

STANDARDS DEVELOPMENT BRANCH MOE



36936000010176

~~Town of Richmond Hill I.W.O.~~

Tom Cruikshank

Humber R.



THE
ONTARIO WATER RESOURCES
COMMISSION
INDUSTRIAL WASTE SURVEY
of the
COUNTY OF YORK

1965 - 1966

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1966
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1966

A report on an industrial wastes
survey of the county of York /

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A REPORT
on
AN INDUSTRIAL WASTES SURVEY
of
THE COUNTY OF YORK

1965 and 1966

by
Division of Industrial Wastes
ONTARIO WATER RESOURCES COMMISSION

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AN INDUSTRIAL WASTES SURVEY OF THE COUNTY OF YORK

1965 and 1966

INTRODUCTION

This survey of the industries in the County of York (excluding Metropolitan Toronto) was carried out in conjunction with studies by other Divisions of the Ontario Water Resources Commission.

Information was requested from the various municipal officials on industries using more than 20,000 gallons of water per month. The industries with liquid discharges to storm sewers or watercourses were intensively investigated. When the waste flow from an industry was to the municipal sanitary system, and when the operation of the sewage treatment plant was not impaired by this flow, a minimum amount of information was obtained and is presented.

The industries in the Village of Bolton (County of Peel) were investigated as information on all discharges to the Humber River was desired in this survey.

SUMMARY

A summarization of the information obtained in this survey may best be presented by the following table.

MUNICIPALITY	INDUSTRY	TYPE	WATER(gpd) CONSUMPTION	WASTE DISCHARGE TO	REMARKS
Aurora (Town)	Alanco (Aurora) Ltd.	Aluminum fabricators	300,000	Cooling water - Holland River; Process and domestic waste - sanitary system	Cooling water sampled - satisfactory
	Choice Cut-Up Chicken (1958) Co. Ltd.	Chicken killing	90,000	Sanitary system	Satisfactory
	Collis Leather Co. Ltd.	Tannery	130,000	Storm water - Holland River; process and domestic waste - sanitary system	Satisfactory
	Cousin's Dairy Co. Ltd.	Dairy	80,000	Sanitary system	Satisfactory
	Stirling Drug Ltd.	Manufacture of medicines and drugs	80,000	Sanitary system	Satisfactory
Richmond Hill (Town)	No industries discharging to watercourses during the time of this survey.				
Newmarket (Town)	Glenville Farms	Dairy	12,600	Sanitary system	Satisfactory
	Iacal Industries	Metal fabricating	4,500	Domestic - sani- tary system; rinse and cooling waste - land dumped; storm water - Holland R.	Satisfactory
	Office Specialty	Manufacture of furniture	65,000	Septic tank - Holland River	All wastes will be directed to the sanitary system.

MUNICIPALITY	INDUSTRY	TYPE	WATER (gpd) CONSUMPTION	WASTE DISCHARGE TO	REMARKS
Woodbridge (Village)	Robinson Cotton Mills (Monsanto Co. Ltd.)	Manufacture of polyvinyl chloride and urethane products	25,000	Domestic - septic tank; cooling and wash water - weeping bed; - Robinson Creek and Humber River	Ether soluble content high in discharge to Robinson Creek.
	M.L. Snyder and Sons Ltd.	Manufacture of rubber goods	5,000	Domestic - septic tank; cooling - underground set- tling basin - wash water - land dumped	Satisfactory
	Myers Water Conditioning Ltd.	Water softeners	4,500	Wash water - Humber River	Satisfactory
Markham (Village)	Amalgamated Electric Corp. Ltd.	Manufacture of electric wiring materials	38,000	Sanitary system	Cyanides high Unsatisfactory
	Markham Dairy Ltd.	Dairy	10,000	Sanitary system	Satisfactory
	Chesebrough Ponds Ltd.	Manufacture of cosmetics	6,000	Sanitary system	Satisfactory
Stouffville (Village)	Maple Leaf Dairy	Dairy	5,500	Sanitary system	Satisfactory
	Stouffville Creamery	Creamery	6,500	Domestic and wash sanitary system; cooling - Duffin's Creek	-Satisfactory
Sutton (Village)	Briar's Dairy	Dairy	400,000	Domestic and wash - sanitary system; cooling - Black River	Satisfactory

MUNICIPALITY	INDUSTRY	TYPE	WATER (gpd) CONSUMPTION	WASTE DISCHARGE TO	REMARKS
Bolton (Village in County of Peel)	There are no direct discharges from industries to water-courses in this village.				
King (Township)	Sky Line Farms Ltd.	Chicken killing	165,000	Domestic - septic tank; process - aerated lagoon - Kettleby Creek	Unsatisfactory
Whitchurch (Township)	King Cole Duck Farms Ltd.	Meat processing	50,000	Domestic - septic tank; process - sprayed on land	Satisfactory
Vaughan (Township)	C.N.R. Humpyard	Railway yard	100,000	West Don sewage treatment plant	Unsatisfactory
	Union Carbide Co. Ltd.	Plastic products	6,000	West Don sewage treatment plant	Satisfactory
	Artex Co. Ltd.	Pre-cast concrete structures	100	Wash - weeping bed; domestic - sanitary system	Satisfactory
	Rayette Co. Ltd.	Manufac- ture of cosmetics	1,000	Sanitary system	Satisfactory
Markham (Township)	White- Rodgers Ltd.	Manufac- ture of electrical items	4,000	Domestic - septic tank; process - settling pond to creek	Satisfactory
East Gwillimbury	Federal Farms Ltd.	Washing and packing of fresh vege- tables - production of french fries, chips, etc.	50,000	Domestic - septic tank; process - lagoon	Unsatisfactory

Georgina - nil

North Gwillimbury - nil.

A follow-up program has been initiated on the industries that were considered unsatisfactory in the above table.

A routine surveillance of the "satisfactory" industries is planned.

Towns

AURORA

The industries in the Town of Aurora that use more than 20,000 gallons of water per month and have significant quantities of liquid wastes are:

Alanco (Aurora) Limited
Choice Cut-up Chicken Limited
Collis Leather Company Limited
Cousin's Dairy Company Limited
Stirling Drug Limited.

Industries in the town which do not have significant liquid wastes are:

Excel Metalcraft Limited
Universal Insulations Company Limited
Glenville Farms Dairy.

ALANCO (AURORA) LIMITED

Specialty Extruders is a part of Alanco (Aurora) Limited and both plants are located on Dunning Avenue. These plants produce aluminum articles for fabricators.

DETAILS OF SURVEY

Personnel Interviewed - Mr. H. Smallwood, Production Foreman
Number of Employees - 70
Operating Schedule - 8 1/2 hours per day
5 days per week
Water Consumption - 300,000 gallons per day.

PROCESS

- The main processes carried out in the plant are
- (1) the extrusion of aluminum ingots into a variety of shapes for sale to fabricators,
 - (2) the sulphuric acid anodizing of aluminum, and
 - (3) the chemical pretreatment of aluminum articles (a preliminary step to acrylic coating).

Waste Disposal and Treatment

The overflow from the rinse tanks in the anodizing and metal treating sections is segregated and discharged to the municipal sanitary system. ✓

Cooling water from the extruding machines is discharged via a storm sewer to the Holland River. Previously the cooling water had been contaminated by lubricating oil and was the cause of many pollution complaints. No oil is allowed to contaminate the cooling water now, however.

Sampling Program

The plant was visited on September 30 and October 6, 1965, and samples of the effluent to the storm sewer were taken. (See pages 9 and 10.)

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgw. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Aurora

Report to: T. Armstrong

Source: Alanco Ltd.

Date Sampled: Sept. 30/65 by: R. Hussain

Lab. No.	Solids			pH at Lab.	Chrome as Cr.	Cyanide as HCN	Aluminum as Al	Alkalinity as CaCO ₃
	Total	Susp.	Diss.					
T-1767	276	3	273	7.7	0.0	0	0.2	223

T-1767 1. Effluent to creek (grab).

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Aurora

Report by: T. Armstrong

Source: Alanco Limited

Date Sampled: Oct. 6/65 by: R. Hussain

Lab.	Ether
No.	Solubles

T-1822	0.0
--------	-----

T-1822 1. Effluent to creek - grab at 11:30 a.m.

Results

From the sample analyses (Pages 9 and 10) it may be seen that no contaminants are included in the discharge to the storm sewer.

CONCLUSIONS

The cooling water may be safely discharged to a watercourse.

CHOICE CUT-UP CHICKEN (1958) LIMITED

This chicken processing plant is located on Old Yonge Street. All liquid wastes are discharged to the municipal sanitary system. The plant was visited on September 30, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. G. Morris, Plant Superintendent
Number of Employees - 120
Operating Schedule - 8 1/2 hours per day
5 days per week
Production Volume - 20,000 - 30,000 birds per day
Water Consumption - 90,000 gallons per day (P.U.C.)
85,000 industrial
5,000 domestic.

PROCESS

This is a typical chicken processing plant. The operations are killing, defeathering, cleaning and packing.

Waste Disposal and Treatment

The process water (85,000 gpd) is pretreated before it is discharged to the sanitary system. This pretreatment includes screening, biological treatment and sedimentation. The sludge which settles in the sedimentation tank may be returned to the aeration section, or directed to a holding tank as a preliminary step to land disposal.

DISCUSSION

The condition of the plant indicated that good in-plant control was being maintained. The operation of the municipal sewage treatment plant has not been adversely affected by this chicken killing waste. Thus no samples of the effluent to the municipal system were taken.

COLLIS LEATHER COMPANY LIMITED

This tannery is located on Tyler Street. It was visited on Sept. 30, 1965. All process wastes are discharged to the sanitary system.

DETAILS OF SURVEY

Personnel Interviewed - Mr. F. J. Wims - Plant Manager
Number of Employees - 220
Operating Schedule - 2 - 8 hour shifts
Water Consumption - 130,000 gpd approximately
10,000 from P.U.C.
120,000 from Company well.

PROCESS

Typical tanning operations are carried out in this plant.

Waste Treatment and Disposal

All the process wastes (approx. 140 gpm for 14 hours per day) are pretreated before they enter the municipal sanitary system. The pretreatment operations are mixing, settling and chlorinating.

Roof drainage and ground seepage are discharged to the Holland River via a company sewer.

DISCUSSION

A grab sample was taken of the effluent to the sanitary sewer (Page 15). Analysis of this sample shows that the effluent is of satisfactory quality for discharge to the sanitary system.

This Company has submitted monthly samples to the OWRC laboratory for analysis in the past. Their effluent has consistently been satisfactory for discharge to the sanitary system.

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Aurora

Report to: T. Armstrong

Source: Collis Leather Co. Ltd.

Date Sampled: Sept. 30/65 by: R. Hussain

Lab. No.	5-day B.O.D.	Solids			pH at Lab.	Sulphide as H ₂ S	Chromium as Cr.	Iodine Demand
		Total	Susp.	Diss.				
T-1768	360.	5764	220	5544	6.5	12.	0.0	317.

T-1768 1. Effluent to Sanitary Sewer (Grab).

COUSIN'S DAIRY COMPANY LIMITED

Milk and cream are processed in this plant on Yonge Street. It was visited on September 30, 1965. All process wastes are discharged to the municipal sanitary system.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. D. H. Glass, Vice President
Number of Employees	-	50
Operating Schedule	-	8 hours per day 5 days per week
Water Consumption	-	80,000 gallons per day (P.U.C.)
Raw Materials	-	raw milk (approx. 25,000 - 30,000 lbs/day).

PROCESS

Milk is processed in the usual manner - filtered, preheated, pasteurized, cooled and bottled.

About 1,200 lbs per day of cream are produced by centrifuging the raw milk.

Waste Disposal

The liquid wastes are made up of cooling water and wash water (bottles, equipment and floors) and are discharged to the sanitary sewers. ✓

Previously the skim milk from the centrifuging operation was discharged to the sanitary sewers. This skim milk is now processed and sold for human consumption.

About 200 lbs per day of stale milk is dumped to the sanitary system.

DISCUSSION

The sewage treatment plant has experienced no difficulties due to this milk waste since the dumping of skim milk ceased.

STIRLING DRUG LIMITED

This plant, located on Yonge Street, was visited on September 30, 1965. Medicines, including injectable drugs, are produced here.

DETAILS OF SURVEY

Personnel Interviewed - Mr. Watson, Manager
Number of Employees - 375
Operating Schedule - 8 hours per day
5 days per week
Water Consumption - 80,000 gpd (P.U.C.) approximately
8,000 gpd domestic
72,000 gpd industrial.

PROCESS

The process is mainly a batch operation and involves the mixing, heating, cooling and blending of the chemicals. It may be termed a "compounding" process.

Waste Disposal

All liquid wastes from this plant are discharged to the sanitary system. Domestic wastes make up 80% of the total waste volume and wash water makes up the remainder. The wash water is mainly from the washing of glass-lined blending tanks.

DISCUSSION

A steam pipe used in the heating of boiler oil ruptured in May 1965. This pipe failed because of corrosion and allowed oil to leak through to the condensate trap and finally to the creek. This section is kept under close surveillance and there should be no further spills.

The sewage treatment plant operators indicated the waste from this Company was not detrimental to the operation of the sewage plant.

RICHMOND HILL

When this survey was carried out, there were no industries in the Town of Richmond Hill that discharged significant quantities of liquid wastes to watercourses.

Approval, however, has been granted a new industry, Texas Instruments Incorporated, to install waste treatment (neutralizing) facilities. These facilities were to be installed in late 1965 and the waste from this plant, commencing in early 1966, was expected to be: - 10,000 gpd of neutralized wastewater to German Mills Creek and thence to the Don River.

NEWMARKET

The industries in the Town of Newmarket that use greater than 20,000 gallons of water per month and discharge significant quantities of liquid wastes are:

Glenville Farms

Line and Cable Accessories (Lacal Industries)

Office Specialty

Other industries in the town that use appreciable quantities of water but do not discharge significant quantities of liquid wastes are:

Bender Caskets Limited

Deerfield Plastics

Dixon Pencil Company

Polmont Limited

Tenatronics Limited.

GLENVILLE FARMS

This dairy was visited on October 18, 1965.

DETAILS OF SURVEY

- Personnel Interviewed - Mr. L. Cardis, Plant Manager
- Number of Employees - 14 (including office staff)
- Operating Schedule - 8 hours per day
5 days per week
- Water Consumption - 278,000 gallons per month (approx.)
from P.U.C.
- Raw Materials - about 21,000 gallons of raw milk per day.

PROCESS

This is a typical dairy operation. The raw milk is clarified, treated, pasteurized, cooled and then bottled. Varying amounts of raw milk are centrifuged to produce cream and skim milk.

Waste Disposal

Washing and cooling waters are discharged to the sanitary sewage system. The domestic waste is also discharged to the sanitary system. ✓

DISCUSSION

Since all wastes from this plant are discharged to the sanitary system and no problems exist at the sewage treatment plant because of these wastes, no samples of the effluent were taken.

LACAL INDUSTRIES

(Line and Cable Accessories)

This Company was formerly called Line and Cable Accessories but has been renamed Lactal Industries. This metal fabricating plant was visited on October 18 and November 25, 1965. The main products are overhead electric lines, metal highway signs and small metal parts.

DETAILS OF SURVEY

Personnel Interviewed - Mr. A. L. Bogdanow, Plant Superintendent
Number of Employees - 160
Operating Schedule - 3 8-hour shifts per day
5 days per week
Water Consumption - 100,000 gallons per month from the P.U.C.

PROCESS

This process may be termed a deep-galvanizing metal finishing process. After the metals have been fabricated to appropriate sizes and shapes, they are finished as required. This finishing operation involves

- (1) the removal of undesirable solids in a 20% H_2SO_4 bath (approx. 2,400 gallons),
- (2) rinsing in a still water bath,
- (3) sensitizing of the metal surface for outer coatings, and finally the coating by immersion in a molten zinc bath. The finished products are then cooled in a water bath.

Waste Disposal

The liquid wastes from this plant consist of:

- (1) rinse and cooling waters
- (2) domestic wastes
- (3) spent acid solutions.

The domestic wastes are discharged to the municipal sanitary system. ✓

The rinse and cooling waters as well as the spent acid solutions are trucked away from the site and land dumped. Therefore, the only water being discharged to the Holland River from this plant is from the roof and ground drains.

DISCUSSION

The spent acid solutions previously were discharged to a limestone bed on the premises (for neutralization) and then were allowed to seep to the river. The land dumping of all liquid process wastes has eliminated the possibility of contaminants reaching the Holland River from this plant.

OFFICE SPECIALTY

This Company manufactures wood and steel office furniture and is the largest industry in Newmarket. The plant was visited on October 19 and December 2, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. J. R. Jenkinson, Plant Engineer
Number of Employees - 340
Operating Schedule - 3 8-hour shifts per day
5 days per week
Water Consumption - Approx. 1,425,000 gallons per month (P.U.C.)
800,000 are for domestic purposes
625,000 for industrial purposes.

PROCESS

The plant is divided into two sections according to the material used in building the furniture. The wood section is typical of any wood-working shop and has no liquid process wastes.

The operations in the metal section include fabrication, washing, painting and assembly of metal parts. Plating operations are also carried out in this section.

Waste Treatment and Disposal

The liquid wastes from this plant include:

- (1) domestic wastes
- (2) cooling water from compressors and spot welders
(major amount)
- (3) rinse water from the plating operation (20% of the
process waste)
- (4) wash water.

All the plant wastes are discharged to a large septic tank and thence to the Holland River. Samples were taken of the overflow from the septic tank and they were analysed for chemical and bacteriological content.

DISCUSSION

The sample results indicate that the domestic portion of the waste should be directed to the municipal sanitary system. The town engineer has indicated that all the liquid waste from this industry will be directed to the sanitary system.

BACTERIOLOGICAL EXAMINATION

SEWAGE AND SURFACE WATERS

Report to: R. Hussain

File: Newmarket - Office Specialty

Date: December 2, 1965

Date Sampled	Date Analyzed	Lab. No.		Coliforms per 100 ML MEMBRANE FILTER
Nov.25/65	Nov.26/65	S25313	1. Overflow from Septic Tank - Grab (1.00) -	1,900

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Newmarket Report to: R. Hussain

Source: Office Specialty

Date Sampled: Oct. 18/65 by: R. Hussain

Lab. No.	5-Day B.O.D.	Solids		Anionic Detergents as ABS	Phosphate as PO ₄	pH at Lab.	Ether Solubles	Cyanide as HCN
		Total	Susp. Diss.					
T-1953	7.2	514	8 506	0.1	1.80	7.9	0.2	0

T-1953 1. Overflow from septic tank to river - Grab 4:00.

Villages

WOODBIDGE

The industries in the Village of Woodbridge which use greater than 20,000 gallons of water per month and discharge significant quantities of liquid wastes are:

Robinson Cotton Mills Limited

M. L. Snyder and Sons Limited

Myers Water Conditioning Limited.

ROBINSON COTTON MILLS LIMITED

This Company has ceased to manufacture textiles and the original plant is now occupied by three companies:

- (1) Romac Fabricators - dry
- (2) Robinson Machine Works - dry
- (3) Monsanto Company Limited, which is the only source of liquid wastes.

MONSANTO COMPANY LIMITED

This plant was visited on September 21, 1965.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. R. Dobson, Plant Superintendent
Number of Employees	-	150 approximately
Operating Schedule	-	2 8-hour shifts per day 5 days per week
Water Consumption	-	25,000 gpd (P.U.C.)
Raw Materials	-	liquid urethane and catalyst, polyvinyl chloride (P.V.C.) and plasticizer.
Products	-	life-jackets, pillows, mattresses and in-place insulation.

PROCESS

The process may be divided into two separate parts, depending on the raw materials used.

- (a) The polyvinyl chloride is compounded with a plasticizer in a round mould. The mould is subjected to intense pressure and temperature

(145,000 psi and 350°F.), and the original contents are enlarged many times. The material is then cooled in the atmosphere. As a final step, the expanded item is steamed in an oven to ensure proper growth of the material. The product is then ready for inspection and packing.

- (b) The urethane process involves mixing the liquid urethane with a catalyst under special conditions on a foaming line. The thickness of the material depends on the amount of catalyst added. (One inch on one run expanded to 33 inches.) The material is then cut to the desired shape, packed and shipped.

Waste Treatment and Disposal

The liquid wastes from this plant are made up of:

- (1) cooling water from the hydraulic machinery and air conditioners (major amount)
- (2) wash water - small amount
- (3) domestic sewage.

The boiler water is recirculated in a closed system.

The cooling water and wash water are discharged to a weeping bed and thence to Robinson Creek and the Humber River.

The sanitary wastes go to a septic tank and tile system.

Samples were taken of the process discharge to Robinson Creek.

DISCUSSION

The results (see page 31) indicate that the ether soluble content of the waste was slightly higher than the OWRC objective. The Company have been advised of this and follow-up inspections will be made.

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Woodbridge

Report to: T. Armstrong

Source: Robinson Mills (Monsanto)

Date Sampled: Sept. 21/65 by: R. Hussain

Lab. No.	5-Day B.O.D.	Solids			Ether Solubles	C.O.D.
		Total	Susp.	Diss.		
T-1656	3.4	454	3	451	32.	9.2

T-1656 1. Effluent from Plant.

M. L. SNYDER AND SONS LIMITED

This rubber manufacturing plant was visited on September 25, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. C. Hughes, Plant Superintendent

Number of Employees - 35

Operating Schedule - 8 hours per day
5 days per week

Water Consumption - 5,000 gpd
4,300 process
700 domestic

Raw Materials - liquid latex, colouring agents and
special compounds

Products - Rubber commodities such as waterproof
clothing and gloves.

PROCESS

The main operation involves the blending of liquid latex with special compounds. This mixture is heated, agitated in baths and specially shaped moulds are dipped into it. The moulds are then cooled in large water tanks (two) and spray washed. To ensure proper removal of the rubber layer from the mould, extensive powdering is required.

Waste Treatment and Disposal

The liquid waste from this plant is made up of:

- (1) domestic sewage
- (2) cooling water - 4,000 gpd
- (3) wash water - latex brushes - 80 gpd
gloves - 200 gpd
- (4) boiler blowdown - 50 gpd.

The domestic sewage is discharged to a septic tank and tile bed.

The cooling water is discharged to an underground settling basin and tile bed.

The wash water and boiler blowdown water are land dumped on the premises.

There is no surface runoff of any liquid waste to the Humber River. It therefore appears that this Company does not add contaminants to the Humber River.

MYERS WATER CONDITIONING LIMITED

This Company regenerates the plastic resin used in Culligan Water Softeners by an ion exchange process. The plant was visited on September 21 and October 6, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. W. M. Myers, Manager
Operating Schedule - 2 - 3 hours per day starting about 3 p.m.
Water Consumption - 100,000 gallons per month (P.U.C.)

PROCESS

The steps in the regeneration process are as follows:

- (1) The resin is forced by water pressure from the long, narrow, circular tank to an overhead hopper. This initial washing lasts 10 - 15 minutes.
- (2) The resin is returned to the container and is treated with a 30% brine solution.
- (3) The resin is then chlorinated and rewashed. The resin in 30 - 40 tanks is regenerated each day.

Waste Treatment and Disposal

The only source of liquid waste to the Humber River is the wash water. This wash water is routed through a small sump to the river.

A sample of the plant effluent was taken on October 6, 1965. The analysis (page 35) shows that this waste may be satisfactorily discharged to a watercourse.

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Woodbridge Report to: T. Armstrong
Source: Myers Water Conditioning
Date Sampled: Oct. 6/65 by: R. Hussain

Lab. No.	5-Day B.O.D.	Solids			pH at Lab.
		Total	Susp.	Diss.	
T-1821	1.6	582	20	562	7.2

T-1821 1. Effluent to River (Grab at 4:30 p.m.)

MARKHAM

The industries in the Village of Markham that use greater than 20,000 gallons of water per month and discharge significant quantities of liquid wastes are:

Amalgamated Electric Corporation Limited

Markham Dairy Limited

Chesebrough-Ponds Limited (All discharge to the
sanitary system.)

Other industries in the village which do not have significant liquid wastes are:

Reesors Marmill Limited

Stanley Manufacturing Company Limited

Kent Tools Limited

Humphrey Cosburn Plastics Limited.

AMALGAMATED ELECTRIC CORPORATION LIMITED

This Company produces wiring for the electrical industry and a variety of other small metal items. The plant was visited on September 28, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. W. P. Mulligan, Assistant to the
Plant Manager

Number of Employees - 250 (approximately)

Operating Schedule - plating - 8 hours per day
5 days per week

Water Consumption - 38,000 gpd (approximately)

5,000 domestic
33,000 process.

PROCESS

The zinc plating and bright dipping operations are the major sources of contaminating liquid wastes. These operations are conventional and are outlined in detail in H. A. Clarke's report of March 1965.

Since that report was issued, a perchloran tank has been installed to initially treat the barrel plating wastes for cyanide. This tank allows the oxidation of the cyanide wastes (cyanide to cyanate).

Waste Treatment and Disposal

Liquid wastes from this plant include:

- (1) sanitary sewage
- (2) cooling water - compressors
- (3) wash water
- (4) plating rinse water and water from the bright dipping operation.

The rinses from the plating operations which contain cyanide are segregated and treated in a large sump where some agitation is provided. The contents of this tank (200 gallons) are allowed to slowly discharge to the sanitary system during the night (4:30 p.m. - 7:45 a.m.). They are diluted with approximately 11,000 gallons of water during this period.

The wastes from the bright dipping operation are piped to a small plastic tank where automatic pH control equipment has been installed. Caustic soda is used for neutralization. This treated waste is then discharged along with the treated cyanide wastes to the sanitary system.

The sanitary sewage, cooling water and wash water, as well as the treated wastes, are all discharged to the municipal sanitary system.

DISCUSSION

Samples were taken by staff of this Division and company personnel and were analyzed at the OWRC laboratory. The results (page 39) reveal that the cyanide content consistently exceeds OWRC objectives and also that occasionally the zinc content is high.

Better control and treatment of these wastes are needed. A detailed outline of suitable treatment procedures is included in H. A. Clarke's report of March 1965. A follow-up program with this Company has been initiated.

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Village of Markham

Report to R. Hussain

Source: Amalgamated Electric Corporation Limited

Lab. No.	Solids		pH at Lab.	Zinc as Zn	Alkalinity as CaCO ₃	Acidity as CaCO ₃	Cyanide as HCN	Chromium as Cr.	Phenols in ppb
	Total	Susp. Diss.							

Date:
Sep. 28/65

T-1736			9.3	15.	267	-	20.		
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T-1736	1. Total plating room effluent to sanitary sewer - 1 hr. comp. - 10 minutes.								
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Oct. 13,14/65

T-1951	1474	1080 *	394	9.4	44		11.0	0.6	8
T-1952	1688	974 *	714	8.5	53		14.0	0.4	4

T-1951 1. Total effluent to sanitary sewers 1/2 hr. comp. on Oct. 13.

T-1952 2. Total effluent to sanitary sewers 1/2 hr. comp. on Oct. 14.

* Disregard these values since an additive was used to preserve the solution of other results.

LARKHALL DAIRY LIMITED

This dairy was visited on September 28, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. B. Goode, Plant Manager
Number of Employees - 10
Operating Schedule - 8 hours per day
5 days per week
Water Consumption - 10,000 gpd (approximately)
250 gpd domestic
9,750 gpd process.

PROCESS

Raw milk is processed in this plant to homogenized milk, and ice cream is also made. The raw milk (about 10,000 lbs per day) is clarified, treated, pasteurized, homogenized, cooled and bottled.

Milk is combined with other milk products, flavourings and a sweetening agent in the making of ice cream.

Waste Treatment and Disposal

Liquid wastes from this plant include:

- (1) cooling water (majority)
- (2) wash water
- (3) domestic sewage.

All these wastes are discharged to the municipal sanitary system.

DISCUSSION

The waste discharge from this plant has not adversely affected the operation of the sewage treatment plant. Thus no samples of the effluent were taken.

CHESEBROUGH PONDS LIMITED

This Company manufactures cosmetics and toilet goods. The plant was visited on September 28 and October 6, 1965.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. G. E. Marshall, Plant Manager
Number of Employees	-	165
Operating Schedule	-	8 hours per day 5 days per week
Water Consumption	-	6,000 gpd 5,850 domestic 150 process
Raw Materials	-	oils, emulsifiers, waxes, cleaners.

PROCESS

The general process can be termed a "compounding" process. Several batch operations are carried out simultaneously. These include heating, mixing, cooling and blending of different raw materials to attain the desired end products.

Waste Treatment and Disposal

Liquid wastes in this plant consist of

- (1) domestic wastes (95%)
- (2) wash and cooling waters (5%).

The process wastes flow to floor drains, through grease traps and are then discharged to the municipal sanitary sewer. The skimmings from the grease traps are land dumped.

DISCUSSION

Samples were taken of the process effluent to the sanitary system. From the results below it may be seen that the phenol and ether soluble content slightly exceeded OWRC objectives. As the total process flow from the plant is only 150 gallons per day, no adverse operating conditions should be experienced at the sewage treatment plant as a result of this discharge.

ANALYTICAL RESULTS

Lab. No.	5-Day B.O.D.	Total	Susp.	Diss.	Phenols in ppb	Ether Solubles	pH at Lab.
T-1737	240.	738	81	657	200	26.	8.2
T-1737	1. Total Plant Effluent - Grab - 1445 hrs. to Sanitary Sewer.						

Note: All analyses except pH reported in p.p.m. unless otherwise indicated.

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

STOUFFVILLE

The industries in the Village of Stouffville that use 20,000 gallons of water per month and discharge significant quantities of liquid wastes are the

Maple Leaf Dairy and
Stouffville Creamery.

Other industries in the village which use greater than 20,000 gallons of water per month but do not discharge significant liquid wastes are:

Stouffville Floral Company Limited
Stouffville Goldfish Supply
Coinco Equipment Limited
Schell Meat and Grocery Store
Stouffville Machine and Tool Limited.

MAPLE LEAF DAIRY

This Dairy is located on Main Street in Stouffville and was visited on October 22, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. F. Hanna, Plant Manager
Number of Employees - 10
Operating Schedule - 8 hours per day
5 days per week
Raw Materials - 5,500 pounds per day raw milk
Water Consumption - 125,000 gallons per month (P.U.C.)

PROCESS

This is a typical dairy operation. The raw milk is filtered, pre-heated, pasteurized, cooled and bottled. About 10 quarts of cream are produced each day from the centrifuging of raw milk. About 50 quarts of skim milk are also produced daily as a by-product of this centrifuging operation.

Waste Treatment and Disposal

All washing and cooling waters are discharged to the sanitary sewers.

DISCUSSION

Since all wastes from this plant are discharged to the sanitary system, and no problems have existed at the sewage treatment plant because of these wastes, no samples of the effluent were taken.

STOUFFVILLE CREAMERY

Butter is manufactured at this creamery on Civic Street in Stouffville. The plant was visited on October 22, 1965.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. F. Crossen, Owner
Number of Employees	-	4
Operating Schedule	-	8 hours per day 5 days per week
Raw Materials	-	Approximately 1,200 pounds of cream per day
Water Consumption	-	145,000 gallons per month (P.U.C.)

PROCESS

The main operation in this plant is the churning of cream into butter.

Waste Treatment and Disposal

The liquid wastes in this plant consist of

- (1) domestic sewage
- (2) cooling water
- (3) wash water.

The domestic sewage and the wash water are discharged to the sanitary system. The cooling water (5 gallons per minute) from the ice-making machine is discharged to Duffin's Creek, via the company's storm sewer.

DISCUSSION

The cooling water was not contaminated in any way, therefore, it was not sampled. The discharge to the sanitary sewer system had caused no adverse effects in the operation of the sewage treatment plant, thus no samples of this discharge were taken.

VILLAGE OF SUTTON

The only industry in the Village of Sutton that uses greater than 20,000 gallons of water per month and discharges a significant liquid waste is Briar's Dairy.

BRIAR'S DAIRY

This Dairy was visited on October 19, 1965. It is the major industry in the Village of Sutton.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. T. Lonergan, Plant Manager
Number of Employees	-	15
Operating Schedule	-	8 hours per day 5 days per week
Water Consumption	-	approx. 400,000 gallons per day (P.U.C.)
Raw Materials	-	10-11,000 pounds of raw milk per day.

PROCESS

This is a typical dairy operation. Raw milk is filtered, pre-heated, pasteurized, cooled and bottled. Some raw milk is also centrifuged for the production of cream.

Waste Treatment and Disposal

Liquid wastes from this plant are made up of

- (1) cooling water
- (2) wash water
- (3) domestic wastes.

The wash water and domestic sewage plus a small quantity of raw milk are discharged in the municipal sanitary system. The cooling water is discharged at the rate of 30 to 35,000 gallons per day to the Black River.

DISCUSSION

A sample of the cooling water to the Black River was taken. From the results below, it is seen that this cooling water may satisfactorily be discharged to an open watercourse. The waste discharge to the sanitary system has had no adverse affects on the operation of the sewage treatment plant, thus its content was not analyzed.

ANALYTICAL RESULTS

Lab. No.	5-Day B.O.D.	Solids		
		Total	Susp.	Diss.
T-1954	0.4	148	1	147

T-1954 1. Plant effluent to Black River - Grab (2:30)

VILLAGE OF BOLTON

This village is located in the County of Peel but as information was desired on all discharges to the Humber River, it was surveyed.

Three industries were visited on January 18, 1966.

(1) Bolton Creamery

All liquid wastes (cooling and wash waters) are directed to the sanitary system.

(2) Reeves and Leavens

All liquid wastes are directed to the sanitary system.

(3) Continental Dye Works Limited

Production at this plant ceased in April 1965.

Therefore, there are no direct industrial waste discharges to the Humber River within the Village of Bolton.

TOWNSHIP OF KING

The only industry in the Township of King which discharges a significant liquid waste is Skyline Farms Limited, Kettleby.

SKYLINE FARMS LIMITED
KETTLEBY

A continuing inspection program has been carried out at this plant by the Divisions of Industrial Waste and Research.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. D. Marshall, President Mr. D. Gear, Maintenance Foreman
Number of Employees	-	Approx. 110 - plant staff 20 to 30 - office staff
Operating Schedule	-	9 hours per day - production) 8 to 9 hours per day - wash-up) 5 days/week
Production Volume	-	25,000 birds per day (max.) normal volume about 20,000 birds per day
Water Consumption	-	Sanitary - 2,000 gallons per day Production - 110,000 gallons per day Clean-up - 53,000 gallons per day <hr/> Total 165,000 gallons per day

All the water is drawn from Kettleby Creek. It is filtered and chlorinated prior to being used.

PROCESS

This is a typical chicken killing process.

Water Usage and Waste Disposal

There are two sources of liquid waste at this plant:

- (1) sanitary waste and
- (2) process waste.

The sanitary waste is discharged to a septic tank and tile bed.

The process waste from the plant flows by gravity to a sump approximately 6 feet long, 10 feet wide and 6 feet deep. The waste is then pumped from this sump to a Kayson vibrating 60-mesh screen. The screen separates most of the solids and some of the grease from the liquid. An intermittent jet of water and a revolving scraper transfer this material to drums.

Liquid that passes through the screen flows by gravity back to an over and under baffled settling tank, approximately 15 feet long, 10 feet wide and 6 feet deep. Practically all the solids in the sump and settling tank float to the surface. The sump and tank are skimmed as necessary and the sludge, consisting mostly of grease, is hauled to a land-disposal site. The waste flows by gravity from the settling tank to the aerated lagoon. The aerated lagoon has a volume of approximately 525,000 cubic feet. At the time of the survey, there were 26 aero-hydraulic guns aerating the lagoon. The lagoon effluent to Kettleby Creek had a 5-day BOD of from 40 to 60 ppm and a suspended solids content of from 25 to 60 ppm, during the period of this survey.

DISCUSSION

The effluent to Kettleby Creek does not meet the OWRC objectives for discharge to a watercourse, thus some form of additional treatment should be provided. Since the conduct of this survey, additional aerating devices have been added to the lagoon with the hope of increasing the biological solids in the inlet portion of the lagoon. If this does not provide sufficient treatment, suppliers of the aerating devices propose to install a partition in the lagoon near the influent end in an attempt to provide the mixed liquor section. The Division of Research is continuing its evaluation of the treatment facilities.

CONCLUSIONS

Some modification of the existing treatment facilities is definitely a necessity. The Division of Industrial Wastes will follow closely the changes that are made and will endeavour to have the effluent to Kettleby Creek meet the OWRC objectives.

TOWNSHIP OF WHITCHURCH

The only industry in the Township with a significant liquid waste is King Cole Duck Farms Limited.

KING COLE DUCK FARMS LIMITED

This plant is located at lot No. 21, concession No. 5, and was visited on November 19, 1965.

DETAILS OF SURVEY

Personnel Interviewed	- Mr. J. Murky, Owner
Number of Employees	- 16
Operating Schedule	- 8 hours per day 5 days per week
Production	- 5,000 birds per week
Water Consumption	- Approximately 100 gallons per minute from the Holland River.

PROCESS

This Company operates a typical meat processing plant. The operations involved are killing, defeathering, cleaning and packing of the birds.

Water Usage and Disposal

There are two sources of waste from this plant:

- (1) sanitary wastes and
- (2) wash water wastes.

The sanitary waste is discharged to a septic tank and tile system.

The process waste or washing water is pumped to a series of six settling ponds (each being approximately 75 feet by 50 feet by 6 feet deep). All feathers and innards are separated from the process waste before the waste leaves the plant. The supernatant from the last pond is sprayed onto the surrounding land. In the winter time, a large lagoon is utilized to collect the supernatant from the series of ponds and it serves as a storage for the winter period. In the spring, its contents are disposed of to the nearby land. The solids from these ponds are collected, trucked away and land-dumped.

DISCUSSION

The treatment of this waste may be considered satisfactory.

TOWNSHIP OF VAUGHAN

The industries in the Township of Vaughan that use greater than 20,000 gallons of water per month and discharge significant quantities of liquid wastes are:

C. N. R. Humpyard
Union Carbide Company Limited
Artex Company Limited
Rayette Company Limited.

The industries that were not discharging significant liquid wastes when this survey was conducted were:

Diversified Research and Sales Company Limited
Presto-Lite Company Limited
Aersol Company Limited
Crown Cork and Seal Company Limited.

Some of these plants were not fully constructed, thus a follow-up program on them has been planned.

CANADIAN NATIONAL RAILWAY HUMPYARD

This humpyard is located at the intersection of Keele Street and Highway No. 7 and has been in operation since February 1965. The railway cars and Diesel locomotives are washed, serviced and routed at this site.

DETAILS OF SURVEY

Personnel Interviewed - Mr. D. Hay, Facility Maintenance Superintendent
Number of Employees - 1,00 to 1,500
Operating Schedule - 1 shift per day
Water Consumption - 100,000 gallons per day (approx.) (P.U.C.)

Water Usage and Waste Disposal

This plant was visited on November 16, 1965. The yard is divided into north and south sections and waste pre-treatment facilities are available for each section. The treatment in each case consists of settling, skimming, pH control and mechanical flotation. A breakdown of the liquid wastes from the south section is as follows:

Sanitary wastes - 42,000 gallons per day
Floor washings - 500 gallons per day
Car washings - 40,000 gallons per day.

These flows are directed to treatment plant #1 and to the municipal sanitary sewers. A similar breakdown of the north section is as follows:

Sanitary wastes - 11,000 gallons per day

Floor washings
(from Diesel shop)- 2,500 gallons per day.

These flows are directed to treatment plant #2 and to the municipal sanitary sewers. The sludge from the treatment plants and the solid matter from the washing areas are trucked away and land dumped by A. and A. Waste Disposal Company.

DISCUSSION

Some problems have occurred at the West Don sewage treatment plant as a result of the flows from the C.N.R. Humpyard. The pretreatment facilities appear to be adequate, but more and closer attention is needed in the operation of these facilities. This Division will assist the Township of Vaughan officials in attaining proper pretreatment of the liquid wastes from the Canadian National Railways yard.

UNION CARBIDE COMPANY LIMITED

This plant is located on Keele Street just north of Highway No. 7.
It was visited on November 16, 1965.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. Pfaff, Plant Engineer
Number of Employees	-	40
Operating Schedule	-	24 hours per day 6 days per week
Raw Materials	-	plastic pellets
Water Consumption	-	6,000 gallons per day from the Township.

PROCESS

The process involves the melting of plastic pellets and the injection moulding of the resulting liquid into desired products.

Water Use and Waste Disposal

Water is used mainly in this plant for the cooling of the compressors and the moulding machines. This flow (15 gpm) is directed to an outside cooling tower then recirculated in a closed system back to the machines. Some make-up water is needed and this is obtained from the Township. There is no effluent, however, from the cooling water system.

The domestic wastes are discharged to the municipal sanitary system.

ARTEX COMPANY LIMITED

This Company produces pre-cast concrete structures for building purposes. The plant was visited on November 18, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. J. Farwell, Plant Superintendent
Number of Employees - 50
Operating Schedule - 9 hours per day
5 days per week
Water Consumption - 800 gallons per week.

PROCESS

Concrete is mixed with appropriate quantities of water and aggregate and placed in moulds so that it may harden in the desired shapes.

Water Use and Waste Disposal

The only source of process waste from this plant is the water used to wash the forms. It is conducted via a drain to a sedimentation basin, and then to a weeping bed. There is no surface runoff from the weeping bed area.

The domestic wastes are discharged to the sanitary system.

RAYETTE COMPANY LIMITED

This Company manufactures shampoos and other cosmetics. The plant was visited on November 18, 1965.

DETAILS OF SURVEY

Personnel Interviewed - Mr. K. Delph, Plant Manager
Number of Employees - approximately 100
Operating Schedule - 2 8-hour shifts per day
5 days per week.

PROCESS

This process may be termed a compounding process. The operations involved are mainly "batch" and include heating, mixing, cooling and blending of the various raw materials to attain the desired products.

Water Use and Waste Disposal

The water from the Township is treated prior to being used in the plant. It is subjected to a sand filter, a carbon bed for decolorizing and a deionizer. In certain cases, it is additionally treated by an ultra-violet ray which gives culture-free water. The only source of liquid waste, apart from the domestic waste, is the wash water used in cleaning the mixing tanks. This amounts to approximately 1,000 gallons per day and is discharged via an in-plant ditch to a settling pond and then to the sanitary system. Domestic wastes are also discharged to the municipal sanitary system.

TOWNSHIP OF MARKHAM

The only industry in the Township of Markham that uses 20,000 gallons of water per month and discharges a significant quantity of liquid waste is White-Rogers Limited. Canada Wire and Cable Company Limited plan to start operations in early 1966 and they too at that time will discharge a significant liquid waste. A survey of Canada Wire and Cable Company Limited is planned for early 1966.

WHITE-ROGERS LIMITED

This plant was visited on August 26, 1965. This Company assembles as a finished product radial and table saws and portable welders from pre-finished parts and accessories. Electric and gas controls are also manufactured at this plant.

DETAILS OF SURVEY

Personnel Interviewed	-	Mr. E. Short, Plant Engineer
Number of Employees	-	75
Operating Schedule	-	5 days per week 8 hours per day.

PROCESS

The portion of the process where liquid wastes occur is the bonderizing and painting section.

Waste Treatment and Disposal

Approximately 20,000 gallons of liquid waste per week are discharge from the plant. This waste flows by gravity to a retention pond 50 feet in diameter and 6 feet deep, at the rear of the plant. Only occasionally is there an overflow from this holding pond to the creek, but during the time of this survey there was a small effluent. This effluent was sampled and the results may be seen on page 63.

The sanitary wastes are discharged to a septic tank and tile bed.

DISCUSSION

The phenolic content of the waste is double the OWRC objective and a further check will be made by this Division on the content of this waste. It does appear, however, that the waste treatment now being provided is satisfactory. Extreme caution must be taken to ensure that no appreciable quantity of settled liquid waste reaches the ditch.

CONCLUSIONS

This method of treatment may be termed "satisfactory".

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Markham

Report to: T. Armstrong

Source: White - Rodgers Limited

Date Sampled: August 26/65 by: T. Armstrong

Lab. No.	5-Day B.O.D.	Solids			pH at Lab.	Phosphate as PO ₄	Chromium as Cr.		Phenol Equiv. ppb	Iron as Fe.	C.O.D.	Chloride as Cl.
		Total	Susp.	Diss.			Pexa.	Total				
T-1527	10.	406	21	385	9.1	23	0.0	0.0	40	0.60	138	23

T-1527 Effluent from Holding Pond.

TOWNSHIP OF EAST GWILLIMBURY

The only industry in the Township of East Gwillimbury with a significant quantity of liquid waste is Federal Farms Limited.

FEDERAL FARMS LIMITED

This Company was visited on a continuing basis throughout 1965.

DETAILS OF SURVEY

- Personnel Interviewed - Mr. H. Lunscher, Maintenance Superintendent
- Number of Employees - approximately 200
- Operating Schedule - varies with the seasons - 18 hours per day for 6 months of the year and 9 hours per day for the remainder of the year.
- Water Consumption - about 50,000 gpd when production is average.
- Products - fresh vegetables packed in polyethelyne containers and various potato products such as chips, french fries, etc.

PROCESS

Fresh vegetables are washed and packed in polyethelyne containers for distribution on the open market.

Potatoes are treated in a conventional manner to produce such products as chips, french fries, etc.

Waste Treatment and Disposal

There are three sources of liquid waste in this plant:

- (1) Sanitary wastes
- (2) Wash waters
- (3) Starchy wastes from the potato processing section.

The sanitary wastes are discharged to a septic tank and tile bed.

The wash waters from the plant are transferred to a settling tank and thence to a U-shaped lagoon. The starchy wastes from the potato processing section are filtered through a special type of cloth and are then directed to the lagoon. Approximately 50,000 gallons per day of liquid waste reach the lagoon during a typical operating day. There is no effluent discharge from the lagoon. A study is now being planned to determine where this water is going and the effect that it is having on the ground water in the area.

DISCUSSION

A study is being planned by the Ground Water Division of the Ontario Water Resources Commission to evaluate the effect that the waste is having on the ground water in the area.

TOWNSHIP OF GEORGINA

There are no industries discharging significant quantities of liquid wastes in this Township.

TOWNSHIP OF NORTH GWILLIMBURY

There are no industries discharging significant quantities of industrial wastes in this Township.