THAMES RIVER BASIN WATER MANAGEMENT STUDY TECHNICAL REPORT

Water takings in the
Thames River Basin

July, 1975

Ministry
of the
Environment

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by

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FORWARD

This report is one of a series of technical reports presenting detailed results of individual studies carried out as part of the Thames River basin water management study. The technical reports are designed to supplement the main report which summarizes the findings of the study and outlines recommended courses of action for water management in the Thames River basin. These reports will prove useful as support documents to those who wish to delve more deeply into any one aspect of water management in the basin.

Map 1: Location and extent of the Thames River basin.

INTRODUCTION

This report outlines in detail the results of studies by the Ministry of the Environment of water takings in the Thames River basin (Map 1), Water takings for municipal, rural domestic, industrial, and agricultural purposes are described according to source and amount of water taken. In addition, the report outlines water-use conflicts which result from water-supply interference, and draws conclusions as to the nature of this problem in the watershed.

Much of the information is presented in tabular form and is also depicted in three maps which accompany the report.

MUNICIPAL AND RURAL DOMESTIC WATER TAKINGS

Water taking for municipal and rural domestic purposes represents the greatest consumptive use of the water resource in the Thames River basin. The demand for water for municipal purposes is such that not all communities can be adequately served by the resources of this watershed alone, and the municipalities of London, Chatham, Blenheim, West Lorne and Comber pipe water from Great Lakes sources. The Lake Huron pipeline, West Elgin system, and the Blenheim line overcome the problem of inadequate local ground-water supplies while the Chatham pipeline provides a reliable supply of water at low cost of treatment.

Municipal water obtained from outside the watershed represents an input to the system as most of it will eventually reach the Thames River in the form of treated sewage effluent. Table 1 quantifies this input in terms of average and maximum consumption per day. Table 2 represents similar data for the major municipalities obtaining water supplies from ground water.

Table 3 is a summary of data available for all municipal and communal water systems in the Thames River basin. Figures of average water consumption and numbers of people served are presented. Under the heading "Capacity" the columns "Source" and "Plant" designate intake capacity and installed pump capacity respectively. Information is based on 1971 data, unless otherwise stated. A total of 343,541 persons are served by municipal or communal water supplies, or about 83% of the population of the watershed. An average of 38 MGD (28 MGD from the Great Lakes and about 10 MGD from ground-water sources in the basin) are required to meet residential, industrial and commercial water demands.

Map 2 depicts the sources and locations of municipal and communal water systems in the Thames River watershed, including the standby wells maintained by the London Public Utilities Commission. In addition, the capacity of each water source is represented by symbols.

As indicated above, approximately 83% of the population in the Thames River basin obtains water supplies from municipal or communal sources. The remaining population, approximately 73,000 persons, obtains water for domestic use from private sources, primarily individual wells serving single residences.

No attempt was made to determine the number of persons obtaining water from shallow dug or bored wells and springs as opposed to more reliable deep wells. From a recent study of a predominantly rural basin in the Grand River watershed, it was determined that about 55% of the sources of water for rural domestic purposes were shallow wells or springs. The proportion would likely be about the same in most of the Thames watershed as well.

Table 4 is a breakdown of water service statistics by municipality. For each portion of the municipality falling within the Thames River watershed, totals of municipally serviced and self-serviced population are presented, together with an estimate of the total water demand of the individually serviced sector in each municipality. Based on an estimated demand of fifty gallons per person per day, the total water requirement of those persons on individual supplies is 3.66 million gallons a day.

INDUSTRIAL WATER TAKINGS

Water taking for industrial purposes is an important facet of total water use in the Thames River basin. Many industries in the watershed obtain water from municipal service, but there are a number of major industries that obtain large quantities of water from their own sources. This section of the report presents water-use data for those industries using significant quantities of water from sources other than municipal supplies. Data concerning industrial water takings were obtained from information submitted by applicants for Permit To Take Water for industrial purposes, and by means of field investigations and inspection reports by staff of the Ministry of the Environment.

Water consumption data for industries obtaining water from municipal sources have not been separately compiled. However, it is estimated that between 33 and 45 percent of municipal water consumption in the basin is for industrial service. Industrial takings from non-municipal sources use a total of about 25 MGD, of which about 14 MGD are recirculated with some loss to the atmosphere.

Certain types of industrial activity are worth special mention because of their significant impact on the water resource. The extractive industry (the mining of sand, gravel and limestone, and the mineral processing connected with this activity) represents the major industrial water use in the Thames River basin. Large quantities of water are used in mineral processing and gravel washing. About 6 million gallons per day, on the average, are used for this purpose. As most mineral processing plants employ closed water systems, most of this water is recirculated. A further 11 MGD are withdrawn from pits and quarries to allow extraction of material. This water is discharged to nearby watercourses.

In the oil fields of Elgin County, water is pumped to the Devonian formation to aid in secondary recovery of oil. Most of the 0.5 MGD taken for this purpose is obtained from ground water. None of this water is returned to source or to surface.

Food processing industries with their own water supplies use a total of about 1.8 million gallons daily, all of which is obtained from wells. About one-third of this total is used as cooling water and discharged to surface watercourses after use.

Other manufacturing industries not connected to municipal service use a total of about 700,000 gallons per day. About 90% of this amount is obtained from wells, and most is used for cooling purposes.

Table 5 represents water-use data for the major industries using their own water supplies in the Thames River basin. The data are also portrayed graphically on Map 3, and are cross-referenced by location number with Table 5.

AGRICULTURAL WATER TAKINGS

Agriculture has traditionally been a highly significant economic activity in the Thames River basin. Despite rapid urbanization and industrial growth in the post-war period, the agricultural sector remains essential to the economy of this region.

Tables 6, 7 and 8 indicate the water demand for livestock watering and crop irrigation in the Thames watershed. Data on livestock numbers for each municipality were obtained from 1971 census figures and were broken down into townships by the Dominion Bureau of Statistics. Estimates of water demand for various types of livestock were based on average consumption figures provided by the Ontario Ministry of Agriculture and Food. Data on crop and golf course irrigation were obtained from information on file with the Ministry of the Environment, including applications for Permits to Take Water and records of water taking submitted by permittees, and by personal interviews with farmers and golf course operators who practise irrigation.

Water Demand for Livestock

The livestock industry is a prime agricultural activity in this region. In the counties drained by the upper Thames watershed (Perth, Oxford and Middlesex) pasture and feed crops occupy between 46% and 55% of the total improved farmland.

Large numbers of livestock are raised in this area, and the water requirements of these animals represent a significant demand on the water resources of the Thames River basin. Table 6 is an estimate of this demand for that portion of each township falling within the Thames River drainage area. A water demand for each category of livestock is presented, as is an aggregate figure for all livestock in the Thames River drainage area.

A trend to intensive livestock operations was evident in the region. Although it was not possible to locate all of these and determine the number of stock being raised in feedlots, a number of such operations were inspected. In general, water supply for such operations tends to be reliable as the consequences of water shortage would be serious. Deep wells are commonly constructed for water supply at feedlots and large poultry farms. Cattle that are pastured are watered from a variety of sources, including streams and ponds. Smaller farms with mixed herds tend to use a variety of water sources for stock watering, including streams, springs, and drilled or dug wells.

Water Demand for Irrigation

Certain areas of the basin support intensive field crops such as tobacco, fruit, vegetables and other market garden crops, and nursery stock. Many farm operators engaged in such activities supplement normal rainfall with spray irrigation, as do several golf courses in the basin.

Map 4 indicates locations in the Thames River basin where water is taken for irrigation. Symbols are used to represent the type of water source employed and the type of crop irrigated. This includes all water sources authorized by Permit To Take Water as well as known water takings exempted from permit legislation.

Table 7 is a summary of water takings for irrigation authorized by the Ministry of the Environment. Information includes the sources of water, type of crop watered, and maximum allowable water taking at each location under the terms of the Permits To Take Water. Data are arranged by sub-basin in which the irrigation occurs, and the total maximum rate and daily amount of all takings in each sub-basin from surface - and ground-water sources are given in the four right-hand columns.

In Table 8, data are presented on water use for irrigation from two streams, Dingman Creek and Mill Creek, during the 1971 season. Information was obtained from records of water taking submitted by irrigators, and includes the total amount of water withdrawn, period of irrigation, and the average amount of water taken from streams each day of the irrigation period. An estimate of the impact of the water taking on streamflow is given in terms of average rate of withdrawal in cubic feet per second.

Water taking for irrigation is a highly variable demand, and in practice the total amount of water consumed is considerably less than that authorized to be taken. A comparison of the data in Tables 7 and 8 indicates that the average daily takings from Mill Creek and Dingman Creek in 1971 were 11% and 23% respectively of the maximum authorized daily amount. In other years, water taking for irrigation has been even less than in 1971. The demand is directly related to precipitation during the latter stages of plant growth. In drought periods, the demand would undoubtedly be higher than in the season presented here. The impact on streamflow could be severe in an extended drought condition, as peak irrigation demand tends to occur at times of low streamflow.

Water Supply Interference

One basic objective of the Thames River study is the resolution of water-use conflicts that occur in the basin due to various uses that man makes of surface and ground waters. In this section, one aspect of water-use conflict, water supply interference, is described and evaluated, and conclusions are drawn as to the nature of this problem in the Thames River basin.

Problems which arise when a taking of water interferes with other uses of water are investigated by the Ministry of the Environment. A water-taking permit program, which came into effect in 1961, established legislative authority for control of major water takings in the Province, and thus a means of resolving water-supply interference problems that can arise from such water use. A study was made of information on file

concerning the number and type of interference problems which have been investigated in the Thames River basin between 1961 and 1973.

As can be seen from the Table 9, interference with well supplies has been the major type of complaint that has been received. One hundred and eleven such complaints have been investigated, including 79 which arose out of ground-water taking for municipal supply by the City of London prior to the completion of the pipeline from Lake Huron in 1967. As well, there have been 14 expressions of concern that withdrawal of ground-water might interfere with other uses of water. Of the complaints investigated, it was concluded that 45 represented valid cases of serious water supply interference, and recommendations were made for the restoration or replacement of the affected water supply.

Incidents of interference with surface water supplies, or concern that a surface water use represented a threat to other uses of the stream, led to ten investigations. In six of these investigations it was concluded that serious water-supply interference had occurred.

From a study of complaints of water supply interference in the Thames River basin, the following conclusions can be drawn:

1. The use of water for urban supply, and water use associated with urban development, is the primary factor leading to water-supply interference. Widespread interference occurred in the White Oaks well field prior to construction of the Lake Huron pipeline and the cessation of ground-water takings by the City of London. The impact of road construction, industrial activity, and mineral extraction and processing has been a significant part of the problem. Both temporary and prolonged interference with shallow wells can occur due to the installation of watermains, sewers, and drainage ditches.

2. The storage of surface water for private recreational purposes is often in conflict with other use of the water.

3. Shallow well supplies are highly vulnerable to impact from surrounding development, in terms of both water supply and ground-water quality.

4. Gravel pit and quarry operations are frequently perceived as a cause of interference or potential interference with local water supplies due to dewatering or to the interception of ground-water aquifers, even though actual water-use conflicts attributable to this activity in the basin have been relatively infrequent.

5. The taking of water for irrigation can cause serious localized interference problems, particularly through the reduction of streamflow in smaller streams in the watershed.

TABLE 1: Average and Maximum Daily Water Use by Municipalities Importing Water to the Basin - 1971

Municipality	Average Daily Consumption (MGD)	Maximum Daily Consumption (MGD)	Average Daily Consumption Per Capita (GPD/Person)
London	22.70	35.60	103.65
Chatham	4.45	9.25	126.42
Tilbury	0.63	1.33	161.54
Blenheim	0.33	0.83	97.75
West Lorne	0.21		70.79

TABLE 2: Average and Maximum Daily Water Use by Major Municipalities Using Ground Water Sources Within the Thames River Basin - 1971

Municipality	Average Daily Consumption (MGD)	Maximum Daily Consumption (MGD)	Average Daily Consumption Per Capita (GPD/Person)
Woodstock	3.84	6.90	147.69
Stratford	2.70	4.30	115.29
St. Marys	0.78		151.29
Ingersoll	1.10		137.50
Tavistock	0.13	0.20	92.86

TABLE 3: Municipal and Communal Water Systems in the Thames River Basin - Capacity and Consumption Statistics

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
ELGIN COUNTY							
Aldborough Twp							
West Lorne (including Dutton and Rodney)	Lake Erie	1,008,000	529,000	205,000	1,071	2,896	Serviced population in West Lorne -1,030
Essex County							
Comber	Lake St. Clair			24,000 av 49,000 max		640	
KENT COUNTY							
Cities							
Chatham	Thames River		Old Plant Av. 3,760,000	Av. Daily 1971 4,450,000 Max. Daily 1971 9,250,000	9,857	35,200	
Chatham	New Source Lake Erie	New Intake 22 M	New Plant 10 M				Provincial project-36" dia. pipeline to Chatham. Service commenced June 1973

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
Towns							
Blenheim	Old System 4 Wells Knight Hough #1,2,3	2.9 M		Av. Daily 260,000	1,300	3,417	Old system no longer used
Blenheim	New System Lake Erie	16" intake	1.0 M	Av. Daily Taking 1971: 0.344 M Max. Daily Taking 1971: 0.832 M	1,300	3,417 in Blenheim 4,000 in total system	Provincial Project - Blenheim Region Water Supply
Ridgetown	Wells	0.92 M		Av. Daily 0.233 M Max. Daily 0.38 M		2,900	3 Well Fields - #1 Pumphouse Erie St.(7 wells) #2 NYC Tracks(2 wells) #3 Hitchcock Property (1 well)
Tilbury	L. St. Clair		1.44 M	Av. Daily in 1971 0.63 M Max. Daily in 1971 1.33 M		3,900	
Bothwell	Well	6,000		1,000	7	20	Private system - 1 well

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
KENT CTY (continued)							
Villages							
Highgate	Pure Water Supply System - 2 wells	10,800		8,750	50	180	
Highgate	Smith System			2,275*	13	45	
Highgate	Grant System			1,925*	11	35	
Highgate	Tape Water	7,200		2,800 *	16	55	
				15,750 Total *Estimated Consumption		315	
Thamesville	Cornwall Cr. (fire system) Domestic service - individual wells						No domestic service
Townships							
Dover Twp							
Thamesville Subdivision	Well #1	7,200		Av. Daily Taking:4,500	18 max	63	
	Well #2	7,200		Max. Daily Taking:9,000			

* Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
KENT CTY (continued)							
Burke Subdivision	Well			875	5	18	
Charing Cross	Well			2,100	12	42	
Harwich Twp							
Marlborough (Colony Subdiv.)	1.Drilled Well 340'	7,200		1,925	11	37	Planned expansion to 19 units 70 pop.
	2.Dug Well-35'	4,800					
Orford Twp							
Duart	Drilled Well 152'	12,960		2,975	17	59	MacPherson system
Muirkirk	Neith System Well	8,640		875	5	18	Well #3 - 190' deep
Muirkirk	Smyth-Neely Well			1,575*	9	32	Well #2 -190'deep
Muirkirk	East Muirkirk	6,240		1,050 *	6	21	Well #1
	Water Supply			3,500	20	71	Total Muirkirk

* Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average	Service		Comments
		Source (gpd)	Plant (gpd)	Consumption (gpd)	Units	Population	
MIDDLESEX COUNTY							
City of London	Lake Huron	100 M	36 M	22.7M (av.)	48,769	219,000	Commenced service July, 1967
London PUC - Standby	Wells (Standby)			35.6 (max)			Consumption data at source
	-Throwbridge Well Field-3 wells	1.5 M					
	-White Oaks Well Field-5 wells	1.3 M					
	-Fanshawe Wells(6)	5.0 M					
	-North End Wells (10)	2.0 M					
	-Gardiner(3)	3.0 M					
	-First St. Well	0.2 M					
	-East End	2.5 M					
	-Crumlin Rock Well	0.35 M					
	-Ridout Wells(5)	1.0 M					
	-Foster Wells(4)	1.0 M					
	-Medway Well	0.28 M					
	-Crossman Well	0.75 M					
	-Riverside Dr. Wells(2)	0.75 M					
	-Hyde Pk Well	1.0 M					
	-Springbank Well	4.0 M					
	-Byron Well	0.6 M					
	-Lambeth Wells(3)	5.5 M					
	-Komoka Wells(4)	4.03 M					
	-Adair Well						
	-Andrea Well						
	-Uptigrove Well						
London Airport	3 Wells			24,600			100,000 gallons storage

TABLE 3 Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
MIDDLESEX CTY (continued)							
Villages							
Glencoe	7 Wells					1,276	
	Old Well Field (4)	55,000		38,510			
	South Well Field(3)	37,000		27,140			
		92,000		65,650			Glencoe Totals
Wardsville	6 communal systems			6,100 *		122	Nesbitt-5 dwellings, 2 commercial,1 institutional Gardner - 10-15 units Humphrey - 8-10 units Purcell - 4 units Purdy - unknown
Townships							
Biddulph Twp							
Granton	3 communal wells and individual wells			4,350 *		87	Forester's - 3 units + apt. Kloss - 7 units Granton Feed - 5 units
Caradoc Twp							
Caradoc Indian Reservation	Spring			3,500	20	70	

* Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
MIDDLESEX CTY (continued)							
Delaware Twp							
P.V. of Delaware	Well			2,750*	14	55	Tunks water system (one shallow well)
Dorchester Twp							
Brookdale Water System	Well	6 gpm		unknown		unknown	Well is 60' deep
Dorchester Mobile Homes	2 Wells	14 gpm		8,400*	48	168	20,000 gallons storage
P.V. of Dorchester	1 Well	270,000		88,950	514	1200	90' drilled well
Don-Mar Water System	1 Well			18,200	104	364	
Lobo Twp							
Komoka							Application for provincial works May 1972
W. Nissouri Twp							
Elliot Water System (Thorndale)	2 Wells	5 gpm 10 gpm		2,100 *	12	42	Well depths 86',107'
Hogg Water System	1 Well	20,000		3,675*	21	73	Well 113'deep

* Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (9pd)	Service		Comments
		Source (qpd)	Plant (gpd)		Units	Population	
MIDDLESEX CTY (continued)							
Westminster Twp							
Lambeth	Well #1	19,200				2700	
	#2	18,800		54,000 *			
	#3	43,200					
	#4	83,900					
OXFORD COUNTY							
Cities							
Woodstock	5 overburden wells						Well capacities:
	2 bedrock wells	10.6 M	8.85 M	3.84 M(av.) 6.9 M(max.)		26,000	Well #1-1.44 Mgpd #2- 0.58 Mgpd #3- 1.58 Mgpd #4- not used #5- 0.58 not used #6- 0.86 standby #7- 0.86 standby #8- 1.44 standby
Towns							
Ingersoll	5 Bedrock wells	3.5 M		1.1 M	2612	8,000	Well #5 not pumped Well #6 - 450' deep Emergency supply - spring and collection gallery

*Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
OXFORD CTY (continued)							
Ingersoll-Webb McWilliam Subdiv.	Well	72,000			4	14	
Ingersoll-Subdiv. (lot 21,con.1)	Well	23,000		3,000	16	56	
Villages							
Loweville Subdiv.	3 Wells	79,200		7,000	40	140	Well #1-7,200 gpd
(Beachville)		Total					#2-17,280 gpd
							#3-57,600 gpd
Embro	2 Wells	170,000		215,000		692	
Tavistock	2 Wells	150,000 ea.		130,000 av.		1,400	'Park' well standby
				200,000 max.			'Reservoir' well production well
Townships							
Dereham Twp							
Mt. Elgin system	2 wells	20,000		4,500		80	
		23,000					
Verschoyle system	I well			1,500 *		30	Dug well
R. Shaftoe system	I well			1,250*		25	

* Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average	Service		Comments
		Source (gpd)	Plant (gpd)	Consumption (gpd)	Units	Population	
OXFORD CTY (continued)							
Nissouri East Twp							
Lakeside-Vining system	I Well	2,400		1,500 *		30	
Lakeside-Mansor system	I Well			1,000 *		20	
Thamesford	2 Wells	250,000		55,000 *		1,100	Thamesford Water Supply Co.
Thamesford	2 Wells	350 gpm Total		24,500 *	140	400	Hossack system
Thamesford	I Well	500 gpm		1,000 *	7	20	Alderson system
Oxford West Twp							
Dorland Ratepayers system	2 Wells	50 gpm		8,750*		175	Lot 2, B.F.,W. Oxford
Smith system	1 Well			1,500*	7	30	Lot 16, Con.2, W. Oxford
Zorra East Twp							
Chambers system (Hickson)	Well			2,000 *	14	40	Former Borden Co. well

* Estimated Consumption

TABLE 3: Continued

Municipality	Source	Capacity		Average Consumption (gpd)	Service		Comments
		Source (gpd)	Plant (gpd)		Units	Population	
OXFORD CTY (continued)							
King System (Hickson)	Well	67,680		4,500 *	30	105	
Innerkip Homesites	2 Wells			7,000 *	40	139	E. Zorra Twp. well Lot 10, Con.17
Innerkip Water Supply Co.	I Well	50 gpm		7,500*		150	
PERTH COUNTY							
City of Stratford	4 Wells	1.44 M	5.6 M	2.7 ay.	6,562	23,420	Well #1
		0.51 M		4.3 max.			Well #5
		1.08 M					Well #6
		1.08 M					Well #7
T. of St. Marys	3 Wells	1.29 M		727,000	1,480	4,800	Well #1
		2.3 M					Well #2
		1.14 M					Well #3
T. of Mitchell	3 Wells	720,000					Well #1
		432,000	1.92 M	500,000 ay.	1,027	2,500	Well #2
		720,000		700,000 max.			Well #3-standby

*Estimated Consumption

TABLE 4: Municipal and Self-Serviced Water Supply Statistics by Municipality

County	Municipality	Classification	Population	Municipally Serviced Population	Self-Serviced Population	Self-Serviced Demand (gpd)
Elgin	Aldborough	Township	1,512	400	1,112	55,600
	Dunwich	Township	1,062		1,062	53,100
	Southwold	Township	865		865	43,250
Essex	(North)Tilbury	Township	1,456		1,456	72,800
	(West)Tilbury	Township	1,086	192	894	44,700
Huron	Usborne	Township	282		282	14,100
Kent	Chatham	City	33,671	33,671		
	Blenheim	Town	3,431	3,417	14	700
	Bothwell	Town	813	20	793	39,650
	Ridgetown	Town	2,826	2,826		
	Tilbury	Town	3,613	3,613		
	Highgate	Village	420	315	105	5,250
	Thamesville	Village	1,017		1,017	50,850
	Camden	Township	417		417	20,850
	Chatham	Township	928	400	528	26,400
	Dover	Township	1,159	123	1,036	51,800
	Harwich	Township	3,973	37	3,936	196,800
	Howard	Township	1,929	74	1,855	92,750
	Orford	Township	1,107	130	977	48,850
	Raleigh	Township	4,891		4,891	244,550
	Romney	Township	661		661	33,050
	(East) Tilbury	Township	2,742	287	2,455	122,750
	Zone	Township	584		584	29,200

TABLE 4: continued

County	Municipality	Classification	Population	Municipally Serviced Population	Self-Serviced Population	Self-Serviced Demand (gpd)
Middlesex	London	City	219,921	219,000	921	46,050
	Glencoe	Town	1,392	1,276	116	5,800
	wardsville	Town	330	122	208	10,400
	Biddulph	Township	663	87	576	28,800
	Caradoc	Township	1,630	70	1,560	78,000
	Delaware	Township	1,546	55	1,491	74,550
	(North)Dorchester	Township	5,384	1,732	3,652	182,600
	Ekfrid	Township	1,374		1,374	68,700
	Lobo	Township	755		755	37,750
	London	Township	4,935		4,935	246,750
	Moss	Township	608		608	30,400
	(West)Nissouri	Township	3,141	115	3,026	151,300
	Westminster	Township	3,958	2,700	1,258	62,900
Oxford	Woodstock	City	25,081	25,081		
	Ingersoll	Town	7,755	7,755		
	Beachville	Village	991	140	851	42,550
	Embro	Village	692	692		
	Tavistock	Village	1,356	1,356		
	Blandford	Township	723	419	304	15,200
	Dereham	Township	2,261	135	2,126	106,300
	(East) Nissouri	Township	3,350	810	2,540	127,000
	Oxford East	Township	936	500	436	21,800
	Oxford West	Township	2,954	420	2,534	126,700
	Oxford North	Township	1,767	860	907	45,350
	Zorra East	Township	3,980	478	3,502	175,100
	Zorra West	Township	2,216		2,216	110,800

TABLE 4: continued

County	Municipality	Classification	Population	Municipally Serviced Population	Self-Serviced Population	Self-Serviced Demand (gpd)
Perth	Stratford	City	23,380	23,380		
	Mitchell	Town	2,553	2,500	53	2,650
	St. Marys	Town	4,495	4,495		
	Blanshard	Township	1,856	305	1,551	77,550
	Downie	Township	2,475		2,475	123,750
	(North) Easthope	Township	984		984	49,200
	(South) Easthope	Township	1,498	40	1,458	72,900
	Ellice	Township	2,393		2,393	119,650
	Fullarton	Township	1,556		1,556	77,800
	Logan	Township	1,807		1,807	90,350
TOTALS			413,141	340,028	73,113	3,655,650
				413,141		

TABLE 5: WATER USE DATA FOR SELF-SERVICED INDUSTRIES

INDUSTRY	Location & Map Ref	Category	Water Use	Source Of Water	Water Taking (gpd)	Av. Days Taking Per Yr.	Comments
Canada Cement Lafarge Ltd	Lot 3 Con 3 West Zorra Twp	Extractive Lime	Dewatering Processing Cooling	Quarry Reservoir	1,440,000 145,000 1,140,000	365	- Water from quarry cycled through plant 300,000 gal evaporation,1,140,000 cooling water discharge to tributary of Middle Thames R.
Cyanamid of Canada	Lot 16 Con 2 Lot 16 Con 3 N Oxford Twp	Extractive Lime	Dewatering Processing	Quarry Reservoir	5,184,000 145,000	365	- Discharged to Thames ⅓ ground water ⅔ surface water from res for dust control
			Cooling	Well	216,000		cooling water discharged to Thames
Domtar Chemical Lime Division	Lot 18 Con 2 N Oxford Twp	Extractive Lime	Processing	Thames R	1,195,200 (average) 1,771,200 (maximum)	365	Recirculated, settled. Spent water discharged to Thames
St. Marys Cement Co Ltd	Town of St. Marys	Extractive Lime	Dewatering Processing Cooling	Quarry Old Quarry & Well	1,440,000 135,000 122,000	365	Discharged to Thames Cooling water discharged to Thames
Steel Co of Canada	Ingersoll	Extractive Flux Stone	Dewatering	Quarry	1,750,000	365	500,000 gpd average discharge to Thames
Huron Gravel	Lot 16 Con 13 Harwich Twp	Extractive Gravel	Cooling Gravel Washing	Reservoir Pond in Pit	144,000 936,000	180	Recirculation makeup requirement - 86,000 gpd. No dewatering

TABLE 5: CONTINUED

INDUSTRY	Location & Map Ref	Category	Water Use	Source Of Water	Water Taking (gpd)	Av. Days Taking Per Yr.	Comments
Riverside Construction	Lot 47 Con A Westminster	Extractive Gravel	Gravel Washing	Thames R	36,000	180	- Khins Pit 7,200 gpd makeup
	Lot 5 Con 3 London Twp	Extractive Gravel	Gravel Washing	Pond in Pit	900,000	180	Legg Pit 12,600 gpd makeup
Riverside Aggregate Ltd	City of London	Extractive processing	Asphalt Products	Thames	10,500	180	4,000 gpd makeup
Matthews Group Ltd	Lot 3 Con 5 London Twp	Extractive Gravel	Gravel Wash	Well	90,000	180	Recirculated 4,500 gpd. makeup requirement
		Concrete	Concrete Plant	Well	23,000 (max)	240	No recirculation - consumption 5,000 to 23,000 gpd
J. F. Marshall & Sons Ltd	Lot 4 Con 6 London Twp	Extractive Gravel	Gravel Washing	Pond in Pit	870,000	200	- Recirculation makeup requirement 43,500 gpd
	Lot 4 Con 4 London Twp (10)	Extractive Gravel	Washing (same plant as above)	Pond in Pit	870,000	200	- Recirculation makeup 43,500 gpd
Walloy Const Ltd	Lot 13 Con 15 London Twp	Extractive Gravel	Dewatering	Pit	8,640,000 (max)	occasional use	- use depends on stage of water in pit
Oxford Sand & Gravel	Lot 18 Con 3 East Oxford Twp.(12)	Extractive Industry	Gravel Washing	Cedar Creek	360,000 Recirculated	250	- makeup requirement 18,000 gpd.

TABLE 5: CONTINUED

INDUSTRY	Location & Map Ref	Category	Water Use	Source Of Water	Water Taking (gpd)	Av. Days Taking Per Yr.	Comments
Yundt Bros Construction	Lot 30 SB Con Blanshard Twp (13)	Extractive	Gravel Washing	Pond or N. Thames	180,00D	30	- Recirculation make-up est. 9,000 gpd
Canada Cities Service Petro-leum Corp	Aldborough Twp (14)	Petroleum	Secondary Recovery	Wells	352,800 (max)	365 days	
International Utilities and Petroleum	Dunwich Twp (15)	Petroleum	Secondary Recovery	Thames R	100,000 (max)	365 days	
Rayrock Mines Ltd	Aldborough Twp(16)	Petroleum	Secondary Recovery	Well	87,500 (max)	365 days	
N. J. Spivack Ltd.	Lot 76 Con W Westminster Twp (17)	Extractive	Gravel Washing	Well	180,000	280	- Using London PUC well (Lambeth #3) - Discharge to Dingman Creek
Chicago Vitreous Ltd.	Town of Ingersoll(18)	Manufacturing	Cooling Water	Thames R.	576,000	250	- Cooling water discharged to Thames
Huron Industrial Park	Kirkton (Blanshard Twp)(19)	Manufacturing	Cooling Water (Primarily)	Wells	380,000 av	365	- Supplies various industries
F.A.G. Bearing	Stratford (20)	Manufacturing	Cooling	Well	127,000	250	- Discharged to storm sewer
Somerville Industries	W. Nissouri Twp(21)	Manufacturing	Cooling 15% Process 30% Sanitary 55%	Well	75,000	240	

TABLE 5: CONTINUED

INDUSTRY	Location & Map Ref	Category	Water Use	Source Of Water	Water Taking (gpd)	Av. Days Taking Per Year	Comments
Canada Duphar Chemicals	London (22))	Manufacturing	Cooling	Well	25,000	unknown	
Fischer Bearings	Stratford (S. Easthope Twp)(23)	Manufacturing	Cooling Air Cond	Well	20,000	240	-Discharged to storm sewer
Campbell Soup Ltd	Lot 18 Con 14 Blanshard Twp(24)	Food Process	Process 50% Cooling 50%	Well	850,000	365	-expansion planned freezer plant, eviscerating
Borden Co	Ingersoll	Food Process	Cooling	Well	300,000 (max)	240	
Beatty Farms Ltd	Lot 22 Con 1 N Oxford Twp	Food Process	Processing Cooling 50%	Well	300,000	365	- poultry processing
Cold Springs Farm Ltd	Lot 22 Con 1 N Oxford	Food Process	Cooling 75% Processing	Well	130,000	365	- poultry processing
Produce Supply Co. Ltd.	W Oxford Twp(28)	Food Process	Process 85% Cooling15%	Well	288,000 (max)	365	
Produce Supply Co. Ltd.	Lambeth (29)	Food Process	Cooling	6 wells	60,000	unknown	- vegetable freezing plant
Coleman Packing Co. Ltd.	City of London (30)	Food Process	Sanitary 80% Cooling 15% Processing 5%	Well	79,500	240	
Oxford Fruit Co-op	Woodstock (31)	Food Process	Processing 50% Cooling 50%	Well	14,400	unknown	

TABLE 6: Livestock Water Demand in the Thames River Basin

MUNICIPALITY			# of Cattle	Estimated Water Demand Cattle	# of Pigs	Estimated Water Demand Pigs	# of Sheep	Estimated Water Demand Sheep	# of Horses	Estimated Water Demand Horses	# of Poultry	Estimated Water Demand Poultry	Total Number of Livestock	Total Estimated Water Demand All Livestock
County	Township	% in Basin		GPD		GPD		GPD		GPD		GPD		GPD
Elgin	Aldborough	25	1695	33900	2850	8550	142	213	49	490	31000	1550	35736	44703
	Dunwich	50	5400	108000	9252	27756	697	1046	175	1750	43659	2183	59183	140735
	Southwold	25	2740	54800	2475	7425	271	407	70	700	21400	1070	26956	64402
Essex	Tilbury North	75	480	9600	635	1905	-	-	21	210	16840	842	17976	12557
	Tilbury West	80	505	10100	1340	4020	33	50	42	420	3220	161	5140	14751
Huron	Usborn	20	DATA NOT AVAILABLE											
Kent	Camden	10	296	5920	1809	5427	80	120	9	90	4311	216	6505	11773
	Chatham	10	1009	20180	1013	3039	15	23	19	190	20914	1046	22970	24478
	Dover	10	378	7560	121	363	0	0	2	20	252	13	753	7956
	Harwich	65	6335	126700	19390	58170	463	695	157	1570	15622	781	41967	187916
	Howard	80	4030	80600	15700	47100	150	225	126	1260	215000	10750	235006	139935
	Orford	65	3460	69200	7350	22050	630	945	66	660	62000	3100	73506	95955
	Raleigh	95	3498	69960	7471	22413	256	384	86	860	8497	425	19808	94042
	Romney	50	488	9760	707	2121	78	117	89	890	1103	55	2465	12943
	Tilbury East	98	965	19300	1935	5805	94	141	27	270	22800	1140	25821	26656
	Zone	70	DATA NOT AVAILABLE											
Middlesex	Biddulph	50	5853	117060	4844	14532	512	768	138	1380	3365	168	14712	133908
	Caradoc	45	4270	85400	3100	9300	184	276	154	1540	110000	5500	117708	102016
	Delaware	75	3140	62800	2450	7350	41	62	84	840	7100	355	12815	71407
	Dorchester N	90	9280	185600	13800	41400	169	254	290	2900	71800	3590	95339	233744
	Ekfrid	85	9100	182000	8700	26100	567	851	159	1590	139000	6950	157526	217491
	Lobo	25	20130	41600	900	2700	190	285	32	320	33600	1680	36802	46585
	London	100	16511	330220	23170	69510	495	743	713	7130	287764	14388	328653	421991
	Mosa	33	1960	39200	2100	6300	338	507	91	910	2220	111	6709	47028
	Nissouri W	100	12145	242900	14673	44019	421	632	197	1970	109626	5481	137062	295002
	Westminster	65	5920	118400	4430	13290	392	588	240	2400	32200	1610	43182	136288

TABLE 6: Continued

MUNICIPALITY			# of Cattle	Estimated Water Demand Cattle	# of Pigs	Estimated Water Demand Pigs	# of Sheep	Estimated Water Demand Sheep	# of Horses	Estimated Water Demand Horses	# of Poultry	Estimated Water Demand Poultry	Total Number of Livestock	Total Estimated Water Demand All Livestock
County	Township	% in Basin		GPD		GPD		GPD		GPD		GPD		GPD
Oxford	Blandford	50	3076	61520	8146	24438	41	62	50	500	2090	105	13403	86625
	Dereham	50	7953	159060	14194	42582	62	93	176	1760	20577	1029	42962	204524
	Nissouri E	100	12390	247800	13921	41763	19i	287	260	2600	67403	3370	94165	295820
	Oxford E	50	4365	87300	4904	14712	24	36	45	450	9029	451	18367	102949
	Oxford N	100	5841	116820	6908	20724	654	981	79	790	30512	1526	43994	140841
	Oxford W	100	7312	146240	7418	22254	45	68	93	930	42336	2117	57204	171609
	Zorra E	100	21628	432560	27394	82182	114	171	290	2900	141679	7084	191105	524897
	Zorra W.	100	17754	355080	14102	42306	595	893	199	1990	121761	6088	154411	406357
Perth	Blanshard	98	10720	214400	13920	41760	323	485	200	2000	150000	7500	175163	266145
	Downie	100	13424	268480	15058	45174	342	513	162	1620	121476	6074	150462	321861
	Easthope N	50	6743	134860	11220	33660	192	288	102	1020	46317	2316	64574	172144
	Easthope S	95	6750	135000	11150	33450	8	12	54	540	109000	5450	126962	174452
	Ellice	90	12350	247000	24400	73200	48	72	152	1520	89000	4450	125950	326242
	Fullarton	100	11102	222040	23391	70173	289	434	101	1010	37000	1850	71883	295507
	Logan	75	13620	272400	19250	57750	115	172	95	950	243700	12185	276780	343457
	TOTALS		256566	5131320	365591	1096773	9261	13899	5094	50940	2495173	124760	3131685	6417692

TABLE 7: IRRIGATION TAKINGS AUTHORIZED BY PERMIT

Minor Basin	Source	Crop	Maximum Permitted Withdrawal (gpm)	Maximum Permitted Withdrawal (gpd)	Ground Water Maximum Cumulated Rate (gpm)	Ground Water Maximum Cumulated Amount (gpd)	Surface Water Maximum Cumulated Rate (gpm)	Surface Water Maximum Cumulated Amount (gpd)
Thames R. and Unnamed Tributaries	Surface Water							
	Thames R	tobacco	419	168,000				
	"	"	833	500,000				
	"	"	314	377,000				
	"	"	300	324,000				
	"	"	628	708,700				
	"	"	440	396,000				
	"		390	283,800				
	"	golf course	250	90,000				
	"	tobacco	498	415,000			4072	3,262,500
	Tributary	tobacco	360	129,600			360	129,600
	Ground Water							
	Well	tobacco	333	480,000				
	Well	"	380	339,000				
	Dugout	"	486	466,600				
	Dugout		417	425,000				
	Dugout	"	600	360,000				
	Dugout	"	375	626,600				
	Dugout	"	500	480,000				
	Well	golf course	677	280,000				
	Dugout	tobacco	250	148,300				
	Dugout	tobacco	612	367,200	4630	3,972,700		

TABLE 7: CONTINUED

Minor Basin	Source	Crop	Maximum Permitted Withdrawal (gpm)	Maximum Permitted Withdrawal (gpd)	Ground Water Maximum Cumulated Rate (gpm)	Ground Water Maximum Cumulated Amount (gpd)	Surface Water Maximum Cumulated Rate (gpm)	Surface Water Maximum Cumulated Amount (gpd)
Thames R and Unnamed Tributaries	Surface Water							
	Thames R	tobacco	498	415,000				
	"	tobacco	458	330,000				
	"	mkt. garden	710	766,800				
	"	"	450	270,000				
	"	tobacco	600	360,000				
	"	tobacco	314	225,000				
	"	tobacco	400	480,000				
	"	tobacco	334	208,300				
	"	golf course	626	450,000				
	"	tobacco	200	504,000			4590	4,009,100
	Thames Trib	golf course	494	100,000				
	"	mkt. garden	300	216,000				
	"	tobacco	324	194,400				
	"	tobacco	292	180,000				
	"	tobacco	199	216,000			491	906,400
	Ground Water							
	Dugout	mkt. garden	216	155,500				
	Dugout	mkt. garden	540	583,200				
	Dugout	mkt. garden	387	418,000				
	Dugout	tobacco	500	540,000				
	Dugout	tobacco	192	135,000				
	Dugout	tobacco	500	360,000	2335	2,191,700		

TABLE 7: CONTINUED

Minor Basin	Source	Crop	Maximum Permitted Withdrawal (gpm)	Maximum Permitted Withdrawal (gpd)	Ground Water		Surface Water	
					Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)	Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)
Lockhart Drain	Surface Water							
	Drain	tobacco	360	259,200				
	Drain	tobacco	480	288,000				
	Drain	tobacco	350	315,000			1190	862,200
	Ground Water							
	Dugout	tobacco	417	300,000				
	Dugout	tobacco	270	194,800				
	Dugout	tobacco	458	368,800	1145	863,600		
Cedar Creek	Surface Water							
	Cedar Creek	mkt. garden	251	100,000				
	Cedar Creek	mkt. garden	160	86,400			411	186,400
Ingersoll Cr	Surface Water							
	Drain	tobacco	312	300,000			312	300,000
	Ground Water							
	Dugout Pond	golf course	300	108,000				
	Dugout Pond	golf course	40	57,600	340	165,600		
Reynolds Cr	Ground Water							
	Dugout Pond	mkt. garden	183	132,000	183	132,000		
Dorchester Cr	Surface Water							
	Dorchester Cr	tobacco	440	167,700				
	" "	tobacco	261	375,800			971	737,900
	" "	tobacco	270	194,400				

TABLE 7: CONTINUED

Minor Basin	Source	Crop	Maximum Withdrawal (gpm)	Maximum Permitted Withdrawal (gpd)	Ground Water		Surface Water	
					Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)	Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)
Dorchester Cr	Ground Water							
	Dugout Pond	tobacco	270	194,400				
	Dugout Pond	tobacco	372	310,800				
	Dugout Pond	mkt. garden	324	291,600				
	Dugout Pond	tobacco	342	222,900	1308	1,019,700		
North Thames R.	Surface Water							
	N. Thames R	nursery stock	117	40,000				
	Medway R	golf course	239	338,400				
	Avon R	golf course	375	180,000			731	558,400
	Ground Water							
	Well	mkt. garden	300	432,000	300	432,000		
Dingman Creek	Surface Water							
	Creek	mkt. garden	200	144,000				
	"	mkt. garden	434	250,400				
	"	nursery stock	335	200,000				
	Tributary	mkt. garden	125	13,300				
	"	mkt. garden	398	280,200				
	"	mkt. garden	448	376,300			1940	1,264,200
Komoka Drain	Surface Water							
	Komoka Drain	mkt. garden	190	114,000				
	" "	tobacco	340	400,000			530	411,400
	Ground Water							
	Dugout	tobacco	210	126,500				
	"	tobacco	500	540,000				
	"	tobacco	312	206,600				
	"	tobacco	592	494,160				
	"	tobacco	221	158,400	1835	1,525,660		

TABLE 7: CONTINUED

Minor Basin	Source	Crop	Permitted Withdrawal (gpm)	Permitted Withdrawal (gpd)	Ground Water Cumulated Rate (gpm)	Ground Water Cumulated Amount (gpd)	Surface Water Cumulated Rate (gpm)	Surface Water Cumulated Amount (gpd)
Mt. Brydges Drain	Surface Water							
	Drain	tobacco	250	120,800				
	"	tobacco	242	145,000				
	"	mkt. garden	540	388,800				
	"	mkt. garden	366	220,000				
	"	mkt. garden	377	456,000			1775	1,330,600
Mill Creek	Surface Water							
	Creek	mkt. garden	250	225,000				
	"	"	40	57,600				
	"	"	390	327,600				
	"	"	314	153,000				
	"	"	325	468,000				
	"	"	565	814,200				
	"	"	314	252,000				
	"	"	375	270,000				
	"	"	396	166,300				
	"	tobacco	350	210,000				
	"	"	333	200,000				
	"	"	282	240,000				
		"	429	264,200			4363	3,647,900
	Ground Water							
	Dugout	tobacco	289	208,100				
	"	"	300	268,300				
	"	"	134	64,000				
	"	mkt. garden	700	1,008,000				
	"	mkt. garden	564	310,000	1987	1,858,400		

TABLE 7: CONTINUED

Minor Basin	Source	Crop	Maximum Permitted Withdrawal (gpm)	Maximum Permitted Withdrawal (gpd)	Ground Water		Surface Water	
					Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)	Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (Gpd)
Sharon Creek	Surface Water							
	Creek	mkt. garden	420	252,000			420	252,000
Hogg Creek	Surface Water							
	Creek	mkt. garden	160	155,500			160	155,500
	Ground Water							
	Dugout	tobacco	228	82,100				
	Dugout	tobacco	375	270,000	603	352,100		
Big Munday Cr	Surface Water							
	Creek	tobacco	622	320,800				
	Creek	tobacco	570	350,000			1192	670,800
Newbiggen Cr	Ground Water							
	Well	mkt. garden	20	57,600	20	57,600		
Battle Hill Cr	Ground Water							
	Dugout	tobacco	470	282,000	470	282,000		
Big Bend Cr	Surface Water							
	Creek	mkt. garden	260	156,000			260	156,000
Thamesville Cr	Surface Water							
	Creek	tobacco	83	59,800				
	"	mkt. garden	550	264,000				
	"	mkt. garden	315	94,500				
	"	tobacco	233	139,800				
	"	tobacco	308	185,000				
	"	tobacco	500	540,000			1989	1,283,100

TABLE 7: CONTINUED

Minor Basin	Source	Crop	Maximum Permitted Withdrawal (gpm)	Maximum Permitted Withdrawal (gpd)	Ground Water		Surface Water	
					Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)	Maximum Cumulated Rate (gpm)	Maximum Cumulated Amount (gpd)
Thamesville Cr	Ground Water							
	Dugout	tobacco	333	160,000				
	"	tobacco	531	385,000				
	"	mkt. garden	418	401,300				
Cruikshank Dr	Surface Water	mkt. garden	158	58,600	1440	1,004,900		
	Drain	tobacco	333	160,000			333	160,000
McGregor Cr	Surface Water							
	Creek	mkt. garden	252	453,000			252	453,000
		THAMES BASIN TOTALS			16,596	13,857,960	26,342	20,737,000

TABLE 8: Mill Creek And Dingman Creek Watersheds - Reported Withdrawal From Streams For Irrigation During 1971

Stream	Crop	Number of Irrigators	Irrigators reporting use	Total Withdrawal 1971	Earliest Irrigation	Latest Irrigation	Number of Irrigation Days	Average amount of water per day	Average Total Rate of Withdrawal
				gallons				gallons	cfs
Mill Creek (near Mt. Brydges)	Tobacco	14	9	10,328,100	July 5	Aug.19	36	286,892	1.82
Dingman Creek	Market Garden	4	2	2,844,660	May 19	Aug.19	24	118,528	0.46
	Sod	1	1	105,480	June 30	Aug.19	18	5,860	
	Golf Course	2	2*	4,144,692	May 12	Sept. 20	54	145,000	0.64
		1	1						
	Tobacco	_	_	1,296,000	Aug. 5	Aug.14	9	144,000	0.89
	Dingman Cr. Total	8	6	8,390,832		Dingman Cr. Total		413,388	1.99

* Estimate was made of one course's water use as it was exempt from Permit. Estimate based on interview with company official.

TABLE 9: Complaints Of Interference With Water Supplies- Thames River Basin - 1961-1973

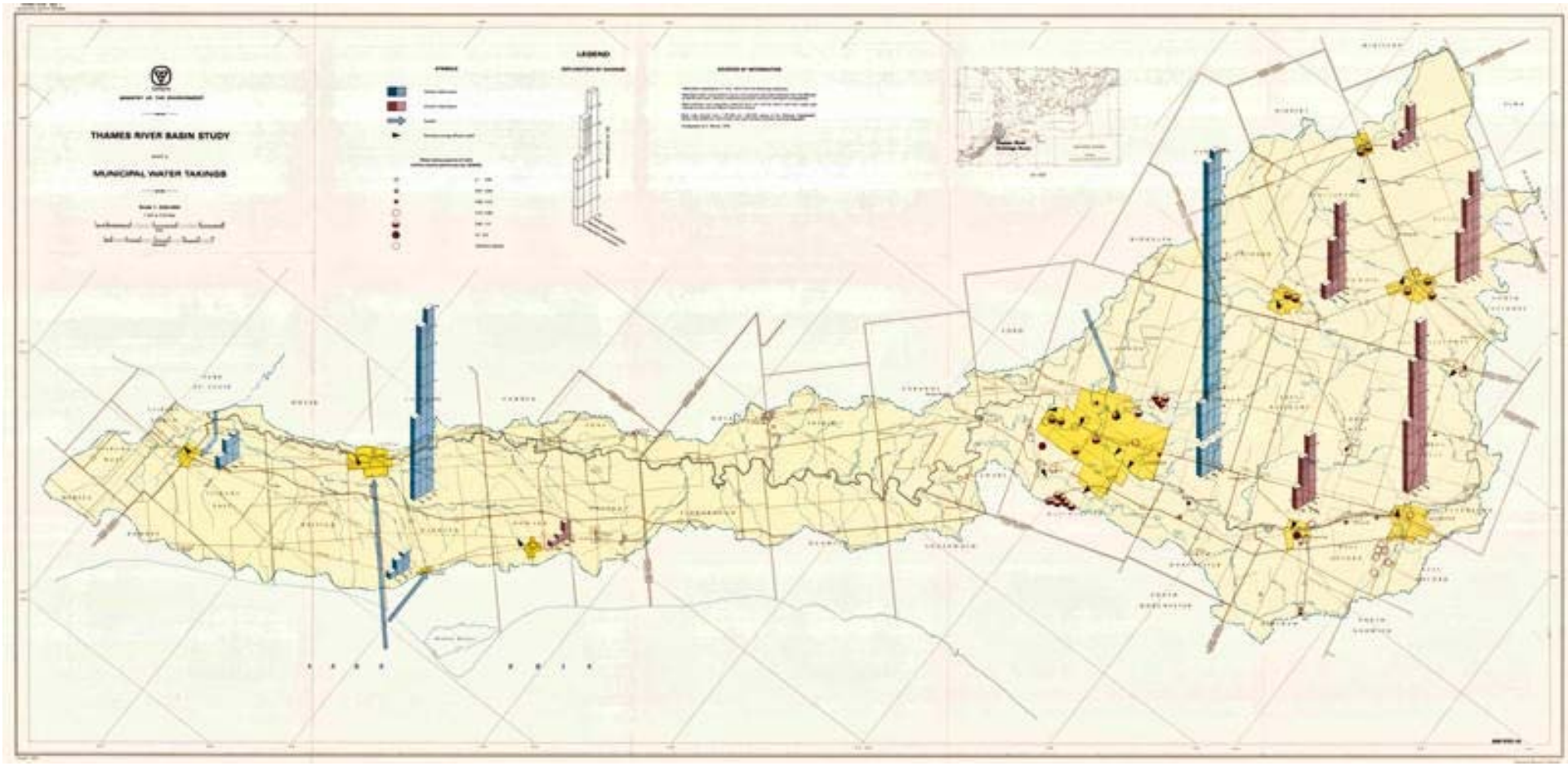
Area	Complainant	Nature Of Complaint	Party Allegedly Responsible	Findings
Twp of Tilbury W	several residents	well interference	Municipal well	valid complaint Regional scheme now in service.
Twp of Orford	tobacco irrigator	streamflow interference due to dam and withdrawals	upstream irrigator	valid complaint
Twp of Caradoc	conservation area	depletion of streamflow	upstream irrigators	valid complaint
Twp of Caradoc	conservation area	streamflow stoppage	road contractor	valid complaint
Twp of Delaware	farmer (mkt garden)	well interference	poultry feedlot	invalid
Twp of Delaware	rural resident	well interference	unknown	invalid - inadequate well
Twp of Delaware	rural resident	well interference due to nearby construction	LTVCA	invalid
Twp of Delaware	market gardener	interference with spring supply	neighbouring ground-water withdrawals	invalid -inadequate supply
Twp of Ekfrid	livestock farmer	well interference	municipal well	valid complaint
Twp of Lobo	several domestic well owners	well interference from road cut	county roads commission	invalid
Twp of Lobo	several local residents	well interference due to municipal well	London PUC	one case valid two cases invalid
Twp of London	resident with dug well	well interference due to pit dewatering	nearby gravel pit	invalid

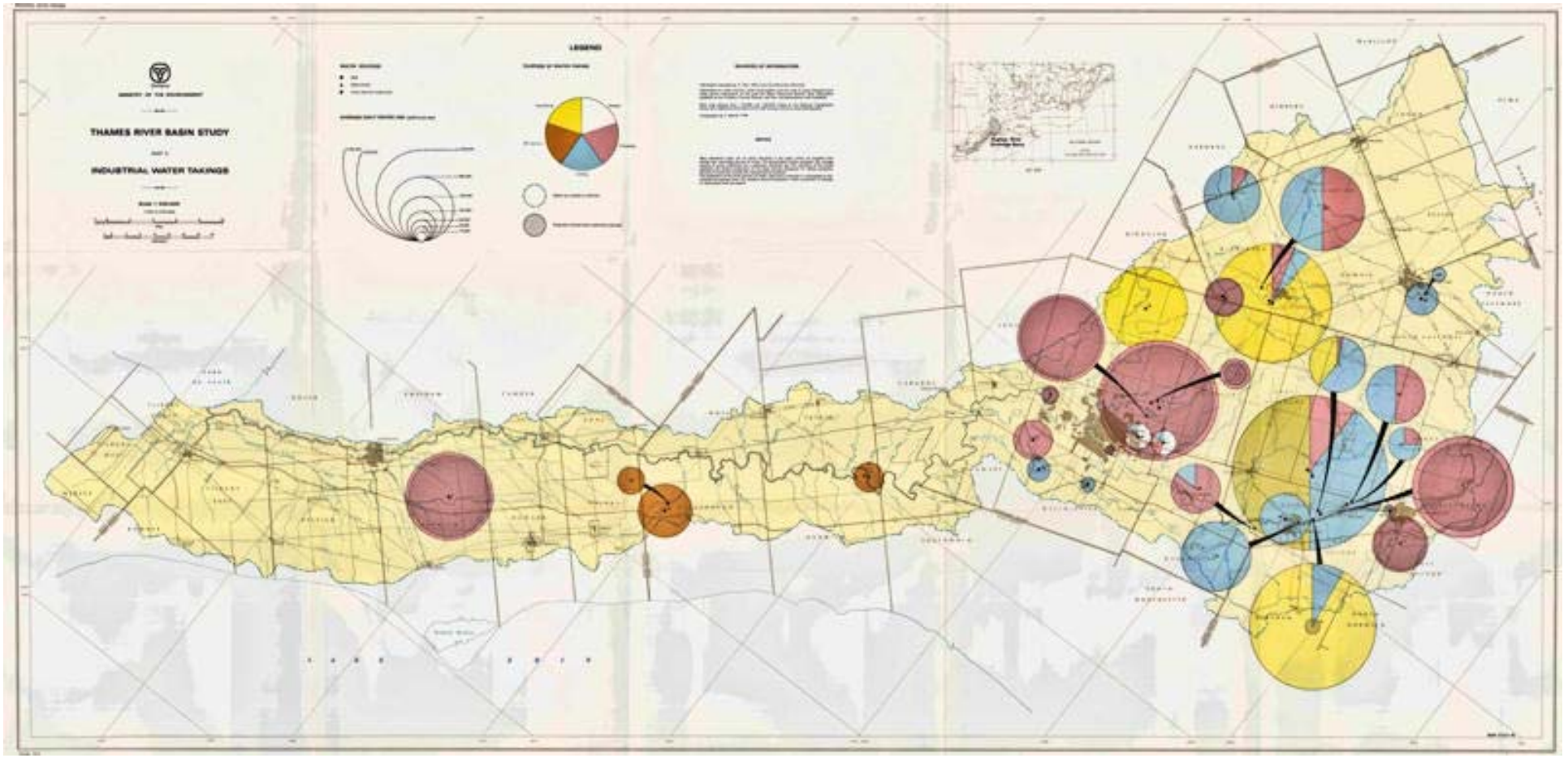
TABLE 9: CONTINUED

Area	Complainant	Nature Of Complaint	Party Allegedly Responsible	Findings
Twp of London	resident with dug well	well interference due to storm sewer construction	Twp of London	valid - connected municipal supply
Twp of London	resident with dug well	well interference due to pit operation	gravel pit	invalid - inadequate
Twp of N Dorchester	resident with dug well	well interference due to Municipal drain construction	Twp of N Dorchester	valid - well replaced
Twp of West-minster	numerous well owners	well interference due to operation of mun. wells	London PUC White Oaks well field	22 valid cases 44 invalid 15 additional residences joined to service
Twp of West-minster	riparian landowner (Dingman (Creek)	streamflow depletion due to irrigation withdrawal	large commercial farm	invalid
Twp of Oxford West	local resident	well depletion due to pumping of municipal well	Ingersoll PUC	valid - well deepened
Twp of Oxford North	local farmer	domestic and stock supplies depleted by high capacity well	commercial farm	valid
Twp of Oford North	riparian landowner	streamflow withdrawal interfered with well supply	upstream land-owner	invalid
Twp of East Oxford	riparian landowner	streamflow interference due to municipal wells	Woodstock PUC	invalid - natural causes

TABLE 9: CONTINUED

Area	Complainant	Nature Of Complaint	Party Allegedly Responsible	Findings
Twp of West Oxford	local residents	well depletion due to quarry operation	quarry at Beachville	invalid
Twp of West Zorra	local farmer	interference with farm and domestic supplies	nearby quarry	invalid
Twp of West Zorra	riparian land-owner	filling of on- stream pond depleted streamflow	upstream livestock operator	valid
Blanshard Twp	several residents of Kirkton Woodham	Ground-water interference due to industrial wells	industrial park	invalid
Blanshard Twp	4 well owners	ground-water depletion	high capacity industrial well	valid in 2 cases, 2 other invalid
Blanshard Twp	resident near St. Marys	well interference	quarry operation	invalid
Downie Twp	local resident	well interference	industrial well	valid
Logan Twp	2 livestock operators	streamflow stop-page	upstream irrigation from pond formed by dam	valid


THAMES RIVER BASIN STUDY
MUNICIPAL WATER TAKINGS
LEGEND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INDUSTRIAL WATER TAKINGS
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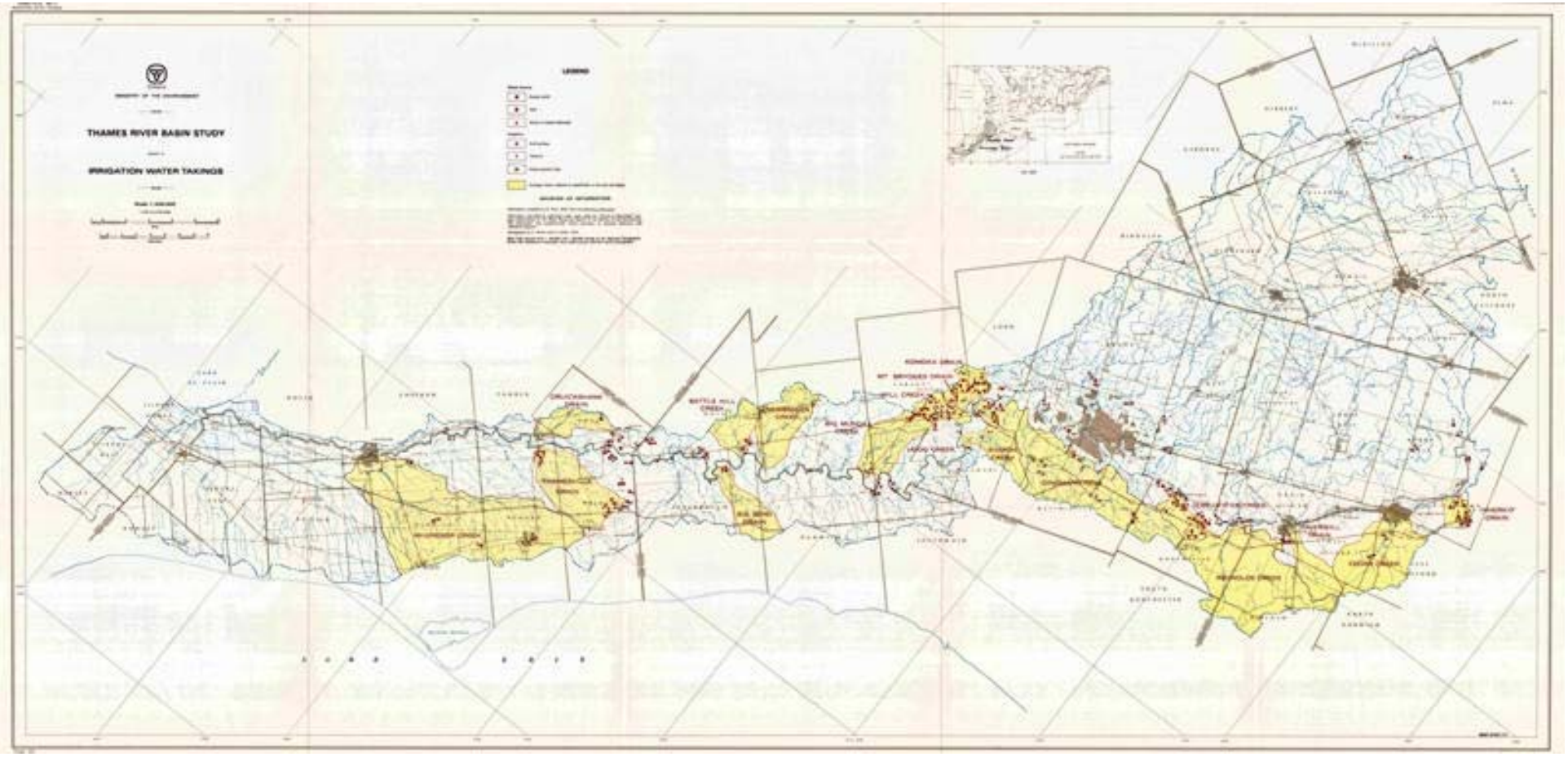
THAMES RIVER BASIN STUDY
IRRIGATION WATER TAKINGS
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