

Ontario Water Resources Commission.  
Division of Plant Operations.

ONTARIO MINISTRY OF ENVIRONMENT



36936000023217

1966 OPERATING SUMMARY

# CONISTON

## water pollution control plant

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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1966**

Coniston : water pollution  
control plant.

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ONTARIO WATER RESOURCES COMMISSION  
OFFICE OF THE GENERAL MANAGER

Members of the Coniston Local Advisory Committee,  
Town of Coniston.

Gentlemen:

We are pleased to submit to you the 1966 Operating Summary for the  
Coniston Water Pollution Control Plant, OWRC Project No. 57-S-8.

It is hoped that our joint participation in efforts to combat water pollution  
will have even more success in the coming year.

Yours very truly,

A handwritten signature in black ink, appearing to read "D. S. Caverly", written over a faint, illegible typed name.

D. S. Caverly,  
General Manager.

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

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VICE-CHAIRMAN

D. S. CAVERLY  
GENERAL MANAGER

W. S. MACDONNELL  
COMMISSION SECRETARY

General Manager,  
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Coniston Water Pollution Control Plant, OWRC Project No. 57-S-8.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in cursive script, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,  
Director,  
Division of Plant Operations.



## FOREWORD

● This operating summary contains complete information on the management of the project during 1966. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

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**CONISTON**  
**water pollution control plant**  
operated for

THE TOWN OF CONISTON

by the

ONTARIO WATER RESOURCES COMMISSION

---

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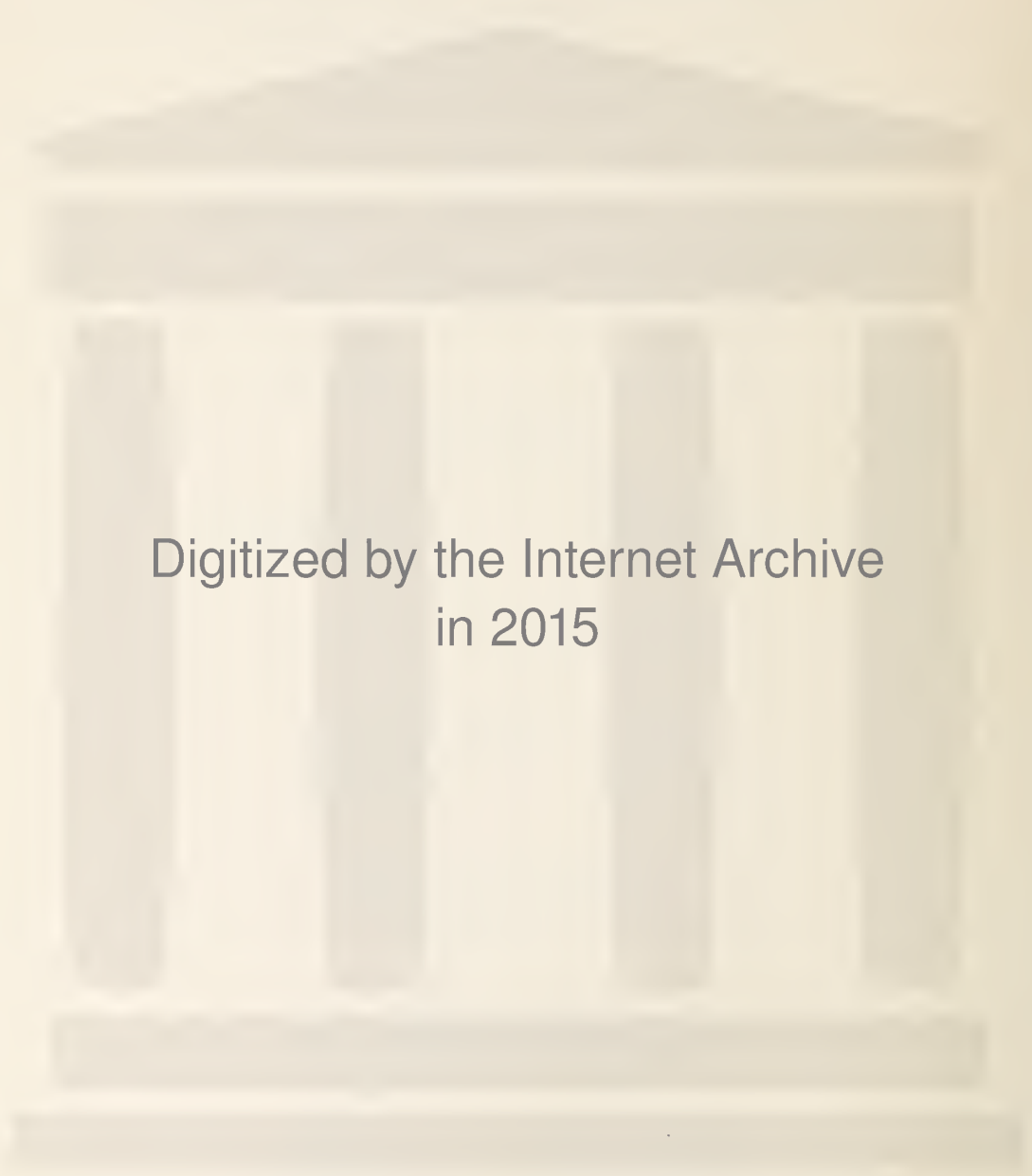
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DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director: C. W. Perry  
Regional Supervisor: D. A. McTavish  
Operations Engineer: R. Kauppinen

801 Bay Street              Toronto 5



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# '66 REVIEW

A total of 63.139 million gallons was treated in 1966 for an average of 173,000 gallons per day. The design flow of 150,000 gallons per day was exceeded 66 percent of the time.

The plant efficiency for the year was less than that expected for the activated sludge process, being 81.5 percent and 78 percent in BOD and suspended solids removal respectively. This efficiency reflects a hydraulic overload at the plant.

The total operating cost for the year was \$11,578.81, or \$183.39 per million gallons treated, compared to \$12,495.59, or \$171.47 per million gallons treated in 1965.

## PROJECT COSTS

|  |                     |
|--|---------------------|
| NET CAPITAL COST (Final)<br>Long Term Debt to OWRC | <u>\$468,190.39</u> |
|--|---------------------|

|   |                     |
|---|---------------------|
| Debt Retirement Balance at Credit<br>(Sinking Fund) December 31, 1966 | \$ <u>79,948.62</u> |
|---|---------------------|

|               |              |
|---------------|--------------|
| Net Operating | \$ 11,578.81 |
|---------------|--------------|

|                 |          |
|-----------------|----------|
| Debt Retirement | 9,448.00 |
|-----------------|----------|

|         |          |
|---------|----------|
| Reserve | 3,236.88 |
|---------|----------|

|                  |           |
|------------------|-----------|
| Interest Charged | 26,341.48 |
|------------------|-----------|

|       |                     |
|-------|---------------------|
| TOTAL | <u>\$ 50,605.17</u> |
|-------|---------------------|

### RESERVE ACCOUNT

|                            |             |
|----------------------------|-------------|
| Balance at January 1, 1966 | \$ 9,900.02 |
|----------------------------|-------------|

|                           |          |
|---------------------------|----------|
| Deposited by Municipality | 3,236.88 |
|---------------------------|----------|

|                 |               |
|-----------------|---------------|
| Interest Earned | <u>618.31</u> |
|-----------------|---------------|

|  |              |
|--|--------------|
|  | \$ 13,755.21 |
|--|--------------|

|                   |   |
|-------------------|---|
| Less Expenditures | - |
|-------------------|---|

|                              |                     |
|------------------------------|---------------------|
| Balance at December 31, 1966 | <u>\$ 13,755.21</u> |
|------------------------------|---------------------|

## MONTHLY OPERATING COSTS

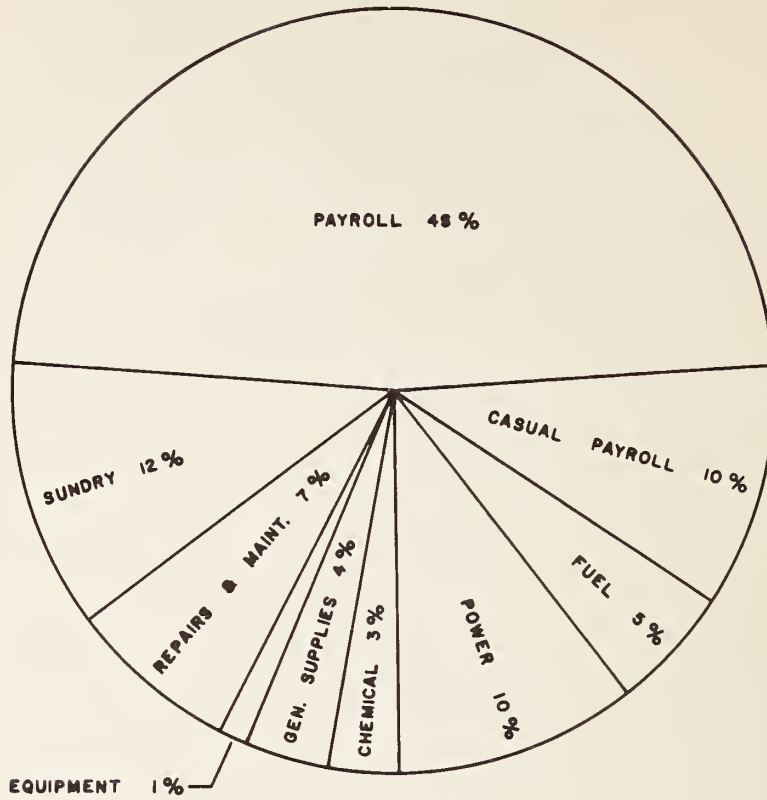
| MONTH        | TOTAL EXPENDITURE | PAYROLL        | CASUAL PAYROLL | FUEL          | POWER          | CHEMICAL      | GENERAL SUPPLIES | EQUIPMENT     | REPAIRS & MAINTENANCE | * SUNDRY       |
|--------------|-------------------|----------------|----------------|---------------|----------------|---------------|------------------|---------------|-----------------------|----------------|
| JAN          | 841.77            | 431.49         | 86.54          | 54.98         | 103.73         |               | 62.22            |               | 34.50                 | 68.31          |
| FEB          | 621.82            | 380.34         | 28.42          |               | 112.70         |               | 5.00             |               | 18.53                 | 76.83          |
| MARCH        | 996.04            | 424.77         | 47.39          | 226.90        | 105.97         |               | 42.84            |               | 57.05                 | 91.12          |
| APRIL        | 1084.34           | 679.43         | 132.00         | 62.76         | 97.01          |               | 37.11            | 2.55          |                       | 73.48          |
| MAY          | 1069.40           | 432.20         | 90.70          | 57.77         | 94.35          | 228.38        | 20.20            |               | 77.36                 | 68.44          |
| JUNE         | 925.82            | 461.19         | 192.40         | 48.51         | 74.14          |               | 42.78            | 22.58         |                       | 84.22          |
| JULY         | 677.80            | 398.98         | 91.48          |               | 58.57          |               | 25.53            | 25.00         | 13.54                 | 64.70          |
| AUG          | 832.34            | 398.98         | 88.33          | 64.00         | 58.84          |               | 73.68            |               | 10.00                 | 138.51         |
| SEPT         | 850.57            | 607.98         | 80.14          |               | 60.87          |               | 4.40             |               |                       | 97.18          |
| OCT          | 1117.41           | 444.64         | 114.87         | 59.83         | 86.86          | 118.13        | 42.00            | 4.03          | 10.47                 | 236.58         |
| NOV          | 949.72            | 427.08         | 151.99         | 47.10         | 95.57          |               | 3.30             | 69.91         | 77.42                 | 77.35          |
| DEC          | 1611.78           | 436.58         | 71.92          | 4.00          | 253.61         |               | 62.07            |               | 521.33                | 262.27         |
| <b>TOTAL</b> | <b>11578.81</b>   | <b>5523.66</b> | <b>1176.18</b> | <b>625.85</b> | <b>1202.22</b> | <b>346.51</b> | <b>421.13</b>    | <b>124.07</b> | <b>820.20</b>         | <b>1338.99</b> |

## YEARLY OPERATING COSTS

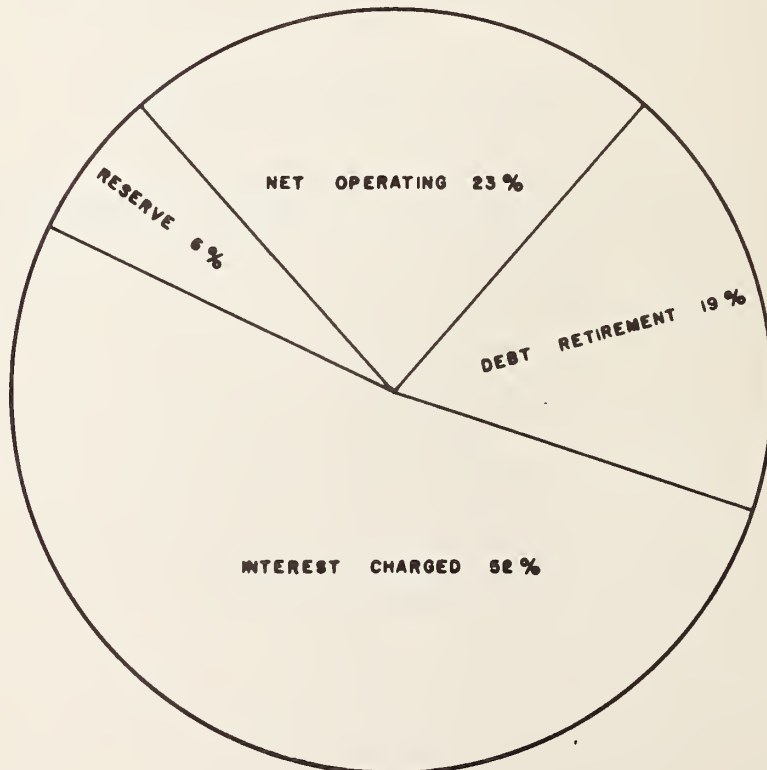
| YEAR | M.G. TREATED | TOTAL COST | COST PER FAMILY PER YEAR | COST PER MILLION GALLONS | COST PER L.B. OF BOD REMOVED |
|------|--------------|------------|--------------------------|--------------------------|------------------------------|
| 1962 | 40,150       | \$10345.20 | * \$15.56                | \$257.66                 | 12 CENTS                     |
| 1963 | 54,750       | \$ 8669.18 | \$13.03                  | \$158.34                 | 8 CENTS                      |
| 1964 | 65,844       | \$11738.97 | \$17.55                  | \$178.28                 | 9 CENTS                      |
| 1965 | 72,875       | \$12495.59 | \$18.68                  | \$171.47                 | 12 CENTS                     |
| 1966 | 63,139       | \$11578.81 | \$17.32                  | \$183.39                 | 11 CENTS                     |

\* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

# 1966 OPERATING COSTS



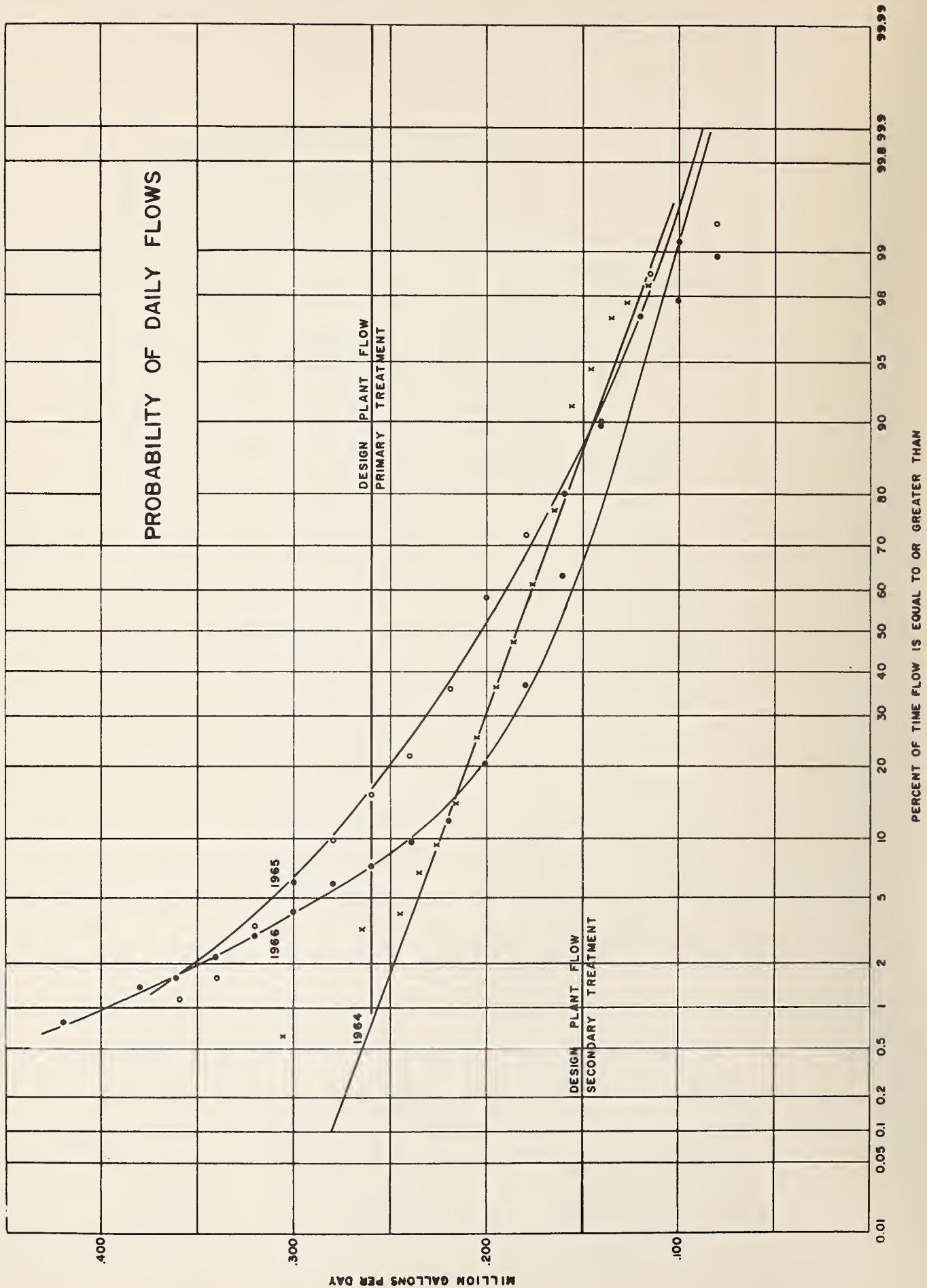
# TOTAL ANNUAL COST



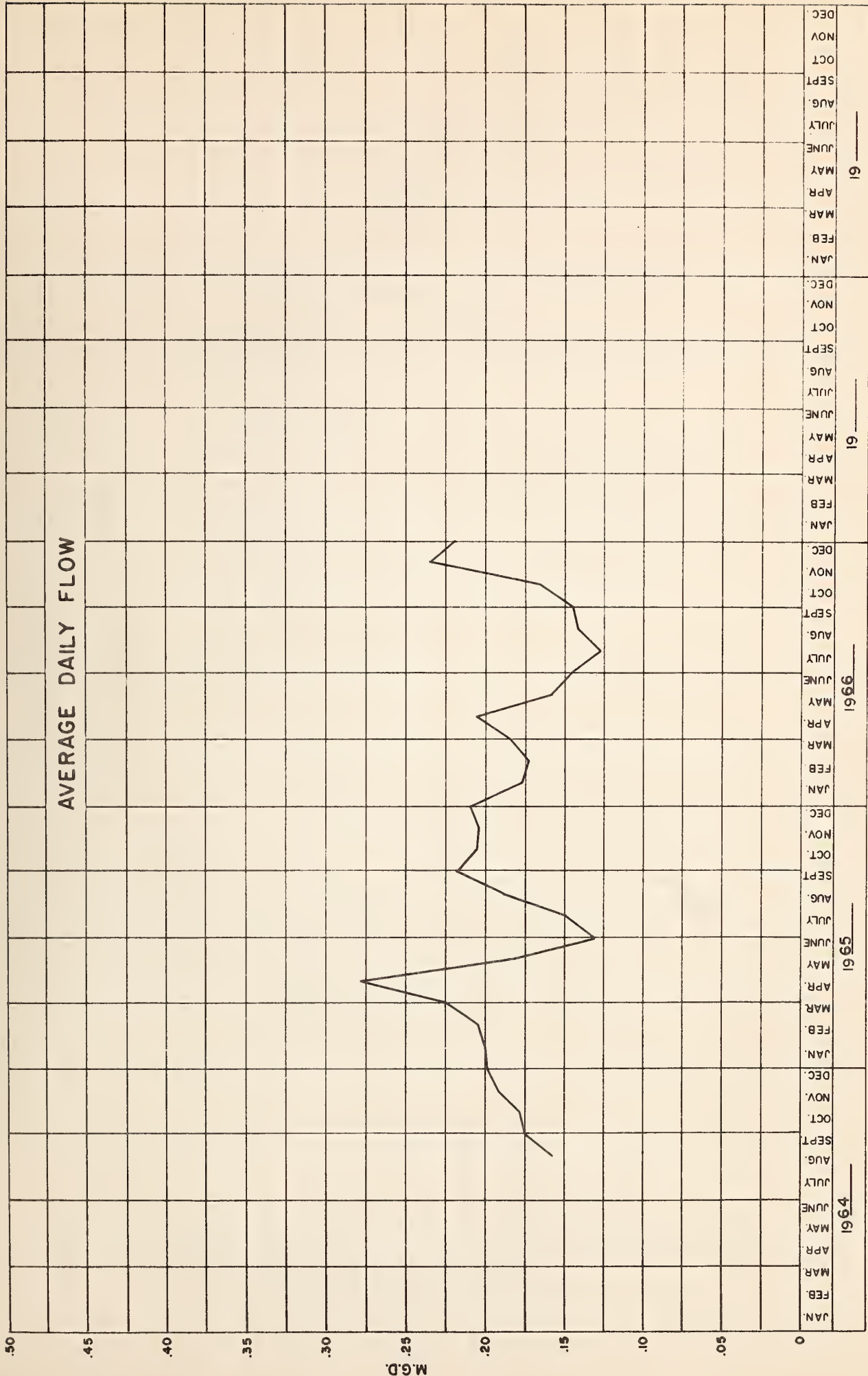
## **Process Data**

As will be noted in the following charts and graphs, a total of 63.139 million gallons was treated in 1966 for an average daily flow for the year of 173,000 gallons. This is a decrease from the average daily flow in 1965 which was 199,000 gallons.

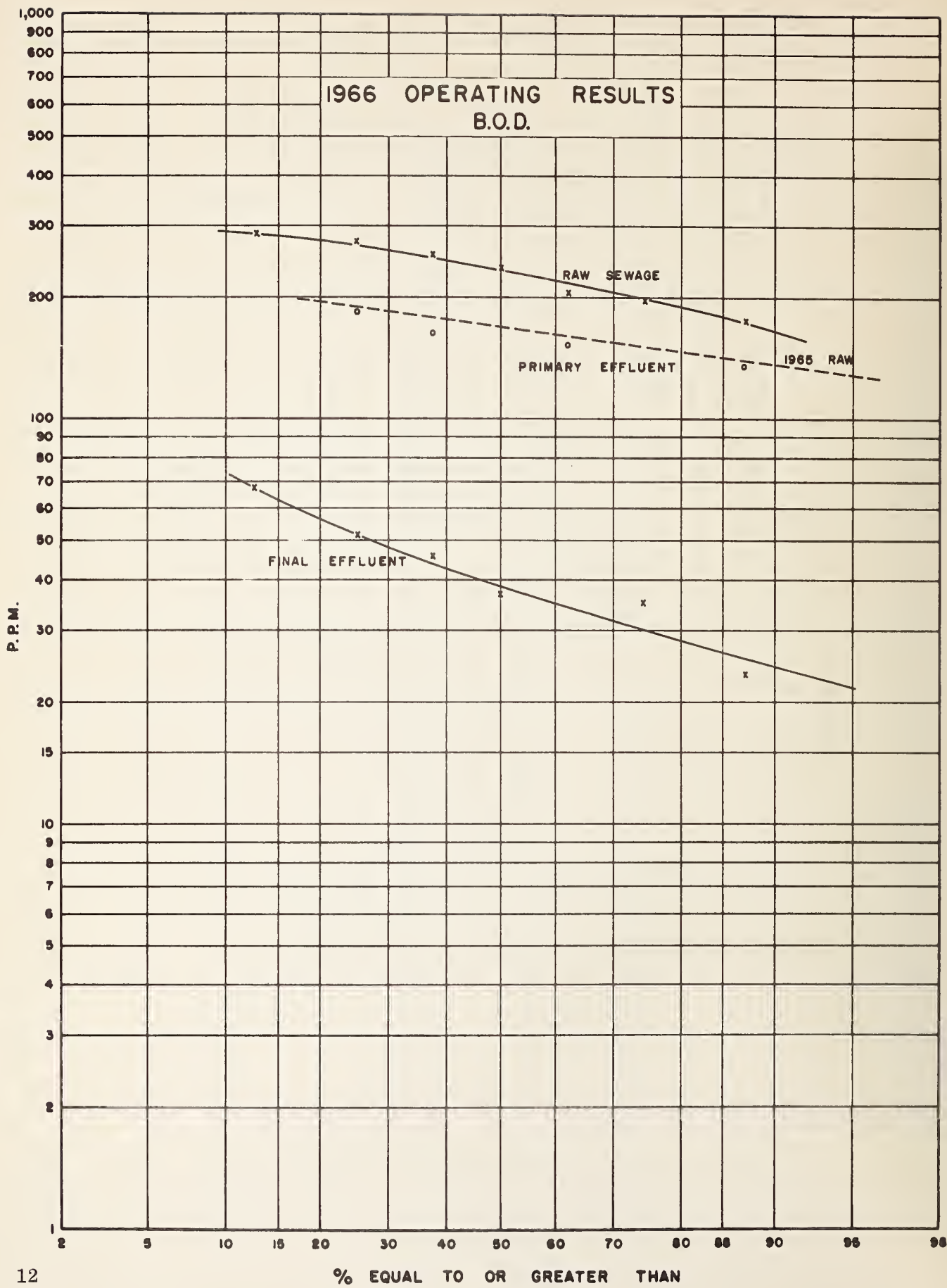
Also, 66 percent of the time the flow was greater than the design flow for secondary treatment.



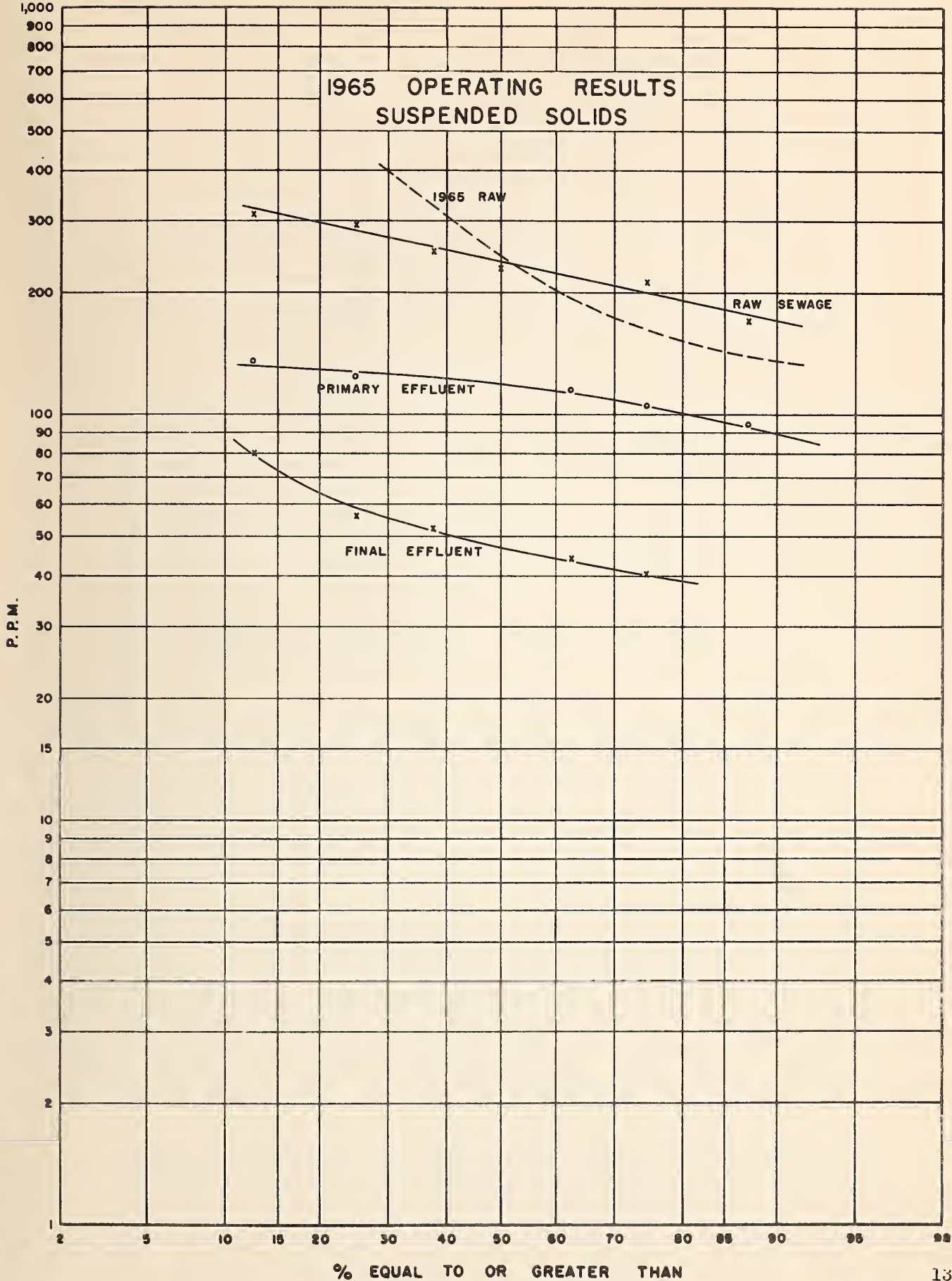


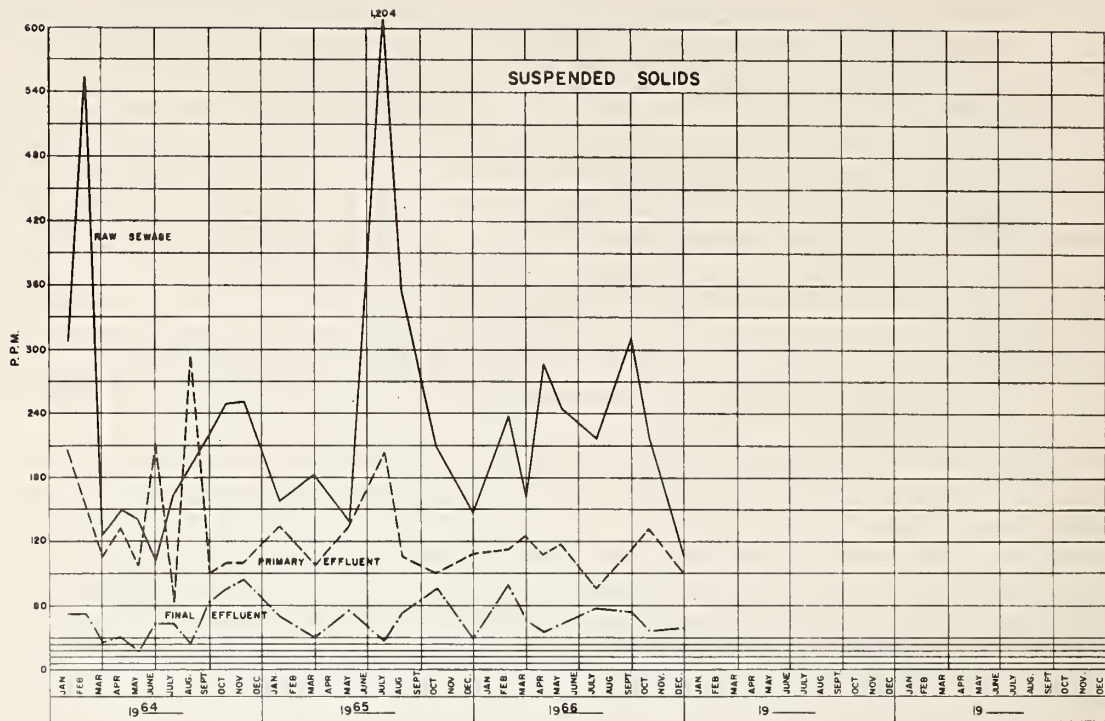


# 1966 OPERATING RESULTS B.O.D.

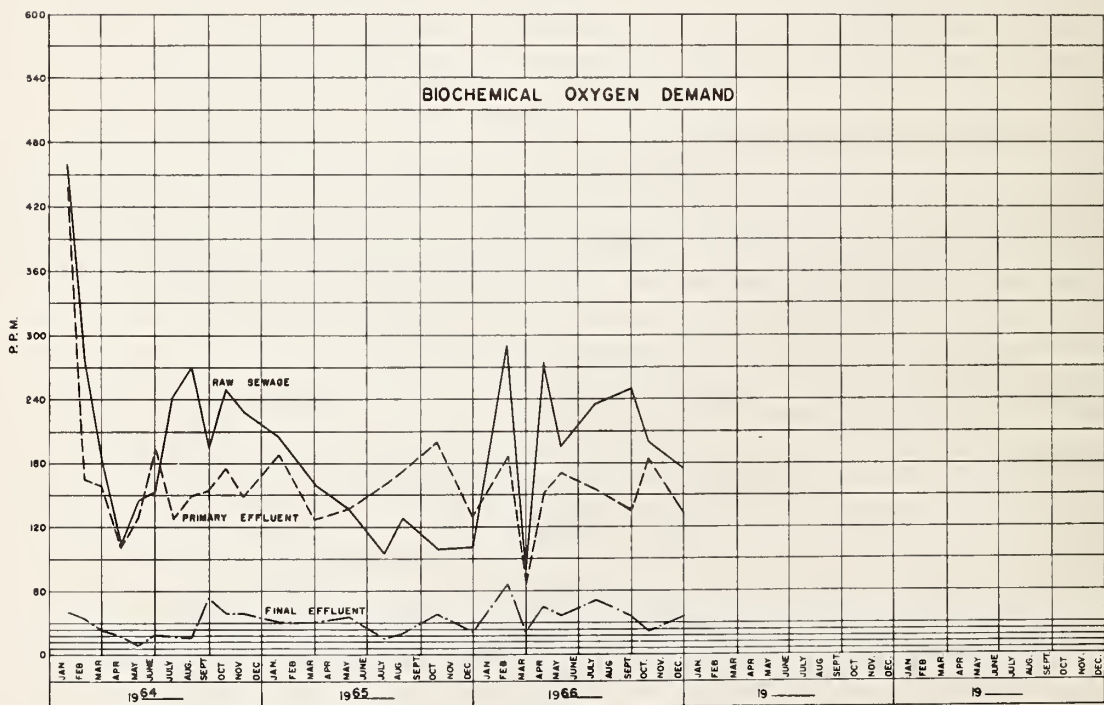


# 1965 OPERATING RESULTS SUSPENDED SOLIDS





## MONTHLY VARIATIONS



## GRIT, B.O.D AND S. S. REMOVAL

| MONTH | B. O. D.         |                  |                |                 | S. S.            |                  |                |                 | GRIT<br>REMOVAL<br>CU. FT. |
|-------|------------------|------------------|----------------|-----------------|------------------|------------------|----------------|-----------------|----------------------------|
|       | INFLUENT<br>PPM. | EFFLUENT<br>PPM. | %<br>REDUCTION | TONS<br>REMOVED | INFLUENT<br>PPM. | EFFLUENT<br>PPM. | %<br>REDUCTION | TONS<br>REMOVED |                            |
| JAN.  | * 213            | 39               | 81.5           | 4.7             | * 223            | 49               | 75.0           | 4.7             | 60                         |
| FEB.  | 280              | 66               | 77.0           | 5.4             | 238              | 80               | 66.5           | 3.8             | 45                         |
| MAR.  | 80               | 21               | 74.0           | 1.7             | 161              | 47               | 71.0           | 3.3             | 60                         |
| APR.  | 275              | 45               | 83.5           | 7.1             | 288              | 36               | 87.5           | 7.8             | 59                         |
| MAY   | 196              | 37               | 81.0           | 3.9             | 246              | 44               | 82.0           | 4.9             | 45                         |
| JUNE  | * 213            | 39               | 81.5           | 3.8             | * 223            | 49               | 78.0           | 3.8             | 45                         |
| JULY  | 235              | 51               | 78.0           | 3.6             | 218              | 58               | 73.5           | 3.2             | 15                         |
| AUG.  | * 213            | 39               | 81.5           | 3.8             | * 223            | 49               | 78.0           | 3.8             | 60                         |
| SEPT. | 250              | 36               | 85.5           | 4.7             | 312              | 54               | 82.5           | 5.6             | 35                         |
| OCT.  | 200              | 22               | 89.0           | 4.6             | 218              | 36               | 87.5           | 4.7             | 45                         |
| NOV.  | * 213            | 39               | 81.5           | 6.2             | * 223            | 49               | 78.0           | 6.2             | 15                         |
| DEC.  | 175              | 35               | 80.0           | 4.7             | 102              | 39               | 62.0           | 2.1             | 30                         |
| TOTAL | -                | -                | -              | 54.9            | -                | -                | -              | 54.9            | 514                        |
| AVG.  | 213              | 39               | 81.5           | 4.6             | 223              | 49               | 78.0           | 4.6             | 43                         |

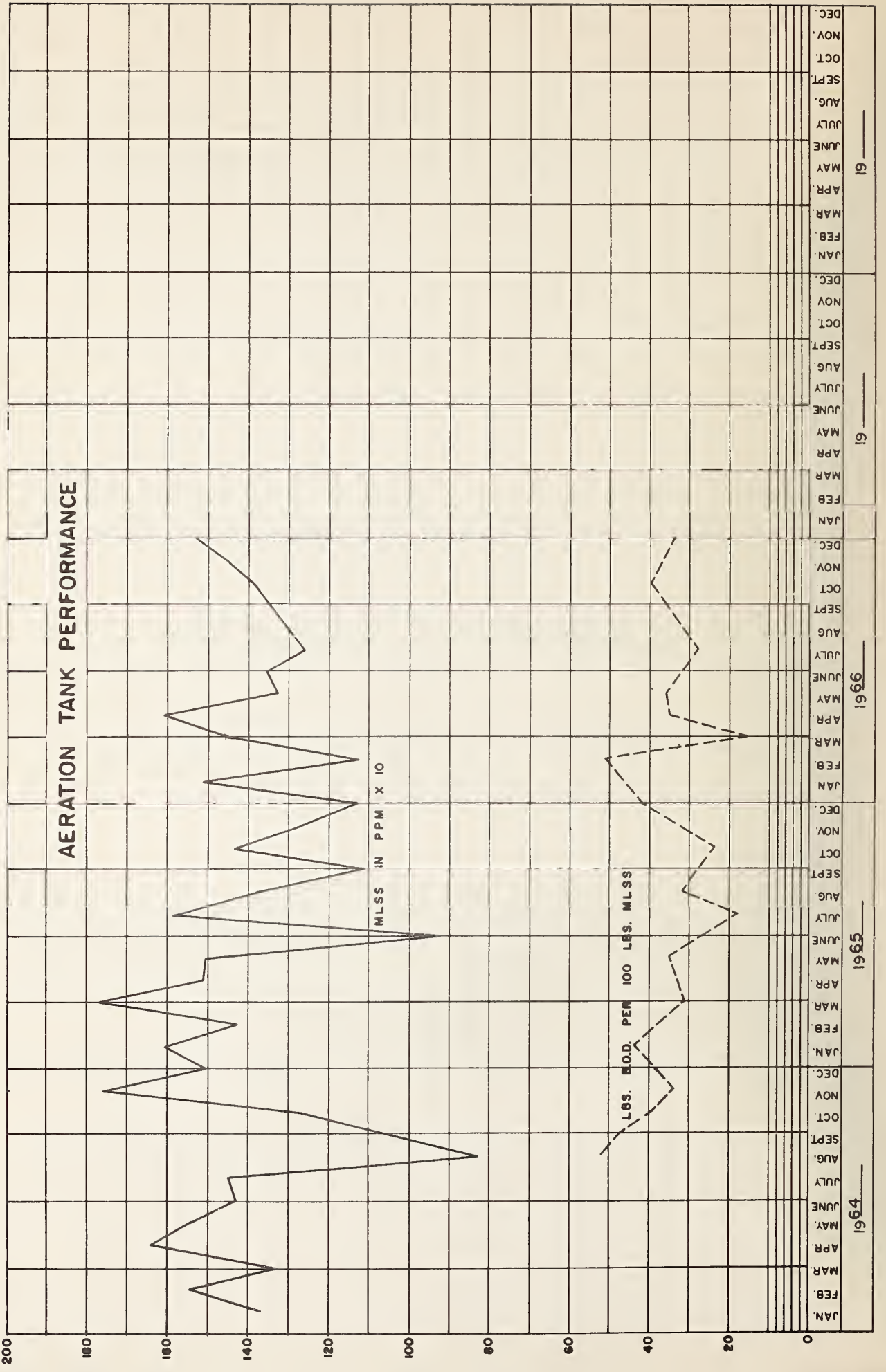
\* Average values substituted, no sample.

### COMMENTS

The raw sewage had an average concentration of 213 ppm BOD and 223 ppm SS. The average concentration in the final effluent was 39 ppm BOD and 49 ppm SS, which indicated an 81.5 percent BOD reduction and 78 percent suspended solids reduction.

The quality of the effluent was not within OWRC objectives of 15 ppm for BOD and suspended solids for plants with secondary treatment.

A total of 514 cubic feet of grit was removed at an average of 8.1 cubic feet per million gallons treated.



## AERATION SECTION

| MONTH     | PRIM. EFFL<br>B.O.D. P.P.M. | ML.SS.<br>P.P.M. | LBS. BOD. PER<br>100 LBS. M. L. S. S. |
|-----------|-----------------------------|------------------|---------------------------------------|
| JANUARY   | * -                         | 1506             | -                                     |
| FEBRUARY  | 185                         | 1125             | 51                                    |
| MARCH     | 67                          | 1459             | 15                                    |
| APRIL     | 152                         | 1610             | 35                                    |
| MAY       | 170                         | 1332             | 36                                    |
| JUNE      | -                           | 1356             | -                                     |
| JULY      | 155                         | 1263             | 28                                    |
| AUGUST    | -                           | -                | -                                     |
| SEPTEMBER | 135                         | -                | -                                     |
| OCTOBER   | 185                         | 1392             | 40                                    |
| NOVEMBER  | -                           | 1456             | -                                     |
| DECEMBER  | 133                         | 1530             | 34                                    |
| TOTAL     | -                           | -                | -                                     |
| AVERAGE   | 148                         | 1403             | 34                                    |

\* SAMPLE BROKEN IN TRANSIT

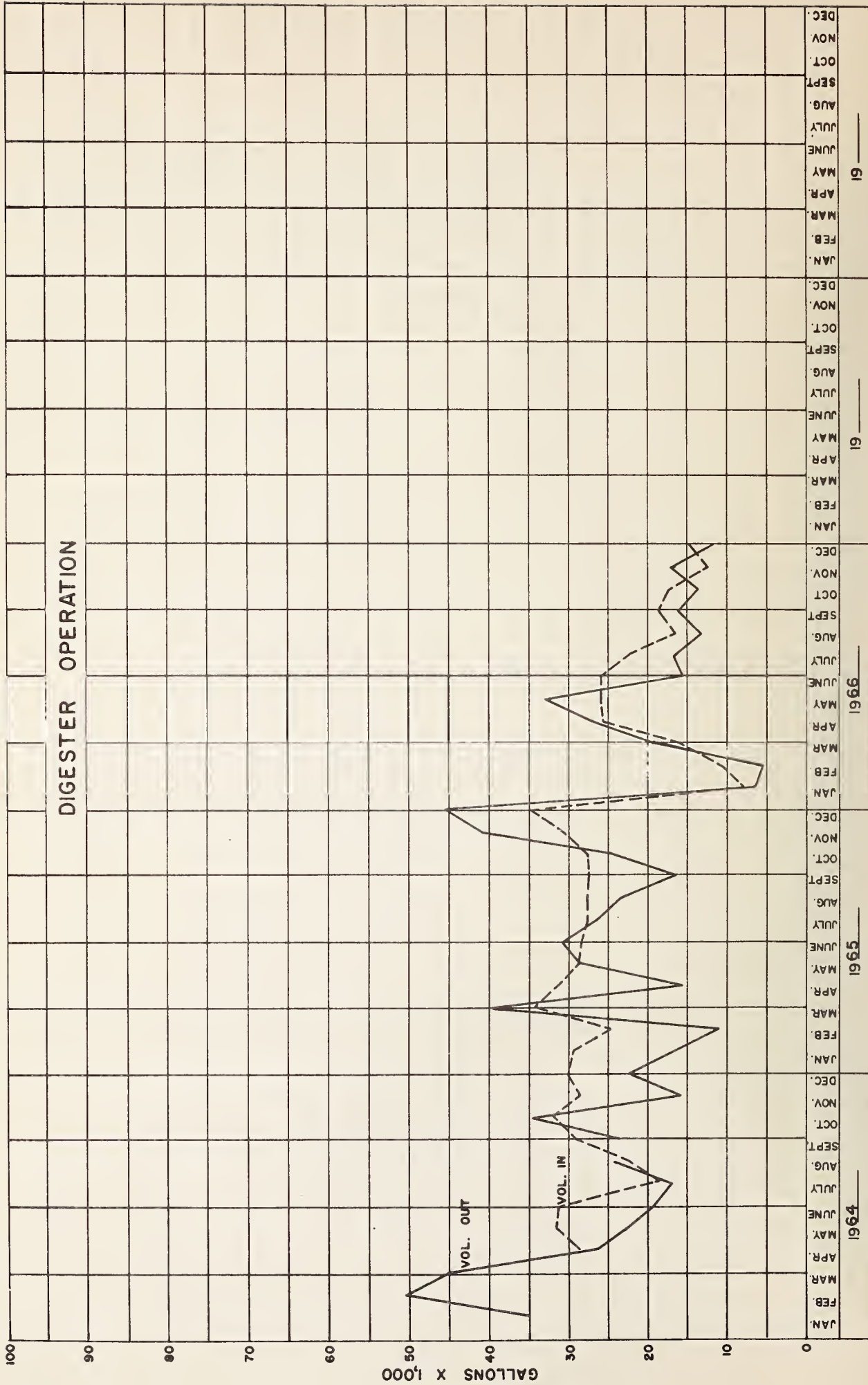
### COMMENTS

Since mechanical aeration is used at the plant, there is no direct means of measuring the air used. However, dissolved oxygen tests indicated sufficient oxygen was supplied to the process.

The average mixed liquor suspended solids concentration was 1403 ppm and the loading was 34 pounds of BOD per 100 pounds MLSS.

The average primary effluent BOD of 148 ppm indicates a 30.5 percent reduction of BOD in the primary tank.

# DIGESTER OPERATION





## DIGESTER OPERATION

| MONTH | SLUDGE TO DIGESTERS |          | SLUDGE FROM DIGESTERS |          |
|-------|---------------------|----------|-----------------------|----------|
|       | 1000'S CU.FT.       | % SOLIDS | 1000'S CU.FT.         | % SOLIDS |
| JAN.  | 1.27                | 4.59     | 1.04                  | 10.32    |
| FEB.  | 1.71                | 2.73     | 0.90                  | 1.54     |
| MAR.  | 2.48                | 6.48     | 2.98                  | 7.48     |
| APR.  | 4.10                | 2.67     | 4.32                  | 8.35     |
| MAY   | 4.13                | 3.14     | 5.25                  | 8.32     |
| JUNE  | 4.15                | -        | 2.42                  | -        |
| JULY  | 3.54                | 6.95     | 2.69                  | 8.78     |
| AUG.  | 2.63                | -        | 2.08                  | -        |
| SEPT. | 2.98                | 1.70     | 2.56                  | 2.09     |
| OCT.  | 2.74                | -        | 2.16                  | 9.83     |
| NOV.  | 1.97                | -        | 2.72                  | -        |
| DEC.  | 2.36                | 5.10     | 1.84                  | 0.53     |
| TOTAL | 34.06               | -        | 30.96                 | -        |
| AVG.  | 2.84                | 4.17     | 2.58                  | 6.36     |

### COMMENTS

An estimated total of 34,060 cubic feet of raw sludge was pumped to the digester and an estimated 30,960 cubic feet of digested sludge were removed from the digester.

## CHLORINATION

| MONTH     | PLANT FLOW (MG) | POUNDS CHLORINE | DOSAGE RATE (PPM) |
|-----------|-----------------|-----------------|-------------------|
| JANUARY   | 5.449           | -               | -                 |
| FEBRUARY  | 4.848           | -               | -                 |
| MARCH     | 5.735           | -               | -                 |
| APRIL     | 6.162           | -               | -                 |
| MAY       | 4.891           | * 435           | 9.51              |
| JUNE      | 4.383           | 450             | 10.27             |
| JULY      | 3.941           | 465             | 11.80             |
| AUGUST    | 4.398           | 465             | 10.57             |
| SEPTEMBER | 4.356           | 450             | 10.33             |
| OCTOBER   | 5.159           | 465             | 9.01              |
| NOVEMBER  | 7.069           | -               | -                 |
| DECEMBER  | 6.748           | -               | -                 |
| TOTAL     | 63.139          | 2730            | -                 |
| AVERAGE   | 5.262           | -               | 10.18             |

\* 29 days' chlorination

### COMMENTS

Chlorination of the final effluent was carried out from May 2 to October 31. A total of 2310 pounds of chlorine was used during this period for an average dosage of 10.18 ppm.

## CONCLUSIONS

The flows in 1966 exceeded the design capacity of the plant 66 percent of the time and the resulting quality of the effluent did not meet the objectives of the OWRC for secondary treatment.

## RECOMMENDATIONS

A study of futur

Date Due


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Ontario Water Resources Commission  
Division of Plant Operations.  
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Coniston. Sewage Treatment Plant  
Annual Reports. 1966

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