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THE  
ONTARIO WATER RESOURCES  
COMMISSION  
WATER POLLUTION SURVEY  
of the  
VILLAGE OF THORNLOE  
DISTRICT OF TIMISKAMING

VILLAGE OF THORNLOE 1966  
DISTRICT OF TIMISKAMING

1966

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REPORT

on a

WATER POLLUTION SURVEY

of the

VILLAGE OF THORNLOE

District of Timiskaming

September 1966

Division of Sanitary Engineering

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ONTARIO WATER RESOURCES COMMISSION

R E P O R T

INTRODUCTION

A water pollution survey was conducted in the Village of Thornloe on September 23, 1965. The purpose of the survey was to locate and record all significant sources of water pollution within the village. Such surveys are performed routinely, and upon request, by the Ontario Water Resources Commission as a basis for evaluating all existing and potential sources of pollution. When sources of pollution are found, corrective action is requested by the Commission. Where water and/or pollution control works appear desirable or expansions to present facilities are necessary, the Commission has a programme to aid in the construction and financing of these works.

The information received from the town officials and the Timiskaming Health Unit is gratefully acknowledged.

I GENERAL INFORMATION

The Village of Thornloe lies at the intersection of Armstrong, Kerns, Harley, and Hilliard townships in the District of Timiskaming. The village, with a 1965 assessed population of 161 (1966 Municipal Directory), is located one mile west of Highway No. 11 on Highway No. 562. Approximately one-half of the populace resides within the village while the remaining population inhabits the surrounding farm lands.

The village is situated in a relatively flat low lying area within the Wabi Creek watershed. The surrounding land is utilized

primarily for agricultural purposes.

## II WATER USES

### 1. Private Water Systems

The Village of Thornloe does not have a communal water works. Due to the high water table, artesian or flowing wells are used on an individual basis for domestic purposes.

### 2. Industrial Water Supplies

Thornloe Cheese Factory - Water for operations at this plant is obtained from a flowing well. Water consumption figures were not available.

## III WATER POLLUTION

### 1. Sanitary Waste Disposal

The majority of the residences within the village are serviced by septic tanks and private privies. There are approximately 12 residences served by septic tanks which discharge to open ditches. There are only five subsurface tile beds in existence and seepage from the beds also have access to the ditches. There are only three private privies utilized in the village.

Due to the high water table, poor soil porosity and poor surface drainage, many of the sewage disposal systems are malfunctioning.

### 2. Industrial Waste Disposal

Thornloe Cheese Factory - This plant produces an estimated 600,000 pounds of cheese per year. An average of 50 milk producers

supply the factory with 12,000 pounds of milk per day which increases to about 40,000 pounds during the summer months.

All processing wastes are discharged to a floor drain which outfalls to an open ditch on the east side of Young Street opposite the cheese factory. A total waste discharge estimated at 12,000 gallons including processing water, whey, and the overflow from the well are directed to the ditch daily during normal operations.

Whey is collected during the summer months and is hauled by truck to local farms where it is sprayed on the fields. This operation is discontinued during the winter months.

The cheese factory is located on a two acre site in which the area itself is insufficient for a septic-tank and subsurface tile-bed system. In a previous OWRC report, it was estimated that a 30-acre lagoon would be necessary to treat the processing wastes excluding the whey.

### 3. Discussion of Sample Analyses

The laboratory results of the bacteriological examinations and the chemical analyses of samples collected from open ditches and watercourses are included in the table appended to this report. Descriptions of the tests and an outline of the OWRC objectives are also included.

Samples, collected from the open ditch on the east side of Young Street downstream from the Thornloe Cheese Factory and the residences discharging septic-tank effluent to the ditch, revealed

total coliform counts exceeding the Commission's maximum objective of not greater than 2,400 coliforms per 100 ml. Also the 5-Day BOD of the samples were generally in excess of the Commission's objective of not greater than 4.0 ppm.

The samples, collected from the open ditches receiving septic-tank effluents from residences on Main Street, showed excessive BOD and coliform counts.

The open ditches behind the residences on Main Street flow in a westerly direction and finally discharge into one drainage ditch east of the Ontario Northland Railway tracks. This drainage ditch has been constructed to a six-foot width and approximately four feet in depth. Flow is in a southerly direction and water in the ditch is ponded by a blocked culvert under the ONR tracks. At the time of the investigation the water in the ditch was a milky colour. It is suspected that wastes from the cheese factory has access to this ditch. A sample, collected from the ditch downstream from the ponded area, revealed a high coliform count.

The sample, collected from the tributary of the Wabi Creek downstream from the Village of Thornloe and from the confluences with the drainage ditches, showed an excessive coliform density and a high 5-Day BOD.

As indicated by the laboratory results the water quality of the open ditches and the tributary of Wabi Creek has been adversely affected by the discharging of septic-tank effluent and milk wastes



to the ditches.

#### IV REFUSE DISPOSAL

Refuse from the village is collected on an individual basis and deposited in an open-face dump, three miles from the village in the Township of Harley. No water pollution problems were reported in connection with the operation of this disposal site.

#### V SUMMARY AND CONCLUSIONS

A water pollution survey was carried out in the Village of Thornloe on September 23, 1965.

The Village of Thornloe does not have a communal water works or sewage works. Water is obtained on an individual basis from flowing wells. The residences are served by septic-tank systems and privies. Where tile beds are not employed, septic-tank effluents are directed to open ditches.

Milk wastes from the Thornloe Cheese Factory are directed to an open ditch without treatment.


As revealed by the investigation, improper sewage disposal methods are being practised in the village and action should be taken to correct this undesirable situation.

#### VI RECOMMENDATION

Consideration should be given to the establishment of a sanitary sewerage system for the Village of Thornloe in order to eliminate the discharges of polluting material into open ditches.

Allowance should be made in the system to treat the waste discharges from the Thornloe Cheese Factory.

/elc  
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## APPENDIX

### THE SIGNIFICANCE OF LABORATORY RESULTS

The OWRC objectives for surface waters in Ontario are as follows:

5-Day BOD - not greater than 4 ppm  
Total Coliform Count - not greater than 2,400 coliforms  
per 100 ml  
Phenolic Equivalents - average - not greater than 2 ppb  
maximum - not greater than 5 ppb  
pH Range - 6.7 to 8.5

A few pertinent maximum concentration limits of contaminants in storm sewers, sewage treatment plant and industrial waste effluents, are listed below. Adequate protection for surface waters, except in specific instances influenced by local conditions, should be obtained if the concentrations and pH range are not exceeded.

5-Day BOD - not greater than 15 ppm  
Suspended Solids - not greater than 15 ppm  
Phenolic Equivalents - not greater than 20 ppb  
Ether solubles (oil) - not greater than 15 ppm  
pH Range - 5.5 to 10.6

### EXPLANATION OF LABORATORY RESULTS

Bacteriological Examinations - The Membrane Filter Technique is used to obtain a direct enumeration of coliform organisms. These organisms are the normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in untreated sewage and are in general, relatively few in number in other stream pollutants. The results are reported as MF coliform count per 100 millilitres.

Biochemical Oxygen Demand (BOD) - The biochemical oxygen demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent, polluted waters, or industrial wastes, by aerobic biochemical action. The time and temperature used are five (5) days and 20°C, respectively.

Solids - The analyses for solids include tests for total, suspended, and dissolved solids. Total solids is a measure of the solids in solution and in suspension. Suspended solids indicate the measure of undissolved solids of organic nature whereas the dissolved solids are a measure of those solids in solution.

TABLE I

VILLAGE OF THORNLOE

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>M.F. Coliform Count per 100 ML</u>	
WE-14.00	Tributary of Wabi Creek (East Branch)	Sept.23/65	6.0	450	121	329	200,000	
WE-14.09 D	Drainage Ditch	Sept.23/65	2.2	356	28	328	11,000	
WE-14.22 D-1	Drainage Ditch-East of Young St. and South of ONR tracks.	Sept.23/65	2.6	762	350	412	19,000	
WE-14.22 D-2	Drainage Ditch.	Sept.23/65	1100	1350	300	1050	530,000	
WE-14.22 D-3	Drainage Ditch.	Sept.23/65	-	420	17	403	1,020	
WE-14.22 D-4	Drainage Ditch downstream from Separate School.	Sept.23/65	110	444	74	370	1,230,000	
WE-14.22 D-5	Drainage Ditch downstream from Thornloe Cheese Factory.	Sept.23/65	12	376	57	319	1,030,000	
WE-14.22 I	Thornloe Cheese Factory-Industrial Waste Outfall.	Sept.23/65	No Flow Noted					

TABLE I (CONT)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>M.F. Coliform Count per 100 ML</u>
WE-14.22 P-1	Septic-Tank outfall from Cheese Factory.	Sept.23/65	No Flow Noted				
WE-14.22 D-6	Drainage Ditch down-stream from Private Septic-Tank Outfall.	Sept.23/65	2.4	350	35	315	650,000
WE-14.22 P-2	Private Septic-Tank Outfall East Side of Ditch.	Sept.23/65	Insufficient Flow				
WE-14.22 D-7	Drainage Ditch - South Side of Main Street.	Sept.23/65	2.0	400	28	372	1,700
WE-14.22 D-8	Drainage Ditch - North Side of Main Street.	Sept.23/65	1.6	344	33	311	1,600
WE-14.22 D-9	Drainage Ditch - North Side of Main St.East of Young Street.	Sept.23/65	3.8	354	17	337	15,200
WE-14.22 D-10	Drainage Ditch - South Side of Main St.East of Young Street.	Sept.23/65	13.0	610	14	596	50,000

TABLE I (CONT)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>M.F. Coliform Count per 100 ML</u>
WE-14.22 D-11	Drainage Ditch - South of Main St. at Culvert.	Sept.23/65	1.8	382	11	371	50,000
WE-14.22 D-12	Drainage Ditch Downstream from Confluence.	Sept.23/65	4.0	384	11	373	90,000

TOWNSHIP OF ARMSTRONG

TOWNSHIP OF HILLIARD

HIGHWAY No. 562

VILLAGE

OF

MAIN STREET

THORNLOE

THORNLOE CHEESE FACTORY  
SEPARATE SCHOOL

ST.  
YOUNG

TOWNSHIP OF KERNS

TOWNSHIP OF HARLEY



LEGEND

- STREAM SAMPLING POINT SHOWING MILEAGE
- OUTFALL SHOWING STREAM AND MILEAGE  
- TYPE OF OUTFALL
- D - DRAINAGE OR DITCH
- I - INDUSTRIAL WASTE EFFLUENT

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF THORNLOE

WATER POLLUTION SURVEY

1965

SCALE: 330 0 330 660 990 FT.

DRAWN BY: A.L.

DATE: AUGUST 1966

CHECKED BY:

DRAWING No. 66-55

