65	5.20	2.96
72-16*	0.93	0.63	0.72	0.50	0.58	0.72	0.09	0.01	0.20	0.08	0.03	0.03	2.70	3.84	24.01	2.80	5.60	2.96
72-17*	0.80	0.40	0.57	0.64	0.96	0.64	0.14	0.21	0.13	0.02	0.15	0.01	LTB	55.40	0.51	2.60	5.50	5.77
72-18*	0.48	0.79	----	0.91	0.91	0.64	0.08	0.01	----	0.13	0.03	0.07	4.20	4.16	----	3.22	4.00	2.96
74-1	1.20	1.04	0.87	0.92	1.15	1.04	0.38	0.02	0.12	0.02	0.07	0.10	LTB	5.22	2.53	1.70	LTB	5.04
74-2	3.61	1.81	1.94	3.21	0.93	3.13	0.36	0.02	0.03	0.02	0.07	0.04	LTB	4.91	3.03	6.00	LTB	7.57
74-3*	0.80	1.81	0.69	0.92	0.64	0.88	0.11	0.01	0.08	0.05	0.06	0.04	45.90	4.76	4.80	7.80	LTB	10.81
74-4	0.80	0.74	0.59	1.04	0.56	0.96	0.05	0.01	0.01	0.03	0.06	0.04	4.00	0.92	1.90	1.40	LTB	4.68
74-5	0.80	0.90	0.83	0.96	0.48	0.88	0.17	0.01	0.03	0.02	0.06	0.05	0.70	2.30	2.53	0.90	LTB	3.60
74-6	----	0.66	0.50	0.72	0.80	0.88	----	0.01	0.13	0.05	0.06	0.05	----	5.07	3.29	1.20	LTB	1.80
74-7	----	0.82	0.48	0.76	0.56	0.64	----	0.02	0.14	0.05	0.06	0.04	----	4.76	6.32	5.80	6.60	2.16

Calcium, Nitrate, and COD of each sample station for the A-Autumnal, H-Hibernal, P-Prevernal, A_e-Aestival, and S-Serotinal Seasons. Sampling stations marked with asterisks are ponds while those unmarked are streams. LTB as used above means "less than blank".

Station	Turbidity (ppm) A	H	P	V	A_e	S
52-1	1.10	1.35	1.25	0.90	0.50	0.50
52-2	1.24	1.50	0.30	2.00	2.15	1.20
52-3	1.45	2.15	0.20	0.90	0.75	1.75
52-4	1.00	1.30	1.35	1.25	1.00	1.00
52-5	2.25	2.60	0.75	2.70	2.25	1.20
52-6	1.00	0.05	3.56	1.45	1.00	2.15
52-7	7.80	1.00	4.40	1.60	7.80	2.40
52-8	5.50	0.60	2.15	1.60	5.50	1.85
52-9	1.00	0.24	1.61	3.00	1.00	2.85
52-10	1.60	0.29	1.24	0.45	1.60	0.50
52-11	0.90	0.04	1.00	0.50	0.90	0.75
52-12	2.00	0.34	1.87	1.90	2.40	1.50
52-13*	3.00	2.40	3.15	0.90	1.10	4.20
52-14	2.55	3.30	1.25	1.60	1.25	2.25
52-15	2.00	1.10	0.75	0.90	2.00	0.75
64-1	2.57	0.65	1.60	2.15	0.50	1.45
64-2	0.29	0.50	1.60	2.15	0.35	0.25
64-3	0.29	1.00	1.35	0.75	0.75	0.25
64-4	0.60	1.00	0.90	1.35	1.23	0.65
70-1	----	3.30	1.50	3.80	3.15	2.40
70-2	----	0.20	1.25	0.30	1.50	1.90
70-3*	----	3.30	2.70	1.50	4.00	1.40
70-4	----	1.75	1.75	0.75	3.15	1.10
71-1	----	2.15	2.70	1.15	1.23	0.95
71-2	----	1.60	0.75	1.60	2.55	1.10
71-3	----	1.20	0.53	1.15	1.00	0.65
71-4	----	1.10	3.45	1.35	1.88	0.75
71-5*	----	1.10	2.00	1.35	1.90	1.50
72-1	1.60	2.70	2.25	1.88	1.60	1.15
72-2	3.10	3.30	2.55	2.15	3.15	2.80
72-3	1.90	4.00	1.75	2.42	3.90	2.80
72-4	2.85	2.40	3.75	3.14	3.90	2.00
72-5	2.35	4.00	2.55	2.80	2.70	2.40
72-6	3.06	4.15	2.55	2.80	2.15	1.35
72-7	2.84	3.45	1.35	2.80	3.75	1.75
72-8	0.47	1.60	1.50	1.45	1.60	1.35
72-9	2.14	2.85	2.27	1.60	1.60	0.90
72-10	1.50	0.20	1.00	1.24	2.20	1.15
72-11	1.20	0.55	1.35	1.12	1.23	0.65
72-12	0.50	0.32	1.10	1.12	2.20	0.65
72-13	0.50	0.32	1.35	1.24	1.12	0.50
72-14	1.50	1.20	4.15	1.00	0.85	1.45
72-15*	4.00	3.30	2.27	3.15	3.65	3.25
72-16*	2.70	1.20	2.00	1.60	1.35	1.90
72-17*	1.20	1.70	2.90	2.42	2.20	2.15
72-18*	3.00	2.15	----	4.05	2.15	1.35
74-1	2.55	2.40	3.40	2.85	6.00	3.25
74-2	9.05	3.25	4.55	3.58	16.00	11.50
74-3*	9.21	4.00	1.25	2.85	1.30	13.70
74-4	1.45	0.50	0.65	1.35	1.90	0.10
74-5	0.91	1.00	1.25	0.75	1.88	1.20
74-6	0.75	1.00	0.65	0.75	1.40	1.20
74-7	----	1.25	1.25	0.99	2.70	1.20

Turbidity values of each sample station for the A-Autumnal, H-Hibernal, P-Prevernal, V-Vernal, A_e-Aestival, and S-Serotinal Seasons. Sampling stations marked with asterisks are ponds while those unmarked are streams.

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