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PERFORMANCE EVALUATION OF EXISTING LAGOONS PETERBOROUGH, NEW HAMPSHIRE

Municipal Environmental Research Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

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PERFORMANCE EVALUATION OF EXISTING LAGOONS, PETERBOROUGH, NEW HAMPSHIRE

by

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Contract No. 68-03-2062

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FOREWORD

The Environmental Protection Agency was created because of increasing public and government concern about the dangers of pollution to the health and welfare of the American people. Noxious air, foul water, and spoiled land are tragic testimony to the deterioration of our natural environment. The complexity of that environment and the interplay between its components require a concentrated and integrated attack on the problem.

Research and development is that necessary first step in problem solution and it involves defining the problem, measuring its impact, and searching for solutions. The Municipal Environmental Research Laboratory develops new and improved technology and systems for the prevention, treatment, and management of wastewater and solid and hazardous waste pollutant discharges from municipal and community sources, for the preservation and treatment of public drinking water supplies, and to minimize the adverse economic, social, health, and aesthetic effects of pollution. This publication is one of the products of that research; a most vital communications link between the researcher and the user community.

As part of these activities, this case history report was prepared to make available to the sanitary engineering community a full year of operating and measured performance data for a three-cell facultative wastewater treatment lagoon system.

Francis T. Mayo, Director
Municipal Environmental Research
Laboratory

ABSTRACT

Wastewater treatment lagoons have found extensive use particularly in smaller forms. However, little operational data is currently available to form a basis for evaluating the performance capabilities of lagoons. This report presents data gathered during a one year period of monitoring the lagoon system at Peterborough, New Hampshire, and compares treatment plant performance to design loading rates and the Federal Secondary Treatment Standards. The treatment system was found to perform very well. Removal of suspended solids and fecal coliform were always excellent. Biochemical oxygen demand removal was excellent except for four months during the winter when anaerobic conditions occurred under the ice cover and soluble BOD levels rose substantially. During the winter, the pH of the effluent also was low due to large dosing of chlorine to maintain a residual. In addition to these parameters, many others were monitored and are presented both in summary form and in complete listings of all data gathered during the study. As a result of the study it was recommended that induced-air aeration be installed in one of the ponds to decrease the concentration of soluble BOD and thus meet the Federal Standards.

This report was submitted in fulfillment of Contract No. 68-03-2062, by JBF Scientific Corporation, under the sponsorship of the U. S. Environmental Protection Agency.

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SECTION 1

INTRODUCTION

Waste treatment lagoons have been used in this country since the turn of the century. In general, observations have shown that lagoons are an effective and relatively inexpensive process having best application to small towns in which the large area requirements can be met. It has only been within the last 25 years that attempts have been made to provide a rational basis for pond design. In the last two decades the virtues of oxidation lagoons have increasingly been recognized so that today the U.S. has approximately 4000 lagoons treating domestic wastewater.

The Federal Water Pollution Control Act Amendments of 1972 have established the minimum performance requirements for public owned wastewater treatment works. By July 1977 publicly owned treatment works must meet effluent limitations based on secondary treatment. In attempts to determine the performance capabilities of oxidation lagoons it has been found that very little useful operational data exists to form a basis for evaluating the performance capabilities of lagoons.

It was the aim of this program to document and evaluate the performance of a well designed and operated lagoon system in Peterborough, New Hampshire. This work was undertaken by JBF Scientific Corporation for the U.S. Environmental Protection Agency. Dr. Stuart P. Bowen was the project director. The success of this project was made possible through the cooperation of John Isham, Town Manager of Peterborough, and by the conscientious effort of Tom Weeks, the Peterborough wastewater treatment plant operator who assisted in the conduct of the work.

SECTION 2

CONCLUSIONS

Wastewater treatment lagoons offer a promising treatment method for small towns and industries because the process is relatively inexpensive to construct, easy to operate, and generally provides a high level of treatment. This report presents data on the operation of a lagoon system at Peterborough, New Hampshire, and compares pollutant removal with Secondary Treatment Standards set by the U.S. Environmental Protection Agency as authorized by the Federal Water Pollution Control Amendments of 1972.

The principal conclusions resulting from this study are the following:

1. In general, the Peterborough wastewater treatment plant performed very well during this 12-month study. Removal of suspended solids and fecal coliform were always excellent. BOD removal was excellent except during the winter when anaerobic conditions existed under the ice cover on the ponds.

2. The Peterborough plant, when compared to its design loading rates, is underloaded both hydraulicly and in BOD loading. This may at least in part, account for the high level of treatment observed.

3. The Federal Secondary Treatment Standards for removal of suspended solids and fecal coliform were consistently met. The standard for BOD removal was exceeded during the winter for approximately 11 weeks. During that time the total BOD concentration in the effluent averaged about 52 mg/l and the soluble BOD averaged about 45 mg/l. Percent removal of total BOD fell to about 60 percent, while the soluble BOD concentration in the effluent exceeded that in the influent by about 10 percent. Anaerobic conditions in the ponds caused by the ice cover were responsible for the drop in treatment efficiency. Also during this time the effluent pH fell below 6.0 because of the very high chlorine dose required to meet the requirement of maintaining a chlorine residual in the effluent.

4. Measurement of plant influent and effluent flow rates showed that about 27 percent water loss occurred presumably due to seepage into the ground.

5. The dissolved oxygen concentration in the effluent was generally below 2 mg/l, and during the winter was essentially zero.

6. Chemical oxygen demand removal closely paralled BOD removal in that good removal was accomplished during most of the year, but during the winter both soluble and total COD values rose substantially.

7. Nitrogen species and phosphorus were measured. TKN and ammonia nitrogen values in the effluent rose during the winter and nitrate nitrogen decreased. Nitrite nitrogen was generally below the detection limit of 0.1 mg/l. Removal of total phosphorus was approximately 10 percent for the year.

8. Effluent alkalinity values prior to chlorination showed a distinct seasonal trend with the lowest values occurring during the summer and concentrations twice as high during the winter.

9. Algae measurement was very difficult and generally unsuccessful. It is not believed that any useful algae data were collected.

10. A chlorine residual of 2.0 mg/l was maintained except when equipment malfunctions occurred. However, during the winter the chlorine demand rose to 40 to 50 mg/l which caused a low pH in the effluent.

SECTION 3

RECOMMENDATIONS

Intensive monitoring of the Peterborough, New Hampshire, wastewater treatment plant showed that in general the plant was highly efficient. However, some aspects of the plant's performance should be improved. With the aim of upgrading the treatment plant, the following recommendation is made:

> BOD removal during the winter must be improved. The consistently high level of performance occurring during other parts of the year indicates that the only problem is one of insufficient oxygen in the ponds when the ice cover has formed. This problem could be alleviated in a number of ways, but probably the solution which best combines efficiency and economy would be an induced-air aeration system which would both supply necessary oxygen and probably could prevent ice formation on at least a portion of the pond surface. The quick recovery of the treatment system after melting the ice suggests that the soluble BOD is readily oxidizable, and therefore perhaps only one pond would need to be aerated and then only for a few months each year. If kept aerobic the Peterborough system should be readily able to meet the Standards.

It is therefore recommended that a study be undertaken to:

1. Select the optimum aeration equipment for the Peterborough, New Hampshire, wastewater treatment system.

2. Install that equipment.

3. Monitor the treatment system through a winter to demonstrate that the seasonally aerated pond system can meet the Secondary Treatment Standards.

Demonstration of this system would provide guidance for others faced with the problem of designing a pond system to operate efficiently when ice will cover the pond for several months of the year.

SECTION 4

DESCRIPTION OF PETERBOROUGH TREATMENT SYSTEM

The site selected for this study was the Peterborough, New Hampshire, wastewater treatment lagoon system. Peterborough is located in southern New Hampshire, approximately 16 kilometers (10 miles) north of the Massachusetts border, 40 kilometers (25 miles) west of Nashua, New Hampshire, and 100 kilometers (60 miles) from the Atlantic Ocean, as shown in Figure 1. The temperature has a wide range both daily and annually. Normal summer daytime readings are approximately 20-27°C (68-81° F). Summer nighttime minimums are about 10°C (50°F). Winters are moderately cold with an average January daily maximum of 1°C (33°F) and a minimum of -10°C (13°F). Precipitation is spread evenly throughout the year with an annual average of 104 cm (41 inches).

The Peterborough wastewater treatment system consists of three ponds having a total surface area of 8.3 hectares (21 acres). A site and piping layout sketch is shown as Figure 2. Photographs of the lagoon system are shown as Figure 3. The treatment system was designed in early 1968 by Camp, Dresser, and McKee of Boston, Massachusetts, and constructed shortly thereafter.

Wastewater is pumped a few hundred yards from the pumping station to a distribution structure. Although the piping arrangement will allow other flow patterns, the ponds have generally been run in series with the flow passing from Pond No. 1, to Pond No. 2, and then to Pond No. 3. The effluent from Pond No. 3 is collected in an effluent structure and transported by gravity sewer back to the pumping station where it is chlorinated and discharged to the Contoocook River. Since a feedback chlorination control system was not provided, the chlorination dose is determined by setting the effluent wier to provide a constant flow and chlorinating at a constant dose. The dosage criteria is to obtain a chlorine residual leaving the chlorination chamber of 2.0 mg/l.

The design rationale was an areal loading basis of 19.6 kg BOD/ha/day (17.5 lb BOD/acre/day) in 1968 to be increased as population increased to a loading of 39.2 kg BOD/ha/day (35 lb BOD/acre/day) in the year 2000. The total initial BOD load was designed to be 227 kg/day (500 lb/day). The initial flow was considered to average 1.9 mil l/day (0.5 mgd) with a maximum of 8.1 mil l/day (2.14 mgd). At the design 1.2 meter (4 foot) water depth the detention time would be 57 days. In the year 2000 the detention time was estimated to be 35 days. The ponds are not aerated. The population served is 2200 persons.

Figure 1. Site Map - Location of Peterborough, NH.

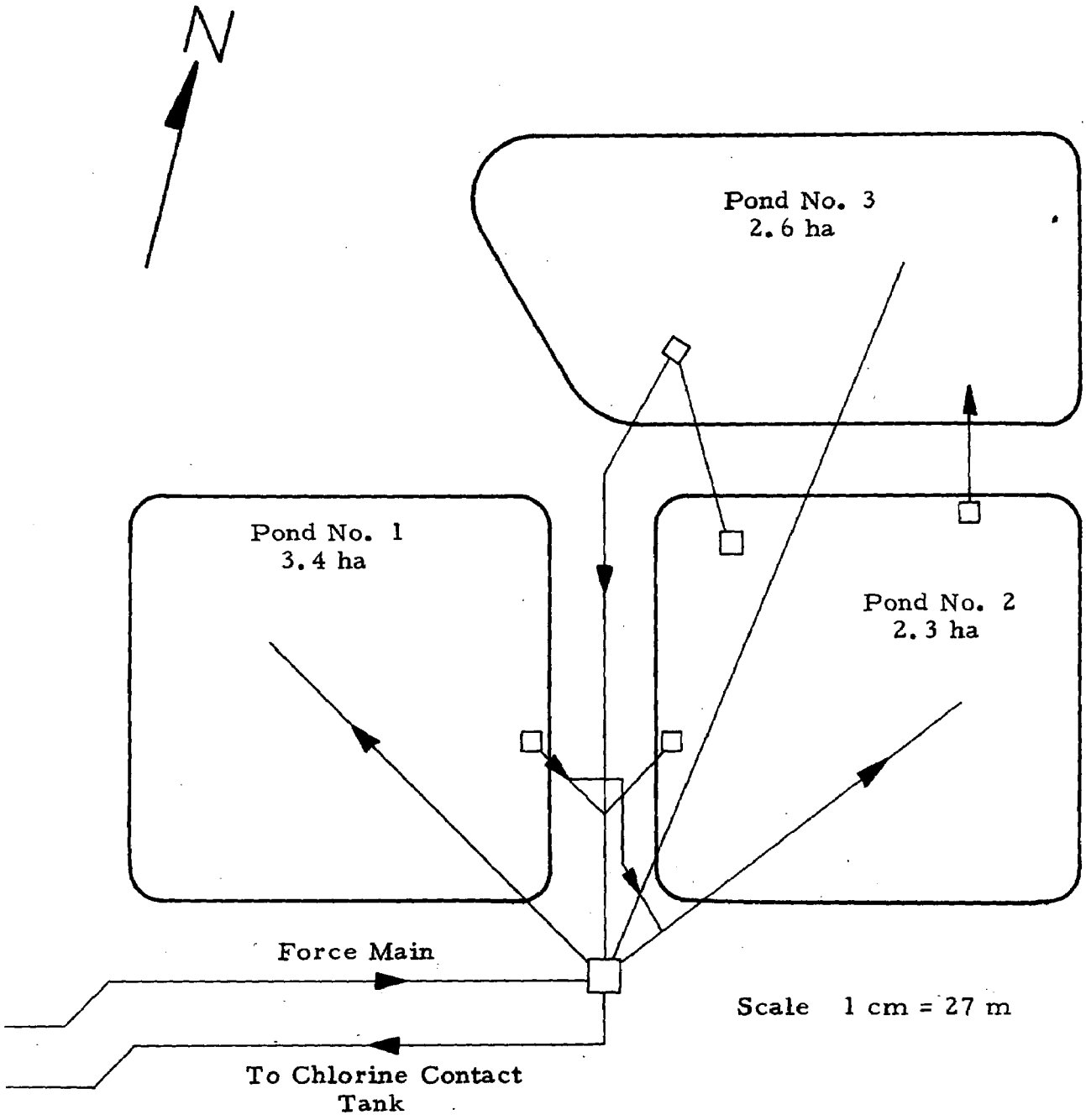
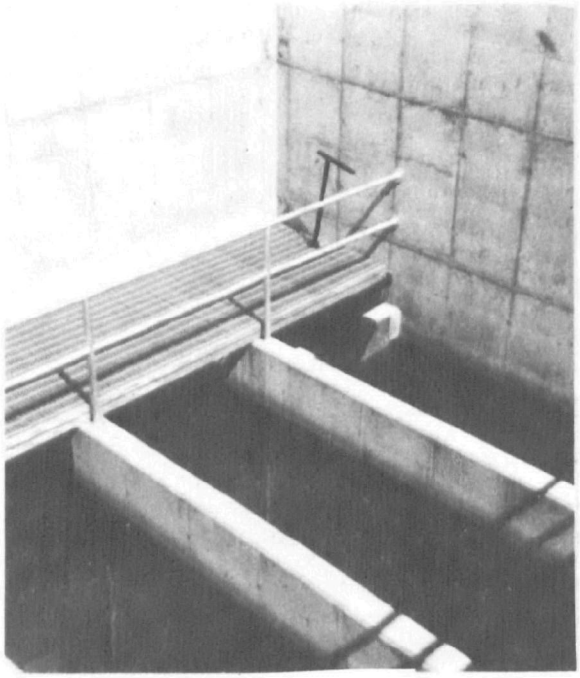


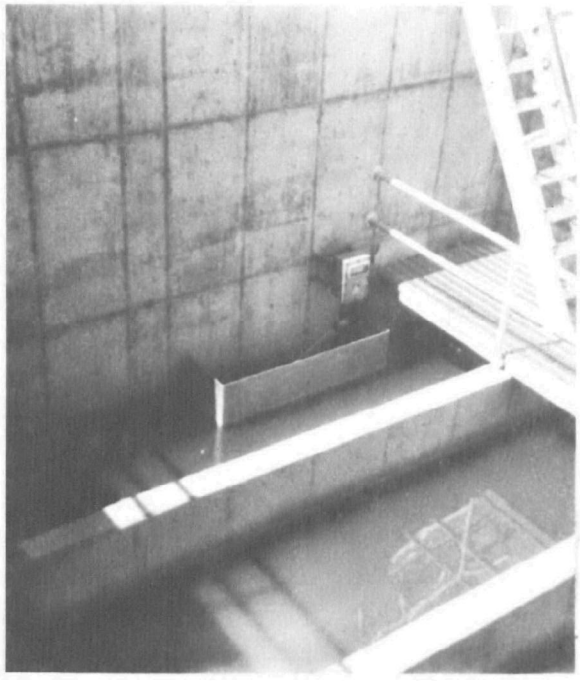
Figure 2. Peterborough, NH, wastewater treatment lagoons.

Pond No. 2 Effluent Structure

Pond No. 3 Effluent Structure



Chlorine Contact Tank Showing Effluent Weir



Chlorine Contact Tank Showing Flow Measuring Device

Figure 3. Photographs of Peterborough wastewater treatment lagoons.

Since the New Hampshire Water Supply and Water Pollution Control Commission has not required performance data for the Peterborough lagoon system, little operational data is available. Reports are filed but the only data given are water color, area covered by floating scum or algal mats, pond water depth, general weather conditions, flow rate, chlorination dosage in pounds, chlorine residual, and occasional values of pond dissolved oxygen, BOD, and ice cover.

SECTION 5

SAMPLING AND ANALYSIS PROCEDURES

Treatment plant wastewater flow at Peterborough is measured and continuously recorded at the pumping station by a magnetic flow meter to determine the lagoon influent flow rate. The effluent flow rate is measured in the chlorine contact chamber where water level is controlled by a V-notch weir. A float-type water level indicator in a stilling well generates the electrical signal for the recorder. In addition, to determining the hydraulic loading of the treatment plant, these flow recorders provided the information to determine the lagoon system long-term water balance.

An influent flow-proportional sample was obtained by using the existing magnetic flow meter to actuate the sampler pump at a rate proportional to flow. The sampler, Brailsford and Company Model EVS-2, delivered one sample for each closure of the flow meter switch. Sample size was adjusted to assure a 3.8 l (one gallon) total sample during each 24-hour test period. The location of the sample tube was at the head of a flume where the wastewater flow first enters the pump building. Since the pump station wetwell is small, the pumping rate is proportional to influent flow rate and thus the magnetic flow meter provided a good measure of hydraulic loading.

Other sampling locations are shown in Figure 4. These locations are the effluent from Pond No. 1, the effluent from Pond No. 2, the effluent from Pond No. 3, and the effluent from the chlorine contact chamber.

Each of these samplers was a Brailsford Model EVS-1 (battery powered), but the effluent sampler was converted to line voltage. To prevent freezing the effluent sampler was enclosed in an insulated box and heated by three light bulbs actuated by a temperature controller. The sample line was enclosed in a plastic pipe, insulated, and wrapped with a heating tape which was actuated by a separate temperature controller. The effluent sampling station is shown in Figure 5.

To minimize sample deterioration during warm periods, each sample jug was enclosed in an insulated box containing an icewater bath. During the winter months, samples from stations 2, 3 and 4 (effluents from each pond) were obtained by grab sampling because electrical power was not available at these locations to power heaters to prevent freezing of the sample line. This is not considered to lead to significant differences compared to composited samples because changes in water characteristics were very slow due to long detention times and the thick ice cover.

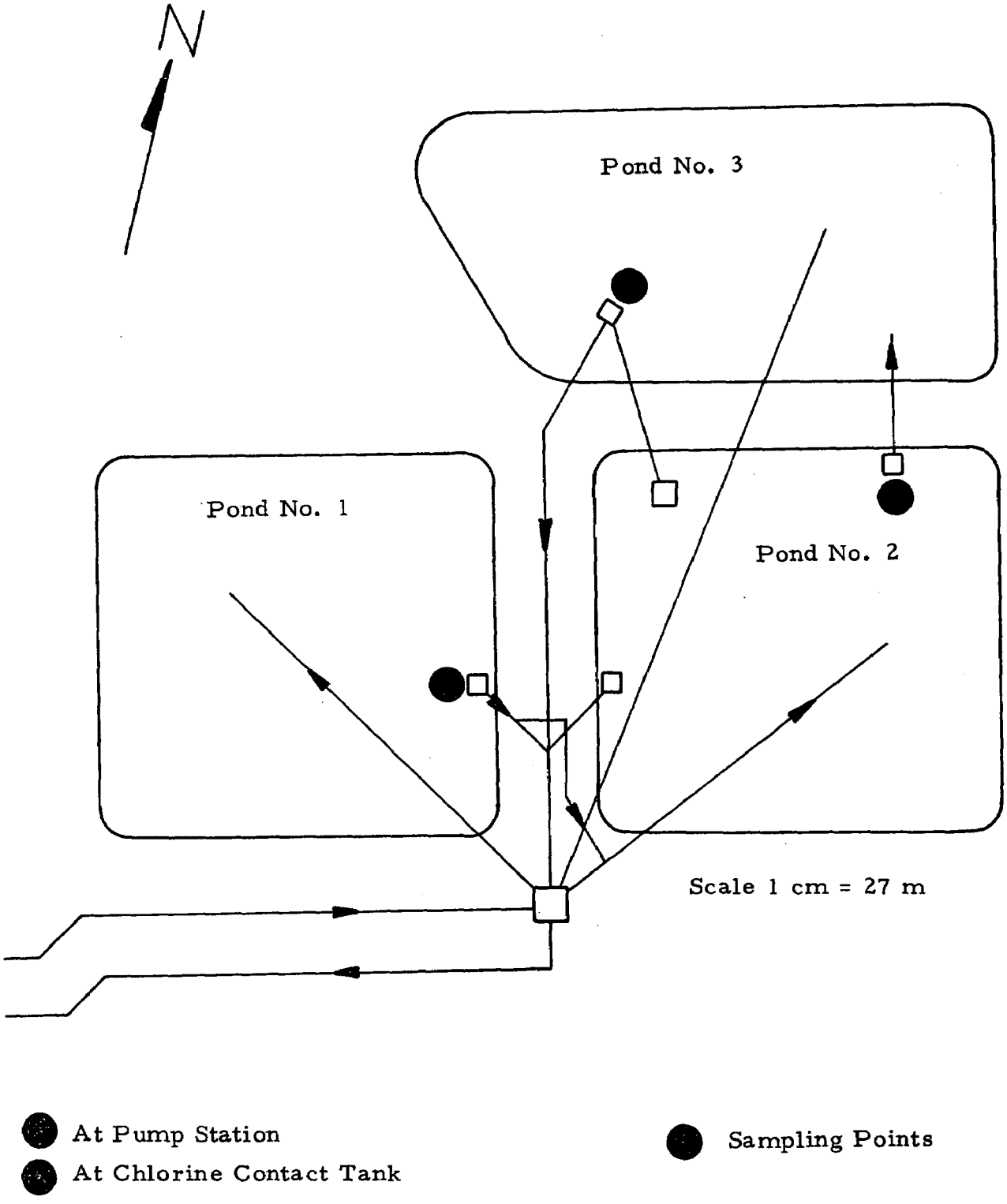


Figure 4. Location of sampling points.

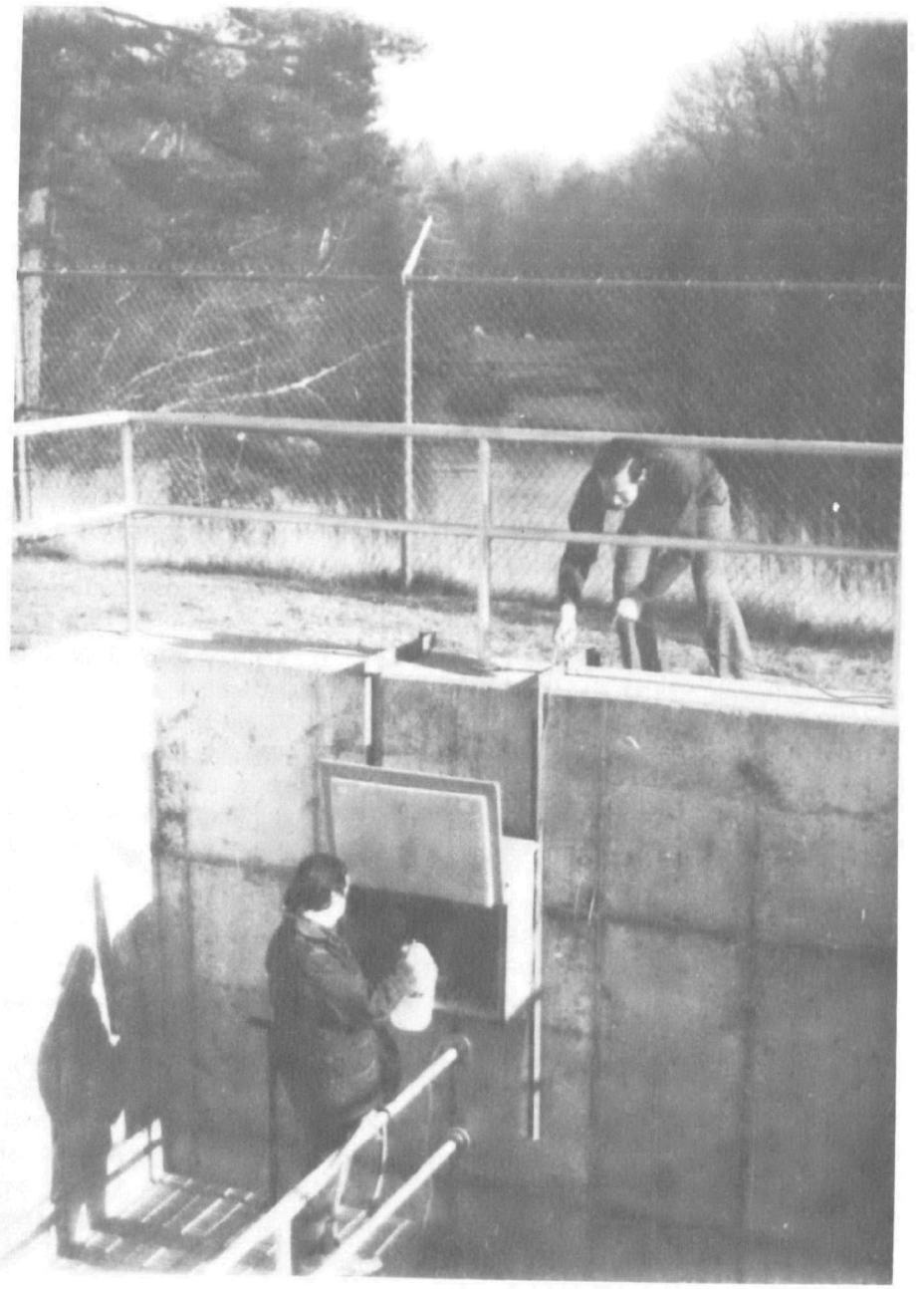


Figure 5. Effluent sampling station.

The needs of the program were met by a combination of sampling programs. Evaluation of some parameters was accomplished by collection of samples over a 24-hour period with the automatic sampling devices described above. A second group of parameters cannot be preserved over the 24 hours of sample collection and the additional hours for completion of the tests. These parameters were measured on grab samples and analyzed in the field on a spot basis, or fixed and brought to the lab for analysis.

The wastewater samples required to perform the total BOD, soluble BOD, suspended solids, and algal count, in addition to the samples to be sent to EPA Advanced Waste Treatment Research Laboratory in Cincinnati, were obtained with 24-hour automatic samplers. Several of the parameters to be measured cannot be determined by composite sampling since no method is available for sample preservation. These were measured on grab samples obtained at the time of collection of the composite sample, or were measured in situ. Dissolved oxygen (DO) was measured with a polarographic probe. Similarly pH was measured with a pH probe and temperature was determined by titration of a grab sample since it is not possible to preserve a sample for this analysis. Samples for fecal coliform analysis likewise cannot be composited and stored for more than six hours. Therefore, a grab sample was filtered onto delayed incubation preservative medium and returned to the JBF laboratory for colony development.

A summary presentation of the method of sampling for each parameter is as follows:

24-Hour Composite	Grab Sample
Total BOD	Temperature
Soluble BOD	Dissolved Oxygen
Suspended Solids	pH
Algal Count	Alkalinity
Sample for EPA Lab	Fecal Coliform

These sampling procedures were followed at each of the sample points within the treatment system.

The following are the laboratory analytical procedures followed during this study:

pH	measured in situ, method 144A, p. 276 Standard Methods*
Dissolved Oxygen	measured in situ, method 218F, p. 484 Standard Methods

* Standard Methods for the Examination of Water and Wastewater, American Public Health Assoc., New York, N.Y. (1971).

Temperature	measured in situ, method 162, p. 348 Standard Methods
Alkalinity	method 102, p. 52 Standard Methods
Total BOD	method 219, p. 489 Standard Methods. Nitrification inhibited by addition of 0.5 mg allythiourea per liter of dilution water
Soluble BOD	same as Total BOD but following filtration through an 0.45μ glass fiber filter.
Suspended Solids	method 224, p. 537 Standard Methods.
Fecal Coliform	method 408B, p. 684 Standard Methods. Samples preserved at treatment plant by method 408C, p. 685 Standard Methods. To aid in validating the membrane technique the fecal coliform MPN procedure, method 407C, p. 669 Standard Methods, was run on a number of samples during the early weeks of this study.
Algal Cell Count	method 601D, p. 734 Standard Methods.

The following sample preservation techniques were used for samples sent to the EPA Cincinnati laboratory:

a. One liter was preserved by method 200B, p. 368 Standard Methods for Total COD, Total P, and TKN analyses.

b. One liter was preserved by addition of 1 ml per liter of chloroform to the sample for NH_3 - N, NO_2 - N, and NO_3 - N analyses.

c. 0.25 liter was filtered through an 0.45μ glass fiber filter and preserved by method 200B, p. 368 Standard Methods for soluble COD analysis.

Analyses performed in the field (alkalinity, filtering of fecal coliform, preservation of algal cells) were performed in the laboratory at the Peterborough wastewater treatment plant. All other analyses and preparation and packaging of samples for shipment to EPA were carried out at the JBF Scientific Corporation Laboratory which at that time was located in Burlington, Massachusetts. This laboratory is certified by the Department of Public Health of the Commonwealth of Massachusetts to perform water chemistry analyses. Transportation of samples from Peterborough to Burlington was accomplished by car, and more often by United Parcel Service delivery. Samples were contained in plastic bottles and placed in an ice bath inside sealed plastic boxes. Delivery was generally accomplished

within 24 hours. On the one occasion when delivery was delayed for three days over a holiday the sample was discarded.

SECTION 6

EVALUATION OF THE PETERBOROUGH, NEW HAMPSHIRE, WASTEWATER TREATMENT LAGOON SYSTEM

The objectives of this project were to generate reliable year-round performance data at the Peterborough, New Hampshire, wastewater lagoon treatment plant and to utilize that data to evaluate the effectiveness of the lagoons tested to: a) perform in accordance with their design criteria, and b) to meet Secondary Treatment Standards as established by the Federal Water Pollution Control Amendments of 1972.

Treatment Plant Loading

The treatment system was designed in early 1968 by Camp, Dresser and McKee of Boston, Massachusetts, and constructed shortly thereafter. The design rationale was an areal loading basis of 19.6 kg BOD/ha/day (17.5 lb BOD/acre/day) in 1968 to be increased as population increased to a loading of 39.2 kg BOD/ha/day (35 lb BOD/acre/day) in the year 2000. The total initial BOD load was designed to be 227 kg/day (500 lb/day). The initial flow was considered to average 1.9 mil l/day (0.5 mgd) with a maximum of 8.1 mil l/day (2.14 mgd). At the design 1.2 m (4 foot) water depth the detention time would be 57 days. In the year 2000 the detention time was estimated to be 35 days. The ponds are not aerated. The population served is 2200 persons.

A summary comparing the design loading and the actual loading is shown in Table 1. The actual flow rate is seen to average only slightly more than half the design rate. The total BOD loading is also considerably lower than the design value and the areal BOD loading is approximately 20 percent less than the design value. The data for monthly average values show that in no month did the average flow rate exceed 65 percent of the design value. The total BOD loading was likewise less than the design value for all months, and the areal loading exceeded the design value for only two months, and then by only a small amount. It is apparent that during the period of this study the Peterborough treatment system was underloaded compared to its initial design loading.

Comparison with Secondary Treatment Standards

The Federal Secondary Treatment Standards were published in the Federal Register on August 17, 1973. The portions of those regulations to which the performance of the Peterborough wastewater treatment system is to be compared are the following:

TABLE 1. PETERBOROUGH LOADING RATES

	Influent Flow, MGD*		BOD, lb/day*	BOD, lb/acre/day*
	Ave.	Max.		
Design Loading Rates (1968)	0.50	2.14	500	17.5
Actual Loading, 12 month average	0.267	0.714	306	13.9
Month				
October	0.241		396	18.0
November	0.230		326	14.8
December	0.230		276	12.6
January	0.242		248	11.3
February	0.256		280	12.7
March	0.309		330	15.0
April	0.326		275	12.5
May	0.278		387	17.6
June	0.262		291	13.2
July	0.272		256	11.7
August	0.271		278	12.6
September	0.283		323	14.7

*1 MGD = 0.044 m^3/sec
*1 lb BOD/day = 0.454 kg BOD/day
*1 lb BOD/acre/day = 1.12 kg BOD/ha/day

The following paragraphs describe the minimum level of effluent quality attainable by secondary treatment in terms of the parameters biochemical oxygen demand, suspended solids, fecal coliform bacteria and pH. All requirements for each parameter shall be achieved except as provided for in § 133.103.

(a) Biochemical oxygen demand (five-day).

(1) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 30 milligrams per liter.

(2) The arithmetic mean of the values for effluent samples collected in a period of seven consecutive days shall not exceed 45 milligrams per liter.

(3) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

(b) Suspended solids

(1) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 30 milligrams per liter.

(2) The arithmetic mean of the values for effluent samples collected in a period of seven consecutive days shall not exceed 45 milligrams per liter.

(3) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

(c) Fecal coliform bacteria.

(1) The geometric mean of the value for effluent samples collected in a period of 30 consecutive days shall not exceed 200 per 100 milliliters.

(2) The geometric mean of the values for effluent samples collected in a period of seven consecutive days shall not exceed 400 per 100 milliliters.

(d) pH.

The effluent values for pH shall remain within the limits of 6.0 to 9.0.

The following paragraphs present the data collected during the year-long sampling and analysis program. For each of the four parameters comprising the Secondary Treatment Standards the data on treatment plant performance are summarized and compared to the Standards.

An important measure of comparison between the data gathered and the Standards is the performance of the treatment system during four intensive sampling periods which were conducted during the year-long study. The dates of intensive sampling periods were selected to provide representative portions of each season of the year. These periods were:

November 21	to	December 20
March 17	to	April 25
June 25	to	July 11
September 2	to	September 30

A second method of comparing the data to the Standards is to use monthly data to determine compliance. When intensive daily sampling was not in progress, sampling days were selected to provide approximately equal coverage for all days of the week. This randomness of selection of sampling day, and the fact that there are no significant industrial discharges into the system, means that monthly data, although much of it was not collected on successive days, provide an accurate picture of the performance of the treatment plant throughout the year.

Performance of the Peterborough wastewater treatment system during each of the intensive sampling periods is shown in Table 2. The following paragraphs discuss each parameter considered in the Section 133 requirements.

a. Biochemical Oxygen Demand

During the first intensive sampling period (11/21 to 12/20) the treatment system met all of the requirements set forth in the Standards. The arithmetic mean value of BOD concentration in the effluent was 7.3 mg/l, thus meeting the requirement of $\leq$ 30 mg/l. The greatest seven day arithmetic mean was 9.0 meeting the requirement of $<$ 45 mg/l. The average influent BOD was 149.3 mg/l and the average effluent BOD was 7.3 mg/l for a removal efficiency of 95.1 percent meeting the requirement of 85 percent removal.

During the second intensive sampling period the treatment system was unable to meet the requirement of the Standards concerning BOD removal. The mean value of all effluent BOD samples was 42.9 mg/l compared to the requirement of a maximum of 30 mg/l. The worse case seven day mean effluent BOD value was 56.7 mg/l which exceeds the limit of 45 mg/l, and the average percent removal during this period was 61 percent compared to the required treatment efficiency of 85 percent. The cause of the problem apparently was the ice cover on the ponds which caused anaerobic conditions to occur. Under anaerobic conditions treatment was less effective in terms of BOD removal.

TABLE 2. INTENSIVE SAMPLING PERIODS

	Section 133 Requirement	Period 1 11/21 to 12/20	Period 2 3/17 to 4/25	Period 3 6/25 to 7/11	Period 4 9/2 to 9/30
No. of Sampling Days	--	29	39	16	28
BOD					
Eff. conc., mg/l					
30-day ave.	30	7.3	42.9	10.1	5.8
7-day ave.	45	9.0	56.7	13.6	6.0
Percent removal	85	95.1	61.4	91.2	95.8
Suspended Solids					
Eff. conc., mg/l					
30-day ave.	30	11.1	11.9	6.5	8.1
7-day ave.	45	14.0	18.7	10.0	13.6
Percent removal	85	92.2	87.7	95.3	94.8
Fecal Coliform					
Eff. conc., no./100 ml					
30-day mean	200	0	3.0	0	1.9
7-day mean	400	0	19.2	0	9.1
pH					
Eff. value	6.0 to 9.0	6.7 to 6.8	5.6 to 6.4 21 days below 6.0	6.5 to 6.7	6.4 to 6.7

By the time of the third intensive sampling period (June 25 to July 11) the ice cover had melted and the treatment system had returned to good operating conditions. The average BOD concentration for all samples during this period was 10.1 mg/l and the worst case seven day average was 13.6 mg/l, each easily meeting the requirements of the Standards. The average percent removal was 91.2 percent.

The fourth intensive sampling period showed excellent performance. The average BOD concentration for all days was 5.8 mg/l and the worst case seven day value was 6.0 mg/l. The efficiency of removal was 95.8 percent.

b. Suspended Solids

During all four intensive sampling periods the concentration of suspended solids both for entire period and for the worst case seven day period were well within the limits imposed by the Standards. The percent removal in each case exceeded the 85 percent removal requirements.

c. Fecal Coliform

Fecal coliform concentrations in the effluent were low during each of the intensive sampling periods. During the first and third periods no coliform were observed in any of the samples. Although coliform were occasionally found in the second and fourth periods the concentrations were often zero and the geometric means were well below the values set by the Standards.

d. pH

During three of the four intensive sampling periods pH values stayed within the range of 6.0 to 9.0 percent required by the Standards. In the second period the pH was below 6.0 for many days. The lowest value observed was 5.6. The cause of the low pH was the massive amount of chlorine added to the effluent to meet the State of New Hampshire requirement of a chlorine residual of 2.0 mg/l. Under the anaerobic conditions existing in the ponds during this period, the chlorine demand of the effluent was high. The acidic effect of large amounts of chlorine often lowered the pH to levels which did not meet the Standards.

Monthly Averages of Treatment Plant Performance

The data gathered during this study may also be evaluated on the basis of monthly averages. These averages include both the data from the intensive sampling periods and also the data from other times when samples were obtained approximately twice a week. Since the sampling days were chosen essentially at random, the less frequent sampling also provides a good representation of treatment plant performance.

Table 3 shows monthly average BOD data including both total and soluble BOD. The concentration of both total and soluble BOD in the treatment plant influent were reasonably uniform throughout the year with random variation from month to month. The effluent BOD, however, shows a large increase during the months of January, February, March, and April. During all months except for this period total BOD removal was greater than 90 percent and soluble BOD removal was greater than 80 percent. During the winter months total BOD removal fell to about 60 percent with effluent BOD concentrations greater than 50 mg/l compared to the rest of the year when the total BOD concentration in the effluent was generally less than 10 mg/l. Soluble BOD removal during the four winter months decreased to the extent that effluent concentrations exceeded the influent concentration during the months of February and March. Since influent soluble BOD concentrations were lower during this period than for any other period of the year, it appears that under anaerobic conditions existing in the ponds beneath the ice cover, soluble BOD was being released from particulate matter by anaerobic decomposition. In the absence of aerobic organisms the soluble BOD was not being degraded which results in the observed increase in soluble BOD. When the ice cover left the ponds, rapid re-establishment of aerobic organisms quickly restored the treatment plant effluent to its usual condition of a low soluble BOD concentration. It is interesting to note that the concentration of effluent insoluble BOD was essentially unchanged throughout the year and ranged from 1.5 to 8.3 mg/l on a monthly average basis.

Figure 6 graphically presents the total and soluble BOD and COD data. Total oxygen demand is seen in both cases to depend on the soluble oxygen demand values since the distance between the lines (insoluble oxygen demand) was essentially constant throughout the year. COD values also exhibited the same type of seasonal variation as BOD values with a large peak during the winter months.

In addition to BOD, the Standards include restrictions on suspended solids, fecal coliform, and pH. The monthly average values of these parameters are shown in Table 4. Percent removal of suspended solids was quite consistent throughout the year with the exception of April during which the influent suspended solids concentration was by far the lowest of the year, and the effluent concentration was the second highest. No reason is known for this unusual behavior during April.

The April percent removal of suspended solids was the only month during which the 85 percent removal requirement was not met. Most months were considerably above that limit with the 12 month average percent removal of suspended solids at 91.6 percent. In contrast to the BOD removal previously discussed, suspended solids removal was apparently unaffected by the anaerobic state caused by ice cover during the winter. January, February, and March show no important differences from other months, and April's low percent removal was due more to low influent values than poor treatment.

Fecal coliform monthly values were all very low with a maximum geometric mean value of 5.4/100 ml compared to the 30-day statutory limit

TABLE 3. MONTHLY AVERAGE BIOCHEMICAL OXYGEN DEMAND

Month	Influent, mg/l		Effluent, mg/l		Percent Removal	
	Total	Soluble	Total	Soluble	Total	Soluble
October	197.3	70.2	14.3	12.8	92.8	81.8
November	169.9	49.5	8.8	7.3	94.8	85.3
December	143.5	48.7	8.5	6.2	94.1	87.3
January	123.0	39.7	30.9	25.5	74.9	35.8
February	131.1	36.5	49.0	43.0	62.6	(17.8)
March	128.0	43.4	54.9	46.6	57.1	(7.4)
April	101.4	31.3	33.8	28.1	66.7	10.2
May	166.8	72.8	11.8	7.6	92.9	89.6
June	132.5	55.8	9.8	6.8	92.6	87.8
July	112.7	48.8	9.9	6.1	91.2	87.5
August	122.6	56.1	6.4	4.1	94.8	92.7
September	136.8	49.6	5.8	3.7	95.8	92.5
12-Month Average	138.8	47.3	20.3	16.4	85.4	65.3

TABLE 4. MONTHLY RANGE PERFORMANCE DATA

Month	No. of Samples	Suspended Solids, mg/l Inf.	Eff.	% Rem.	Fecal Coliform/100 ml* Effluent	pH Range
October	9	156.4	17.0	89.1	0	6.5-7.0
November	16	151.1	11.7	92.3	0	6.5-8.4
December	23	135.7	12.0	91.2	0	6.7-6.8
January	11	126.4	14.2	88.8	0	6.2-6.6
February	10	148.2	10.3	93.0	1.7	6.0-6.3
March	17	134.2	7.8	94.2	0	5.7-6.1
April	26	75.8	14.3	81.2	5.4	5.7-6.4
May	6	139.0	13.8	90.1	2.3	6.4-7.0
June	12	135.7	12.8	90.6	1.4	6.5-7.2
July	15	144.6	9.5	93.5	0	6.5-6.7
August	8	130.1	5.2	96.0	2.3	6.4-6.6
September	28	155.4	8.1	94.8	1.9	6.4-6.7
12-Month Average		133	11.2	91.6	1.6	5.7-8.4

*Geometric mean of all samples during period. For calculation purposes, when non-zero values occurred during a month, a value of 1 was substituted for each zero in that month.

of 200/100 ml. On most days no coliform were observed. When coliform were observed, the field log generally noted a chlorinator failure for that day.

Except for several days in March and April, pH values were within the range of 6.0 to 9.0 required by the Standards. Low pH values were caused by large doses of chlorine added to the plant effluent during the winter months to meet the 2.0 mg/l residual chlorine requirement.

Additional Tests and Measurements

In addition to the treatment parameters previously discussed and required to be measured to determine compliance with the Standards, many other measurements and tests were conducted during this study. The Appendix contains a complete listing of all data gathered during this study. Table 5 presents a summary of treatment plant effluent quality. The following paragraphs discuss these and other results and their implications. Emphasis is placed on effluent quality.

a. Flow Measurement

Both influent and effluent flow measurements were recorded for each sampling day during the year. A summary of the data is shown in Table 6. Influent flow averages show that the maximum flow occurred in the spring during March and April but these values were only about 20 percent greater than the average for the entire year. The magnitude of the effluent flow was a function of both the influent flow rate and the setting of the elevation of the effluent wier, and therefore short-term variations are not very meaningful. However, over the course of a year influent and effluent values should match fairly well. At Peterborough the average effluent flow rate was found to be about 27 percent lower than the influent flow rate. At this location evaporation and rainfall are approximately equal, so the loss can be presumed to be predominantly due to infiltration into the ground. At the flow rates found during this study, the total infiltration would be about 26 million gallons per year.

b. Temperature

The treatment plant effluent temperature behaved as expected with a peak monthly average of 24°C in July and a minimum monthly average of 2°C in both February and March. Since the ponds have large surface area, shallow depth, and long detention time, it should be expected that the effluent temperature would vary with long seasonal air temperature.

c. Dissolved Oxygen

The concentration of dissolved oxygen in the effluent is presented in Table 5. Monthly averages are shown together with maximum and minimum values for each month. For most months the

TABLE 5. PETERBOROUGH EFFLUENT QUALITY

Month	Temp °C	Dissolved Oxygen mg/l			Total COD mg/l			Sol. COD mg/l			Nitrogen Species mg/l				Total P mg/l	Alkalinity mg/l	Algae x 10^3	Chlorine Residual, mg/l		
		Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	TKN	NH_3	NO_3	NO_2				Max	Min	Ave
Oct	10	8.4	2.8	5.4	137	114	126	118	82	97	14.5	4.3	0.4	<0.1	6.6	71	67	4.0	1.5	2.4
Nov	7	4.6	0.6	2.1	186	101	115	135	68	78	11.9	5.9	0.2	<0.1	6.3	82	189	4.0	1.0	2.2
Dec	3	1.9	0.3	0.5	121	74	96	83	62	70	14.5	9.4	0.1	<0.1	6.4	95	533	3.0	1.5	2.0
Jan	3	0.3	0.15	0.2	131	87	114	94	79	88	23.8	16.9	0.1	<0.1	7.1	106	548	2.5	0.5	1.6
Feb	2	0.3	0.2	0.2	203	118	154	114	87	103	27.8	20.8	<0.1	<0.1	7.3	96	371	10.0	0.5	3.2
March	2	0.3	0.2	0.2	190	136	151	118	97	107	26.1	21.7	<0.1	<0.1	6.6	86	238	4.0	0.5	2.1
April	5	3.8	0.1	0.7	143	53	106	98	44	74	21.0	16.8	<0.1	<0.1	4.6	84	95	7.5	0.0	3.5
May	18	5.9	0.2	1.8	81	64	71	60	48	55	18.5	14.8	<0.1	<0.1	4.6	100	222	2.0	1.5	1.9
June	22	13.4	0.3	3.3	109	75	87	78	57	68	14.6	9.7	0.2	0.1	5.3	81	2.6	3.0	1.0	2.1
July	24	3.3	0.3	1.6	112	90	103	106	74	88	13.2	7.6	0.2	0.2	5.8	79	6.3	3.0	1.5	2.0
Aug	23	3.6	0.3	2.0	106	88	100	96	83	91	8.8	4.2	0.4	<0.1	5.7	66	1.9	3.0	2.0	2.1
Sept	17	2.8	0.2	1.0	118	84	95	101	73	84	7.0	3.8	0.3	0.1	5.6	71	1.6	5.0	1.5	2.7

TABLE 6. FLOW MEASUREMENT SUMMARY

Month	No. of Obs. Inf.	Eff.	Daily Ave., mg* Inf.	Eff.	Monthly Total, mg* Inf.	Eff.
October	9	9	0.241	0.141	2.166	1.270
November	16	16	0.230	0.118	3.678	1.895
December	23	23	0.230	0.186	5.300	4.283
January	11	11	0.242	0.202	2.665	2.221
February	10	10	0.256	0.256	2.558	2.555
March	17	17	0.309	0.180	5.248	3.052
April	26	22	0.326	0.231	8.481	5.073
May	6	6	0.278	0.412	1.668	2.472
June	12	12	0.262	0.210	3.147	2.520
July	15	15	0.272	0.118	4.075	1.775
August	8	8	0.271	0.137	2.166	1.096
September	29	29	0.283	0.249	8.215	7.218
weighted 12-month average			0.271	0.199		

$$\text{water loss} = \frac{0.271-0.199}{0.271} (100) = 26.6 \text{ percent}$$

*1 mg = 3785 m^3

average value was quite low with only three months averaging 2.0 mg/l or greater. During the months from December to April the DO was generally below 2.0 mg/l at all times and was often essentially zero under the ice cover.

d. Chemical Oxygen Demand

Monthly values of both total and soluble COD in the effluent are shown in Table 5. A graph of these values together with comparable BOD values has been presented in Figure 6. The maximum values are seen to occur during the months of February and March when anaerobic conditions in the ponds limited biological activity.

e. Nitrogen Species

During the test period, four nitrogen species were measured: total kjeldahl nitrogen (TKN), ammonia nitrogen, nitrate and nitrite nitrogen. During the winter months when the ice cover was established TKN values rose to approximately twice the average for the other months of the year. Ammonia nitrogen values also rose to several times the value observed during other parts of the year. Although all the values were low for both nitrate and nitrite nitrogen it appears that nitrate nitrogen values decreased during the winter. The nitrite concentration was generally undetectable.

f. Total Phosphorus

Removal of total phosphorus by the treatment system averaged less than 10 percent. The plant influent averaged 6.4 mg/l and the effluent 5.9 mg/l. This result would be expected since biological treatment plants are not efficient processes for removal of phosphorus.

g. Alkalinity

Effluent alkalinity values remained essentially unchanged during the study. However, effluent values did not accurately reflect seasonal changes in alkalinity because the effluent was highly chlorinated during the winter months. The chemical reactions occurring during chlorination release hydrochloric acid and in effect reduce the alkalinity of the water. A better measure of seasonal changes is the effluent from Pond No. 3 prior to chlorination. This exhibits a marked trend as shown in the following table:

October	83 mg/l	April	114 mg/l
November	93 mg/l	May	107 mg/l
December	108 mg/l	June	94 mg/l
January	135 mg/l	July	92 mg/l
February	164 mg/l	August	80 mg/l
March	147 mg/l	September	82 mg/l

During the summer months when algal biological activity was

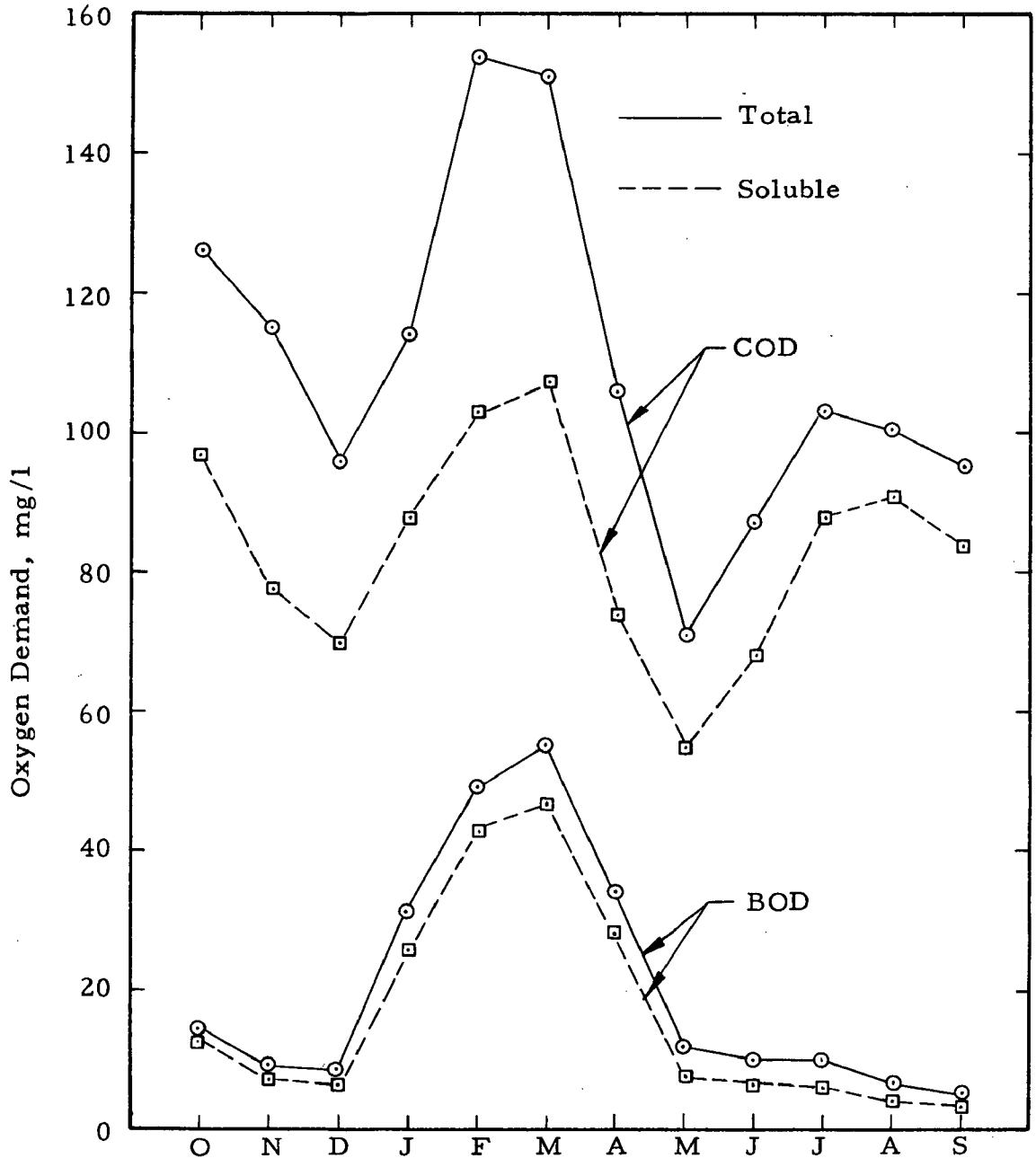


Figure 6. Average monthly effluent oxygen demand.

greatest, the concentration of inorganic carbon (bicarbonates) was low. As biological activity slowed down during the winter, the concentration of bicarbonates increased. During the winter the anaerobic organisms under the ice cover produced carbon dioxide as a decomposition product and thus increased alkalinity.

h. Algae

One of the tests performed during this study was algae counting by microscopic examination of samples preserved in formaldehyde. This effort was largely unproductive. Several reasons can be cited including large concentrations of detrital matter (particularly during the winter months) which interfered with counting, large variations in species which caused difficulty in identification of which particulate matter were actually algae, and the sporadic presence of rotifers in the samples which consumed the algae before being killed by the preservative. For these reasons the algae count data contained in this report is of questionable value and great care should be taken in utilizing this data.

i. Chlorine Residual

The Peterborough treatment plant uses chlorine for disinfection of the effluent immediately before discharge to the Contoocook River. The criteria used to determine the proper dose is that a chlorine residual of 2.0 mg/l is to be maintained. When the ponds are aerobic the chlorine dose required to maintain the residual is about 10 mg/l. As the ice cover formed and the ponds became anaerobic and the chlorine demand (chlorine dose minus chlorine residual) rapidly increased to more than 40 mg/l. When the ice went out in April the chlorine demand rapidly returned to its summer time condition. The following Table shows the chlorine demand during the year of study.

October	9.9 mg/l	April	20.8 mg/l
November	9.5 mg/l	May	5.9 mg/l
December	8.0 mg/l	June	9.0 mg/l
January	23.3 mg/l	July	8.7 mg/l
February	41.7 mg/l	August	9.9 mg/l
March	42.0 mg/l	September	7.3 mg/l

This dramatically shows the change of behavior of the pond system through the seasons.

SECTION 7

APPENDICES

DATE	10/1/74					10/4/74					10/8/74				
AIR TEMP °C MAX/MIN															
WEATHER	Partly Cloudy					Cold, Sunny					Clear				
INF FLOW, MG	0.222					0.200					0.203				
EFF FLOW, MG	0.130					0.129					0.135				
CL_2 DOSE-MG/L	13.0					14.8					13.3				
CL_2 RESIDUAL-MG/L	1.5					2.0					4.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	15	14	14	14	14	15	10	11	11	11	15	11	11	11	11
DO, MG/L	4.0	10.4	>15	>15	2.8	4.6	>15	9.2	9.4	4.2	2.0	>15	>15	3.6	5.6
PH	7.1	7.4	7.2	7.5	6.6	7.2	7.6	7.7	7.5	6.6	7.1	7.9	8.2	7.7	6.7
ALKALINITY-MG/L	168	101	98	81	72	173	105	105	86	73	154	110	105	84	73
SUSP. SOLIDS-MG/L	175	100	46	39	24	154	91	40	27	11	174	80	49	19	16
BOD TOTAL MG/L	178	40	32	27	11	208	42	29	25	9	219	38	34	37	12
BOD, SOL MG/L	48	14	15	6	6	75	9	11	9	11	95	12	7	12	12
ALGAE /ML x 10^3	—	147	81	125	123	—	246	107	165	92	—	205	107	145	109
*FECAL COLI/100ML x 10^6															
*MPN/100 ML x 10^6															
NH_3-N, MG/L	28.4	10.9	9.7	5.1	5.3	30.0	10.2	9.3	5.3	5.3	26.1	9.7	8.0	4.8	4.5
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	0.05	0.05	0.05	0.05	<0.1	<0.1	0.1	0.2	<0.1
COD TOTAL MG/L	231	219	145	116	118	361	201	155	118	114	378	199	171	138	124
COD SOL. MG/L	175	133	95	86	83	133	105	78	77	82	118	113	101	92	90
TKN MG/L	33.6	22.4	18.4	10.3	10.0	42.8	23.2	19.6	11.5	9.6	44.0	21.6	17.9	11.4	10.0
TOTAL P MG/L	8.3	7.6	7.2	6.6	6.5	8.4	7.5	7.3	6.7	6.6	9.8	8.0	7.8	6.8	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	10/12/74					10/16/74					10/19/74				
AIR TEMP °C MAX/MIN															
WEATHER	Cloudy					Rain					Sunny				
INF FLOW, MG	0.471					0.210					0.232				
EFF FLOW, MG	0.138					0.138					0.152				
CL_2 DOSE-MG/L	13.0					12.1					12.2				
CL_2 RESIDUAL-MG/L	3.0					1.5					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	15	11	11	11	11	15	11	11	10.5	12	13	8	8	8	8.5
DO, MG/L	3.5	7.0	14.2	11.4	3.8	4.2	10.7	10.5	>15	5.9	3.5	4.0	7.9	12.8	3.2
PH	7.2	7.6	8.5	7.9	6.7	7.1	7.1	8.1	7.6	6.6	7.5	7.0	7.9	7.7	6.5
ALKALINITY-MG/L	166	113	98	87	73	178	120	100	85	66	178	113	96	82	71
SUSP. SOLIDS-MG/L	164	72	58	28	16	163	60	52	30	14	150	57	49	24	15
BOD TOTAL MG/L	207	35	25	29	12	199	42	32	26	13	217	39	33	21	12
BOD, SOL MG/L	67	8	6	9	10	75	11	10	12	14	81	7	5	5	10
ALGAE /ML x 10^3	–	197	176	92	54	–	117	167	85	73	–	60	126	75	61
* FECAL COLI/100ML x 10^6						40	0.37	0.04	0.11	0	9.8	0.43	0.07	0.015	0
* MPN/100ML x 10^6						1.6	0.003	0.016							
NH_3-N, MG/L	25.1	10.2	7.1	4.7	4.2	25.2	10.7	6.9	4.3	4.1	28.6	11.9	7.4	4.4	4.3
NO_3-N, MG/L	0.1	0.1	0.1	<0.1	0.3	<0.1	<0.1	0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	0.2
NO_2-N, MG/L	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	0.2	0.4	<0.1	<0.1	<0.1	0.1	0.3	0.1
COD TOTAL MG/L	369	210	196	144	124	356	212	186	140	126	307	165	173	128	137
COD SOL. MG/L	139	127	129	104	93	153	127	119	118	87	129	143	130	102	101
TKN MG/L	37.2	21.6	19.6	12.5	10.5	38.8	23.6	17.0	11.6	10.8	42.0	22.4	17.6	11.1	11.4
TOTAL P MG/L	7.2	7.9	7.6	6.8	6.8	7.2	8.1	7.6	6.6	6.6	8.3	7.7	7.5	6.6	6.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	10/22/74					10/24/74					10/28/74				
AIR TEMP °C MAX/MIN															
WEATHER	Sunny					Sunny					Clear				
INF FLOW, MG	0.227					0.223					0.178				
EFF FLOW, MG	0.149					0.149					0.150				
CL_2 DOSE-MG/L	11.9					8.8					11.2				
CL_2 RESIDUAL-MG/L	3.0					3.0					1.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	13	5	5	5	7	15	6.5	6.5	6.5	8	14	8	8	8	9
DO, MG/L	3.0	3.7	11.4	11.6	6.8	4.4	5.6	12.1	12.2	8.1	1.2	6.5	14.0	14.6	8.4
pH	7.9	7.2	8.3	8.4	6.7	7.2	7.4	8.4	8.4	7.0	7.2	7.3	8.4	8.5	7.0
ALKALINITY-MG/L	143	123	96	80	66	107	125	100	83	71	90	124	100	82	75
SUSP. SOLIDS-MG/L	161	47	32	26	18	160	47	44	29	20	107	73	50	37	19
BOD TOTAL MG/L	220	51	34	35	19	183	48	29	34	21	145	57	40	43	20
BOD, SOL MG/L	76	12	9	13	18	65	11	6	10	18	50	13	10	16	16
ALGAE /ML x 10^3	–	33	44	58	33	–	20	32	7.7	22	–	28	12	45	21
* FECAL COLI/100ML x 10^6	6.8	0.28	0.007	0.008	0	0.4	0.005	.0003	.0002	0	0.4	.002	.0001	.0001	0
* MPN/100ML x 10^6															
NH_3-N, MG/L	25.1	12.6	7.2	4.1	3.7	24.5	12.2	7.1	3.7	3.7	17.2	14.2	7.2	4.2	3.7
NO_3-N, MG/L	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	2.4
NO_2-N, MG/L	<0.1	<0.1	0.2	0.3	<0.1	<0.1	<0.1	0.1	0.3	0.1	<0.1	<0.1	0.1	0.3	0.5
COD TOTAL MG/L	378	201	160	135	128	324	189	171	146	136	305	235	185	153	129
COD SOL. MG/L	148	131	127	120	118	140	134	131	124	113	88	143	121	125	110
TKN MG/L	40.4	19.6	17	11	37	10.9	24.4	17.6	11.4	20.2	24.0	28.3	19.2	13.3	11.2
TOTAL P MG/L	9.3	7.9	7.3	6.8	6.7	8.1	7.8	7.4	6.6	6.7	4.0	8.4	7.2	7.1	6.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	11/3/74					11/4/74					11/7/74				
AIR TEMP °C MAX/MIN															
WEATHER	Sunny					Rain					Cloudy				
INF FLOW, MG	0.202					0.177					0.285				
EFF FLOW, MG	0.172					0.150					0.101				
CL_2 DOSE-MG/L	13.2					12.8					12.8				
CL_2 RESIDUAL-MG/L	3.0					2.0					1.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	14	11	11	10	11	15	12	11	11	12	14.5	11	10.5	10.5	11.5
DO, MG/L	4.0	0.6	15.2	9.0	4.6	1.9	0.4	10.4	7.4	3.3	2.7	0.7	2.5	3.6	1.7
pH	8.6	7.5	8.6	8.3	8.4	7.1	7.1	8.1	7.5	6.7	7.3	7.1	7.3	7.1	6.8
ALKALINITY-MG/L	170	132	96	82	80	88	130	105	83	66	113	135	96	84	80
SUSP. SOLIDS-MG/L	162	90	129	31	16	197	63	62	25	15	166	52	41	15	14
BOD TOTAL MG/L	229	53	50	33	16	257	49	31	30	14	149	44	24	20	12
BOD, SOL MG/L	75	11	7	8	12	79	14	10	10	12	43	11	9	9	12
ALGAE /ML $\times 10^3$	–	29	91	27	13	–	116	97	31	15	–	219	147	15	29
* FECAL COLI/100ML $\times 10^6$	5.4	0.81	0.45	0.15	0	2.0	0.75	0.2	0.4	0	4.5	0.19	0.08	0.04	0
* MPN/100 ML $\times 10^6$											0.92	0.03	0.02	0.02	2
NH_3-N, MG/L	21.4	12.4	6.6	3.0	3.6	21.6	13.4	6.8	3.3	3.5	19.6	14.4	8.4	4.4	4.6
NO_3-N, MG/L	<0.1	<0.1	0.2	0.3	<0.1	<0.1	<0.1	0.2	0.4	0.4	0.1	0.1	0.1	0.2	0.3
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.2	0.1
COD TOTAL MG/L	399	247	289	142	126	514	213	213	146	125	328	192	160	103	111
COD SOL. MG/L	192	135	134	119	135	81	82	81	76	83	37	95	79	71	74
TKN MG/L	34.0	27.6	27.2	5.6	10.4	35.2	26.8	20.0	10.6	9.9	28.0	27.6	17.8	9.8	10.0
TOTAL P MG/L	9.3	7.9	8.0	6.2	6.1	9.2	8.0	7.5	6.2	6.2	6.9	7.8	7.2	6.4	6.1

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	11/13/74					11/14/74					11/19/74				
AIR TEMP °C MAX/MIN											12/-4				
WEATHER	Rain					Cloudy					Clear				
INF FLOW, MG	0.216					0.248					0.232				
EFF FLOW, MG	0.150					0.101					0.111				
CL_2 DOSE-MG/L	13.6					18.0					12.0				
CL_2 RESIDUAL-MG/L	2.5					4.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	13	9	8	8	9	14	8	7.5	7	9	14	5	5	5	7
DO, MG/L	2.3	4.2	5.4	0.8	0.7	1.4	7.2	6.3	1.1	0.6	2.7	10.0	5.1	2.9	1.4
pH	7.2	7.1	7.3	6.9	6.5	7.2	7.2	7.3	7.0	6.6	7.3	7.4	7.3	7.1	6.7
ALKALINITY-MG/L	88	128	106	75	69	125	128	111	90	72	106	125	116	100	86
SUSP. SOLIDS-MG/L	133	66	59	17	9	171	74	50	17	10	183	100	58	22	15
BOD TOTAL MG/L	139	40	36	16	7	172	41	31	16	10	230	52	39	16	11
BOD, SOL MG/L	40	9	4	3	6	44	9	5	3	5	59	11	9	7	10
ALGAE /ML x 10^3	–	396	212	24	17	–	296	189	28	29	–	1370	22	1.4	22
* FECAL COLI/100ML x 10^6	2.5	0.1	0.2	0.012	0	1.2	0.18	0.24	0.22	0	6.4	0.19	0.19	0.18	0
* MPN/100 ML x 10^6						2.4	0.24	0.004	0.016	0	2.4	0.35	0.22	0.35	0
NH_3-N, MG/L	27.5	15.0	10.4	5.9	4.7	23.6	14.0	10.2	5.9	4.7	25.7	13.9	11.5	6.7	6.2
NO_3-N, MG/L	0.04	<0.02	0.08	0.15	0.27	<0.02	<0.02	0.08	0.14	0.27	0.08	0.01	0.08	0.06	0.13
NO_2-N, MG/L	<0.02	0.05	0.06	0.06	0.05	0.04	0.06	0.07	0.07	0.05	0.02	0.08	0.06	0.05	0.07
COD TOTAL MG/L	285	216	173	104	104	339	207	169	107	114	392	234	173	110	107
COD SOL. MG/L	103 ~~165~~	75	70	70	74	108	86	72	77	75	139	80	66	76	76
TKN MG/L	109	42.4	21.2	11.8	10.2	40.8	27.2	21.6	11.6	19.5	101	30.4	24.8	12.3	12.0
TOTAL P MG/L	7.3	8.0	7.1	6.5	6.4	6.8	7.5	7.1	6.5	6.7	8.3	7.7	7.1	6.5	6.4

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	11/21/74					11/22/74					11/23/74				
AIR TEMP °C MAX/MIN	12/2					4/-5					1/-11				
WEATHER	Rain					Clear, Cold					Clear				
INF FLOW, MG	0.284					0.283					0.253				
EFF FLOW, MG	0.111					0.106					0.111				
CL_2 DOSE-MG/L	9.2					10.2					10.9				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	13	6	5	5	7	13	4	4	4	6	12	4	3.5	4	5
DO, MG/L	3.2	7.9	5.5	2.9	1.6	1.8	6.6	5.5	3.1	3.8	2.4	5.4	6.2	2.5	1.3
pH	7.1	7.3	7.2	7.0	6.7	7.0	7.2	7.2	7.0	6.7	7.1	7.3	7.3	7.0	6.7
ALKALINITY-MG/L	64	120	117	94	81	107	121	116	93	82	101	123	116	93	86
SUSP. SOLIDS-MG/L	220	87	45	13	9	139	86	46	17	10	121	85	60	22	10
BOD TOTAL MG/L	212	46	30	8	4	128	42	32	9	5	160	50	40	15	6
BOD, SOL MG/L	35	7	6	1	4	42	12	6	4	5	53	10	7	4	6
ALGAE /ML $\times 10^3$	–	2200	2300	514	292	–	4200	2300	5.6	2.8	–	2400	2400	224	336
*FECAL COLI/100ML$\times 10^6$	5.4	0.6	0.55	0.6	0	2.2	0.18	0.16	0.17	0	1.9	0.24	0.22	0.15	0
*MPN/100ML$\times 10^6$															
NH_3-N, MG/L	19.6	14.4	11.4	7.0	6.4	20.5	14.0	11.3	6.9	6.6	26.6	15.0	12.0	6.5	6.6
NO_3-N, MG/L	0.04	0.07	0.12	0.10	0.14	<0.03	<0.04	<0.07	0.08	0.17	0.02	0.08	0.12	0.09	0.17
NO_2-N, MG/L	0.02	0.05	0.04	0.04	0.06	0.04	0.08	0.07	0.06	0.04	0.04	0.04	0.04	0.03	0.04
COD TOTAL MG/L	252	223	167	112	104	293	223	154	97	101	326	220	183	121	111
COD SOL. MG/L	87	76	68	71	75	115	84	68	73	73	112	77	71	80	80
TKN MG/L	30.4	26.6	19.4	12.7	10.8	30.0	30.4	21.6	11.8	11.8	36.4	26.6	12.3	12.0	11.3
TOTAL P MG/L	5.9	7.6	6.9	6.6	6.3	5.6	7.6	6.8	6.4	6.4	7.4	7.6	7.4	6.4	6.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	11/24/74					11/25/74					11/26/74				
AIR TEMP °C MAX/MIN	6/-5					8/3					9/-6				
WEATHER	Cloudy					Cloudy					Cloudy, snow				
INF FLOW, MG	0.209					0.188					0.250				
EFF FLOW, MG	0.114					0.108					0.111				
CL_2 DOSE-MG/L	10.5					10.0					12.0				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	12	5	4	4	5.5	13	6	5	5	6	13	3	3	3	5
DO, MG/L	3.5	4.0	6.9	2.0	1.1	2.2	4.0	6.7	3.5	1.8	2.9	2.8	6.1	3.1	1.8
pH	7.0	7.2	7.4	7.0	6.7	7.0	7.3	7.4	7.0	6.8	7.2	7.2	7.2	7.0	6.7
ALKALINITY-MG/L	84	129	110	96	83	88	125	110	99	83	109	132	116	95	85
SUSP. SOLIDS-MG/L	113	62	53	15	10	341	78	51	16	8	185	75	47	17	11
BOD TOTAL MG/L	182	43	38	15	6	243	49	37	19	9					
BOD, SOL MG/L	49	9	6	2	4	77	12	12	8	9					
ALGAE /ML $\times 10^3$	–	2700	2300	469	467	–	2000	1800	570	357	–	899	953	151	293
* FECAL COLI/100ML$\times 10^6$	2.2	0.49	0.13	0.26	0	3.4	0.47	0.15	0.24	0	1.7	0.26	0.10	0.02	0
* MPN/100ML$\times 10^6$															
NH_3-N, MG/L	18.6	14.4	11.6	7.2	6.8	18.7	14.5	11.5	7.4	6.8	42.0	15.5	12.3	7.0	7.1
NO_3-N, MG/L	0.02	0.05	0.10	0.08	0.17	0.07	0.10	0.13	0.13	0.17	0.04	0.04	0.09	0.06	0.10
NO_2-N, MG/L	0.04	0.05	0.06	0.04	0.05	0.03	0.05	0.04	0.03	0.06	0.02	0.02	0.02	0.02	0.02
COD TOTAL MG/L	297	203	177	111	110	417	224	176	118	106	407	181	162	115	104
COD SOL. MG/L	112	77	68	72	73	128	77	37	74	76	189	71	62	66	72
TKN MG/L	30.8	28.0	20.8	11.4	11.3	30.8	26.6	21.0	11.4	11.0	37.6	26.4	21.2	12.6	11.9
TOTAL P MG/L	8.3	7.3	7.1	6.5	6.4	9.1	7.4	7.1	6.6	6.4	8.1	7.2	7.0	6.6	6.2

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	11/27/74					11/28/74					11/29/74				
AIR TEMP °C MAX/MIN	-1/-9					3/-12					7.5/-6				
WEATHER	Clear					Partly Cloudy					Cloudy				
INF FLOW, MG	0.239					0.237					0.176				
EFF FLOW, MG	0.112					0.112					0.116				
CL_2 DOSE-MG/L	9.6					10.8									
CL_2 RESIDUAL-MG/L	2.0					2.0									
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	3	1.5	1	2	4	12	3	1.5	2.5	4	11.5	4	2	3	5
DO, MG/L	2.8	2.6	7.6	4.2	2.5	4.2	1.6	8.4	4.0	2.7	3.6	0.8	8.4	4.0	2.5
pH	7.2	7.2	7.3	7.1	6.8	7.9	7.3	7.4	7.1	6.8	7.1	7.1	7.4	7.0	6.7
ALKALINITY-MG/L	112	128	121	96	86	144	137	121	104	89	112	132	117	100	99
SUSP. SOLIDS-MG/L	53	70	51	24	11	35	61	49	19	13	165	71	50	21	14
BOD TOTAL MG/L	89	46	35	15	6	72	42	34	18	8	197	51	50	18	9
BOD, SOL MG/L	32	7	5	1	4	36	10	9	5	6	49	11	7	4	6
ALGAE /ML x 10^3	—	1600	1100	359	308	—	3100	1800	438	591	—	2000	1900	358	604
* FECAL COLI/100ML x 10^6	4.6	0.51	0.28	0.04	0	7.5	0.47	0.27	0.01	0	1.2	0.30	0.16	0.02	0
* MPN/100 ML x 10^6											1.6	0.18	0.24	0.02	0
NH_3-N, MG/L	16.2	15.0	11.8	7.8	4.2	21.0	16.2	12.1	7.7	7.4	21.7	15.5	11.9	7.3	7.6
NO_3-N, MG/L	0.14	0.17	0.07	0.11	0.10	<0.01	0.04	0.08	0.08	0.12	0.04	0.04	0.05	0.04	0.06
NO_2-N, MG/L	0.12	0.05	0.5	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.06
COD TOTAL MG/L	178	210	167	119	115	96	139	156	116	106	251	201	170	118	186
COD SOL. MG/L	57	73	64	68	69	55	74	66	70	72	76	74	64	70	68
TKN MG/L	22.0	26.8	20.6	13.7	12.2	20.0	28.0	22.8	13.2	13.6	33.2	26.4	20.8	13.4	13.0
TOTAL P MG/L	2.9	7.4	7.2	6.8	6.4	3.4	7.5	7.1	6.8	6.4	3.1	7.1	6.9	6.4	6.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	11/30/74					12/1/74					12/2/74				
AIR TEMP °C MAX/MIN	3/-14					-5/-17					1/-8				
WEATHER	Clear					Cloudy					Rain and Snow				
INF FLOW, MG	0.199					0.189					0.181				
EFF FLOW, MG	0.109					0.115					0.111				
CL_2 DOSE-MG/L	10.0					10.4					12.0				
CL_2 RESIDUAL-MG/L	2.0					2.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	13	4	2	3	4	11	4.5	2	2.5	9	12	5	2	2	4
DO, MG/L	4.7	0.3	8.7	2.6	1.9	4.4	0.3	8.7	2.4	1.7	3.6	0.3	7.5	1.5	1.3
pH	7.0	7.1	7.3	7.1	6.7	7.0	7.1	7.5	7.1	6.7	7.3	7.2	7.4	7.0	6.7
ALKALINITY-MG/L	83	143	118	99	87	89	144	123	102	93	111	136	125	98	90
SUSP. SOLIDS-MG/L	28	64	48	22	12	17	69	46	16	10	168	70	46	20	16
BOD TOTAL MG/L	89	45	34	15	9	81	50	36	19	13	126	34	27	11	5
BOD, SOL MG/L	29	13	12	6	9	46	15	12	8	10	11	6	11	1	2
ALGAE /ML x 10^3	–	2100	1900	580	546	–	2130	1940	414	238	–	2060	1650	327	383
*FECAL COLI/100ML x 10^6	2.9	0.23	0.78	0.02	0	3.7	1.8	0.20	0.06	0	4.5	2.5	0.37	0.08	0
*MPN/100ML x 10^6															
NH_3-N, MG/L	12.8	16.5	12.0	8.0	7.5	12.8	16.5	11.8	7.1	7.4	17.2	17.3	12.5	8.2	7.6
NO_3-N, MG/L	<0.01	<0.01	0.08	0.05	0.12	0.04	0.04	0.05	0.07	0.18	0.05	0.06	0.08	0.06	0.06
NO_2-N, MG/L	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.06	0.05	0.06	0.05	0.05	0.07	0.05	0.08
COD TOTAL MG/L	74	178	159	109	103	71	183	152	107	114	146	170	152	127	107
COD SOL. MG/L	34	72	70	72	69	46	70	60	73	68	43	74	63	68	68
TKN MG/L	17.9	27.2	21.0	13.5	11.8	17.8	26.8	21.2	13.6	12.6	24.8	28.0	20.4	13.7	12.3
TOTAL P MG/L	2.2	7.2	7.0	6.7	6.4	2.0	7.2	6.9	6.4	3.0	6.3	7.2	7.1	6.5	6.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	12/3/74					12/4/74					12/5/74				
AIR TEMP °C MAX/MIN	2/-1					1/-5					-2/-14				
WEATHER	Cloudy					Partly Cloudy					Cloudy				
INF FLOW, MG	0.337					0.239					0.235				
EFF FLOW, MG	0.111					0.109					0.111				
CL_2 DOSE-MG/L	9.3					11.0					10.8				
CL_2 RESIDUAL-MG/L	2.0					2.5					2.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	13	4	2	2	4	11	4	2	2	4	11	4	3	2	4
DO, MG/L	3.1	0.3	4.9	0.9	0.6	4.4	0.3	4.1	0.9	0.5	4.1	0.3	4.2	0.8	0.4
pH	8.4	7.1	7.3	7.0	6.7	7.7	7.1	7.2	7.0	6.7	7.4	7.1	7.2	7.0	6.7
ALKALINITY-MG/L	161	137	120	97	86	121	144	122	108	88	144	145	122	104	86
SUSP. SOLIDS-MG/L	149	58	42	20	8	141	60	57	15	11	130	50	40	20	6
BOD TOTAL MG/L	138	45	30	17	5	130	48	34	14	6	183	44	30	13	5
BOD, SOL MG/L	33	8	4	1	2	34	9	6	5	5	56	14	7	4	4
ALGAE /ML x 10^3	—	2210	1920	313	524	—	2660	2920	509	711	—	2940	3190	575	627
*FECAL COLI/100ML x 10^6	2.3	0.49	0.13	0.07	0	1.3	0.33	0.09	0.02	0	3.2	0.54	0.11	0.03	0
*MPN/100ML x 10^6															
NH_3-N, MG/L	29.2	16.2	13.0	7.8	7.6	23.2	17.5	13.6	8.3	7.6	25.5	17.7	13.4	8.5	7.9
NO_3-N, MG/L	0.05	0.01	0.01	0.05	0.13	0.15	0.18	0.21	0.18	0.21	0.12	0.21	0.22	0.16	0.22
NO_2-N, MG/L	0.33	0.05	0.06	0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.06	<0.06	<0.05	<0.05
COD TOTAL MG/L	275	167	148	100	96	165	143	130	95	92	256	161	130	97	95
COD SOL. MG/L	95	71	66	71	71	116	83	69	78	79	147	91	71	88	81
TKN MG/L	40.4	26.4	20.8	13.2	13.0	32.4	26.8	21.2	13.6	12.2	35.6	26.2	21.7	13.4	12.2
TOTAL P MG/L	5.8	6.7	7.0	6.3	6.3	7.2	7.2	7.1	6.5	6.3	7.5	7.6	7.2	6.6	6.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	12/6/74					12/7/74					12/8/74				
AIR TEMP °C MAX/MIN	2/-13					4/-13					10/0				
WEATHER	Clear					Clear					Cloudy				
INF FLOW, MG	0.259					0.224					0.192				
EFF FLOW, MG	0.110					0.209					0.223				
CL_2 DOSE-MG/L	9.8					11.4					11.1				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	11	4	3	2	4	11	4	3	2	3	11	4	4	2	4
DO, MG/L	4.5	0.3	4.6	0.8	0.5	4.5	0.3	4.5	0.7	0.6	4.5	0.3	3.0	0.6	0.3
PH	7.3	7.1	7.2	7.0	6.8	7.3	7.1	7.2	7.0	6.8	7.2	7.1	7.2	7.1	6.7
ALKALINITY-MG/L	129	148	128	106	88	126	154	134	109	88	113	155	126	101	97
SUSP. SOLIDS-MG/L	192	57	41	50	8	103	45	36	9	5	117	43	33	10	6
BOD TOTAL MG/L	167	43	25	28	5	129	52	30	13	5	145	34	29	12	4
BOD, SOL MG/L	52	12	4	3	4	53	19	7	4	4	51	16	6	2	3
ALGAE /ML x 10^3	—	2750	2030	449	546	—	1790	1720	418	399	—	1870	1680	452	494
* FECAL COLI/100ML x 10^6	2.5	0.62	0.11	0.03	0	4.8	0.67	0.38	0.08	0	5.4	0.60	043	0.04	0
* MPN/100ML x 10^6	22.4	0.92	0.18	0.05	0						224	0.92	0.35	0.07	0
NH_3-N, MG/L	25.4	19.2	13.7	8.8	8.2	26.3	18.7	14.2	8.9	8.4	23.4	19.6	14.1	8.9	8.4
NO_3-N, MG/L	0.07	0.07	0.15	0.13	0.17	0.08	0.10	0.13	0.10	0.19	0.12	0.11	0.12	0.10	0.20
NO_2-N, MG/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
COD TOTAL MG/L	375	187	133	129	95	276	171	129	104	93	302	170	99	132	92
COD SOL. MG/L	124	98	68	74	78	101	84	60	65	71	119	90	67	54	71
TKN MG/L	30.8	28.4	22.0	14.5	12.8	26.8	27.6	22.1	16.4	13.5	32.4	27.6	21.7	14.6	13.6
TOTAL P MG/L	7.4	7.4	7.3	6.7	6.4	7.1	7.3	7.2	6.7	6.6	9.4	7.5	7.2	6.7	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	12/9/74					12/10/74					12/11/74				
AIR TEMP °C MAX/MIN	12/-3					4/-6					2/-4				
WEATHER	Cloudy					Partly Cloudy					Clear				
INF FLOW, MG	0.211					0.262					0.240				
EFF FLOW MG	0.211					0.222					0.209				
CL_2 DOSE-MG/L	9.1					10.2					11.4				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	11	4	3	2	3	11	4	4	1.5	2.5	12	4	3.5	1	2
DO, MG/L	4.4	0.4	0.4	0.8	0.5	5.9	0.4	0.8	0.4	0.4	5.2	0.4	0.7	0.4	0.4
pH	7.1	7.0	7.1	7.0	6.7	9.2	7.0	7.1	7.0	6.7	7.2	7.0	7.1	7.0	6.7
ALKALINITY-MG/L	62	145	128	106	94	294	144	123	105	94	111	132	129	109	89
SUSP. SOLIDS-MG/L	204	43	38	17	11	120	49	41	23	13	176	47	34	16	6
BOD TOTAL MG/L	132	31	34	13	7	154	40	34	26	8	168	23	29	14	7
BOD, SOL MG/L	34	14	12	4	5	53	17	11	6	6	56	18	7	5	5
ALGAE, /ML x 10^3	—	1430	1720	339	402	—	1210	1440	627	682	—	2590	1800	407	400
*FECAL COLI/100ML x 10^6	5.8	0.58	0.35	0.10	0	1.12	0.60	0.10	0.06	0	1.1	0.87	0.61	0.05	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L	12.7	17.5	14.9	9.3	8.6	22.4	18.1	13.9	9.2	8.7	24.0	17.8	13.9	8.9	9.0
NO_3-N, MG/L	0.10	0.12	0.13	0.10	0.19	<0.06	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	0.10
NO_2-N, MG/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
COD TOTAL MG/L	258	152	134	100	92	276	152	128	109	92	356	147	132	99	93
COD SOL. MG/L	65	67	60	65	76	76	73	59	68	67	138	68	61	64	62
TKN MG/L	23.4	26.0	23.6	13.6	13.6	34.0	26.8	22.0	16.7	14.6	35.2	28.0	23.2	15.5	14.7
TOTAL P MG/L	5.8	6.7	7.0	6.5	6.6	7.1	6.9	7.1	6.4	6.4	6.9	6.7	7.1	6.5	6.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	12/12/74					12/13/74					12/14/74				
AIR TEMP °C MAX/MIN	4/-4					5/-2					6/-1				
WEATHER	Cloudy					Clear					Snow				
INF FLOW, MG	0.243					0.235					0.240				
EFF FLOW MG	0.231					0.213					0.218				
CL_2 DOSE-MG/L	12.6					10.1					9.4				
CL_2 RESIDUAL-MG/L	2.5					1.5					1.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	10.5	4	4	1	2	10	4.5	4	1	2	11	4	4	2	2
DO, MG/L	5.0	0.3	0.4	0.4	0.4	4.9	0.4	0.3	0.4	0.4	5.2	0.3	0.6	0.6	0.5
pH	7.2	7.0	7.1	7.0	6.8	7.1	7.0	7.1	7.0	6.8	7.2	7.0	7.1	7.0	6.7
ALKALINITY-MG/L	120	140	131	108	92	124	144	126	107	93	128	146	121	108	96
SUSP. SOLIDS-MG/L	130	46	46	22	15	164	42	37	17	13	160	43	32	13	12
BOD TOTAL MG/L	138	48	26	12	7	146	43	26	13	9	150	52	29	12	7
BOD, SOL MG/L	54	25	6	5	5	59	26	9	4	6	57	24	7	4	5
ALGAE, /ML x 10^3	—	1210	1130	461	620	—	862	1320	510	468	—	1080	1070	627	571
*FECAL COLI/100ML x 10^6	3.0	0.73	0.28	0.07	0	1.1	0.70	0.19	0.10	0	4.2	0.82	0.65	0.20	0
*MPN /100 ML x 10^6						0.35	0.28	0.13	0.17	0					
NH_3-N, MG/L	24.4	17.9	13.9	8.7	9.1	26.5	19.1	13.8	9.1	9.1	24.0	19.5	14.2	9.3	9.3
NO_3-N, MG/L	<0.05	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
NO_2-N, MG/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05
COD TOTAL MG/L	286	155	126	97	95	316	163	129	94	99	329	160	122	99	91
COD SOL. MG/L	130	90	58	57	64	131	88	38	60	64	129	85	62	62	70
TKN MG/L	36.4	30.0	22.8	15.7	16.1	38.8	34.8	21.6	16.3	14.5	36.4	29.2	23.2	15.7	14.2
TOTAL P MG/L	6.7	6.8	7.0	6.5	6.4	6.5	6.7	6.9	6.6	6.5	7.1	6.7	6.8	6.6	6.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	12/15/74					12/16/74					12/17/74				
AIR TEMP °C MAX/MIN	-1/-10					-5/-8					4/-3				
WEATHER	Clear					Cloudy					Partly Cloudy, snow				
INF FLOW, MG	0.211					0.197					0.246				
EFF FLOW MG	0.221					0.207					0.201				
CL_2 DOSE-MG/L	10.2					10.4					—				
CL_2 RESIDUAL MG/L	2.0					2.0					1.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	10	5	3	2	2	11.5	4.5	4	2	3	11	5	4	2	3
DO, MG/L	4.5	0.3	0.3	0.5	0.4	4.8	0.3	0.4	0.4	0.4	4.5	0.3	0.3	0.3	0.4
pH	7.1	7.0	7.1	7.0	6.7	7.0	7.0	7.0	7.0	6.7	8.1	6.9	7.0	7.0	6.8
ALKALINITY-MG/L	97	145	129	108	99	85	123	144	107	100	161	147	124	108	99
SUSP. SOLIDS-MG/L	143	35	35	16	11	163	28	34	15	9	101	47	32	16	14
BOD TOTAL MG/L	170	41	29	15	8	161	27	30	13	7	127	48	27	16	10
BOD. SOL MG/L	50	24	8	5	5	42	6	18	4	5	48	20	9	4	6
ALGAE, /ML $\times 10^3$	—	554	1040	655	679	—	1230	1290	567	583	—	925	1310	452	458
*FECAL COLI/100ML $\times 10^6$	6.5	0.70	0.65	0.23	0	3.8	0.70	0.52	0.12	0	6.3	0.67	0.73	0.08	0
*MPN/100 ML $\times 10^6$	22A	0.54	1.1	0.49	0										
NH_3-N, MG/L	19.5	19.0	14.4	9.8	9.5	19.3	14.7	18.6	10.2	9.6	27.2	19.7	14.2	9.7	9.8
NO_3-N, MG/L	<0.05	<0.05	<0.05	<0.06	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NO_2-N, MG/L	<0.05	<0.05	<0.05	<0.05	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	270	154	118	99	108	272	101	121	92	74	118	127	95	81	83
COD SOL. MG/L	112	87	61	58	65	101	62	81	62	65	99	78	60	62	68
TKN MG/L	15.2	26.0	22.0	15.3	14.2	34.0	21.5	28.0	15.6	14.8	31.0	30.4	21.6	15.5	14.8
TOTAL P. MG/L	8.1	7.1	6.9	6.6	6.5	10.2	6.8	6.8	6.7	6.5	7.1	6.8	6.8	6.7	6.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	12/18/74					12/19/74					12/20/74				
AIR TEMP °C MAX/MIN	7/-5					3/-4					5/-7				
WEATHER	Partly Cloudy					Cloudy					Cloudy				
INF FLOW, MG	0.247					0.240					0.236				
EFF FLOW MG	0.207					0.218					0.224				
CL_2 DOSE-MG/L	6.9					8.3					8.5				
CL_2 RESIDUAL MG/L	1.5					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	10	5	3.5	2	3	11	5	3	2	3	10	5	3.5	2	3
DO, MG/L	5.0	0.3	0.3	0.5	0.4	4.8	0.3	0.3	0.3	0.3	4.9	0.2	0.3	0.3	0.3
pH	7.4	6.9	7.0	7.0	6.7	8.15	6.9	7.0	7.0	6.7	7.2	6.9	7.0	7.0	6.7
ALKALINITY-MG/L	117	144	132	110	101	178	153	125	113	100	137	150	122	111	104
SUSP. SOLIDS-MG/L	117	42	35	21	16	181	34	32	19	17	183	34	35	24	19
BOD TOTAL MG/L	141	51	32	19	11	186	57	37	21	12	185	53	26	13	8
BOD, SOL. MG/L	52	24	10	7	7	70	36	13	7	7	54	33	10	5	5
ALGAE, /ML $\times 10^3$	—	404	699	346	294	—	962	979	397	466	—	917	764	601	932
*FECAL COLI/100ML $\times 10^6$	3.0	0.81	0.21	0.04	0	3.5	0.87	0.50	0.17	0	2.3	0.97	0.49	0.14	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	26.0	19.2	15.0	10.4	10.0	24.8	20.6	15.4	10.9	10.5	26.4	15.9	21.0	11.1	10.7
NO_3-N, MG/L	0.10	0.10	0.10	0.10	0.10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	205	139	108	81	81	295	136	112	83	80	240	143	108	81	83
COD SOL. MG/L	93	81	63	61	64	115	89	67	60	64	105	96	65	60	64
TKN MG/L	34.4	29.2	23.6	16.3	15.9	38.8	29.2	23.0	16.2	13.7	38.4	28.0	23.5	16.9	15.8
TOTAL P. MG/L	6.5	7.0	6.8	6.7	6.6	8.1	7.4	7.0	6.7	6.8	7.9	7.0	6.9	6.8	6.8

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	12/27/74					12/30/74					12/31/74				
AIR TEMP °C MAX/MIN	5/-20					5/-15					7/-14				
WEATHER	Cloudy					Partly Cloudy					Clear				
INF FLOW, MG	0.217					0.181					0.238				
EFF FLOW MG	0.200					0.196					0.206				
CL_2 DOSE-MG/L	9.6					9.2					9.8				
CL_2 RESIDUAL MG/L	2.0					2.0					1.5				
	INF	1	2	3	EFF	IINF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	10	4.5	3	3	3	10	5	3	3	3	10	4.5	3	3	3
DO, MG/L	4.9	0.25	0.4	0.3	0.3	5.0	0.2	0.3	0.3	0.3	4.5	0.3	0.2	0.4	0.4
pH	7.4	6.8	6.9	7.0	6.7	7.1	6.8	6.95	6.9	6.8	7.3	6.8	6.9	7.0	6.7
ALKALINITY-MG/L	156	146	122	119	104	94	147	135	121	98	126	156	140	119	108
SUSP. SOLIDS-MG/L	41	21	22	20	18	25	21	23	18	15	196	21	20	19	17
BOD TOTAL MG/L	79	82	35	25	16	41	63	27	18	14	224	90	47	23	17
BOD, SOL MG/L	46	56	26	11	10	22	43	18	10	11	86	46	27	11	11
ALGAE /ML x 10^3	—	852	846	629	556	—	468	489	686	726	—	355	995	602	503
*FECAL COLI/100ML x 10^6	1.23	0.60	0.53	0.19	0	2.2	0.83	0.63	0.25	0	2.4	0.97	0.63	0.24	0
*MPN /100 ML x 10^6															
NH_3-N, MG/L	24.5	22.6	16.9	12.1	12.6	14.5	22.9	17.2	12.9	13.0	25.6	22.8	17.3	12.4	13.1
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	119	141	126	116	112	73	170	133	112	121	354	184	136	116	121
COD SOL. MG/L	65	103	70	68	69	36	108	68	64	68	133	112	69	70	83
TKN MG/L	28.0	29.2	25.2	18.3	16.7	18.4	30.4	22.8	19.9	18.3	38.8	22.8	22.8	18.9	18.8
TOTAL P. MG/L	2.7	6.8	6.8	6.7	6.6	3.2	7.0	6.7	6.7	6.7	8.9	6.9	6.8	6.7	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	1/4/75					1/5/75					1/8/75				
AIR TEMP °C MAX/MIN	0/-12					6/-17					11/-18				
WEATHER											Clear				
INF FLOW, MG	0.229					0.212					0.211				
EFF FLOW MG	0.199					0.198					0.198				
Cl_2 DOSE-MG/L	14.4					13.4					12.6				
Cl_2 RESIDUAL-MG/L	2.0					1.5					1.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	9.5	5	3	3	3	9	5	3	2.5	3	10	5	3	2.5	3
DO, MG/L	5.2	0.3	0.3	0.3	0.3	5.6	0.2	0.3	0.3	0.3	2.7	0.2	0.1	0.3	0.3
pH	7.3	6.7	6.9	6.9	6.6	7.2	6.8	6.9	6.9	6.6	8.0	6.8	6.8	6.9	6.6
ALKALINITY-MG/L	143	160	137	126	105	100	149	143	129	116	158	159	145	124	110
SUSP. SOLIDS-MG/L	163	32	24	21	16	175	28	24	21	16	187	28	16	18	14
BOD TOTAL MG/L	132	74	30	17	17	161	68	32	16	16	170	62	38	20	22
BOD, SOL. MG/L	48	51	18	5	13	66	52	19	6	13	57	50	23	10	12
ALGAE, /ML $\times 10^{-2}$	—	283	665	564	865	—	380	531	448	601	—	287	570	297	367
*FECAL COLI/100ML $\times 10^6$	3.4	1.8	0.80	0.24	0	1.5	0.68	0.38	0.38	0	1.52	0.83	0.57	0.08	0
*MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	26.0	24.0	18.6	13.3	13.4	23.0	24.0	18.5	13.5	13.6	29.2	25.6	19.2	14.1	14.2
NO_3-N, MG/L	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	317	374	131	116	131	362	180	136	121	121	364	185	141	112	121
COD SOL. MG/L	107	119	71	65	79	130	122	76	64	84	114	115	84	71	79
TKN MG/L	39.2	32.4	24.0	21.2	20.7	36.8	29.6	24.0	20.5	21.2	43.0	34.0	22.7	14.0	21.4
TOTAL P. MG/L	8.3	7.5	7.0	7.1	6.9	9.3	7.4	7.2	6.9	7.1	8.0	7.4	7.0	6.7	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	1/14/75					1/15/75					1/20/75				
AIR TEMP °C MAX/MIN	5/-12					-5/-17					4/-24				
WEATHER	Cloudy					Clear					Cloudy				
INF FLOW, MG	0.299					0.217					0.205				
EFF FLOW MG	0.243					0.174					0.208				
CL_2 DOSE-MG/L	17.8					21.4					21.4				
CL_2 RESIDUAL-MG/L	1.0					1.0					0.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	10	5	3	2	3	9	5	3	2	3	9	5	2	2	3
DO, MG/L	3.3	0.1	0.3	0.2	0.2	5.9	0.2	0.1	0.2	0.2	5.6	0.2	0.1	0.2	0.2
pH	7.7	6.6	6.7	6.75	6.5	7.5	6.7	6.8	6.8	6.5	7.3	6.8	6.75	6.8	6.4
ALKALINITY-MG/L	147	150	140	131	109	148	162	153	132	108	97	147	152	140	107
SUSP. SOLIDS-MG/L	140	23	20	16	11	105	23	24	17	14	78	29	22	19	15
BOD TOTAL MG/L	135	69	36	24	29	122	59	33	23	25	63	72	44	28	33
BOD, SOL. MG/L	35	63	29	18	23	40	57	29	15	25	17	48	27	18	26
ALGAE, /ML $\times 10^2$	—	166	394	435	457	—	158	369	383	494	—	243	348	371	562
*FECAL COLI/100ML$\times 10^6$	5.4	1.0	0.61	0.44	0	2.1	0.82	0.47	0.18	0	4.8	0.97	0.67	0.40	0
*MPN/100 ML$\times 10^6$															
NH_3-N, MG/L	24.8	23.6	21.8	16.4	17.2	24.0	26.0	21.2	16.1	17.0	18.1	23.6	22.3	17.1	18.0
NO_3-N, MG/L	0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1
COD TOTAL MG/L	160	113	100	96	102	191	128	117	103	118	79	133	118	102	103
COD SOL. MG/L	92	113	89	81	88	87	109	82	77	87	51	96	85	81	92
TKN MG/L	34.0	30.4	27.2	21.7	20.3	31.2	31.6	26.0	21.5	22.3	23.6	30.4	25.2	31.6	24.0
TOTAL P. MG/L	6.9	7.1	7.1	6.9	6.9	7.0	7.5	7.1	7.0	7.0	2.9	7.7	7.9	7.9	8.1

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	1/21/75					1/22/75					1/27/75				
AIR TEMP °C MAX/MIN	10/-28					0/-20					2/-22				
WEATHER	Clear					Cloudy					Cloudy				
INF FLOW, MG	0.265					0.249					0.255				
EFF FLOW MG	0.228					0.234					0.250				
CL_2 DOSE-MG/L	28.8					30.0					26.7				
CL_2 RESIDUAL MG/L	2.5					2.5					0.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	5	3	2	3	9	5	2	2	3	8	5	2	2	3
DO, MG/L	6.1	0.2	0.1	0.2	0.2	6.1	0.2	0.15	0.2	0.2	6.7	0.25	0.1	0.2	0.2
PH	7.2	6.75	6.7	6.8	6.4	7.2	6.8	6.75	6.8	6.3	7.1	6.6	6.7	6.7	6.4
ALKALINITY-MG/L	114	152	156	138	99	110	148	155	131	104	90	168	159	145	110
SUSP. SOLIDS-MG/L	68	30	25	24	18	131	30	27	23	15	95	24	19	16	13
BOD TOTAL MG/L	54	69	38	31	36	135	66	46	29	37	115	60	44	29	40
BOD, SOL MG/L	24	61	29	20	30	38	55	32	20	30	35	42	32	21	36
ALGAE /ML $\times 10^3$	—	336	339	344	612	—	289	531	428	397	—	197	327	366	519
* FECAL COLI/100ML $\times 10^6$	3.8	1.0	0.42	0.41	0	2.0	0.88	0.46	0.32	0	4.4	1.3	0.90	0.36	0
* MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	16.8	25.2	21.7	17.3	17.9	26.8	25.2	21.9	17.2	18.0	17.2	27.2	22.4	16.7	17.8
NO_3-N, MG/L	4.3	0.1	0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	66	116	121	94	124	188	128	121	104	124	133	111	117	92	87
COD SOL. MG/L	45	106	93	80	93	100	104	86	77	93	79	98	94	76	94
TKN MG/L	26.0	34.4	31.2	24.8	26.0	37.0	31.8	29.0	23.8	23.4	29.2	36.8	32.4	27.2	28.8
TOTAL P MG/L	2.1	7.0	6.9	7.0	7.1	6.9	7.2	7.1	6.9	7.0	7.0	7.3	7.2	7.0	7.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	1/28/75					1/29/75					2/3/75				
AIR TEMP °C MAX/MIN	2/-12					5/-10					2/-19				
WEATHER	Clear					Cloudy					Clear				
INF FLOW, MG	0.268					0.255					0.188				
EFF FLOW MG	0.151					0.138					0.300				
CL_2 DOSE-MG/L	42.0					47.0					34.4				
CL_2 RESIDUAL MG/L	2.0					2.5					3.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	5	2.5	2	3	8	3	2	2	3	8	4	2	2	3
DO, MG/L	5.6	0.2	0.1	0.1	0.15	5.8	0.2	0.2	0.2	0.3	5.7	0.2	0.2	0.2	0.3
pH	7.2	6.8	6.7	6.7	6.3	7.2	6.8	6.7	6.8	6.2	7.0	6.8	6.8	6.8	6.1
ALKALINITY-MG/L	113	165	168	147	96	110	155	157	145	102	86	160	165	156	86
SUSP. SOLIDS-MG/L	127	20	21	17	12	121	26	18	17	12	36	28	19	13	11
BOD TOTAL MG/L	134	59	44	33	40	132	58	53	30	45	59	57	42	28	41
BOD, SOL MG/L	37	37	32	23	35	40	46	41	26	38	16	45	31	25	35
ALGAE, /ML $\times 10^3$	—	310	282	330	698	—	309	327	432	454	—	288	482	406	510
* FECAL COLI/100ML $\times 10^6$	1.02	0.79	0.37	0.26	0	2.1	0.81	0.60	0.23	0	3.9	1.0	0.65	0.30	0
* MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	23.2	24.8	22.0	17.6	19.6	23.6	22.0	22.4	18.0	19.6	13.8	23.2	21.8	17.9	18.5
NO_3-N, MG/L	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	191	128	112	104	113	188	140	113	96	114	31	128	106	91	141
COD SOL. MG/L	131	94	84	79	90	102	95	85	74	92	32	87	89	68	88
TKN MG/L	35.6	35.2	34.0	28.4	28.0	37.6	32.0	33.6	29.6	25.6	20.8	32.8	32.4	27.2	25.2
TOTAL P. MG/L	6.5	7.2	7.2	7.2	7.2	6.7	6.9	7.3	7.1	7.0	2.7	6.9	7.0	7.1	7.0

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	2/4/75					2/11/75					2/12/75				
AIR TEMP °C MAX/MIN	-1/-24					4/-30					-7/-28				
WEATHER	Clear										Cloudy				
INF FLOW, MG	0.256					0.241					0.231				
EFF FLOW MG	0.358					0.254					0.253				
CL_2 DOSE-MG/L	31.5					44.8					46.9				
CL_2 RESIDUAL-MG/L	0.5					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	4	2	2	2	8	2	2	2	2	8	2	2	2	2
DO, MG/L	6.2	0.2	0.2	0.2	0.2	6.2	0.4	0.2	0.2	0.3	5.9	0.2	0.2	0.2	0.2
pH	7.2	6.8	6.8	6.8	6.3	7.2	6.7	6.7	6.7	6.1	7.5	6.7	6.8	6.7	6.2
ALKALINITY-MG/L	118	177	167	155	108	113	166	172	167	98	156	157	170	167	96
SUSP. SOLIDS-MG/L	143	31	23	18	14	154	15	19	12	9	167	15	13	12	10
BOD TOTAL MG/L	136	52	37	29	41	131	77	52	52	46	152	71	58	44	61
BOD, SOL MG/L	38	44	34	31	32	31	73	57	49	47	59	68	56	46	45
ALGAE, /ML $\times 10^{-3}$	—	238	280	360	351	—	104	159	243	260	—	107	226	252	348
*FECAL COLI/100ML $\times 10^{6}$	3.5	0.92	0.90	0.51	0	1.7	0.65	0.68	0.43	0	3.5	0.90	0.54	0.40	0
*MPN/100 ML $\times 10^{6}$															
NH_3-N, MG/L	23.7	24.7	22.2	19.1	18.3	30.0	24.0	25.2	19.1	20.3	19.3	22.9	22.9	19.2	20.0
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	277	137	104	95	118	200	120	136	127	152	171	148	134	124	151
COD SOL. MG/L	109	96	80	84	87	80	112	107	103	106	83	115	105	101	105
TKN MG/L	38.0	35.2	31.2	26.4	24.8	38.8	30.0	32.8	26.8	26.0	31.6	33.6	34.0	29.6	28.8
TOTAL P MG/L	7.7	7.1	7.4	7.1	7.3	7.8	7.0	7.6	7.4	7.6	4.3	6.9	7.3	7.4	7.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	12/13/75					2/16/75					2/19/75				
AIR TEMP °C MAX/MIN	-5/-25					7/-24					4/-16				
WEATHER	Clear					Snow					Clear				
INF FLOW, MG	0.232					0.210					0.224				
EFF FLOW MG	0.255					0.275					0.239				
CL_2 DOSE-MG/L	46.5					44.0					48.6				
CL_2 RESIDUAL MG/L	2.0					2.0					3.0				
	INF	1	2	3	EFF	IINF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	2	2	2	2	8	2	2	2	2	8	2	2	2	2
DO, MG/L	5.9	0.2	0.2	0.2	0.2	5.4	0.2	0.2	0.2	0.2	6.2	0.2	0.2	0.2	0.2
pH	7.2	6.7	6.7	6.7	6.2	7.0	6.8	6.8	6.8	6.2	7.2	6.8	6.8	6.8	6.1
ALKALINITY-MG/L	141	150	171	170	97	104	193	180	169	93	114	173	175	164	92
SUSP. SOLIDS-MG/L	181	44	13	13	10	195	31	19	21	11	63	20	15	24	9
BOD TOTAL MG/L	174	90	60	51	54	122	63	58	32	48	96	86	65	56	54
BOD, SOL. MG/L	51	69	57	47	48	22	37	37	27	41	20	63	47	38	46
ALGAE, /ML x 10^3	—	—	265	409	293	—	130	184	510	380	—	373	351	731	384
*FECAL COLI/100ML x 10^6	2.7	0.97	0.72	0.56	0	3.45	1.1	0.78	0.53	0	2.9	1.1	0.46	0.42	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L						16.8	27.8	24.6	21.1	22.4	17.2	24.6	23.5	20.1	21.7
NO_3-N, MG/L						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L						417	310	228	176	164	130	148	149	133	155
COD SOL. MG/L						68	106	100	88	112	57	112	96	98	112
TKN MG/L						28.0	36.8	34.0	33.6	32.8	32.4	34.0	37.6	29.6	29.6
TOTAL P. MG/L						4.2	7.6	7.1	7.0	7.0	3.3	6.7	7.2	7.2	7.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	2/20/75					2/25/75					2/27/75				
AIR TEMP °C MAX/MIN	9/-1					12/0					7/-2				
WEATHER	Clear					Cloudy, Rain					Clear				
INF FLOW, MG	0.255					0.421					0.300				
EFF FLOW MG	0.253					0.184					0.184				
CL_2 DOSE-MG/L	—					57.3					49.5				
CL_2 RESIDUAL MG/L	—					10.0					3.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	2	2	2	2	6	4	2	2	2	8	3	2	2	2
DO, MG/L	7.2	0.2	0.2	0.2	0.2	7.9	0.2	0.0	0.3	0.3	6.6	0.2	0.2	0.3	0.3
PH	7.7	6.9	6.8	6.8	6.3	6.8	6.8	6.7	6.7	6.0	7.1	6.9	6.8	6.8	6.1
ALKALINITY-MG/L	120	165	179	175	121	57	133	168	159	77	86	138	159	162	90
SUSP. SOLIDS-MG/L	249	26	14	12	10	199	24	18	12	9	95	26	17	12	10
BOD TOTAL MG/L	190	79	68	51	52	147	59	61	53	52	104	63	62	58	51
BOD, SOL MG/L	58	53	46	39	43	81	40	46	43	46	39	38	48	48	47
ALGAE, /ML $\times 10^3$	—	370	469	494	410	—	321	377	411	418	—	321	369	437	354
*FECAL COLI/100ML $\times 10^6$	3.3	0.90	0.72	0.46	200	1.36	0.99	0.60	0.38	0	1.3	0.77	0.38	0.16	0
*MPN /100 ML $\times 10^6$															
NH_3-N, MG/L						14.8	20.7	27.2	23.6	22.1	21.6	20.8	24.0	21.9	23.0
NO_3-N, MG/L						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
NO_2-N, MG/L						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L						210	91	164	141	203	221	150	139	161	148
COD SOL. MG/L						72	88	100	100	100	84	87	99	101	114
TKN MG/L						50.8	28.8	32.8	31.2	27.2	30.0	29.6	115.2	36.0	28.0
TOTAL P. MG/L						5.1	6.0	7.2	7.4	7.0	6.0	5.9	7.1	7.2	7.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	3/5/75					3/12/75					3/17/75				
AIR TEMP °C MAX/MIN	3/-16					—					14/-2				
WEATHER	Clear					Cloudy					Clear				
INF FLOW, MG	0.261					0.257					0.187				
EFF FLOW MG	0.190					0.177					0.159				
CL_2 DOSE-MG/L	43.5					52.1					39.9				
CL_2 RESIDUAL-MG/L	2.5					2.0					0.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	4	2	2	2	7	4	2	2	2	8	4	2	2	2
DO, MG/L	6.2	0.2	0.0	0.3	0.2	6.2	0.2	0.2	0.3	0.2	6.5	0.3	0.2	0.2	0.2
pH	7.1	6.7	6.7	6.7	6.0	7.1	6.8	6.7	6.7	6.1	6.8	6.8	6.7	6.7	6.1
ALKALINITY-MG/L	105	132	152	156	97	114	133	146	147	96	76	146	156	157	101
SUSP. SOLIDS-MG/L	163	21	18	11	9	185	20	16	11	10	53	23	16	11	8
BOD TOTAL MG/L	184	82	75	67	66	173	65	57	51	53	71	79	66	64	60
BOD, SOL MG/L	61	49	53	>54	>54	55	43	41	37	46	21	51	45	50	51
ALGAE, /ML × 10^3	—	238	351	296	290	—	145	198	271	247	—	363	263	251	208
* FECAL COLI/100ML×10^6	0.90	1.1	0.28	0.26	0	0.78	1.0	0.62	0.35	0	2.3	0.65	0.37	0.22	0
* MPN/100 ML×10^6															
NH_3-N, MG/L	23.2	20.0	23.2	22.4	24.0	23.2	21.2	22.8	22.4	22.4	15.5	22.0	22.4	22.4	22.4
NO_3-N, MG/L	0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1
COD TOTAL MG/L	326	152	154	195	163	367	168	148	149	155	132	173	149	142	153
COD SOL. MG/L	118	82	92	102	110	153	111	100	101	113	50	100	100	102	116
TKN MG/L	36.0	28.0	32.4	24.8	30.4	38.4	28.8	30.4	28.0	28.4	22.8	30.4	30.4	30.4	28.8
TOTAL P. MG/L	7.0	5.7	6.7	6.9	7.0	7.1	5.9	6.3	6.5	6.6	3.1	6.3	6.4	6.8	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	3/18/75					3/19/75					3/20/75				
AIR TEMP °C MAX/MIN	11/-11					12/-5					10/0				
WEATHER	Clear					Partly Cloudy					Rain				
INF FLOW, MG	0.272					0.271					0.366				
EFF FLOW MG	0.188					0.191					0.177				
CL_2 DOSE-MG/L	42.7					42.6					45.3				
CL_2 RESIDUAL MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	4	2	2	2	8	4	2	2	2	8	4	2	2	2
DO, MG/L	6.3	0.3	0.2	0.2	0.2	6.0	0.2	0.2	0.3	0.3	7.2	0.3	0.2	0.2	0.2
pH	7.0	6.7	6.7	6.7	6.0	7.4	6.7	6.7	6.65	6.0	6.6	6.7	6.7	6.7	6.0
ALKALINITY-MG/L	50	135	141	158	92	137	136	150	154	89	52	126	145	150	92
SUSP. SOLIDS-MG/L	236	22	16	12	9	170	21	16	14	8	151	13	16	11	9
BOD TOTAL MG/L	167	63	55	51	49	141	70	62	55	55	142	56	64	61	58
BOD, SOL MG/L	56	47	41	43	41	54	52	46	38	47	38	38	43	42	48
ALGAE, /ML $\times 10^3$	—	449	402	336	416	—	346	259	186	167	—	209	203	260	306
*FECAL COLI/100ML $\times 10^6$	1.3	0.95	0.46	0.26	0	0.95	0.76	0.54	0.25	0	1.26	1.1	0.80	0.38	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	21.5	21.1	22.1	21.9	22.1	21.3	20.8	22.0	21.7	22.2	16.5	16.9	20.9	20.5	22.0
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	360	158	144	131	153	315	162	150	140	150	293	136	158	147	154
COD SOL. MG/L	124	101	96	105	110	90	100	93	93	104	91	79	92	91	109
TKN MG/L	33.2	30.0	29.2	30.8	27.6	34.4	30.0	29.6	29.6	29.6	30.0	25.2	30.0	29.2	28.4
TOTAL P. MG/L	7.4	6.3	6.5	6.6	6.7	6.6	6.0	6.4	6.7	6.7	5.2	5.0	6.2	6.5	6.8

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	3/21/75					3/22/75					3/23/75				
AIR TEMP °C MAX/MIN	8/3					7/6					5/1				
WEATHER	clear					Cloudy					Partly Cloudy				
INF FLOW, MG	0.422					0.376					0.309				
EFF FLOW MG	0.177					0.177					0.177				
CL_2 DOSE-MG/L	52.8					39.9					47.4				
CL_2 RESIDUAL-MG/L	4.0					1.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	3.5	2	2	2	7	3.5	2	2	2	8	4	2	2	2
DO, MG/L	6.8	0.2	0.2	0.3	0.3	7.2	0.2	0.2	0.3	0.3	7.1	0.2	0.2	0.3	0.3
pH	6.6	6.6	6.7	6.6	6.0	6.3	6.6	6.6	6.6	6.0	6.3	6.6	6.6	6.6	5.9
ALKALINITY-MG/L	73	125	142	149	81	64	123	141	143	88	55	120	138	167	81
SUSP. SOLIDS-MG/L	197	21	5	6	8	135	27	16	15	8	87	24	12	10	9
BOD TOTAL MG/L	138	81	79	74	58	118	68	56	51	54	110	68	65	63	59
BOD, SOL MG/L	49	62	61	57	46	46	42	41	38	47	45	48	49	48	48
ALGAE, /ML $\times 10^3$	—	290	205	198	145	—	247	180	227	229	—	338	383	296	346
*FECAL COLI/100ML $\times 10^6$	1.07	1.06	0.49	0.45	0	2.4	0.98	0.48	0.63	0	1.85	0.75	0.38	—	0
*MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	15.6	17.9	21.1	20.2	21.4	16.6	19.2	20.0	21.4	21.5	14.6	18.2	21.3	21.8	22.0
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	300	166	161	152	190	256	151	150	144	153	225	155	150	148	162
COD SOL. MG/L	103	111	106	110	108	116	98	101	94	108	88	97	100	104	105
TKN MG/L	27.2	27.2	27.2	27.6	28.8	26.0	26.8	28.4	28.4	28.4	23.2	26.8	28.4	26.4	26.8
TOTAL P MG/L	4.6	5.3	6.1	6.5	6.7	5.2	5.4	5.9	6.7	6.6	6.2	6.3	6.1	6.7	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	3/24/75					3/25/75					3/26/75				
AIR TEMP °C MAX/MIN	10/5					5/0					15/-1				
WEATHER	Cloudy					Cloudy					Cloudy				
INF FLOW, MG	0.271					0.367					0.358				
EFF FLOW MG	0.177					0.173					0.172				
CL_2 DOSE-MG/L	40.6					45.0					44.6				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	4.5	2	2	2	7	4.5	2	2	2.5	7	4	2	2	2
DO, MG/L	6.2	0.25	0.1	0.1	0.2	6.4	0.2	0.2	0.2	0.2	6.4	0.2	0.2	0.1	0.2
pH	6.4	6.6	6.6	6.6	6.0	8.0	6.6	6.6	6.6	6.0	6.4	6.6	6.6	6.6	6.0
ALKALINITY-MG/L	68	118	135	146	85	101	123	134	145	82	69	112	133	146	85
SUSP. SOLIDS-MG/L	73	16	10	7	4	91	15	7	4	3	69	22	11	11	6
BOD TOTAL MG/L	104	67	63	53	55	113	74	66	65	58	76	55	52	55	53
BOD, SOL MG/L	36	48	46	42	51	38	51	54	57	49	27	36	38	43	46
ALGAE, /ML $\times 10^3$	—	287	312	241	266	—	242	253	193	181	—	210	220	90	244
* FECAL COLI/100ML $\times 10^6$	4.3	1.25	1.07	0.40	0	2.4	1.38	0.78	0.47	0	1.3	0.46	0.38	0.25	0
* MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	13.3	18.3	21.0	20.8	21.5	16.6	19.0	19.7	21.4	21.6	16.1	17.2	19.5	20.4	21.3
NO_3-N, MG/L	<0.1	<0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	1.3	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	207	149	143	138	141	239	161	148	149	148	205	138	134	140	144
COD SOL. MG/L	74	84	84	103	118	86	102	104	100	114	65	79	84	105	100
TKN MG/L	21.8	21.6	24.0	25.2	24.8	23.6	22.0	24.4	24.0	22.4	22.0	24.1	23.6	24.0	24.4
TOTAL P. MG/L	5.4	5.4	6.3	6.6	6.5	5.3	5.5	6.0	6.7	6.7	4.5	5.2	5.9	6.5	6.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	3/27/75					3/28/75					3/29/75				
AIR TEMP °C MAX/MIN	4/-12					-1/-10					7/-8				
WEATHER	Clear					Clear					Clear				
INF FLOW, MG	0.346					0.326					0.318				
EFF FLOW MG	0.172					0.177					0.198				
CL_2 DOSE-MG/L	45.4					45.4					41.1				
CL_2 RESIDUAL-MG/L	2.5					2.0					2.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	3	2	2	3	8	3	3	2.5	3	8	4	3	2	3
DO, MG/L	6.7	0.2	0.2	0.1	0.2	6.3	0.3	0.2	0.2	0.2	6.1	0.3	0.2	0.2	0.2
pH	6.6	6.55	6.6	6.6	6.0	6.5	6.5	6.6	6.6	5.9	6.2	6.5	6.5	6.5	5.8
ALKALINITY-MG/L	64	118	138	145	83	76	119	135	140	77	73	117	129	138	78
SUSP. SOLIDS-MG/L	117	18	7	9	8	100	19	12	4	9	105	24	16	14	7
BOD TOTAL MG/L	118	83	65	68	56	94	62	55	56	50	118	63	53	49	50
BOD, SOL MG/L	43	57	48	53	49	31	44	43	44	44	51	38	33	36	40
ALGAE, /ML x 10^3	—	325	239	213	314	—	294	289	224	165	—	189	245	150	135
*FECAL COLI/100ML x 10^6	4.6	1.25	0.95	0.48	0	0.60	0.56	0.26	0.23	0	3.4	0.98	0.38	0.30	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L	16.9	18.0	18.9	19.2	20.9	17.7	18.1	18.7	18.9	20.7	16.0	19.2	19.4	20.2	20.4
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	224	154	139	143	141	221	151	139	140	145	263	132	123	130	138
COD SOL. MG/L	72	100	93	103	106	87	101	94	107	97	113	84	81	88	103
TKN MG/L	22.0	21.2	21.6	23.2	22.8	23.2	21.6	20.0	22.4	22.0	22.4	21.6	21.2	22.0	23.6
TOTAL P. MG/L	5.2	5.4	5.8	6.4	6.7	5.1	5.4	6.0	6.4	6.7	5.6	5.7	5.6	6.4	6.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	3/30/75					3/31/75					4/1/75				
AIR TEMP °C MAX/MIN	7/0					8/-5					7/4				
WEATHER	Rain					Partly Cloudy					Cloudy				
INF FLOW, MG	0.274					0.267					0.334				
EFF FLOW MG	0.191					0.179					0.189				
CL_2 DOSE-MG/L	39.5					39.5					44.4				
CL_2 RESIDUAL-MG/L	2.0					2.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	4	3	2	3	7	3	3	2	3	7	4	3	3	3
DO, MG/L	6.0	0.3	0.2	0.2	0.2	6.7	0.3	0.2	0.0	0.2	6.5	0.3	0.2	0.0	0.2
PH	6.2	6.5	6.5	6.5	5.9	6.2	6.3	6.3	6.3	5.7	6.3	6.3	6.3	6.3	5.7
ALKALINITY-MG/L	52	130	126	130	82	62	110	122	126	73	81	114	128	130	76
SUSP. SOLIDS-MG/L	125	25	15	11	9	225	25	15	14	8	125	16	15	15	9
BOD TOTAL MG/L	159	61	55	51	52	150	54	48	46	48	121	51	48	40	53
BOD, SOL MG/L	48	38	34	40	42	39	33	32	31	43	38	35	29	25	37
ALGAE, /ML $\times 10^3$	—	149	180	191	211	—	199	225	213	156	—	206	240	243	165
*FECAL COLI/100ML $\times 10^6$	4.58	1.9	0.94	0.53	0	0.96	0.49	0.31	0.18	0	3.85	1.26	1.05	0.48	0
*MPN/100ML $\times 10^6$															
NH_3-N, MG/L	15.4	19.0	19.7	20.0	20.2	18.3	20.8	21.5	21.6	22.4	17.9	19.3	19.7	19.8	20.8
NO_3-N, MG/L	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	271	136	126	133	136	263	129	119	125	142	263	123	117	109	127
COD SOL. MG/L	93	87	84	94	107	73	70	70	74	97	88	81	76	73	96
TKN MG/L	22.4	23.6	19.6	21.2	22.0	23.6	24.0	24.0	23.2	24.0	27.6	24.4	22.4	24.8	23.5
TOTAL P. MG/L	6.5	5.4	5.8	6.2	6.4	5.0	5.0	5.4	5.8	6.0	4.2	4.6	4.8	5.2	5.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	4/2/75					4/3/75					4/4/75				
AIR TEMP °C MAX/MIN	8/-8					10/1					5/2				
WEATHER	Clear					Rain					Snow				
INF FLOW, MG	0.303					0.303					0.714				
EFF FLOW MG	0.190					0.189					—				
CL_2 DOSE-MG/L	38.5					38.0					—				
CL_2 RESIDUAL MG/L	2.0					3.0					0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	5	3	3	3	8	5	3	3	3	7	5	3	3	3
DO, MG/L	6.2	0.3	0.2	0.2	0.2	6.5	0.3	0.2	0.2	0.2	8.7	0.3	0.2	0.2	0.2
pH	6.6	6.3	6.3	6.3	5.8	6.2	6.4	6.3	6.4	5.8	6.0	6.4	6.3	6.3	6.1
ALKALINITY-MG/L	83	125	123	138	78	64	117	130	130	74	44	119	124	130	108
SUSP. SOLIDS-MG/L	89	25	16	13	11	116	14	15	13	12	350	20	14	7	14
BOD TOTAL MG/L	100	59	47	49	53	129	64	63	61	53	146	62	63	63	57
BOD, SOL MG/L	38	39	31	32	41	38	46	44	45	44	22	37	45	50	45
ALGAE, /ML x 10^3	—	234	227	159	153	—	10.9	33.4	5.2	2.1	—	15.6	24	16.7	10.4
* FECAL COLI/100ML x 10^6	1.11	0.29	0.19	0.11	0	3.48	1.35	1.26	0.58	80 x 10^3	0.68	3.0	0.66	0.60	12 x 10^3
* MPN/100 ML x 10^6															
NH_3-N, MG/L	20.2	19.0	19.2	19.7	19.8	18.8	19.5	19.2	19.7	19.7	10.7	17.5	18.8	19.5	20.3
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	239	139	134	136	140	243	148	136	145	141	460	142	132	143	142
COD SOL. MG/L	87	81	80	84	98	81	94	80	92	97	73	80	86	91	94
TKN MG/L	26.8	23.2	22.8	24.0	23.5	28.8	20.8	22.4	23.2	23.6	24.4	22.0	21.2	22.4	20.8
TOTAL P. MG/L	5.0	4.5	4.8	5.3	5.3	4.2	4.6	4.7	5.4	5.3	2.2	4.3	4.7	5.3	5.1

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	4/5/75					4/6/75					4/7/75				
AIR TEMP °C MAX/MIN	0/-4					3/-2					3/-2				
WEATHER	Snow					Cloudy					Cloudy				
INF FLOW, MG	0.441					0.370					0.327				
EFF FLOW MG	–					–					–				
Cl_2 DOSE-MG/L	–					–					–				
Cl_2 RESIDUAL-MG/L	7.5					7.5					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	5	3	3	3	7	4	3	3	3	7	4	3	3	3
DO, MG/L	8.7	0.3	0.2	0.2	0.2	7.6	0.3	0.2	0.1	0.1	6.7	0.2	0.2	0.2	1.1
pH	6.4	6.4	6.3	6.3	5.7	6.2	6.4	6.4	6.4	5.7	6.3	6.4	6.3	6.3	5.9
ALKALINITY-MG/L	63	119	132	124	84	59	117	135	123	81	59	117	117	102	98
SUSP. SOLIDS-MG/L	95	23	13	16	11	73	24	12	14	11	63	19	17	16	10
BOD TOTAL MG/L	109	56	49	46	55	105	58	54	54	55	90	45	45	41	48
BOD, SOL MG/L	34	32	34	33	44	29	35	39	37	42	22	28	28	35	37
ALGAE /ML $\times 10^3$	–	10.4	15.6	21.4	8.3	–	8.3	10.4	11.0	2.1	–	1.6	2.6	18.8	6.3
*FECAL COLI/100ML $\times 10^4$	1.38	1.27	0.77	0.87	0	4.4	1.46	1.16	1.37	0	0.92	0.29	0.19	0.26	0
*MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	14.4	12.3	18.7	18.4	18.4	20.1	21.6	22.4	22.0	22.0	11.8	17.1	18.1	18.7	18.4
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	232	131	138	127	143	176	138	137	144	141	143	118	103	107	116
COD SOL. MG/L	92	76	88	85	79	66	82	93	90	93	56	69	65	67	88
TKN MG/L	22.7	20.4	22.0	22.0	21.2	20.1	21.6	22.4	22.0	22.0	19.3	24.8	22.8	23.6	22.4
TOTAL P MG/L	3.0	4.2	5.2	5.3	4.9	3.9	4.2	5.4	5.1	4.7	4.5	5.0	5.3	5.9	5.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	4/8/75					4/9/75					4/10/75				
AIR TEMP °C MAX/MIN	5/-4					5/-5					2/-7				
WEATHER	Partly Cloudy					Cloudy					Clear				
INF FLOW, MG	0.394					0.351					0.323				
EFF FLOW MG	0.250					0.285					0.282				
CL_2 DOSE-MG/L	29.7					25.6					25.1				
CL_2 RESIDUAL MG/L	3.0					3.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	4	3	3	3	7	5	3	3	3	7	5	3	3	3
DO, MG/L	6.4	0.2	0.2	0.2	0.7	6.9	0.2	0.2	0.2	0.5	7.1	0.3	0.2	0.3	0.4
PH	6.2	6.4	6.4	6.4	5.8	6.3	6.4	6.4	6.4	5.8	6.4	6.5	6.4	6.4	5.9
ALKALINITY-MG/L	64	122	118	134	87	68	121	125	129	95	64	120	125	126	87
SUSP. SOLIDS-MG/L	173	22	14	13	10	173	23	16	15	10	131	35	32	37	19
BOD TOTAL MG/L	391	50	42	45	48	469	53	44	43	48	213	51	47	45	38
BOD, SOL MG/L	113	26	25	32	33	115	31	30	34	42	53	31	34	41	40
ALGAE, /ML x 10^3	—	7.8	13.0	15.7	15.1	—	16.2	10.4	22.9	13.6	—	3.6	8.9	72.0	11.0
*FECAL COLI/100ML x 10^6	1.04	0.62	0.18	0.08	0	0.69	0.41	0.11	0.05	0	8.8	5.04	2.68	3.02	4 x 10^3
*MPN /100 ML x 10^6															
NH_3-N, MG/L	16.0	17.2	17.9	19.0	18.8	16.3	17.3	18.0	18.9	19.0	18.7	18.5	18.4	18.8	18.8
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	405	125	106	111	116	819	126	97	107	114	289	116	96	116	106
COD SOL. MG/L	—	67	66	77	87	525	75	63	74	85	84	79	72	86	92
TKN MG/L	21.6	22.8	22.4	24.0	24.0	22.4	20.4	21.6	21.2	21.2	25.2	20.8	21.6	23.2	21.6
TOTAL P MG/L	4.5	4.6	4.9	5.7	5.2	5.1	4.7	4.9	5.5	5.3	5.4	4.8	4.9	5.4	5.1

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	4/11/75					4/12/75					4/13/75				
AIR TEMP °C MAX/MIN	12/-5					14/-8					12/-7				
WEATHER	Clear					Partly Cloudy					Partly Cloudy				
INF FLOW, MG	0.335					0.321					0.263				
EFF FLOW MG	0.249					0.192					0.172				
Cl_2 DOSE-MG/L	26.9					28.1					31.3				
Cl_2 RESIDUAL-MG/L	4.0					2.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	5	3	3	3	7	7	4	4	4	7	8	4	4	4
DO, MG/L	6.7	0.3	0.2	0.2	0.3	6.3	0.3	0.2	0.5	0.4	6.4	0.2	0.2	0.9	0.4
pH	6.0	6.5	6.3	6.3	5.6	6.7	6.5	6.3	6.3	5.8	6.2	6.6	6.4	6.5	5.7
ALKALINITY-MG/L	62	120	116	124	73	98	119	119	129	77	71	119	106	124	76
SUSP. SOLIDS-MG/L	100	43	37	48	26	31	23	23	20	18	32	26	17	25	18
BOD TOTAL MG/L	85	59	55	47	53	–	–	68	28	64	73	61	76	50	41
BOD, SOL. MG/L	46	36	36	24	36	–	92	56	56	63	20	68	44	43	52
ALGAE /ML $\times 10^3$	–	4.2	16.2	2.84×10^3	20.9	–	2.6	6.8	193.5	39.6	–	5.2	16.7	185.1	95.9
*FECAL COLI/100ML $\times 10^6$	7.76	7.32	3.72	5.48	5×10^3	9.96	7.68	2.5	3.6	0	1.78	0.62	0.21	0.51	0
*MPN 100 ML $\times 10^6$															
NH_3-N, MG/L	17.6	18.3	18.4	17.7	18.7	23.6	18.0	17.7	18.1	18.6	15.5	17.7	17.0	18.0	18.5
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	197	132	97	107	109	93	128	99	111	126	62	135	103	125	142
COD SOL. MG/L	82	92	75	72	89	57	76	64	64	90	36	74	61	65	84
TKN MG/L	24.4	23.2	20.0	22.8	23.2	28.4	21.6	20.8	20.4	23.6	21.6	25.2	18.4	21.2	23.6
TOTAL P MG/L	5.2	4.7	4.9	5.3	5.3	4.7	4.4	4.6	5.2	5.3	2.1	4.4	4.2	4.9	4.9

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	4/14/75					4/15/75					4/16/75				
AIR TEMP °C MAX/MIN	7/-5					14/-7					14/-2				
WEATHER	Clear					Partly Cloudy					Cloudy				
INF FLOW, MG	0.243					0.308					0.298				
EFF FLOW MG	0.164					0.174					0.211				
Cl_2 DOSE-MG/L	27.7					28.2					23.2				
Cl_2 RESIDUAL-MG/L	2.0					7.5					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	7	7	4	4	4	7	8	6	4	5	7	9	7	5	5
DO, MG/L	6.4	0.3	0.4	0.6	0.3	6.3	0.2	0.0	1.2	0.4	6.5	0.2	0.2	2.6	0.3
pH	6.3	6.5	6.4	6.4	5.8	6.4	6.5	6.3	6.3	5.7	6.5	6.5	6.4	6.4	6.0
ALKALINITY-MG/L	59	122	111	125	82	81	121	109	122	81	88	118	117	98	82
SUSP. SOLIDS-MG/L	20	21	14	20	14	34	24	15	28	19	35	27	20	25	17
BOD TOTAL MG/L	32	47	40	44	51	41	41	25	36	36	79	47	29	16	32
BOD, SOL MG/L	14	37	30	27	42	27	29	18	—	28	10	29	26	11	23
ALGAE, /ML $\times 10^3$	—	2.6	12.0	149.1	79.8	—	4.7	17.2	181.5	184	—	8.9	16.7	107.9	121.5
*FECAL COLI/100ML $\times 10^6$	7.22	0.26	0.04	0.04	0	0.42	0.31	0.11	0.09	0	0.28	0.07	0.01	0.01	0
*MPN /CC ML $\times 10^6$															
NH_3-N, MG/L	11.6	17.5	16.7	17.8	18.1	11.7	17.5	16.8	17.2	17.2	19.4	17.6	16.7	14.0	14.9
NO_3-N, MG/L	0.5	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	52	129	100	125	129	117	135	102	125	130	74	131	98	84	108
COD SOL. MG/L	27	75	65	66	88	59	75	62	61	83	46	71	59	46	67
TKN MG/L	15.9	22.4	19.6	22.8	24.8	15.2	23.0	22.4	21.2	22.4	24.8	24.0	23.2	20.0	22.0
TOTAL P MG/L	1.5	4.5	4.2	4.8	4.8	1.8	4.5	4.3	4.9	4.9	2.5	4.6	4.4	4.1	4.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	4/17/75					4/18/75					4/19/75				
AIR TEMP °C MAX/MIN	15/-3					19/-5					19/3				
WEATHER	Clear					Clear					Rain				
INF FLOW, MG	0.299					0.286					0.297				
EFF FLOW MG	0.208					0.206					0.221				
CL_2 DOSE-MG/L	26.5					20.3					17.3				
CL_2 RESIDUAL MG/L	7.5					4.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	9	8	6	6	8	10	9	8	8	8	11	10	9	8
DO, MG/L	6.2	0.3	0.2	0.7	0.3	6.2	0.4	0.3	1.6	0.4	5.7	0.4	0.3	0.5	0.4
pH	7.7	6.5	6.4	6.3	5.9	6.6	6.6	6.5	6.4	6.0	6.5	6.5	6.5	6.4	6.0
ALKALINITY-MG/L	133	118	117	96	69	96	126	117	89	70	73	120	121	98	89
SUSP. SOLIDS-MG/L	69	21	14	20	16	25	21	16	23	21	26	12	11	16	9
BOD TOTAL MG/L	92	44	29	15	11	53	44	39	16	11	30	41	29	22	20
BOD, SOL MG/L	47	26	20	3	9	39	26	19	3	4	19	31	22	8	12
ALGAE, /ML $\times 10^3$	—	9.9	14.6	164.7	169.5	—	9.9	16.7	324.9	134.5	—	8.9	18.8	183.5	118.9
*FECAL COLI/100ML $\times 10^6$	TNTC	7.6	0.83	1.81	0	0.41	<0.02	0.17	<0.01	0	TNTC	7.3	4.2	3.6	25
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	36.0	18.8	17.0	13.3	12.1	10.8	18.7	17.3	12.9	12.2	16.8	18.8	17.3	14.2	14.1
NO_3-N, MG/L	0.5	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	224	138	99	81	85	110	143	101	83	80	70	109	84	56	64
COD SOL. MG/L	111	85	65	50	63	68	85	61	49	46	47	78	63	42	59
TKN MG/L	56.4	26.4	25.2	18.4	18.9	17.6	25.6	23.6	18.7	17.6	28.0	30.8	23.2	18.6	19.2
TOTAL P MG/L	5.8	4.9	4.5	3.8	3.8	2.1	4.9	4.5	4.1	3.7	2.2	4.8	4.6	4.2	4.2

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	4/20/75					4/21/75					4/22/75				
AIR TEMP °C MAX/MIN	17/6					12/-1					8/-6				
WEATHER	Partly Cloudy					Partly Cloudy					Clear				
INF FLOW, MG	0.259					0.237					0.294				
EFF FLOW MG	0.204					0.198					0.200				
CL_2 DOSE-MG/L	17.0					18.1					16.2				
CL_2 RESIDUAL MG/L	3.5					4.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	9	10	10	9	8	10	9	8	8	8	8	9	8	8	8
DO, MG/L	6.0	0.3	0.3	0.7	0.5	5.5	0.4	0.3	0.7	0.5	6.1	0.4	0.2	2.8	2.2
pH	6.3	6.5	6.4	6.4	5.9	6.6	6.6	6.5	6.4	6.0	6.7	6.6	6.6	6.5	6.1
ALKALINITY-MG/L	64	129	118	104	85	70	126	122	101	81	88	129	119	100	86
SUSP. SOLIDS-MG/L	10	16	9	14	11	17	25	19	23	13	40	23	17	20	11
BOD TOTAL MG/L	15	47	32	18	14	42	50	38	21	9	31	38	26	17	14
BOD, SOL MG/L	9	32	18	5	6	8	30	17	8	10	24	27	15	8	8
ALGAE, /ML $\times 10^3$	—	7.3	20.3	223.7	166.9	—	7.3	8.9	353.5	209.6	—	7.8	15.1	352	165.3
* FECAL COLI/100ML $\times 10^4$	1.5	0.97	0.01	<0.01	0	4.4	0.37	0.07	<0.01	0	2.55	0.43	0.09	0.09	0
* MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	9.8	18.7	17.2	14.1	13.7	12.6	12.6	17.3	14.5	13.9	22.0	18.7	17.9	14.4	13.9
NO_3-N, MG/L	0.3	<0.1	<0.1	<0.1	<0.1	0.3	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	30	109	72	60	66	28	116	71	62	66	82	115	80	62	71
COD SOL. MG/L	24	83	56	42	57	27	78	62	45	57	52	79	57	40	54
TKN MG/L	13.1	25.6	20.4	18.0	18.0	13.8	20.8	17.6	17.1	17.5	22.8	19.6	18.8	14.0	16.4
TOTAL P. MG/L	2.1	5.0	4.7	4.3	4.2	2.7	2.7	4.5	4.1	4.1	2.5	5.0	4.6	4.1	4.0

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	4/23/75					4/24/75					4/25/75				
AIR TEMP °C MAX/MIN	15/-6					21/4					10/5				
WEATHER	Clear					Rain					Cloudy				
INF FLOW, MG	0.292					0.283					0.294				
EFF FLOW MG	0.202					0.205					0.473				
Cl_2 DOSE-MG/L	14.2					12.8					10.1				
Cl_2 RESIDUAL MG/L	3.0					3.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	8	10	9	9	8	8	9	11	10	10	9	11	11	10	10
DO, MG/L	5.9	0.4	0.3	5.8	3.8	5.8	0.4	0.2	5.5	2.8	6.2	0.4	0.0	1.1	1.5
pH	6.5	6.7	6.7	6.7	6.3	6.3	6.8	6.8	7.0	6.3	6.7	6.8	6.7	6.8	6.4
ALKALINITY-MG/L	95	143	124	105	88	69	133	124	99	87	84	136	131	97	92
SUSP. SOLIDS-MG/L	37	30	19	25	18	25	21	17	29	17	54	24	15	22	16
BOD TOTAL MG/L	21	42	24	10	14	20	46	27	17	9	30	53	34	13	13
BOD, SOL. MG/L	8	25	12	1	9	6	36	17	5	11	22	36	20	11	4
ALGAE, /ML $\times 10^3$	—	4.2	6.8	673.7	246.6	—	6.3	5.2	360	170.5	—	7.3	9.4	180.9	127.2
*FECAL COLI/100ML $\times 10^6$	TNTC	4.9	0.25	0.01	25	TNTC	TNTC	4.75	TNTC	0	TNTC	TNTC	0.74	0.04	0
*MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	11.2	18.5	17.0	14.1	13.7	12.3	19.6	17.4	13.5	13.3	15.5	19.0	17.8	14.4	13.9
NO_3-N, MG/L	0.2	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	91	188	103	88	91	52	120	84	73	75	85	129	96	65	67
COD SOL. MG/L	32	73	55	39	53	23	88	59	38	44	51	88	65	38	48
TKN MG/L	16.6	21.6	18.8	15.2	18.2	16.9	26.8	23.2	20.0	19.6	24.4	26.8	23.2	20.4	19.0
TOTAL P MG/L	1.4	4.7	4.2	3.8	3.8	1.7	4.6	4.3	3.8	3.7	2.4	4.5	4.3	3.9	3.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	4/30/75					5/6/75					5/7/75				
AIR TEMP °C MAX/MIN	17/-4					17/1					22/7				
WEATHER	Clear					Cloudy					Partly Sunny				
INF FLOW, MG	0.262					0.254					0.268				
EFF FLOW MG	0.409					0.409					0.406				
CL_2 DOSE-MG/L	11.7					9.9					6.2				
CL_2 RESIDUAL-MG/L	3.0					2.0					1.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	9	10	10	10	10	9	11	11	12	11	10	12	13	13	13
DO, MG/L	5.3	0.3	0.3	2.3	0.7	5.5	0.3	0.3	6.2	3.9	6.0	0.3	2.0	6.0	5.9
PH	6.3	6.4	6.4	6.5	6.2	6.5	6.5	6.6	7.0	6.6	6.4	6.7	6.8	7.0	6.8
ALKALINITY-MG/L	108	132	122	97	86	102	146	121	105	99	75	145	128	106	101
SUSP. SOLIDS-MG/L	28	25	16	21	10	148	18	20	24	18	170	19	22	27	20
BOD TOTAL MG/L	18	41	20	14	10	232	28	8	21	21	168	39	14	20	16
BOD, SOL MG/L	13	30	13	6	9	105	56	16	6	11	76	43	3	1	7
ALGAE, /ML x 10^3	—	10.4	14.6	39.6	31.8	—	5.7	131.3	328.4	237.7	—	8.3	291.9	1253	528
*FECAL COLI/100ML x 10^4	1.25	0.45	0.11	<0.01	0	2.5	0.90	0.07	<0.01	0	1.72	0.68	0.04	<0.01	0
*MPN /100 ML x 10^6															
NH_3-N, MG/L	16.3	18.7	19.2	15.0	14.5	26.0	19.5	19.8	15.2	14.8	35.6	22.0	18.3	14.8	14.2
NO_3-N, MG/L	0.3	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	71	120	79	52	53	1100	137	86	74	81	466	124	73	65	76
COD SOL. MG/L	44	77	54	36	45	853	94	48	39	48	144	87	48	35	50
TKN MG/L	19.0	29.0	24.8	20.4	18.1	40.0	34.2	28.0	22.0	18.1	37.2	26.0	21.2	19.6	18.5
TOTAL P MG/L	2.4	5.5	4.8	4.3	4.2	7.8	6.0	5.0	4.4	4.2	7.0	5.8	4.8	4.2	4.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	5/21/75					5/22/75					5/27/75				
AIR TEMP °C MAX/MIN	34/25					35/12					25/12				
WEATHER	Sunny - Humid					Clmdy					Clmdy				
INF FLOW, MG	0.273					0.266					0.329				
EFF FLOW MG	0.408					0.415					0.417				
CL_2 DOSE-MG/L	7.7					7.5					8.0				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	11	19.5	23	22	21	11	20	22	22	21	13	19	20	20	19.5
DO, MG/L	5.8	0.0	0.3	0.2	0.2	4.5	0.3	0.0	0.3	0.3	4.6	0.3	6.0	0.3	0.2
PH	6.7	6.8	6.9	6.9	6.5	6.7	6.8	6.9	7.0	6.6	6.6	6.6	7.2	6.7	6.5
ALKALINITY-MG/L	105	142	132	114	106	92	147	129	108	100	107	137	121	107	98
SUSP. SOLIDS-MG/L	104	51	19	4	9	93	34	14	5	4	124	56	48	23	15
BOD TOTAL MG/L	85	39	15	10	9	105	10	8	4	—	156	39	27	17	5
BOD, SOL. MG/L	61	23	13	13	7	39	—	—	—	—	86	13	11	14	8
ALGAE /ML $\times 10^2$	—	340	—	—	—	—	101	—	—	—	—	284	377	57	102
* FECAL COLI/100ML $\times 10^6$	TNTC	TNTC	1.16	0.92	0	4.8	2.02	0.70	1.68	0	TNTC	6.09	0.57	0.09	130
* MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	21.2	22.0	20.0	15.8	15.0	20.8	20.4	18.4	16.9	14.9	25.2	20.4	17.9	16.1	15.1
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	189	95	85	62	69	218	92	86	70	68	220	102	94	55	64
COD SOL. MG/L	110	65	73	51	57	136	67	70	55	56	139	71	62	50	60
TKN MG/L	27.4	29.8	26.6	19.2	19.1	27.8	27.9	23.9	19.8	19.8	31.1	25.9	22.7	18.3	16.6
TOTAL P MG/L	6.4	4.8	5.5	4.8	4.1	6.4	5.2	5.8	5.1	4.8	8.3	0.1	5.5	4.2	5.1

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	5/28/75					6/3/75					6/5/75				
AIR TEMP °C MAX/MIN	29/8					27/6					19/8				
WEATHER	Clear					Rain					Cloudy				
INF FLOW, MG	0.278					0.313					0.264				
EFF FLOW MG	0.417					0.396					0.340				
CL_2 DOSE-MG/L	7.8					8.5					9.1				
CL_2 RESIDUAL MG/L	2.0					2.0					2.5				
	INF	1	2	3	EFF	IINF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	12	19	20	20	19.5	13	20	21	21	21	12	17	18	18	18
DO, MG/L	5.0	0.2	3.5	1.0	0.3	5.0	1.0	6.3	9.8	7.4	5.0	0.3	0.5	4.0	0.6
pH	6.5	6.6	7.0	6.7	6.4	6.2	6.6	7.3	7.8	6.7	6.5	6.5	6.6	7.0	6.5
ALKALINITY-MG/L	88	136	124	104	95	81	134	110	96	88	95	138	109	105	89
SUSP. SOLIDS-MG/L	195	45	47	23	17	133	56	38	49	27	108	63	47	37	21
BOD TOTAL MG/L	193	60	33	18	8	144	37	16	28	7	148	43	18	21	7
BOD, SOL. MG/L	71	18	13	9	5	68	17	6	6	1	76	18	6	4	3
ALGAE, /ML $\times 10^3$	—	272	180	58	22	—	66	18	13	3.5	—	414	21	8.3	9.1
*FECAL COLI/100ML $\times 10^6$	2.68	2.02	0.48	0.02	0	TNTC	TNTC	1.18	4.90	0	TNTC	TNTC	3.76	2.01	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	26.8	20.4	17.4	15.8	14.9	23.2	19.6	16.2	12.9	12.2	22.0	19.5	16.0	12.6	12.0
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	<0.1	0.1	0.2
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.4	<0.1	<0.1	<0.1	0.1	0.1
COD TOTAL MG/L	357	111	99	54	66	289	151	98	99	99	233	188	138	131	109
COD SOL. MG/L	119	76	59	48	58	129	81	57	57	62	139	73	57	50	60
TKN MG/L	40.3	30.3	23.9	19.1	19.1	29.1	26.7	19.1	17.4	17.2	29.3	24.5	22.5	19.5	16.1
TOTAL P. MG/L	0.0	5.6	4.2	5.0	4.8	7.3	6.7	5.9	5.5	5.4	6.8	6.9	6.2	5.6	5.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	6/10/75					6/11/75					6/19/75				
AIR TEMP °C MAX/MIN	18/1					22/5					30/15				
WEATHER	Clear					Clear					Clear				
INF FLOW, MG	0.286					0.277					0.263				
EFF FLOW MG	0.340					0.340					0.278				
CL_2 DOSE-MG/L	4.9					6.0					12.0				
CL_2 RESIDUAL-MG/L	1.0					1.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	13	15	15	15	15	13	17	18	17	17	13	24	24	24	22.5
DO, MG/L	5.3	3.8	11.8	10.2	9.4	5.0	14.0	11.8	13.6	13.4	4.1	2.0	5.9	6.2	4.0
pH	6.2	6.9	7.4	7.1	6.8	6.6	7.8	7.6	8.2	7.2	6.8	7.0	7.7	7.9	6.6
ALKALINITY-MG/L	83	122	120	97	94	96	108	112	93	81	113	111	97	86	62
SUSP. SOLIDS-MG/L	175	80	25	59	21	156	88	105	26	20	147	22	84	19	16
BOD TOTAL MG/L	146	50	15	17	16	159	45	27	8	9	190	29	22	23	8
BOD, SOL MG/L	54	3	3	2	14	52	14	6	4	5	56	18	8	7	8
ALGAE, /ML $\times 10^3$	—	463	25	16	9.4	—	1170	21	15	4.6	—	941	16	6.9	1.1
* FECAL COLI/100ML $\times 10^6$	1.52	0.16	<0.01	<0.01	0	1.15	0.90	<0.01	<0.01	0	TNTC	TNTC	1.37	1.07	50
* MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	21.2	15.9	14.6	11.9	10.8	20.8	14.5	13.6	9.9	9.0	22.0	14.9	11.3	8.2	7.2
NO_3-N, MG/L	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.5
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.1	0.5	<0.1	<0.1	0.1	0.3	0.5	<0.1	<0.1	<0.1	0.2	<0.1
COD TOTAL MG/L	305	177	93	124	102	177	157	86	70	75	359	161	122	81	91
COD SOL. MG/L	125	72	60	49	59	118	71	59	50	57	127	86	64	55	62
TKN MG/L	32.6	26.5	18.9	18.5	17.2	27.3	25.7	19.7	16.0	15.0	40.1	22.9	20.5	13.3	13.3
TOTAL P MG/L	7.8	5.8	5.4	5.1	4.9	6.2	5.9	5.7	4.9	4.9	7.3	5.5	5.2	4.7	4.9

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	6/20/75					6/25/75					6/26/75				
AIR TEMP °C MAX/MIN	31/13					35/12					29/8				
WEATHER	Clear					Partly Cloudy					Clear				
INF FLOW, MG	0.282					0.273					0.242				
EFF FLOW MG	0.118					0.118					0.118				
CL_2 DOSE-MG/L	17.2					14.2					12.2				
CL_2 RESIDUAL-MG/L	2.0					3.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	14	23	24	24	23	14	25	26	26	25	14	23	25	25	24
DO, MG/L	5.0	0.5	4.2	2.6	2.3	5.0	0.4	6.6	0.4	0.3	4.7	0.3	4.7	0.4	0.3
pH	6.4	6.9	7.4	7.3	6.5	6.9	6.9	8.2	6.8	6.5	6.8	6.9	8.0	7.1	6.6
ALKALINITY-MG/L	89	110	97	88	66	108	120	83	95	78	102	121	86	87	84
SUSP. SOLIDS-MG/L	19	29	39	—	23	35	28	14	191	161	158	41	30	15	6
BOD TOTAL MG/L	45	26	25	60	17	52	33	18	50	11	130	34	16	6	7
BOD, SOL. MG/L	24	25	13	13	10	17	28	11	8	9	76	22	5	3	9
ALGAE, /ML $\times 10^2$	—	628	30	58	0.14	—	1070	17	7.2	0.28	—	215	1.4	1.4	<0.14
*FECAL COLI/100ML $\times 10^4$	2.26	0.49	0.01	0.29	0	7.06	5.96	0.51	0.32	0	11.7	6.1	0.34	0.15	0
*MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	12.1	15.8	11.8	10.7	6.9	15.1	13.4	6.4	9.5	9.1	18.8	14.5	7.1	9.3	9.7
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
COD TOTAL MG/L	61	164	91	118	76	60	192	85	84	80	400	156	95	91	83
COD SOL. MG/L	35	94	66	66	61	44	116	69	65	74	166	112	67	72	76
TKN MG/L	14.4	20.1	17.0	17.6	12.6	19.4	24.4	11.5	15.1	11.6	32.9	24.8	13.0	14.7	14.6
TOTAL P MG/L	1.2	5.5	5.3	6.0	4.7	2.6	6.5	5.2	5.5	5.4	7.8	6.4	5.4	5.3	5.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	6/27/75					6/28/75					6/29/75				
AIR TEMP °C MAX/MIN	30/6					30/13					32/17				
WEATHER	Clear					Cloudy					Clear				
INF FLOW, MG	0.262					0.264					0.231				
EFF FLOW MG	0.118					0.118					0.123				
Cl_2 DOSE-MG/L	12.2					13.2					12.6				
Cl_2 RESIDUAL MG/L	2.0					2.5					2.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	14	21	23	24	23.5	14	22	24	24	23	14	22	24	24	23
DO, MG/L	4.4	0.3	4.2	0.4	0.3	4.2	0.3	3.0	0.4	0.3	4.6	0.3	2.1	0.3	0.3
pH	7.0	6.9	7.6	6.9	6.5	6.8	6.9	7.6	7.0	6.6	6.9	6.8	7.2	7.0	6.5
ALKALINITY-MG/L	109	131	94	100	87	115	123	85	95	81	110	124	93	92	83
SUSP. SOLIDS-MG/L	155	63	75	106	8	229	30	16	89	3	107	29	130	7	2
BOD TOTAL MG/L	162	49	28	36	11	167	36	18	61	6	131	32	98	16	7
BOD, SOL MG/L	71	32	11	11	10	—	13	5	2	<1	56	25	19	2	5
ALGAE, /ML x 10^3	—	344	0.56	3.6	0.56	—	1200	0.56	6.4	0.98	—	987	0.70	1.1	0.56
*FECAL COLI/100ML x 10^6	3.06	0.74	<0.01	<0.01	0	11.3	4.2	0.18	0.06	0	TNTC	TNTC	—	0.74	—
*MPN /100 ML x 10^6															
NH_3-N, MG/L	22.0	15.0	8.3	10.4	9.7	27.6	14.9	7.2	10.2	9.9	19.7	14.7	18.1	9.9	9.9
NO_3-N, MG/L	<0.1	<0.1	0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
COD TOTAL MG/L	243	171	140	137	82	270	188	91	122	81	288	186	289	88	83
COD SOL. MG/L	129	117	71	69	74	121	128	75	69	76	137	123	92	70	77
TKN MG/L	35.2	26.0	18.5	19.2	14.9	37.6	26.8	12.9	16.1	14.3	31.6	24.0	38.6	15.9	14.1
TOTAL P MG/L	7.3	6.7	5.7	5.8	5.5	8.8	6.7	5.2	5.3	5.4	8.6	6.5	8.7	5.5	5.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	6/30/75					7/1/75					7/3/75				
AIR TEMP °C MAX/MIN	32/11					27/3					33/17				
WEATHER	Clear					Clear					Cloudy				
INF FLOW, MG	0.190					0.260					0.272				
EFF FLOW MG	0.113					0.118					0.118				
CL_2 DOSE-MG/L	11.6					13.2					10.2				
CL_2 RESIDUAL MG/L	2.0					3.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	14	22.5	24	24	23.5	14	21	23	23	23	14	24	24.5	25	24
DO, MG/L	4.8	0.3	1.4	0.1	0.5	4.6	0.5	4.9	1.4	0.4	4.5	0.5	3.1	7.2	2.9
pH	6.6	6.8	7.0	6.9	6.5	6.6	6.6	7.0	6.9	6.5	6.8	7.0	7.0	7.1	6.7
ALKALINITY-MG/L	86	131	96	98	83	93	132	99	100	83	96	128	104	95	85
SUSP. SOLIDS-MG/L	206	36	342	31	6	149	62	57	22	4	130	32	27	204	6
BOD TOTAL MG/L	116	41	108	18	11	66	23	2	4	3	168	57	12	69	6
BOD, SOL MG/L	64	33	47	11	8	36	15	5	<1	1	35	27	6	3	4
ALGAE, /ML $\times 10^3$	—	538	0.70	1.5	0.42	—	908	2.5	7.4	1.6	—	174	2.1	23	6
*FECAL COLI/100ML $\times 10^6$	TNTC	1.34	<0.01	0.12	0	7.4	1.4	0.03	0.08	0	4.2	1.2	0.08	0.08	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	19.2	15.6	22.4	10.7	9.9	24.0	18.6	10.4	10.2	10.0	21.6	18.8	10.7	13.1	9.7
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1
COD TOTAL MG/L	306	196	574	114	86	270	212	160	106	93	143	222	111	129	93
COD SOL. MG/L	118	135	132	76	78	125	118	83	77	81	99	146	76	80	80
TKN MG/L	29.6	26.8	50.8	16.9	14.2	35.2	34.4	14.5	15.8	14.3	27.4	22.2	16.7	21.4	14.6
TOTAL P. MG/L	8.2	6.7	10.7	5.8	5.5	9.2	7.1	6.2	5.8	5.7	6.2	7.7	6.1	6.5	5.9

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	7/4/75					7/5/75					7/6/75				
AIR TEMP °C MAX/MIN	31/13					32/11					33/17				
WEATHER	Partly Cloudy					Clear					Partly Cloudy				
INF FLOW, MG	0.276					0.201					0.207				
EFF FLOW MG	0.118					0.123					0.123				
CL_2 DOSE-MG/L	10.2					11.7					10.7				
CL_2 RESIDUAL-MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	15	23	23.5	24	23	15	24	24	24	24	15	25	25	25	25
DO, MG/L	5.0	1.9	2.0	6.2	1.8	3.7	2.3	4.7	4.8	3.0	4.2	1.6	3.4	2.4	2.8
pH	6.9	7.0	7.1	7.1	6.6	6.7	7.0	7.2	7.2	6.7	6.6	6.9	7.1	7.1	6.7
ALKALINITY-MG/L	96	128	108	95	84	82	125	106	95	77	99	129	106	90	74
SUSP. SOLIDS-MG/L	142	79	21	47	12	131	73	22	87	10	130	47	35	57	12
BOD TOTAL MG/L	90	48	21	8	5	191	72	17	8	7	77	20	2	30	7
BOD, SOL. MG/L	45	32	12	11	10	30	42	<1	2	6	44	1	1	2	<1
ALGAE, /ML $\times 10^3$	—	282	1.8	19	7.9	—	111	1.5	25	6.6	—	250	3.8	47	20
*FECAL COLI/100ML $\times 10^6$	2.8	0.34	0.01	0.01	0	3.6	1.2	0.03	<0.01	0	2.4	0.90	0.03	<0.01	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	23.2	20.4	11.4	10.0	8.7	18.9	18.7	11.1	8.4	8.3	21.6	17.4	11.4	8.0	6.6
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.4
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	0.6	0.2	<0.1	<0.1	<0.1	<0.1	0.5	0.2
COD TOTAL MG/L	136	208	98	109	104	178	230	110	157	108	231	231	119	183	106
COD SOL. MG/L	102	136	77	81	79	85	176	86	86	89	112	124	88	86	100
TKN MG/L	28.2	32.2	16.3	16.3	14.2	29.0	34.6	17.5	21.8	14.5	30.6	34.2	19.5	18.0	13.2
TOTAL P. MG/L	7.4	8.1	6.3	6.1	5.7	6.9	7.7	6.3	6.2	5.6	8.5	7.6	6.5	6.2	5.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	7/7/75					7/8/75					7/9/75				
AIR TEMP °C MAX/MIN	33/15					32/15					32/19				
WEATHER	Cloudy					Cloudy					Cloudy				
INF FLOW, MG	0.182					0.252					0.248				
EFF FLOW MG	0.108					0.118					0.118				
CL_2 DOSE-MG/L	11.1					10.2					11.2				
CL_2 RESIDUAL MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	IINF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	15	25	25	25	25	16	24	25	25	24	15	25	25	25	24
DO, MG/L	4.4	0.6	2.2	0.8	3.3	4.4	0.7	3.0	0.4	0.3	4.9	0.9	3.3	0.8	0.3
pH	6.6	6.9	7.0	7.1	6.7	6.7	6.8	7.0	6.9	6.6	6.8	6.9	7.0	7.0	6.7
ALKALINITY-MG/L	102	130	111	88	68	85	133	106	95	81	93	140	109	93	83
SUSP. SOLIDS-MG/L	114	60	22	77	14	149	74	17	19	12	96	61	41	4	4
BOD TOTAL MG/L	74	30	16	33	25	138	37	9	15	12	114	48	29	20	17
BOD, SOL MG/L	74	40	25	15	18	50	24	15	6	9	48	28	19	15	9
ALGAE, /ML $\times 10^3$	—	214	0.98	42	12	—	192	4.1	22	6.9	—	199	1.5	6.6	2.1
*FECAL COLI/100ML$\times 10^6$	3.2	1.1	0.07	0.08	0	4.2	1.8	1.1	<0.01	0	2.1	1.6	0.10	0.21	0
*MPN/100 ML$\times 10^6$															
NH_3-N, MG/L	23.2	19.2	12.5	9.7	6.2	23.2	20.0	12.9	9.6	7.6	23.6	20.4	14.4	9.4	8.1
NO_3-N, MG/L	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.2	0.3	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	0.1	0.1
COD TOTAL MG/L	245	225	113	174	109	280	201	103	104	112	226	222	121	106	111
COD SOL. MG/L	101	133	87	98	94	98	119	81	83	90	116	121	90	92	100
TKN MG/L	30.6	27.0	18.0	16.3	12.0	29.8	29.0	16.4	13.0	12.8	33.4	27.4	19.8	13.4	13.5
TOTAL P. MG/L	8.8	7.5	6.7	6.2	5.7	8.6	7.7	6.7	5.9	5.9	8.2	7.7	7.1	5.9	5.9

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	7/10/75					7/11/75					7/15/75				
AIR TEMP °C MAX/MIN	32/15					31/18					26/18				
WEATHER	Cloudy					Cloudy					Cloudy, Rain				
INF FLOW, MG	0.292					0.272					0.455				
EFF FLOW MG	0.118					0.118					0.118				
CL_2 DOSE-MG/L	10.2					10.2					11.2				
CL_2 RESIDUAL MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	15	24	25	25	24	15	24	25	25	24	14.5	23.5	23	24	22.5
DO, MG/L	3.6	0.4	2.7	0.7	0.3	4.4	0.4	3.0	0.9	0.3	5.0	5.2	4.3	1.1	0.3
pH	6.9	6.9	6.9	6.9	6.7	7.0	7.0	6.9	6.9	6.6	6.8	6.9	6.9	6.8	6.5
ALKALINITY-MG/L	104	131	114	97	82	99	129	110	89	87	89	124	99	93	81
SUSP. SOLIDS-MG/L	211	90	28	17	1	196	83	84	106	4	223	74	47	23	9
BOD TOTAL MG/L	100	56	14	13	13	140	48	37	30	14	123	30	17	11	7
BOD, SOL MG/L	78	24	12	8	9	47	19	11	9	8	30	13	10	4	3
ALGAE /ML $\times 10^3$	—	57	2.8	4.5	2.5	—	26	3.6	8.4	3.4	—	30	3.8	5.9	3.8
*FECAL COLI/100ML$\times 10^6$	4.4	0.70	0.01	0.03	0	5.1	0.24	<0.01	<0.01	0	1.8	1.3	0.89	0.60	0
*MPN/100 ML$\times 10^6$															
NH_3-N, MG/L	24.0	22.8	14.0	9.6	8.0	23.6	20.8	13.8	9.9	8.6	13.1	16.6	13.4	9.1	7.9
NO_3-N, MG/L	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	0.1	0.1	0.1	<0.1	0.1	<0.1	0.1	0.1
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
COD TOTAL MG/L	220	226	121	106	109	203	245	114	111	108	286	212	132	105	98
COD SOL. MG/L	152	143	86	90	106	124	140	93	86	92	84	105	85	77	83
TKN MG/L	28.3	33.9	18.2	14.0	13.1	25.9	26.7	17.4	14.3	13.3	23.5	24.7	20.3	14.5	13.4
TOTAL P. MG/L	8.9	8.4	7.0	6.1	6.0	7.2	8.2	6.9	5.9	6.2	6.1	7.2	6.5	5.8	5.8

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	7/16/75					7/18/75					7/29/75				
AIR TEMP °C MAX/MIN	30/20					32/19					30/12				
WEATHER	Cloudy					Clear					Partly Cloudy				
INF FLOW, MG	0.340					0.292					0.279				
EFF FLOW MG	0.123					0.118					0.118				
CL_2 DOSE-MG/L	10.7					11.2					10.2				
CL_2 RESIDUAL MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	14	24	24	24	23	16	26	27	26.5	25	16	23	24	24	23.5
DO, MG/L	3.4	7.7	6.8	2.9	1.2	3.9	5.5	4.7	9.2	2.1	4.4	6.9	7.5	6.7	2.3
PH	8.1	7.5	7.1	6.9	6.5	6.6	7.6	7.2	7.7	6.6	6.5	7.6	7.2	7.4	6.6
ALKALINITY-MG/L	133	120	105	90	85	84	102	99	88	78	66	88	99	83	71
SUSP. SOLIDS-MG/L	120	56	50	17	12	112	21	134	51	15	155	74	52	20	14
BOD TOTAL MG/L	120	27	23	11	11	116	21	23	16	6	109	19	8	19	9
BOD, SOL MG/L	57	19	15	10	7	69	18	7	<1	2	46	13	5	4	6
ALGAE /ML $\times 10^3$	—	6.9	2.5	4.3	3.2	—	7.6	5.2	15	2	—	5.2	2	8.8	9.3
*FECAL COLI/100ML $\times 10^6$	2.4	0.92	0.70	<0.01	0	3.2	4.2	0.18	<0.01	0	7.8	6.1	0.31	0.30	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	16.0	15.3	13.2	8.5	8.0	19.2	12.8	18.9	9.1	6.9	22.4	6.7	10.5	6.1	5.2
NO_3-N, MG/L	<0.1	0.1	0.1	0.1	0.1	<0.1	0.1	<0.1	<0.1	0.3	<0.1	0.1	<0.1	<0.1	0.3
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	0.1	<0.1	0.4	0.4
COD TOTAL MG/L	156	167	127	92	90	254	142	311	98	91	312	230	142	108	110
COD SOL. MG/L	116	95	86	74	74	154	106	91	75	76	121	109	94	85	83
TKN MG/L	20.8	19.2	16.8	13.4	11.5	23.5	17.9	31.1	12.9	10.4	32.8	22.4	18.1	11.8	10.9
TOTAL P. MG/L	6.1	6.8	6.6	5.8	5.9	6.5	6.7	7.3	5.7	5.5	10.4	7.0	6.7	6.2	5.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	7/30/75					8/5/75					8/6/75				
AIR TEMP °C MAX/MIN	29/11					24/17					35/15				
WEATHER	Clear					Clear					Cloudy				
INF FLOW, MG	0.257					0.242					0.265				
EFF FLOW MG	0.118					0.136					0.136				
CL_2 DOSE-MG/L	9.1					—					—				
CL_2 RESIDUAL-MG/L	1.5					—					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	22	24	23	23	17	24	25	25	24	18	24	26	25	26
DO, MG/L	3.8	3.7	5.8	4.0	2.3	4.0	0.4	2.8	0.3	0.4	3.8	1.4	6.2	0.6	0.3
pH	7.2	8.0	7.4	7.8	6.7	6.6	6.9	7.0	6.9	6.5	7.0	7.3	7.6	7.0	6.6
ALKALINITY-MG/L	89	86	105	87	71	90	102	105	86	76	109	98	104	85	77
SUSP. SOLIDS-MG/L	111	53	28	13	13	145	56	99	17	0.3	164	56	27	17	8
BOD TOTAL MG/L	64	19	7	<1	7	155	29	15	16	12	164	30	20	12	7
BOD, SOL MG/L	43	10	1	2	<1	66	20	11	9	8	101	21	10	7	5
ALGAE, /ML x 10^2	—	4.3	2.0	9.8	7.9	—	74	4.2	2.5	2.1	—	33	1.7	4.5	1.7
*FECAL COLI/100ML x 10^6	7.6	7.7	0.45	0.08	0	7.2	2.06	0.35	0.15	0	TNTC	5.1	0.16	0.10	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L	17.3	5.0	9.4	5.2	5.2	22.0	8.9	9.0	5.6	5.3	19.7	7.5	7.1	4.9	5.2
NO_3-N, MG/L	<0.1	0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	0.1	<0.1	0.4	0.4	<0.1	<0.1	<0.1	0.3	0.1	<0.1	<0.1	<0.1	0.3	<0.1
COD TOTAL MG/L	203	225	134	115	100	339	191	167	112	96	400	197	135	102	95
COD SOL. MG/L	124	118	94	88	89	130	108	—	80	87	227	103	97	83	94
TKN MG/L	26.8	8.8	10.2	14.8	16.9	27.6	18.8	16.9	11.0	10.6	32.8	17.0	16.1	10.5	10.5
TOTAL P. MG/L	7.7	6.9	6.5	5.7	5.7	8.6	7.0	6.8	5.9	5.9	8.6	7.4	6.6	6.2	6.2

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	8/7/75					8/11/75					8/13/75				
AIR TEMP °C MAX/MIN	23/13					32/10					33/12				
WEATHER	Rain					Clear					Clear				
INF FLOW, MG	0.288					0.213					0.329				
EFF FLOW MG	0.136					0.136					0.136				
CL_2 DOSE-MG/L	13.2					11.5					12.3				
CL_2 RESIDUAL MG/L	2.0					2.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	21	23	23	23	17	22	23	22	22	17	22	23	24	23
DO, MG/L	3.8	0.2	1.4	0.3	0.4	3.9	6.2	8.7	6.0	3.0	5.7	3.6	6.1	6.0	2.4
PH	6.6	6.9	7.1	7.1	6.6	6.9	7.5	6.6	7.3	6.5	7.3	7.2	7.5	7.2	6.4
ALKALINITY-MG/L	69	107	100	88	74	85	89	66	82	66	197	87	86	75	59
SUSP. SOLIDS-MG/L	151	56	42	24	4	35	133	78	17	6	16	148	73	13	1
BOD TOTAL MG/L	156	31	16	11	7	10	20	14	8	3	50	35	27	16	9
BOD, SOL MG/L	78	16	2	4	5	8	5	2	1	1	38	16	10	9	7
ALGAE, /ML $\times 10^3$	—	8.6	2.7	3.2	1.5	—	43	0.84	1.4	4.8	—	49	11	6.7	0.98
*FECAL COLI/100ML $\times 10^6$	4.6	1.5	0.02	0.01	0	TNTC	4.0	0.04	0.01	0	4.0	0.80	0.16	0.16	800
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	21.6	8.6	7.8	6.2	5.4	17.0	8.3	7.9	4.7	4.7	11.1	9.5	7.5	3.7	4.3
NO_3-N, MG/L	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.2	<0.1	<0.1	<0.1	0.4
NO_2-N, MG/L	<0.1	<0.1	<0.1	0.2	0.1	0.1	<0.1	<0.1	0.3	<0.1	1.5	<0.1	<0.1	0.3	<0.1
COD TOTAL MG/L	331	191	172	118	106	100	247	193	111	104	343	510	194	113	101
COD SOL. MG/L	212	102	93	91	96	81	82	100	92	95	84	83	96	90	91
TKN MG/L	27.0	17.7	16.5	11.2	9.6	20.2	23.4	19.7	9.6	8.9	16.9	26.6	19.0	9.8	8.3
TOTAL P. MG/L	8.0	7.2	6.8	6.1	6.0	7.0	2.7	6.7	5.5	5.5	38.4	7.2	6.2	5.2	5.1

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	8/19/75					8/21/75					8/22/75				
AIR TEMP °C MAX/MIN	29/7					25/4					27/12				
WEATHER	Clear					Clear					Partly Cloudy				
INF FLOW, MG	0.278					0.272					0.279				
EFF FLOW MG	0.136					0.140					0.140				
CL_2 DOSE-MG/L	11.5					12.0					12.0				
CL_2 RESIDUAL MG/L	2.0					2.0					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	21	22.5	22	22	18	20	21	21	21	17	21	22	21	21
DO, MG/L	4.1	0.6	2.3	5.3	3.0	3.0	0.9	3.0	6.0	3.6	3.0	0.6	2.8	7.5	3.0
pH	6.6	6.8	7.1	7.0	6.5	7.6	6.9	7.1	7.2	6.5	7.1	7.0	7.1	7.2	6.5
ALKALINITY-MG/L	80	101	98	74	59	130	105	95	77	61	121	95	93	72	59
SUSP. SOLIDS-MG/L	136	63	48	5	6	222	60	53	8	9	172	38	2	4	7
BOD TOTAL MG/L	136	51	30	15	6	144	22	18	<1	3	166	18	<1	8	4
BOD, SOL MG/L	43	15	6	3	—	51	4	<1	<1	2	64	<1	<1	<1	1
ALGAE, /ML x 10^3	—	51	5.5	3.8	0.84	—	25	2.7	1.5	1.7	—	9.5	0.70	0.84	1.5
*FECAL COLI/100ML x 10^6	TNTC	2.6	0.08	<0.01	0	TNTC	2.1	0.15	0.11	0	5.0	5.1	0.20	0.12	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L	21.2	9.1	8.0	3.5	3.7	23.6	8.6	7.4	2.6	2.4	23.2	9.9	6.4	2.4	2.3
NO_3-N, MG/L	<0.1	<0.1	<0.1	0.1	0.5	<0.1	<0.1	<0.1	0.2	0.8	<0.1	<0.1	<0.1	0.3	0.9
NO_2-N, MG/L	0.1	0.1	0.1	0.5	0.2	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	0.4	<0.1
COD TOTAL MG/L	317	166	155	84	88	428	198	154	87	103	365	139	97	95	104
COD SOL. MG/L	122	90	87	76	83	127	115	94	89	88	156	98	100	84	93
TKN MG/L	34.4	16.9	16.2	8.0	7.5	38.8	18.9	13.8	8.1	7.5	32.0	14.4	11.6	7.5	7.3
TOTAL P. MG/L	8.8	7.2	6.6	6.5	5.5	9.1	7.3	6.9	5.6	5.6	8.7	7.3	6.7	5.4	5.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	9/2/75					9/3/75					9/4/75				
AIR TEMP °C MAX/MIN	—					24/10					22/6				
WEATHER	Partly Cloudy					Cloudy					Clear				
INF FLOW, MG	0.211					0.289					0.286				
EFF FLOW MG	0.124					0.132					0.129				
CL_2 DOSE-MG/L	—					12.3					—				
CL_2 RESIDUAL-MG/L	—					3.0					—				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	18	19	19	19	17	18	19	18.6	19	17	17	18	18	19
DO, MG/L	4.0	5.8	8.7	2.8	0.7	4.1	5.6	7.1	6.2	2.4	4.3	3.2	7.9	5.8	2.0
pH	7.9	6.8	7.5	6.8	6.4	6.8	7.1	7.2	7.0	6.5	6.9	7.1	7.5	7.2	6.5
ALKALINITY-MG/L	177	102	88	80	65	111	105	90	73	59	114	111	94	74	61
SUSP. SOLIDS-MG/L	119	81	50	23	17	194	51	12	30	2	159	67	18	15	9
BOD TOTAL MG/L	104	27	23	17	9	136	28	13	7.	2	170	29	18	10	6
BOD, SOL MG/L	26	15	11	9	7	51	12	6	4	1	59	16	8	4	3
ALGAE /ML $\times 10^3$	—	18	7.9	1.2	0.9	—	15	1.9	2.8	0.5	—	19	1.9	1.6	0.9
*FECAL COLI/100ML $\times 10^6$	9.0	5.0	0.83	0.17	0	8.0	4.5	0.12	0.42	700	>8	1.02	0.63	0.13	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	25.6	11.3	7.3	3.5	3.4	24.0	9.3	5.2	2.0	2.4	23.6	11.4	5.8	2.4	2.3
NO_3-N, MG/L	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.7	<0.1	<0.1	<0.1	0.1	0.6
NO_2-N, MG/L	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.3	0.4	0.4	<0.1	<0.1	<0.1	0.3	0.2	<0.1
COD TOTAL MG/L	301	233	183	116	118	375	183	115	96	93	305	148	107	97	91
COD SOL. MG/L	84	103	108	92	101	125	94	91	81	87	189	99	87	83	84
TKN MG/L	33.5	20.3	14.0	7.6	7.3	32.8	18.2	15.4	4.9	4.8	25.6	13.8	8.9	5.7	5.5
TOTAL P MG/L	6.7	6.9	6.4	5.8	5.4	8.5	6.7	6.1	5.1	5.3	7.4	6.8	6.2	5.2	5.3

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	9/5/75					9/6/75					9/7/75				
AIR TEMP °C MAX/MIN	27/7					27/10					27/9				
WEATHER	Clear					Rain					Clear				
INF FLOW, MG	0.292					0.267					0.241				
EFF FLOW MG	0.136					0.139					0.139				
CL_2 DOSE-MG/L	–					12.8					–				
CL_2 RESIDUAL-MG/L	–					3.0					–				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	18	19	19	19	16.5	19	20	19	19	17	18	19	18	19
DO, MG/L	4.4	7.9	9.1	4.9	2.5	3.9	6.7	9.2	5.6	2.4	4.4	1.9	6.2	5.0	2.8
pH	7.1	7.8	8.0	7.1	6.6	7.1	8.0	8.1	7.1	6.5	7.0	7.0	7.5	7.0	6.5
ALKALINITY-MG/L	106	111	88	73	63	114	107	94	72	56	96	110	94	75	71
SUSP. SOLIDS-MG/L	152	85	18	7	20	161	48	12	14	13	211	53	37	49	18
BOD TOTAL MG/L	147	41	15	9	7	162	21	3	5	5	145	17	8	7	5
BOD, SOL. MG/L	71	13	6	3	3	58	10	1	2	4	45	4	1	<1	4
ALGAE /ML x 10^3	–	31	2.3	1.9	2.1	–	26	4.4	1.2	0.9	–	12	5.4	0.7	1.2
*FECAL COLI/100ML x 10^6	2.5	0.2	0.01	0.03	0	TNTC	TNTC	0.98	0.32	50	TNTC	0.88	0.03	1.72	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L	24.8	11.1	5.4	1.8	2.0	24.8	8.5	4.5	1.2	1.7	16.7	7.9	3.9	2.3	1.8
NO_3-N, MG/L	<0.1	<0.1	0.1	0.4	0.7	<0.1	0.1	<0.1	0.4	0.8	<0.1	0.2	0.6	0.4	0.2
NO_2-N, MG/L	<0.1	<0.1	0.4	0.2	<0.1	<0.1	0.3	0.6	0.5	<0.1	<0.1	0.2	0.6	0.4	0.2
COD TOTAL MG/L	253	147	106	92	88	303	208	109	90	105	260	174	113	111	96
COD SOL. MG/L	162	97	88	82	86	148	104	82	78	82	107	87	90	81	85
TKN MG/L	28.8	11.9	6.8	3.6	4.2	31.1	14.6	7.4	4.5	5.2	23.9	13.4	7.4	5.6	5.2
TOTAL P. MG/L	6.9	7.0	6.1	5.3	5.6	7.4	6.6	6.2	5.4	5.5	7.6	6.5	6.2	5.7	5.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	9/8/75					9/9/75					9/10/75				
AIR TEMP °C MAX/MIN	27/6					21/10					19/1				
WEATHER	Cloudy					Clear					Clear				
INF FLOW, MG	0.197					0.265					0.262				
EFF FLOW MG	0.139					0.139					0.139				
CL_2 DOSE-MG/L	–					17.2					–				
CL_2 RESIDUAL: MG/L	–					5.0					–				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	18	19	19	19	17	19	19	19	19	17	17	18	17.5	18
DO, MG/L	4.3	2.3	6.1	4.5	1.6	5.0	5.6	7.5	5.2	1.9	4.4	3.5	4.6	4.5	1.5
pH	6.7	7.0	7.3	7.0	6.6	7.0	7.7	7.8	7.1	6.4	7.1	7.4	7.2	7.0	6.5
ALKALINITY-MG/L	84	110	93	74	66	105	109	98	74	51	117	110	93	78	56
SUSP. SOLIDS-MG/L	124	40	18	12	8	177	40	9	6	6	160	38	1	46	21
BOD TOTAL MG/L	129	23	9	10	7	185	27	12	7	4	163	26	13	10	10
BOD, SOL MG/L	40	6	4	<1	1	80	14	6	1	4	66	11	6	3	7
ALGAE /ML $\times 10^3$	–	7.9	3.7	0.7	0.7	–	6.5	0.7	0.5	0.7	–	7.9	0.7	4.7	2.1
*FECAL COLI/100ML$\times 10^6$	8.0	0.80	0.03	0.09	0	>8.0	1.85	0.08	0.12	150	3.0	0.07	<0.01	<0.01	0
*MPN /100 ML$\times 10^6$															
NH_3-N, MG/L	18.7	9.6	4.9	1.9	2.1	24.5	9.2	4.9	1.9	2.1	25.2	9.9	5.5	2.0	2.2
NO_3-N, MG/L	<0.1	<0.1	<0.1	0.2	0.4	<0.1	0.1	0.1	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	0.5
NO_2-N, MG/L	<0.1	0.3	0.7	0.4	0.3	<0.1	0.4	0.7	0.4	<0.1	<0.1	0.3	0.6	0.4	<0.1
COD TOTAL MG/L	302	183	112	101	95	276	166	99	90	94	369	169	100	142	108
COD SOL. MG/L	88	86	83	78	77	174	94	87	78	82	162	89	82	77	85
TKN MG/L	26.2	15.0	8.8	5.1	5.0	26.8	17.3	9.1	6.5	5.0	34.4	18.1	9.0	9.2	7.4
TOTAL P MG/L	7.6	6.4	6.0	5.2	5.4	7.1	6.4	6.0	5.3	5.4	7.9	6.6	6.1	5.3	5.5

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	9/11/75					9/12/75					9/13/75				
AIR TEMP °C MAX/MIN	22/2					24/7					22/4				
WEATHER	Clear					Rain					Clear				
INF FLOW, MG	0.211					0.246					0.270				
EFF FLOW MG	0.139					0.243					0.300				
CL_2 DOSE-MG/L	—					12.8					10.4				
CL_2 RESIDUAL MG/L	—					2.0					3.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	17	18	18	18	17	19	19	19	18.5	17	17	18	17.5	18
DO, MG/L	4.0	6.0	2.4	4.1	1.7	4.3	6.0	0.8	4.8	2.1	4.2	1.3	0.5	2.1	0.9
pH	7.1	7.4	7.2	7.0	6.5	7.1	7.5	7.0	7.0	6.6	7.0	7.1	6.9	6.8	6.4
ALKALINITY-MG/L	121	110	93	77	66	117	113	96	78	63	106	108	99	82	63
SUSP. SOLIDS-MG/L	141	60	7	12	6	114	46	6	6	3	138	37	6	9	5
BOD TOTAL MG/L	148	28	5	7	6	118	26	23	5	5	130	22	10	4	3
BOD, SOL MG/L	66	13	3	2	3	58	9	5	3	2	36	2	1	1	2
ALGAE /ML x 10^3	—	32	0.7	0.5	0.7	—	4.9	0.7	0.9	1.2	—	22	1.2	0.9	0.7
*FECAL COLI/100ML x 10^6	78.0	2.7	0.12	0.35	0	3.2	0.40	0.01	0.80	0	TNTC	6.0	0.06	0.90	0
*MPN/100 ML x 10^6															
NH_3-N, MG/L	26.4	9.8	5.8	2.0	2.0	25.6	10.2	6.2	2.0	2.6	27.2	10.2	6.5	2.3	2.8
NO_3-N, MG/L	<0.1	0.2	0.2	0.1	0.5	<0.1	<0.1	0.3	0.1	0.6	<0.1	<0.1	0.1	<0.1	0.4
NO_2-N, MG/L	<0.1	<0.1	0.4	0.4	0.2	<0.1	<0.1	0.4	0.3	<0.1	<0.1	0.3	0.3	0.2	<0.1
COD TOTAL MG/L	355	184	102	94	88	280	163	100	89	89	331	152	97	94	93
COD SOL. MG/L	163	88	88	80	83	157	91	89	88	83	131	88	87	80	84
TKN MG/L	31.6	17.4	9.3	5.6	5.6	31.6	16.0	9.7	5.5	5.6	34.0	17.0	10.5	5.6	5.7
TOTAL P MG/L	7.8	6.7	6.2	5.5	5.5	7.2	6.9	6.3	5.4	5.5	7.7	6.6	6.4	5.6	5.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	9/14/75					9/15/75					9/16/75				
AIR TEMP °C MAX/MIN	20/1					12/-3					17/3				
WEATHER	Partly Cloudy					Clear					Partly Cloudy				
INF FLOW, MG	0.219					0.197					0.264				
EFF FLOW MG	0.319					0.284					0.300				
CL_2 DOSE-MG/L	10.3					—					9.2				
CL_2 RESIDUAL MG/L	3.0					—					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17.5	16	17	17	17	16	14	15	15	16	17	15	15	15	16
DO, MG/L	4.2	3.4	0.7	1.3	0.4	4.2	3.8	0.6	0.6	0.2	4.0	6.7	0.9	0.5	0.3
pH	7.0	7.1	7.0	6.8	6.5	7.1	7.2	7.1	6.8	6.5	7.3	7.7	7.0	7.0	6.6
ALKALINITY-MG/L	92	114	101	81	72	109	116	100	81	76	124	116	104	83	78
SUSP. SOLIDS-MG/L	161	62	12	11	6	130	33	15	5	3	232	37	6	1	1
BOD TOTAL MG/L	166	19	<1	<1	2	136	24	11	4	5	217	23	12	5	6
BOD, SOL. MG/L	62	<1	<1	<1	<1	39	7	3	2	5	59	10	8	5	7
ALGAE, /ML $\times 10^3$	—	17	4.9	0.7	0.5	—	15	1.2	0.9	0.9	—	24	1.4	0.2	0.5
*FECAL COLI/100ML $\times 10^6$	>8.0	0.10	<0.01	0.02	0	>8.0	0.20	0.01	0.02	0	6.0	0.20	0.02	0.10	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	21.6	10.9	6.7	2.8	3.2	19.7	11.1	7.7	3.5	3.5	28.4	10.9	7.3	3.3	3.9
NO_3-N, MG/L	<0.1	<0.1	0.1	<0.1	0.2	<0.1	0.2	<0.1	0.3	1.6	<0.1	<0.1	0.2	0.1	<0.1
NO_2-N, MG/L	<0.1	0.4	0.3	0.2	<0.1	0.3	0.2	0.3	<0.1	0.2	0.1	0.5	0.3	0.1	<0.1
COD TOTAL MG/L	372	191	103	93	90	420	290	102	95	95	432	153	110	91	90
COD SOL. MG/L	159	87	88	79	85	94	90	90	83	88	120	89	93	84	88
TKN MG/L	28.4	18.9	10.6	6.7	6.4	32.0	16.4	12.0	6.5	6.8	39.6	17.7	11.5	6.7	6.6
TOTAL P MG/L	9.8	7.6	6.6	5.9	6.3	8.1	6.7	6.7	6.2	6.2	9.4	6.6	6.3	6.5	5.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	9/17/75					9/18/75					9/19/75				
AIR TEMP °C MAX/MIN	12/5					18/7					—				
WEATHER	Cloudy, Rain					Cloudy, Fog					Cloudy				
INF FLOW, MG	0.255					0.251					0.255				
EFF FLOW MG	0.308					0.308					0.338				
CL_2 DOSE-MG/L	8.2					7.8					8.1				
CL_2 RESIDUAL MG/L	2.0					1.5					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	16	15	15	15	16	16	15	15	15	15.5	16.5	16	16	16	16
DO, MG/L	3.2	7.3	0.8	0.4	0.2	4.3	5.2	0.6	0.7	0.3	4.0	8.2	0.7	0.5	0.3
pH	7.2	7.7	7.1	7.1	6.6	7.3	7.6	7.2	7.0	6.7	7.3	7.8	7.1	6.7	6.6
ALKALINITY-MG/L	133	117	107	84	78	109	120	106	88	83	110	118	109	89	78
SUSP. SOLIDS-MG/L	131	44	4	1	2	169	38	11	<1	2	150	41	53	1	8
BOD TOTAL MG/L	139	16	5	6	4	154	22	10	6	7	139	21	11	6	9
BOD, SOL MG/L	51	4	2	1	3	54	7	3	4	5	52	9	5	3	6
ALGAE, /ML $\times 10^3$	—	13	0.5	0.2	0.2	—	17	0.9	0.2	0.5	—	17	0.9	1.2	14
*FECAL COLI/100ML $\times 10^6$	>9.0	0.10	<0.01	0.27	0	>8.0	1.8	<0.01	0.04	0	>8.0	2.4	0.14	0.18	0
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	24.6	11.1	7.1	3.5	4.1	28.0	11.6	7.3	4.0	4.5	24.4	11.8	7.9	4.2	3.2
NO_3-N, MG/L	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	0.3	0.3	0.2	<0.1	<0.1	0.2	0.3	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	<0.1
COD TOTAL MG/L	324	157	100	94	91	345	149	97	92	96	276	140	99	93	97
COD SOL. MG/L	137	85	91	78	84	141	83	84	82	88	125	87	87	85	83
TKN MG/L	30.0	18.6	10.7	7.2	7.0	34.8	22.0	11.5	7.3	7.4	31.6	17.2	11.3	7.1	6.5
TOTAL P MG/L	7.5	7.0	6.7	5.9	6.1	8.8	7.2	6.7	5.9	5.9	7.0	6.8	6.6	5.9	5.6

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	9/20/75					9/21/75					9/22/75				
AIR TEMP °C MAX/MIN	-					35/1					25/7				
WEATHER	Cloudy					Partly Cloudy					Partly Cloudy				
INF FLOW, MG	0.276					0.198					0.206				
EFF FLOW MG	0.251					0.308					0.335				
CL_2 DOSE-MG/L	8.7					8.2					9.0				
CL_2 RESIDUAL MG/L	2.0					3.0					4.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	17	18	17	16	16	17	19	18	16	16.5	17	17	17	17	17
DO, MG/L	4.0	12.0	0.7	0.2	0.3	2.8	14.6	0.9	0.2	0.3	1.8	4.9	0.8	0.4	0.4
pH	7.2	8.0	7.0	6.8	6.6	7.4	8.4	7.0	6.8	6.6	7.0	7.2	7.1	6.7	6.4
ALKALINITY-MG/L	140	114	105	93	78	149	117	105	92	77	125	119	107	88	76
SUSP. SOLIDS-MG/L	247	82	8	6	5	53	57	18	4	7	150	61	4	9	8
BOD TOTAL MG/L	126	21	4	3	4	17	15	3	5	4	96	41	9	6	7
BOD, SOL MG/L	53	<1	<1	<1	2	7	1	<1	<1	<1	15	8	4	4	4
ALGAE, /ML x 10^3	—	23	1.6	2.6	3.7	—	28	2.1	3.7	2.1	—	34	2.8	2.3	2.1
*FECAL COLI/100ML x 10^6	>8.0	2.8	0.32	0.20	0	9.0	2.6	0.26	0.18	0	>8.0	0.54	0.02	0.90	0
*MPN /100 ML x 10^6															
NH_3-N, MG/L	32.4	13.5	8.2	5.1	5.2	30.0	11.8	9.9	5.1	5.1	23.0	11.8	7.6	4.5	4.8
NO_3-N, MG/L	<0.1	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5.2	<0.1	<0.1
NO_2-N, MG/L	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4.2	0.1	0.1
COD TOTAL MG/L	383	206	103	95	101	118	177	106	96	96	181	165	97	97	99
COD SOL. MG/L	149	83	87	78	85	46	84	86	78	84	47	89	90	82	82
TKN MG/L	40.8	23.2	11.4	8.0	8.9	31.6	20.1	13.0	7.9	8.2	32.0	20.4	11.5	8.0	7.8
TOTAL P MG/L	8.6	6.9	6.7	6.0	6.1	4.4	7.0	6.7	6.1	6.1	5.0	7.1	6.6	5.9	6.2

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	9/23/75					9/24/75					9/25/75				
AIR TEMP °C MAX/MIN	23/10					16/11					12/9				
WEATHER	Rain					Rain					Rain				
INF FLOW, MG	0.268					0.259					0.378				
EFF FLOW MG	0.326					0.321					0.304				
CL_2 DOSE-MG/L	9.5					9.2					9.9				
CL_2 RESIDUAL MG/L	3.0					3.0					2.5				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	16	18	18	17	17	16	17	17	17	17	17	15	16	15	16
DO, MG/L	1.8	7.1	1.2	0.4	0.4	4.3	3.4	0.5	0.4	0.3	3.3	1.9	0.9	0.4	0.4
pH	7.2	7.6	6.9	6.8	6.4	7.1	7.2	6.9	6.8	6.5	7.2	7.1	7.0	6.9	6.6
ALKALINITY-MG/L	134	120	104	85	72	113	119	106	90	80	125	118	111	85	78
SUSP. SOLIDS-MG/L	204	52	3	7	10	145	48	6	94	5	200	35	5	11	7
BOD TOTAL MG/L	175	28	9	6	7	139	27	10	20	6	165	28	12	11	6
BOD, SOL MG/L	53	11	4	4	4	72	13	5	3	3	52	13	4	5	6
ALGAE, /ML $\times 10^3$	—	52	1.4	0.9	1.4	—	22	0.9	0.9	0.9	—	28	1.2	1.6	1.4
* FECAL COLI/100ML $\times 10^6$	>7.0	0.34	0.04	0.25	0	7.5	1.04	0.21	0.40	0	>7.0	>80	<0.01	0.39	0
* MPN /100 ML $\times 10^6$															
NH_3-N, MG/L	24.8	11.2	7.7	4.5	5.2	22.1	11.7	7.9	5.2	5.2	20.4	12.8	8.1	5.2	5.9
NO_3-N, MG/L	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	<0.1	0.8	<0.1	<0.1	<0.1	0.5	0.9	<0.1	<0.1
NO_2-N, MG/L	0.1	0.8	0.5	0.1	0.1	0.1	0.7	0.3	0.1	0.1	0.1	<0.1	0.2	<0.1	<0.1
COD TOTAL MG/L	428	147	106	97	96	299	132	94	157	96	373	114	98	100	101
COD SOL. MG/L	181	89	82	79	89	157	87	82	81	88	168	88	83	79	82
TKN MG/L	36.0	19.1	11.5	8.1	8.3	31.2	18.4	11.7	11.0	8.0	26.8	17.9	12.3	9.0	9.4
TOTAL P MG/L	10.1	7.1	6.7	6.1	6.3	10.1	7.1	6.7	5.2	5.7	5.6	6.3	6.2	5.6	5.7

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

DATE	9/26/75					9/27/75					9/28/75				
AIR TEMP °C MAX/MIN	12/11					16/4					20/7				
WEATHER	—					Cloudy					Partly Cloudy				
INF FLOW, MG	0.375					0.589					0.518				
EFF FLOW MG	0.317					0.301					0.346				
CL_2 DOSE-MG/L	9.5					—					8.0				
CL_2 RESIDUAL-MG/L	2.0					—					2.0				
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	16	14	15	15	15	16	15	15	15	—	16	15	15	15	15
DO MG/L	4.3	0.9	1.0	0.4	0.4	6.7	3.0	1.8	0.5	—	5.4	8.0	2.3	0.2	0.2
PH	7.0	7.1	7.2	6.9	6.7	6.2	7.1	6.8	6.8	—	6.7	7.5	6.9	6.9	6.5
ALKALINITY-MG/L	95	117	108	86	84	41	102	105	88	—	62	105	107	77	75
SUSP. SOLIDS-MG/L	158	36	5	12	7	383	39	5	9	—	140	59	7	8	9
BOD TOTAL MG/L	115	21	10	8	5	147	20	8	8	—	87	30	13	10	6
BOD, SOL MG/L	41	10	3	5	4	48	11	6	6	—	22	8	5	3	4
ALGAE /ML $\times 10^3$	—	14	2.3	1.6	1.6	—	15	1.2	1.6	—	—	37	1.2	2.6	1.2
*FECAL COLI/100ML $\times 10^6$	78.0	1.0	<0.01	0.02	0	77.0	6.2	0.57	1.4	—	5.4	2.1	0.03	1.7	10
*MPN/100 ML $\times 10^6$															
NH_3-N, MG/L	19.6	11.6	8.6	5.4	5.9	18.0	10.8	8.2	5.5	—	7.8	8.5	8.2	5.9	5.9
NO_3-N, MG/L	<0.1	0.2	1.2	<0.1	<0.1	<0.1	<0.1	1.3	<0.1	—	<0.1	0.3	1.1	<0.1	<0.1
NO_2-N, MG/L	<0.1	0.5	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.1	—	0.1	1.1	0.2	0.1	0.2
COD TOTAL MG/L	257	118	94	94	95	589	118	87	92	—	149	122	90	93	89
COD SOL. MG/L	83	89	86	79	82	94	80	80	78	—	61	75	80	80	82
TKN MG/L	23.6	17.9	12.2	9.2	9.3	49.2	17.3	12.2	9.2	—	8.2	16.4	11.4	9.3	9.1
TOTAL P MG/L	5.0	5.8	6.0	5.4	5.4	5.3	5.6	5.6	4.7	—	3.8	5.2	4.6	5.1	4.0

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML

DATE	9/29/75					9/30/75									
AIR TEMP °C MAX/MIN	21/8					29/3									
WEATHER	Clear					Partly Cloudy									
INF FLOW, MG	0.310					0.360									
EFF FLOW MG	0.320					0.334									
CL_2 DOSE-MG/L	9.0					9.0									
CL_2 RESIDUAL-MG/L	3.0					2.0									
	INF	1	2	3	EFF	INF	1	2	3	EFF	INF	1	2	3	EFF
TEMP °C	16	14	15	15	15	16	15	15	15	15					
DO, MG/L	5.1	5.9	1.2	0.5	0.4	4.3	6.7	1.8	0.4	0.4					
PH	6.6	7.2	6.9	6.8	6.5	6.7	7.2	7.0	6.9	6.5					
ALKALINITY-MG/L	82	109	102	84	80	89	108	105	82	77					
SUSP. SOLIDS-MG/L	113	25	14	13	12	119	30	4	4	8					
BOD TOTAL MG/L	106	25	11	11	7	116	16	10	7	7					
BOD, SOL MG/L	51	15	9	8	6	51	7	5	4	3					
ALGAE /ML $\times 10^3$	—	11	0.9	0.9	0.5	—	17	0.5	1.6	1.6					
*FECAL COLI/100ML $\times 10^6$	7.2	0.40	0.05	0.01	0	7.2	36	<0.01	<0.01	0					
*MPN/100ML $\times 10^6$															
NH_3-N, MG/L	13.6	9.2	7.6	5.6	6.9	19.5	8.8	8.0	6.2	7.2					
NO_3-N; MG/L	<0.1	0.2	1.0	<0.1	<0.1	<0.1	0.2	1.0	<0.1	<0.1					
NO_2-N, MG/L	<0.1	0.8	0.2	<0.1	<0.1	<0.1	1.1	0.3	<0.1	<0.1					
COD TOTAL MG/L	188	89	90	87	84	226	85	86	86	94					
COD SOL. MG/L	59	83	78	72	78	118	78	74	71	73					
TKN MG/L	20.4	11.4	11.8	9.3	9.6	24.0	15.0	11.9	9.3	11.1					
TOTAL P MG/L	5.6	5.1	5.8	5.2	5.5	6.8	5.3	5.6	5.3	5.6					

* EFFLUENT FECAL COLIFORM AND MPN ARE NUMBER PER ML.

APPENDIX B

REMARKS AND OBSERVATIONS

11/3	Accumulated solids in the chlorine contact chamber pumped to pond no. 1. DO in the pond dropped requiring that the influent flow be diverted to pond no. 2 until pond no. 1 could recover.
11/21	Normal pond sequence resumed.
11/22	Sample lines freezing at night.
11/23	Approximately 2 cm (3/4 in) of ice on all ponds at 9:00 A.M. Impossible to use samplers at ponds due to sample lines freezing. For remainder of winter stations 2, 3, and 4 will be grab samples. Stations 1 and 5 (influent and effluent) will continue to be composited.
11/29	Chlorinator failed for 4 hours (2:30 - 6:30 A.M.)
12/17	Chlorinator shut off for approximately 2 hours.
2/20	Chlorinator failure.
2/27	River backed up into chlorination chamber.
3/12	Effluent flow rate recorder recalibrated.
3/20-3/25	River backed up into chlorination chamber.
3/30	No longer any ice on pond no. 1.
4/4	Due to high river stage it was not possible to accurately measure the plant effluent flow rate. Overnight the chlorinator was set at 60 lb/day which was increased to 100 lb/day by the operator at 7:30 A.M. to maintain a residual of 2.0 mg/l. Pond no. 3 was bypassed so that flow was discharged from pond no. 2. This resulted from operational problems due to the very heavy rain.
4/7	Pond flow pattern returned to normal.

4/8	An accidental oil spill in town caused a discharge of 2700 gallons of No. 2 fuel oil to the sewer system. The oil was trapped in pond no. 1 where it covered approximately 30 percent of the pond surface.
4/10	Oil spill cleanup company removed oil from pond no. 1.
4/13	No longer any ice on pond no. 2.
4/16	No longer any ice on pond no. 3.
7/1	Pond no. 1 bypassed due to low DO to allow recovery.
7/15	Flow pattern returned to normal.
8/5	Chlorinator failure.
8/6	Chlorinator failure.
9/2	Chlorinator failure.
9/4	Chlorinator failure.
9/7	Chlorinator failure.
9/8	Chlorinator failure.
9/11	Chlorinator failure.
9/27	River stage too high to sample plant effluent.

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16. ABSTRACT

Although wastewater treatment lagoons are used extensively, little operational data is currently available for evaluating the performance capabilities of lagoons. This report presents data gathered during a one-year period of monitoring the lagoon system at Peterborough, New Hampshire, and compares the treatment plant performance to design loading rates and the Federal Secondary Treatment Effluent Standards.

The lagoon system performed very well with excellent removals of suspended solids and fecal coliform bacteria. BOD_5 removal was excellent except for four months during the winter when anaerobic conditions occurred under the ice cover and soluble BOD_5 levels rose substantially. As a result of this study, it was recommended that induced-air aeration be installed in one of the ponds to decrease the concentration of soluble BOD_5 and thus meet the Federal Standards. Other chemical and physical parameters were monitored in the sampling program and the data is presented in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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