

**THAMES RIVER BASIN
WATER MANAGEMENT STUDY**

TECHNICAL REPORT

**THE PUBLIC
CONSULTATION
PROGRAM**

1975



Ministry
of the
Environment

The Honourable
William G. Newman,
Minister

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Deputy Minister

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THE PUBLIC CONSULTATION PROGRAM

Program Co-ordinator and Author

F. C. Hausmann

Ontario Ministry of the Environment

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

INTRODUCTION

The Thames River Basin Study was conceived in 1971 in response to the recognized need for improved flood and erosion control in the Lower Thames valley, particularly downstream from Thamesville, and in recognition of the interdependence of all aspects of water management. Rather than approach the problem of flood and erosion control in relative isolation from other water-related factors such as water quality criteria, groundwater supply, water uses, fish and wildlife, conservation and development in the watershed, land uses, and projected population growth and industrial development, the decision was made to conduct an overall water management study, taking into consideration all these factors with a view to generating recommendations and guidelines for future water management of the entire Thames basin. The terms of reference for the study have been stated as follows:

"To develop guidelines for water management planning in the Thames River Basin which would ensure that an adequate quantity of water at a satisfactory quality is provided for the recognized water uses in the river basin at the lowest cost and that flood and erosion protection is provided consistent with appropriate benefit-cost criteria."

At this time in Ontario a major current, which had been detected and endorsed by the Ontario Government in a policy decision, was to improve citizen participation in government activities and decision making processes. The local history of this decision lay in the Spadina Expressway issue, recommendations of the Committee on Government Productivity and political developments in Metropolitan Toronto, and indeed all of Canada, which pointed to the expressed demand of the public for more direct input into decisions affecting them. Accordingly, in May 1973, the Thames River Basin Study Team began implementing a program to obtain first-hand information on the choices and views of the people living in the Thames River Basin concerning the management of their water resources. This was called the Public Consultation Program - "PCP". The main benefits of public involvement in such planning are usually stated as:

- (i) clarification of local perceptions and attitudes with regard to water pollution problems in a study area,
- (ii) establishment of local needs for water resources as seen by the public,
- (iii) determination of the priorities which the public feels should be followed for corrective action,

- (iv) definition of desirable uses and use priorities which the public would accept in areas where use conflicts occur,
- (v) giving the public a sense of accomplishment by providing them with an opportunity for contributing to water resources planning at a local level,
- (vi) greater acceptance of the final recommendations resulting in more rapid implementation of corrective programs.

The first four items in this list comprise the central subject matter of this report. The degree to which information gathered from the public has been correctly interpreted and incorporated into planning recommendations cannot be determined until the recommendations are made known to the public and the implementation phase begun, at which time benefit (vi) on the list should also be realized.

The achievement of benefit (v) above is difficult to determine at any time. However, there are some indications that the public has benefited from the program. Simply by making the study public knowledge, certain information was brought to the attention of the study team, which might otherwise have been overlooked. For example, the plans of Union Drawn Steel to mine a limestone quarry near the proposed Thamesford dam can bring considerable commercial benefit to the local area, the steel industry and the national economy. Construction of the proposed dam could prevent the mining of this quarry. Through the opening of communication channels, then, the planning process is broadened by the inclusion of more and better information. The public interest is thus better represented and future delays and confrontations are forestalled. During the course of the PCP, many comments were received from the public indicating appreciation of the opportunity to participate even in a minor way. Finally, since the implementation of the PCP the Ministry of the Environment's Regional Office situated within the study area (London) has received many requests, particularly from educators, for information, support materials and guest speakers on the subject of environmental management. Some teachers are using the Thames River Basin Study as a basis for their geography course curriculum.

It is hoped, then, that the following report will be useful to the public to ascertain how much of what they said has been heard, to the planners to take advantage of the benefits of citizen participation in planning, and to future planners as a case history of one effort at citizen participation in water management planning.

CHAPTER 1

SUMMARY OF FINDINGS AND CONCLUSIONS

1.1 SUMMARY OF FINDINGS

The summary of findings is here presented in two sections, corresponding to Phase I and Phase II of the Public Consultation Program. Phase I activities were conducted entirely by the study team, a combined effort of the ministries of the Environment and Natural Resources. Phase II public meetings, however, were held by the Environmental Hearing Board of Ontario which reports directly to the Minister of the Environment. Accordingly, the discussion of Phase II draws upon submissions presented at the hearings, but also upon the report of the Environmental Hearing Board to which the reader is referred for additional study. The reader is also referred to the actual briefs presented, many of which were too detailed to be dealt with in their entirety in this report.

PHASE I

Phase I of the PCP included the use of several techniques to obtain input from citizens of the Thames River basin as to their problems, priorities, desires and perceptions related to water resources and their management. Techniques used were: meetings with municipal councils and water utilities management agencies, special interest group meetings and questionnaire distribution. More details can be found in Chapter 9.

Water Resources

There was little concern expressed by all parties consulted with regard to water quantity in the Thames River basin. This item ranked consistently last on the list of water management priorities.

Water quality, however, was a major point of concern for virtually everyone. Overall, water quality in the Thames River was perceived to range from "very poor" to "fair" with little or no change over the past ten years with the following qualifications. Downstream from London to approximately Wardsville (Region 2) water quality was evaluated to be slightly poorer than in other areas of the basin. Water quality within the City of London (Region 3) was seen to have improved somewhat over a ten year period. This accurately reflects the fact that water quality has indeed improved since the city began its pollution control plant upgrading and expansion program some ten years ago. The water quality of the Thames River above London (Region 4) was

perceived to be deteriorating significantly. Water quality in the Avon River around Stratford (Region 5) was also perceived to be deteriorating. Studies have shown that this is indeed an area of relatively poor water quality. Water quality within Region 5, however, was reported ranging from "poor" to "good". This may reflect the headwaters nature of this region where few urban and industrial contaminants have yet entered the river.

Farmers and to a lesser extent municipal official respondents, the large majority of whom live in non-urban areas, evaluated water quality to be somewhat better than the primarily urban general public respondents. This indicates a better perceived water quality in rural than in urban areas.

All Medical Officers of Health in the basin expressed grave concern with the health hazard presented by high levels of bacteria in the Thames surface waters and expressed the need for improved water quality to meet increasing recreational water uses. Urban and agricultural runoff, improper feedlot waste management and inadequate septic tank design and construction were cited as causes of bacterial contamination. Danger to health from bacterial water pollution also received strong and consistent emphasis as a major problem from the public throughout the study area.

There was some variation from region to region as to other water quality related problems. Floating materials and shoreline debris - aesthetic pollution - were reported to be the major problem in Region 1, the lower portion of the river basin. Moving upstream to London, poor taste and odour and excessive growths of weeds and algae emerge as major problems with colour, floating materials, dead fish and shoreline debris as secondary problems. Excessive weeds and algae remain major problems throughout the Thames River above London and the North Thames River, and poor taste and odour remains a major problem in the Thames above London. Poor water colour is reported as a problem in the headwaters (Region 5).

Combined and ranked, the major problems which emerge for the entire basin are health hazard from bacterial pollution, excessive growths of weeds and algae and unpleasant taste, odour and colour, in that order.

Some water quality problems with well water were also reported by the Indian Bands of the lower Thames River and by Biddulph Township. Apparently, nitrates have been found in this ground water. Woodstock and Ingersoll have reported sulphur in their well



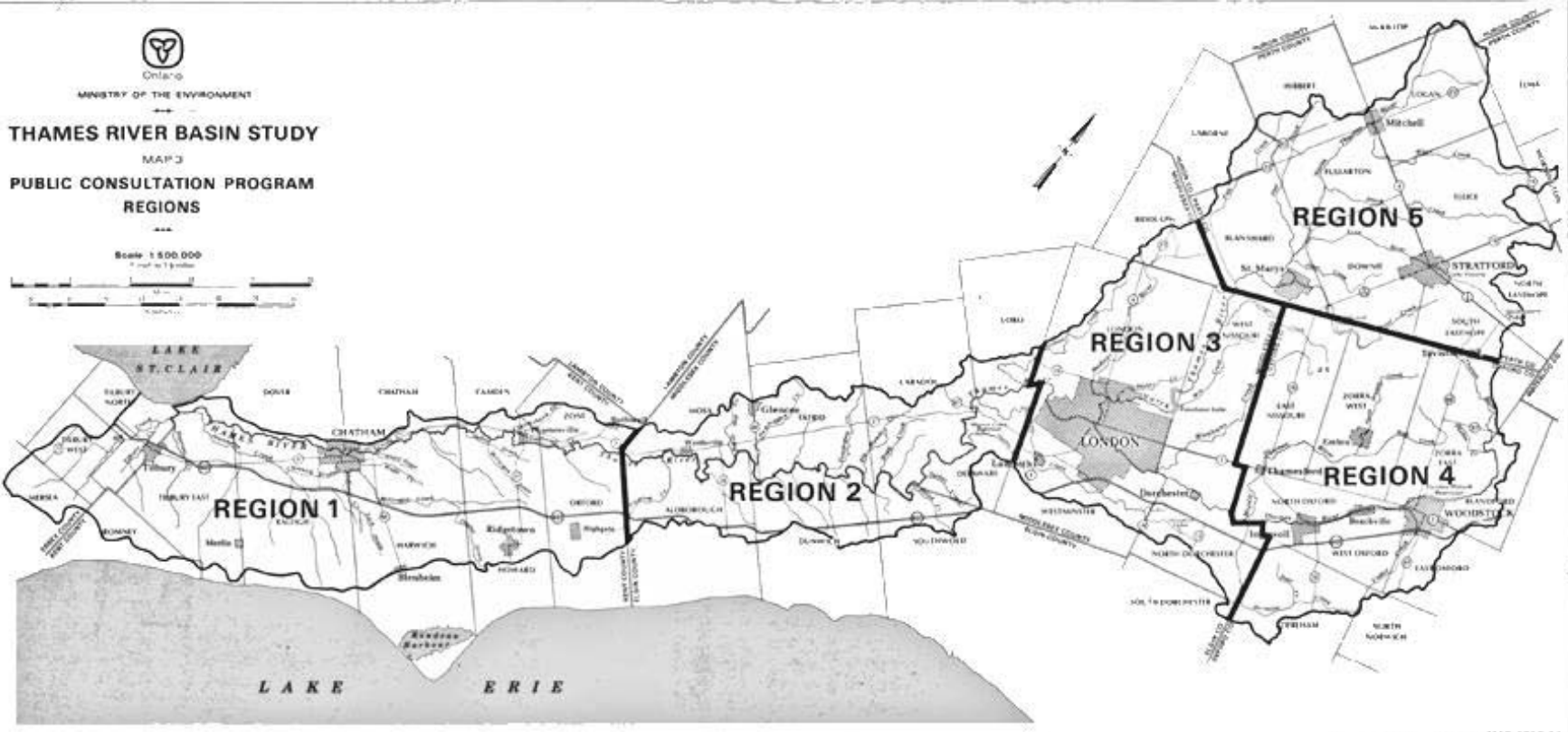
MINISTRY OF THE ENVIRONMENT

THAMES RIVER BASIN STUDY

MAP 3

PUBLIC CONSULTATION PROGRAM REGIONS

Scale 1:500,000



MAP 2727-26

water, and Ingersoll in particular is concerned with securing an adequate water supply for its growing industry.

In summary, all parties consulted expressed the desire and need for improved water quality.

Water and Related Land Uses

Statements as to both the actual and the desired uses of the Thames River basin water resources were solicited from the general public and the municipalities. These were then compared to give an indication of which uses are adequately met and which are not.

Actual and desired water uses reported were highly consistent throughout the study area for all regions. The predominant actual uses reported are aesthetic; hiking, sightseeing and picnicking, while secondary uses are recreational; fishing, swimming and boating. Moderate use of the Thames River is made for agricultural purposes; irrigation and livestock watering.

The most desired uses reported are those noted as aesthetic and recreational. The aesthetic uses appear to be adequately met. Swimming was reported as the most inadequately met use of the river in all regions of the basin. Boating is also inadequately met in all regions except Region 1 where the river is navigable from its mouth up to and somewhat beyond the City of Chatham. Fishing is reported to be inadequately met in the upper river basin, i.e. all areas upstream from Delaware. Finally, irrigation is reported to be a somewhat inadequately met agricultural water use in the lower Thames Valley as is livestock watering in Region 1, downstream from Wardsville.

With reference to recreational boating, two specific points were made repeatedly in Regions 1 and 5. In Region 1, erosion along river banks is a consistent problem, and it was recommended that boat wake control be imposed in order to reduce erosion caused by the many pleasure craft which navigate the channel downstream from Chatham. Wildwood Lake is the major water recreation area in Region 5. Many complaints were received about deteriorating water quality of this lake and it was repeatedly requested that motor boating be restricted to 10 hp or less to relieve the considerable pollution from this source and to ensure safe water recreation for other users. It was argued that Wildwood Lake is simply not large enough to accommodate high-powered motor boats.

While water uses reported are fairly consistent throughout the study area, some trends are distinguishable. The largely urban general public respondents placed a higher priority on recreational water and land uses than did the largely rural municipal official respondents. This latter group, while agreeing that improved and expanded recreational land and water use is the priority, placed more emphasis on water supply for domestic purposes than did the general public.

The Township of Biddulph and the Town of Ingersoll in particular, placed great emphasis on the need to secure an adequate water supply for their populations. The West Elgin Planning Council expressed concern at the high cost of regional water supply systems which they feel they have been forced into as a result of the poor water quality of the Thames River caused by upstream pollution preventing the use of the river as a source of domestic water supply. They suggested that upstream polluters be assessed a portion of the resulting increased costs borne by downstream communities.

Closely related to recreation in the watershed is protection of aquatic life and wildlife, which of course provide for fishing, hunting and also nature appreciation. The importance ascribed to protection of fish and wildlife varied somewhat from region to region, but when water management priority ratings were combined for the entire study area leaving regional differences behind, fish and wildlife protection emerged as the third management priority after municipal and industrial waste treatment.

Some concrete suggestions to promote the preservation of fish, wildlife and unique natural areas were made. The preservation of Ellice and Zorra swamps was urged and the planning of utility corridors to minimize land consumption for transportation and hydro uses was recommended. Also suggested was the creation of a river parkway, especially along the lower reaches of the Thames, and the construction of smaller dams on tributaries of the main rivers for purposes of recreation and flood control to minimize the need for large dams, which are perceived by the public to have a much greater ecological impact.

The top land use priority in the Thames River basin as expressed in plans for the area, where they exist, is unquestionably agriculture with the exception of those lands within existing urban municipal boundaries. Land use priorities expressed by the people of the watershed through the questionnaire and during interviews are divided along the lines of urban and rural residents. Urban residents consistently gave priority to recreational land use while rural residents and farmers insisted upon the priority of agriculture as the major land use in the basin. People in urban areas, however, did recognize the agricultural nature of the watershed by choosing agriculture as the second most important land use. Only in the City of London did residential land use receive a

significant vote. Industrial and commercial land use was not considered significant in any region.

It can be said, then, that agriculture is seen to be the overall land use priority for the basin but that increased recreational land and water use is a high priority in and near urban centres. Recreational lands near these centres should be developed wherever they do not seriously impinge upon prime agricultural land. Also, residential development in London was considered important.

Waste Management

The rapidly increasing need for recreational facilities emphasizes the above-stated need for improved water quality. Improved water quality in turn is largely dependent upon proper management of wastes. Aside from providing domestic and agricultural water supply, recreational opportunities, and supporting aquatic life and wildlife, the waters of the Thames River also bear the burden of receiving treated wastes from industry and urban sewage systems, as well as some untreated wastes from the agricultural industry.

Municipal and industrial wastes were perceived to be the major cause of water quality deterioration of the Thames waters and agricultural runoff was also seen to be a major contributor to water pollution. These relationships are well understood by the people of the basin. Their ratings of water management priorities list municipal and industrial waste treatment as the top two priorities with strong consistency from one region to the next.

Domestic and agricultural waste treatment did not receive the same order of priority being rated as fifth or sixth of ten water management items. However, some specific comments pointing to problems with agricultural waste management were frequently made. The need for more stringent control and monitoring of feedlot waste disposal practices was emphasized in Regions 4 and 5. Farmers themselves mentioned the need for further study of the effects upon water quality of chemical fertilizer and pesticide applications to soil and the need to monitor closely municipal drain water quality to determine to what extent these waters are in fact polluted. In meetings across the basin, municipal officials urged stronger enforcement of environmental protection legislation and stiffer legislation where present laws are inadequate.

In summary, reported major uses of the Thames watercourse are aesthetic and recreational, but the latter, and swimming in particular, are not felt to be adequately provided for. Protection of aquatic life, wildlife and unique natural areas is also a most

important consideration to the people of the river basin. In conflict with these uses is waste disposal into the river by cities, industry, and agriculture. In order to minimize this conflict, improved municipal and industrial waste treatment are the top management priorities expressed by the people and specific attention was drawn to some agricultural practices degrading river water quality which must be stopped or improved upon. Tough environmental legislation with strong enforcement was urged to ensure proper waste management and to protect water uses.

Water Management

The objectives of water management in the Thames River basin are to provide sufficient quantities of water of satisfactory quality for the above discussed uses and to provide adequate flood and erosion control. Flooding is a problem the people of the Thames basin have lived with for many years. In most parts of the basin, it has been minimized through established control programs. People in those areas which are still threatened by flooding, particularly downstream from Thamesville, have clearly indicated that their first priority is to control this flooding.

Several additional dams have been proposed to control flooding and to augment flow in summer months in the Thames watershed, and the people of the basin have had something to say about them. Considerable opposition to the proposed Wardsville and Thamesford dams has been voiced by those who live in the area of the proposed dam sites. This opposition is based primarily on the reasoning that significant portions of prime agricultural land would be taken up by these dams and their corresponding reservoirs; that it is inequitable to flood upstream lands for the benefit of downstream communities and lands which have been reclaimed from the floodplain initially; and that significant fish and wildlife would be disrupted or destroyed by the construction of major dams.

This is not to say that the need for flood protection was not recognized by the opponents of these dams, but they urged that every possible alternative to construction of major dams be investigated, including the following:

1. Construction of small dams on tributaries where less prime agricultural land would be taken up.
2. Preservation and restoration of natural water-retaining land formations including swamps. This would also include a review of optimum levels of land drainage and municipal drain management.

3. Better operation of existing dams to maximize flood protection from these structures.
4. Restriction of all development in the floodplain.

After these alternatives have been investigated and if it is still decided to continue with major dam construction, a detailed benefit-cost analysis was requested by the people who live in the areas of the proposed dam sites. While there has been no significant opposition expressed to the proposed Glengowan dam, the Township of Fullarton has asked to be provided with more details about the ecological effects and proposed operating policy of the dam.

Other

Several proposals that have been made with regard to conservation of water and land resources in the Thames River basin have already been mentioned; designation of utility corridors, development of a river parkway, preference for small dams as opposed to large dams, special protection for unique natural areas. In addition, a comment that was made several times throughout the course of meetings and hearings is the view that government policy must be better co-ordinated. In particular, it was suggested that the ministries of Agriculture and Food, Natural Resources and Environment, coordinate their programs and policies within a given area to assure compatible objectives. Several municipalities, especially those in the Upper Thames basin, suggested that the Provincial Government work more directly and establish closer liaison with municipalities in order to develop programs for specific areas. Finally, it was frequently suggested that further research into erosion control programs be conducted and that education programs be carried out using modern communications technology, in particular television. It was felt that such education programs would be the most effective manner in which to attack the problems of soil and river-bank erosion throughout the Thames River basin.

Waste management depends considerably upon the rate of growth in any particular area. The faster an area grows, the more people need to be serviced, the more industry that requires water for its facilities and the greater the demands placed upon water resources in the area. The rate of growth of the population in the Thames River basin has been fairly stable over the past 20 years at approximately 3 percent per annum. From its Phase I consultations with the people of the basin, the study team concluded that the majority of people prefer to maintain the present rate of growth. However, there was a higher preference for a decreased rate of growth among respondents from the urban areas than from rural areas. Respondents from urban

areas expressed equal preference for a decreased rate of growth as for continuation of the present rate. Municipal officials consistently expressed a greater preference for an increased rate of growth than did the general public.

PHASE II

This section presents a summary discussion of the written and oral submission made before the Environmental Hearing Board during Phase II of the Public Consultation Program (PCP). Hearings were held in five centres throughout the study area corresponding to each of the five regions identified for the purposes of the PCP.

Region 1

Major presentations at the hearing in Chatham came from the Lower Thames Valley Conservation Authority (LTVCA) and the agricultural community represented by the Ontario Federation of Agriculture and the Ministry of Agriculture and Food.

In response to the findings presented in the interim bulletin which noted major opposition to the Wardsville dam, on the grounds that agricultural land would be flooded and the pickerel fishery and spawning grounds would be destroyed, the LTVCA noted that according to its proposed construction and operating policy, the dam would be considered as a flood control project only, would not impound waters for any significant length of time and therefore would not destroy the fishery or spawning grounds and would only take up a small acreage of agricultural land at the site of the dam.

The Authority's brief went on to support a reforestation program along stream banks to restrict cattle access to streams and to protect against wind and river-bank erosion. The Authority approved of a review of the operation of existing flood control structures in the Upper Thames Valley, with a view to maximizing flood control. The practicality of earth dike stabilization through vegetative protection was questioned in light of the wide variation of water levels of the Lower Thames River.

The agricultural community addressed itself to several statements made in the Water Management Bulletin. The statement that as much as 50 percent over-fertilization occurs was questioned and emphasis was given to the need for fertilization to yield high crop production in a time of world food shortages. The questioning of the statement concerning over-fertilization was again encountered in later meetings at Woodstock and Stratford. It was stated that the fencing of streams could reduce land values up to 25 percent and that if such fencing did occur, it should be Government's

responsibility to maintain the fences. The Ontario Federation of Agriculture further noted that drainage of crop lands within 24 hours is essential for crop continuation and on that basis opposed any blocking or restriction of drainage ditches. The Federation recommended that further research be conducted in three areas with the following objectives:

1. To determine the effects of dumping sewage sludge onto farmland.
2. To develop techniques of controlling ditch erosion.
3. To determine the quantity of land drainage relative to total surface waterflow.

In its report, the Environmental Hearing Board noted that there was a feeling expressed by the agricultural community, that it was being made the scapegoat for water quality problems in the Thames River basin. This feeling was also perceived throughout Phase I Consultations and suggests that more and closer communication among the ministries of Natural Resources, Agriculture and Food, Environment and farmers themselves is necessary.

In summary, the major factors emphasized at the Public Hearing in Region 1 concern flood control, erosion control and the maintenance of as much agricultural land as possible in production. This emphasis coincides well with results from Phase 1 consultations.

Region 2

By far the major issue that concerned participants at the hearing in Glencoe was the proposed Wardsville dam project. Opposition to the project was almost unanimous on the grounds that agricultural land would be taken up and fish and wildlife adversely affected, as previously noted. In addition to these reasons, it was pointed out that major disruption of road communication by blockage of bridges between Elgin and Middlesex counties, during times of peak river flow, might result from construction of the dam and it was recommended that this aspect be more closely considered. The difficulty in obtaining land for the project from Indian Reservations and high costs relative to benefits of the project were also cited as reasons not to build the dam.

With respect to flood control, the Township of Aldborough in a brief endorsed by the townships of Southwold and Dunwich, commented that continuation of dike improvements downstream, optimization of dam management upstream and construction of small dams on tributaries could go a long way towards relieving the flooding problem. This brief also stressed the need for continued upgrading of municipal and industrial waste treatment and for controls over livestock operations to ensure good water quality. In the area of conservation, this Township recommended the monitoring of sand and gravel operations and the preservation of wooded areas long the river.

Finally, it was recommended that the optimal width of roadside culverts be determined in co-ordination with the Ministry of Transportation and Communications, and that the Thames watershed be placed under a single conservation authority in place of the two that now exist.

The major concerns expressed at this hearing, then, deal with the proposed Wardsville dam project, alternative methods of flood control, the importance of maintaining agricultural land and woodlots, and the need for improved water quality and waste management. These concerns were all expressed during Phase I consultations, but the Public Hearing added considerable depth and emphasis to the discussion around these issues.

Region 3

Briefs by the City of London, the Upper Thames River Conservation Authority (UTRCA), the National Farmers Union (NFU) and the Ontario Federation of Anglers and Hunters were given at this hearing.

London City's brief concerned itself with three major issues:

1. The cost of sewage treatment and other water management alternatives, particularly as they relate to the city.
2. Long term sewage assimilation policy vis a vis the Thames River.
3. The pressures exerted upon and facilities available to basin communities from outside the watershed.

The City asked for an opportunity to respond to water management alternatives once benefit-cost figures were available and expressed the need for long term forecasts of

sewage assimilation capacity of the Thames River for the purposes of its own planning needs. Examples of outside pressures and facilities affecting basin communities might be population immigration and recreational facilities along nearby Great Lakes shorelines. The City also questioned the feasibility of improving river water quality to the level required to permit swimming and asked if it were possible to get more flow augmentation from the Gordon Pittock reservoir. Many other comments and specific suggestions were made by the City in its brief to which reference should be made for details.

The Upper Thames River Conservation Authority in its brief, stated that flood control has always been the priority in the management of its reservoir program and that in general, prime agricultural lands have not been taken up by reservoirs. Wherever possible, agricultural lands under the Authority's control are leased to neighbouring farmers to be continued in production. The Authority's brief expressed concern over water quality in reservoirs and asked for advice from the Ministry of the Environment as to how water quality could be improved. Also, with respect to reservoir management, the Authority suggested that summer flow periods be carefully studied, so that maximum flow augmentation may be provided to the extent consistent with other uses. The Authority considered proposed dams to be for flood control and flow augmentation purposes only and not for recreational development. The brief supported reforestation programs.

The National Farmers Union emphasized the need "to feed the people of the world" and therefore to maintain the maximum of arable land in production. This brief suggested the control and shifting of populations to unarable land and plantation of as many trees as possible, where such planting does not interfere with agriculture. Industrial and residential sprawl must be stopped, especially near rivers, and dikes or walls would be the preferred means of flood control according to the NFU.

Mr. Chambers of the Ontario Federation of Anglers and Hunters cautioned against human intervention in the affairs of nature and opposed all dam construction in the interest of preserving fish and wildlife. The Federation would prefer a flow diversion to Lake Erie over construction of the Wardsville dam, he said.

One further comment made by a representative of the London Board of Education's Resource Centre for Science, urged the development of better education programs to teach conservation to school children.

The major concerns expressed at this hearing can be summarized as follows:

1. That a comprehensive approach be taken to urban growth and services in relation to quality of life and the environment, taking into consideration financial constraints upon urban municipalities.
2. That the maximum flood protection be provided from existing and proposed reservoirs.
3. That continued and increased agricultural production be a major land and water management priority, even if it means shifting populations to unarable lands.
4. That conservation and fish and wildlife preservation are important and speak against the construction of dams.

It should be noted that points (2) and (4) above are in direct contradiction to each other. This indicates conflicting interests which are very real within the river basin community, and emphasizes the need for open communication and discussion to arrive at acceptable solutions.

Region 4

The major concerns expressed at the hearing in Woodstock dealt with water quality, the Gordon Pittock reservoir, the proposed Thamesford dam project and urban growth and sewage treatment.

With respect to water quality, it was felt that bacterial contamination and low oxygen levels in Cedar Creek, Gordon Pittock reservoir and the Thames River above London were intolerable. To deal with these problems, upgraded sewage treatment, lake aeration and strict monitoring of water quality and enforcement of legislation were recommended.

The deepening of Gordon Pittock reservoir was also suggested as a means to cool water temperatures and prevent the formation of unsightly sludge mats and algae blooms. Several speakers at the hearing also recommended that the City of Woodstock be restricted in its growth to ensure adequate servicing in future and to protect surrounding agricultural lands from urban sprawl.

The Union Drawn Steel Company, which holds land in the area of the proposed Thamesford dam project, indicated its concern that construction of the dam would flood

its lands, thereby preventing the future mining of limestone deposits in the area. The company was supported in its recommendation that the dam not be constructed until after the limestone has been mined by Mr. Fleming, West Zorra representative to the UTRCA.

Complete drawdown of existing dams to maximize flood control and minimize the need for future dams and the implementation of a wetlands acquisition program for the same purposes was recommended. Also recommended was the development of educational programs for schools, libraries and other agencies in the basin. Some criticism was levelled at the City of Stratford for polluting the Avon River and complaints were heard about the unsightliness of Gordon Pittock and Wildwood reservoirs in the fall when they are drawn down to a low level. Here again, conflicting interests are seen. Complete drawdown of reservoirs maximizes flood control, but results in an unsightly reservoir during late summer, fall and winter.

Region 5

The major concern at the hearing in Stratford dealt with water quality of the Avon River, land drainage, conservation measures, urban growth restrictions and Wildwood reservoir.

Several briefs presented urged a variety of conservation measures including the following:

1. The construction of many small dams rather than a few large ones to provide flood control and recreation areas.
2. The preservation and restoration of wetlands, especially the Ellice Swamp, to maintain ground water levels and to help provide flood control.
3. The fencing of streams and restriction of cattle access to streambed areas underlain with gravel. Farmers questioned this suggestion and wondered who would be responsible for construction and maintenance of the fences and how far back from the stream's edge fences would be constructed.
4. The planting of riverbank vegetation to protect against erosion and provide wildlife habitat.

The City of Stratford was singled out as the cause of severe water quality problems in the Avon River and it was urged that the City do something to improve the quality of

its sewage effluent. In the City's defense, the City Engineer noted that the main problem was one of low flow and that the City was doing everything that it could to provide good sewage treatment. Related to this, the Stratford Citizens for the Environment recommended that the City not be allowed to grow further, in view of the already strained water resources and the need to protect agricultural land from urban encroachment.

Some comments were made concerning the Wildwood reservoir. In particular, it was pointed out that the only causes of water quality degradation in the reservoir could be agricultural land runoff and motor boats on the lake. It was recommended that over-fertilization be investigated and controlled and that motor boats on the lake be restricted to 10 hp or less. The UTRCA was criticized for allowing motor boats on the clean upriver waters at Wildwood while restricting them on the dirtier waters at Fanshawe Lake.

Finally, during the course of discussions, it was suggested that pollution clean-up costs be allocated over the widest possible population base, in view of the large amounts of money involved.

1.2 CONCLUSIONS

As is apparent from a review of the findings of the Public Consultation Program, the residents of the basin have diverse and frequently conflicting views concerning water resource problems in the basin and proposals for the solution. Disagreements exist on certain issues between groups, such as the farming and urban communities, and even within occupational groups, depending on the location in the basin.

As pointed out in the Report of the Environmental Hearing Board on public hearings in the Thames River basin, water quality was the common concern. Water management priorities stated by the people of the basin indicate that improvement of water quality should be a major priority of any management program for the Thames River watershed. More specifically, a reduction in bacterial contamination of waters and an improvement of those parameters affecting fish life and the aesthetics of the river is desired. Improved municipal and industrial waste treatment is seen to be the primary need in this respect.

The next item receiving most consensus was that of water and related land use. It was agreed that agriculture is the overall primary land use in the watershed. Nevertheless, more facilities for recreation, particularly swimming, was consistently reported to be a primary need, especially near high population density areas, and water uses reported

show that recreation uses are inadequately met.

One of the major concerns which instigated the Thames River basin study was that of flooding. While the importance of flood control was definitely given more emphasis by public officials, it is clear that the general public is also concerned with this factor, especially in the Lower Thames valley. However, the public is apparently not convinced that major dam construction is the best means of flood control as evidenced by the considerable opposition voiced against the proposed Wardsville and Thamesford dam projects and also by the frequent suggestions of alternate means of flood control. It was asked that consideration be given to alternatives to major dams, such as small dam construction, and that the feasibility of a wetlands acquisition and preservation program be investigated. In this connection, special mention was made of the Ellice and Zorra swamps.

The main reasons given in opposition to major dam construction were related to preservation of fish and wildlife and agricultural land. Even in areas where dam construction was not an issue, however, more widespread, visible and forceful conservation measures were urged, specifically with respect to wetlands preservation, development of more brushland and woodlots in the basin, and designation of utility corridors for highways, railroads and power transmission lines.

Many comments were received and much discussion was entertained concerning the effects of the agricultural industry and farming practices upon the water resources of the basin. Most frequently mentioned were practices of land drainage, municipal drain management, erosion control, intensive livestock operation waste management, stream fencing, farm pond management and application of chemicals to soil and crops. These matters were not investigated in the course of the study to any great extent. From comments received, it can be concluded that further detailed study should be made of these matters.

It was frequently stated that much could be achieved if only those in a position to do something to prevent water pollution and erosion were familiar with the most up-to-date findings and techniques. In this regard, it was suggested that highly visible education programs using all media, be developed to teach conservation techniques in general, and in particular, to promote erosion control and ecologically sound farming techniques.

While education was considered to be an important tool for an improved environment, it was frequently stated that this was not enough and that stricter enforcement of legislation was required. It was felt that there was simply no adequate mechanism of

tracking down and penalizing offenders and it was frequently recommended that stricter enforcement of the Environmental Protection Act and Ontario Water Resources Act be implemented. One problem that was frequently mentioned in relation to enforcement of legislation in rural areas was the role of the Farm Advisory Committee. It is concluded that a review of this committee's role and terms of reference could aid in improving enforcement of legislation.

The Public Consultation Program also addressed itself to the question of rate of growth within the watershed. The report of the Environmental Hearing Board points out that restrictions on large urban developments when more sophisticated sewage treatment processes have been utilized must be considered. According to PCP results, the general public seems more likely to accept restricted growth than do municipal officials.

Among many other points raised during the PCP was that of provincial-municipal liaison. Municipalities were most receptive to the approaches of the study team for consultation and urged that such liaison continue and be expanded to include all provincial programs and studies affecting them. The reader is urged to read carefully the entire text of this report where many additional comments and suggestions, too numerous to be included in this section, will be found.

CHAPTER 2

REGION 1

2.1 INTERVIEW RESULTS

Parties involved:

Official representatives of

- The City of Chatham
- The villages of Thamesford and Highgate
- The townships of Camden, Howard, Zone, Orford and Dover
- Delaware Indian Band Council, Moraviantown
- Kent-Chatham Health Unit
- Eight interest groups (see list, Appendix 1)

The land use priority for this region as stated by municipal officials and official plans, with the exception of Chatham, is agriculture. Unquestionably, the major concern expressed by representatives of municipalities in this region was the need for improved flood and erosion control mechanisms. The City of Chatham urged that the operation of dams be carefully studied to ensure that maximum flood control is realized from existing structures. Erosion has been a concern in this region for years, despite the implementation of various erosion control mechanisms including dike construction and river-edge tree planting. In this connection, it was suggested that boat wake control be imposed and that research be conducted into farm erosion control techniques in order that farmers may be better advised as to how to control wind and river erosion on their properties.

A second concern expressed dealt with the proposed Wardsville dam. Municipal representatives wished to be cognizant of the ability of the proposed dam to control flooding and augment flow during low flow conditions, and also expressed concern over dam management priorities with respect to these functions and the sometimes conflicting recreational use of reservoirs. Flood control and flow augmentation, in the opinion of municipal representatives interviewed, must receive priority over recreational considerations. The effect of the proposed dam was also spoken to by the Indians of the Delaware Band in this region. Their major concern was that the pickerel run, a major source of food and fishing recreation, continue.

A third concern expressed by all parties interviewed dealt with water quality. The Kent-Chatham Health Unit reported the Thames River and beaches near its mouth to be unsuitable for swimming because of high bacteria counts. Nevertheless, it has been

unable to prevent swimming in these waters. In an effort to relate common diseases (ear, eye, nose infections; stomach ailments) to water pollution, the Kent-Chatham Health Unit has requested to receive water quality data from the Ministry of the Environment's routine monitoring network. Municipal officials and the Delaware Indian Band Council expressed the desirability of improving Thames River water quality such that it would be suitable for swimming.

The Delaware Indian Band has also experienced water quality difficulties with its ground waters. Nitrates have been found in well water. The Water Resources Branch in co-ordination with the Kent-Chatham Health Unit has undertaken to determine the cause of this pollution and to correct the situation.

Municipal officials requested special protection for some areas of natural beauty and interest. In particular, it was suggested that the oak grove on the banks of the Thames River directly adjacent to and downstream from the Fairview Museum on Highway 2, should be preserved in its natural state. A related suggestion put forward was to create a two hundred foot (minimum) parkway along the banks of the Thames River, providing camping and recreation facilities. Rather than build one large dam, it was suggested that a series of small dams could be constructed to maintain water levels. With existing good fishing and improved water quality, it was suggested that such facilities could serve the local population as well as the considerable number of summer tourists coming from the United States.

Two areas of investigation that were not covered by the present study were suggested at a meeting of interest group representatives. First, representatives of farming groups (e.g. National Farmers' Union) stated there was a problem with the maintenance of municipal drains with respect to who is and who should be responsible for maintaining them free of vegetation and obstructing objects. Second, farmers also expressed interest in the effects of the application to soils and crops of various types, quantities and concentrations of herbicides, pesticides and chemical fertilizers.

Finally, the City of Chatham urged that full scale public consultations be conducted in connection with this study.

2.2 QUESTIONNAIRE RESULTS

Questions 3 and 4

Question three asks: At present, what use(s) do you make of the watercourse?
Question four asks: What use(s) would you like to make of the watercourse? Table 2.2.1 presents the results from these questions for Region 1.

Table 2.2.1: Water Uses of the Thames River; Region 1

	Uses	Actual		Desired	
		N=13	N=6	N=14	N=7
		G.P.	M.O.	G.P.	M.O.
Water Supply	Domestic	4	0	5	1
	Industrial	1	0	2	1
	Fire Protection	2	1	3	1
	Irrigation	1	0	4	1
	Livestock Watering	0	0	3	1
Recreational	Fishing	7	4	9	4
	Boating	6	3	11	3
	Waterskiing	1	1	7	2
	Swimming	2	0	13	2
	Hunting	1	1	4	1
Aesthetic	Hiking	1	0	10	1
	Picnicking	6	0	13	2
	Sightseeing	7	1	12	0
	None	0	2	0	2

* N = Number of Respondents
G.P. = General Public
M.O. = Municipal Officials

A comparison of columns one and three indicates clearly the wish on the part of the general public to make increased use of the Thames River waters in every respect. Much the same holds true for the municipal official respondents. The most common uses presently made of the watercourse are for fishing, boating, picnicking and sightseeing. Swimming, hiking, and to a lesser extent waterskiing, hunting, livestock watering and irrigation are the most frustrated, desired uses of the Thames River watercourse in Region 1. It is worth noting that the most desired uses of the watercourse are recreational in nature.

REGION I — Question 5

TABLE 2.2.2: Perceived Water Quality, General Public

		PRESENT (N = 14)					
		VP	P	F	G	E	
PAST (N = 13)	VP	2					VERY POOR
	P	3		2			POOR
	F		1	3	1		FAIR
	G				1		GOOD
	E						EXCELLENT
	N/R			1			NO RESPONSE

TABLE 2.2.3: Perceived Water Quality, Municipal Officials

		PRESENT (N = 6)					
		VP	P	F	G	E	
PAST (N = 6)	VP	1					VERY POOR
	P			2			POOR
	F	1		2			FAIR
	G						GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

Question 5

Question 5 asks the respondent to evaluate present water quality and past (10 years ago) water quality of the Thames River. Tables 2.2.2 and 2.2.3 present the results for general public and municipal official respondents in this region respectively.

Above all, the tables indicate that perceived water quality, both past and present, ranges from very poor to fair with only two respondents claiming good water quality. The diagonal in the tables gives an indication of water quality change perceived. Those responses lying on the diagonal show no perceived change in water quality from past to present; those to the left of the diagonal show perceived water quality deterioration; those to the right show perceived water quality improvement. A change in water quality from very poor to poor may be considered a one-gradient change, from very poor to fair a two-gradient change, etc.

According to this method, approximately 50% (6/13) of general public and exactly 50% of municipal official respondents felt there was no change in water quality. In table 2.2.2, four general public respondents indicated perceived water quality deterioration for a total of 4 water quality gradients, while three indicated perceived water quality improvement for a total of three water quality gradients. Turning to Table 2.2.3, one municipal official respondent indicated a perceived water quality deterioration of two gradients, and two indicated a perceived water quality improvement for a total of two gradients. A comparison of tables 2.2.2 and 2.2.3, then, shows an almost identical perception of water quality and change in water quality by general public and municipal official respondents.

Question 6

Question 6 asks respondents to rank a listing of nine possible water-related problems in order of importance. Results from this question were tabulated and computed to give an overall ranking for each region. The technique used for computing these rankings can be found in Chapter 9. Table 2.2.4 presents the resulting rankings for general public and municipal official respondents in Region 1.

Table 2.2.4: Rankings of Water-Related Problems; Region 1

General Public (N=14)	Ranking	Municipal Officials (N=6)
Health Hazard	1	Erosion
Floating Materials	2	Flooding
Shoreline Debris	3	Colour
Flooding	4	Dead Fish
Erosion	5	Taste & Odour
Colour	6	Shoreline Debris
Taste & Odour	7	Weeds & Algae
Weeds & Algae	8	Health Hazard
Dead Fish	9	Floating Materials

The general public's primary concern with health hazard, floating materials and shoreline debris ties in well with their previous emphasis upon desired recreational uses of water in this region. Similarly, the municipal officials' first two rankings, erosion and flooding, are consistent with their previously stated concern with flood and erosion control.

Question 7

Having determined the perceived order of problems relating to water quality in question 6, question 7 asked respondents to indicate what they consider to be the man-made cause(s) of these problems. Respondents could choose one or more of the following; municipal waste, industrial waste and agricultural runoff. Two municipal official respondents indicated that there was no water quality problem in their area.

Table 2.2.5: Perceived Causes of Water Quality Problems; Region 1

Cause	General Public (N=14)	Municipal Officials (N=8)
Municipal Waste	11	6
Industrial Waste	11	3
Agricultural Runoff	11	5

Question 8

This question represented an attempt to group some of the major factors requiring consideration in water management for the Thames River basin and to ascertain a relative ranking of importance for them. Comments on questionnaires indicated that some people had difficulty answering this question as they could not compare items such as flooding, waste treatment and land use control with each other. Nevertheless,

the responses were treated in the same manner as those to question 6 and are presented in Table 2.2.6.

The municipal officials' rankings indicate clearly the repeated primary concern with protection of land and people from flooding and erosion, a secondary concern with control of man made pollution (waste treatment) which implies improved water quality, and tertiary concern with the remaining water management factors. General public respondents put forward the same priorities as municipal officials with the addition of "recreation" as a priority management consideration. This emphasis upon recreation by the general public will be seen to be fairly consistent throughout the entire study area.

Table 2.2.6: Perceived Water Management Priorities; Region 1

General Public (N-14)	Ranking	Municipal Officials (N=8)
Industrial Waste Treatment	1	Flooding
Municipal Waste Treatment	2	Erosion
Flooding	3	Industrial Waste Treatment
Recreation	4	Municipal Waste Treatment
Domestic & Agricultural area. Treatment	5	Domestic & Agricultural Waste Treatment
Erosion	6	Fish & Wildlife Protection
Fish & Wildlife Protection	7	Development and Land Use Control
Water Quality	8	Water Quality
Development and Land Use Control	9	Recreation
Water Quantity	10	Water Quantity

Question 9

Water quality and use-demand upon water resources are directly related to land use within any given area. For this reason question 9a attempts to determine the land use priorities as expressed by the people of the study area. Also related to use-demand upon water resources within a given time period is the rate of population growth in any given area and the concomitant commercial, industrial and residential rate of development. Question 9b addresses itself to this latter relationship. Tables 2.2.7 and 2.2.8 present the findings for Region 1 from questions 9a and 9b respectively.

Table 2.2.7: Land Use Priorities; Region 1

	Agric.	Commercial	Indust.	Recreational	Residential
General					
Public (N=13)	10	2	2	10	1
Municipal					
Officials (N=7)	7	1	1	3	1

Table 2.2.8: Desired Rate of Growth Relative to Present Rate of Growth; Region 1

	Increase	Decrease	Remain Same
General			
Public (N=13)	3	3	7
Municipal			
Officials (N=7)	3	0	4

Table 2.2.7 indicates clearly the agricultural and recreational land use priorities for this region. This result is consistent with the results from interviews discussed in section 2.1. In Table 2.2.8 it should be noted that over 50 percent of respondents in each category desire the same rate of growth as at present.

2.3 SUMMARY - REGION 1

- Flood and erosion control are a first priority for elected municipal officials and are important as well to the lay public;
- Reservoir management should be carefully studied to ensure maximum flood control benefits;
- Research into erosion control should be conducted and techniques passed on to farmers. Boat wake control should also be considered.
- Recreation is a high priority water use in this region and improved water quality combined with more recreational facilities is desired.
- There has been little change in perceived water quality over the past ten years.

Perceived water quality ranges from very poor to fair.

- Erosion, flooding, health hazard, floating materials and shoreline debris are the major water-related problems as seen by the public in this region.
- Municipal, agricultural and industrial wastes are all seen as major contributors to poor water quality.
- Improvement of waste treatment, flood and erosion control, and water recreation facilities are the water management priorities for this region.
- Agriculture and recreation are the land use priorities, even as expressed by questionnaire respondents from the City of Chatham.
- The same rate of growth as at present is desired.

CHAPTER 3

REGION 2

3.1 INTERVIEW RESULTS

Parties interviewed:

Official representatives of -

- the villages of Glencoe, West Lorne, Rodney and Dutton
- the townships of Mosa, Caradoc, Aldborough, Dunwich and Lobo
- Oneida, Chippewa and Delaware Indian Band Councils
- Elgin-St. Thomas Health Unit

Note: Some of the interest groups interviewed and listed under Region 1 also apply to Region 2.

The major issues presented to the study team during meetings with municipal representatives centred around municipal water supply and sewage services, the proposed Wardsville dam, and water quality of the Thames River. More specifically, the municipalities constituting the membership of the West Elgin Planning Council felt that upstream pollution of the Thames River (in particular by the City of London) is preventing their use of the river as a source of municipal water supply and forcing them into expensive regional service schemes. Presently under consideration is the expansion of the West Lorne water supply system to service the Village of Glencoe.

This concern also carries over to Caradoc Township in Middlesex County where consultants are developing plans for water supply systems to service Mt. Bridges and Melbourne. The West Elgin Planning Council expressed the opinion that those communities and industries upstream which pollute the river should also bear the cost of its cleanup. Also with respect to water supply, the Indians of the Muncey reserve have expressed that they are experiencing great difficulty locating good well sites. As a result of their meeting with the study team they have made contact with the Ministry of the Environment's Water and Well Management Section, which is developing aquifer maps of the region. The Elgin-St. Thomas Health Unit has noted an increase in the number of well contaminations but could not say whether this was due to an increase in number of inspections or actual increased contamination.

West Elgin Planning Council and Mosa Township expressed opposition to the proposed Wardsville dam on the basis that prime agricultural land would be traded off for the

benefit of municipalities downstream. It was suggested that a detailed cost-benefit analysis of the proposed dam be conducted before any decision to begin construction is made. It was also suggested that, if provision of recreational facilities is a major consideration in favour of dam construction, it would be preferable to construct several smaller dams on tributaries flooding less valuable land. Indian representatives interviewed, especially those from the Oneida band, were also opposed to dam construction. They do not want any of their Reserve lands flooded. The Oneida reserve has only three farms left due to residential requirements on the reserve and these lie in the floodplain. The Indians are also concerned that the dam would disrupt if not totally destroy their fishing in the Thames River, which they consider to be very important as a source of both food and recreation.

The Elgin-St. Thomas Health Unit expressed the opinion that increasing recreational demands upon the Thames will require improved water quality in the near future.

Many other points were also raised during meetings with the study team. These are presented here in point form.

Mosa Twp.

- Agricultural feedlot waste from holding tanks often enters watercourses directly. There must be better control of this.
- Erosion control is important, but much can be done through wise farming practices. An education program in this respect could be most beneficial.
- Woodlot preservation and tree plantation should be further encouraged through tax exemptions. This was also mentioned by Caradoc Township.
- Agriculture is the land use priority here; land and water conservation practices are the management priorities.
- Would be interested in receiving nutrient load data for municipal drains to see how much fertilizer is wasted.

Caradoc Twp.

- Concerned that land is being excessively drained.

West Elgin

- Concerned that the agriculture industry, as opposed to other polluters will take the brunt of legislation or programs resulting from this study.

Glencoe

- Need more nearby recreational facilities.

Lobo Twp.

- Concerned that major London sewage treatment plant would be located within their boundaries.
- Suspect that municipal drains are a major source of water pollution.
- First priority is adequate water supply.

3.2 QUESTIONNAIRE RESULTS

Questions 3 and 4

Table 3.2.1: Water Uses of Thames River; Region 2

	Uses	Actual		Desired	
		N=18	N=7	N=18	N=7
		G.P.	M.O.	G.P.	M.O.
Water Supply	Domestic	1	0	1	2
	Industrial	0	0	2	1
	Fire Protection	3	1	2	2
	Irrigation	3	0	5	0
	Livestock Watering	2	1	3	1
Recreational	Fishing	9	4	8	4
	Boating	2	1	6	3
	Waterskiing	0	0	1	1
	Swimming	1	1	5	4
	Hunting	3	1	4	1
Aesthetic	Hiking	7	0	5	1
	Picnicking	5	2	3	3
	Sightseeing	5	5	6	5
	None	5	1	4	0

REGION 2 — Question 5

TABLE 3.2.2: Perceived Water Quality, General Public

		PRESENT (N = 17)					
		VP	P	F	G	E	
PAST (N = 17)	VP	7					VERY POOR
	P		2	3			POOR
	F	1		2			FAIR
	G		1		1		GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

TABLE 3.2.3: Perceived Water Quality, Municipal Officials

		PRESENT (N = 8)					
		VP	P	F	G	E	
PAST (N = 8)	VP		1	1			VERY POOR
	P		1		1		POOR
	F		1	2	1		FAIR
	G						GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

The response shown in Table 3.2.1 complements interview results quite well. It indicates a moderate water use for agricultural purposes, a frustrated use as domestic water supply among officials responsible for providing services to the municipalities, the considerable importance of fishing in the area and a need for additional recreational facilities.

Question 5

The results in tables 3.2.2 and 3.2.3 reinforce concern expressed at meetings over water quality with respect to swimming and the use of the Thames as a domestic water supply.

Question 6

Table 3.2.4: Rankings of Water-Related Problems; Region 2

General Public (N = 18)	Ranking	Municipal Officials (N=8)
Erosion	1	Colour
Health Hazard	2	Erosion
Flooding	3	Health Hazard
Taste and Odour	4	Weeds and Algae
Colour	5	Floating Materials
Weeds and Algae	6	Shoreline Debris
Dead Fish	7	Flooding
Floating Materials	8	Taste and Odour
Shoreline Debris	9	Dead Fish

Question 7

Table 3.2.5: Perceived Causes of Water Quality Problems; Region 2

Cause	General Public (N=18)	Municipal Officials (N=8)
Municipal Waste	15	3
Industrial Waste	14	5
Agricultural Runoff	6	4

Table 3.2.4 reiterates the concern expressed that poor water quality may present a health hazard, primarily seen to be caused by upstream pollution from municipal and industrial sources (Table 3.2.5). River bank erosion is also perceived to be a major problem according to question 6 results for this region.

Question 8.

Table 3.2.6: Perceived Water Management Priorities; Region 2

General Public (N=18)	Ranking	Municipal Officials (N=8)
Municipal Waste Treatment	1	Development and Land Use Control
Industrial Waste Treatment	2	Industrial Waste Treatment
Fish & Wildlife Protection	3	Fish & Wildlife Protection
Erosion	4	Domestic & Agricultural
Development and Land Use Control	5	Waste Treatment Water Quality
Flooding	6	Municipal Waste Treatment
Domestic and Agricultural Waste Treatment	7	Recreation
Water Quality	8	Erosion
Recreation	9	Flooding
Water Quantity	10	Water Quantity

In Table 3.2.6, three items are included among the top five rankings in both lists: Industrial Waste Treatment, Fish and Wildlife Protection and Development and Land Use Control. These reflect the previously stated concerns with upstream water pollution, the importance of fishing in the region, (it is a major spawning ground for pickerel) and the commitment to maintaining agriculture as the primary land use in the area.

Question 9(a)

Table 3.2.7: Land Use Priorities; Region 2

	Agric.	Commercial	Indust.	Recreation	Residential
General Public (N=18)	17	0	1	7	3
Municipal Officials (N=7)	5	0	2	3	3

The agricultural land use priority indicated throughout this chapter is here confirmed.

Question 9(b)

Table 3.2.8: Desired Rate of Growth Relative to Present Rate of Growth; Region 2

	Increase	Decrease	Remain Same
General Public (N=18)	5	2	11
Municipal Officials (N=8)	3	0	5

-

3.3 SUMMARY - REGION 2

- Municipalities would like to be able to make use of the Thames River as a source of water supply.
- Water quality must improve for the above to be possible. It is felt that upstream communities should be held responsible for downstream water quality in this regard.
- Most respondents interviewed expressed opposition to the Wardsville dam on the basis that prime agricultural land would be flooded for the benefit of downstream municipalities and that fish life would be disrupted.
- Agriculture is the prime land use in this region.
- Increased control over agricultural waste management is required.
- Woodlot preservation and tree plantation should be encouraged through tax incentives.
- Increased knowledge is required concerning the amount of fertilizer lost through runoff and the degree of land drainage considered optimal.
- An educational program carried to farmers about erosion control is suggested.
- Recreational facilities are needed, but these can be provided along tributaries of the Thames River.
- Improved water quality is needed to meet recreational requirements.

CHAPTER 4

REGION 3

4.1 INTERVIEW RESULTS

Parties interviewed:

Official representatives of

- City of London
- Township of Biddulph
- London Public Utilities Commission
- Six interest groups (see Appendix 1)

The major and only concern the City of London expressed to the study team was in regard to sewage disposal limitations. In particular, the City expressed interest in the waste water loading guidelines expected to be forthcoming from the study and the expected time when the City would no longer be able to use the Thames River as a receiver of treated sewage.

The surrounding townships expressed concern with the effects of London City upon their natural habitat and with their own pollution sources. In regard to the former, Biddulph Township officials expressed concern over the operation of landfill sites in their township. This municipality also expressed the suspicion that municipal drains may be a significant source of water pollution and felt that concentrated feedlot operations should be strictly controlled with respect to waste management and disposal. The need for increased recreational facilities in the area was also mentioned. But the first priority for Biddulph is adequate local water supply servicing. High nitrate concentrations and coliform counts have been found in local wells, particularly in the Komoka region.

The London Public Utilities Commission (P.U.C.) submitted a brief to the study team, which can be found in its entirety in Appendix 2. Its major concerns are summarized here. Two points concern recreation in the Thames River within the City of London. First there is a conflict between powered and non-powered pleasure craft and, in relation to this, the somewhat nebulous matter of shared authority of a municipality, province and the federal government to control water uses.

The mechanisms for establishing appropriate regulations exist, but the question of enforcement of these regulations is not clear. Secondly, the P.U.C. notes that water quality is below swimming standards and yet swimming and water-skiing do in fact take place in these waters.

The P.U.C. brief goes on to express the need for at least some recreational service buildings within the floodplain and to request guidelines and suggestions for the protection and

development of the river basin within city limits. Finally, terms of reference regarding snow dumping in the floodplain are requested.

Two major issues arose from the London meeting with interest groups.

The first dealt with the Wardsville dam and the effect it would have on the pickerel run. Concern was expressed that this valuable fishing resource not be disrupted. Also in this connection, it was stated clearly that farmers would be irate if they were expropriated for a flood control dam and later found that the dam in fact became a recreational venture. The second issue raised was that of the continuing expense of sewage treatment plants. How are smaller communities to afford treatment and what alternative methods are there available?

A separate meeting was also held with the Save the Medway Committee. Their over-all priority is to "save the Medway" at all costs. A policy statement from this group can be found in Appendix 2.

4.2 QUESTIONNAIRE RESULTS

It should be noted here that some 95 percent of general public respondents were from within the City of London compared to only 14 percent of municipal officials respondents; 86 percent of the latter category were from surrounding, more rural areas.

Questions 3 and 4

Table 4.2.1: Water Uses of the Thames River; Region 3

	Uses	Actual		Desired	
		N=55	N=6	N=56	N=6
		G.P.	M.O.	G.P.	M.O.
Water Supply	Domestic	0	0	5	1
	Industrial	1	2	2	2
	Fire Protection	4	2	3	2
	Irrigation	2	2	7	3
	Livestock				
Recreational	Watering	2	2	4	2
	Fishing	17	4	27	5
	Boating	32	3	36	2
	Waterskiing	2	1	8	3
	Swimming	12	1	45	4
Aesthetic	Hunting	2	2	6	2
	Hiking	42	2	40	3
	Picnicking	36	4	38	3
	Sightseeing	40	3	37	2
	None	2	0	1	0

REGION 3 — Question 5

TABLE 4.2.2: Perceived Water Quality, General Public

		PRESENT (N = 56)					
		VP	P	F	G	E	
PAST (N = 47)	VP	5	10	7			VERY POOR
	P		6	7	2		POOR
	F	1	3	2	1		FAIR
	G		1	1			GOOD
	E	1					EXCELLENT
	N/R	1	4	2	2		NO RESPONSE

TABLE 4.2.3: Perceived Water Quality, Municipal Officials

		PRESENT (N = 7)					
		VP	P	F	G	E	
PAST (N = 7)	VP	3		1			VERY POOR
	P		1				POOR
	F			2			FAIR
	G						GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

Table 4.2.1 results suggest that the London Public Utilities Commission's brief reflects accurately the public's overwhelming priority upon recreational and aesthetic water uses in the City of London.

Question 5 (see tables 4.2.2 and 4.2.3)

Once again, the vast majority of respondents evaluated the water quality, both past and present, as ranging from very poor to fair. Only 28 percent of general public respondents, however, felt that the water quality had not changed, compared to 86 percent of municipal official respondents. Fifteen percent of general public respondents felt the water quality had deteriorated over the past ten years, for a total of 12 water quality gradients, while 57 percent felt the water quality had improved for a total of 36 gradients. In comparison, only 14 percent of municipal official respondents felt the water quality had improved for a total of two water quality gradients. These differences with respect to water quality change between general public and municipal official respondents may reflect the urban-rural location disparity between the two groups. This is especially likely in view of the pollution control plant expansion program carried on by the City of London over the past ten years, results of which have in fact shown an improvement of Thames River water quality*. This improvement is here reflected in water quality evaluations of London City respondents.

Question 6

Table 4.2.4: Rankings of Water-Related Problems; Region 3

General Public (N=56)	Ranking	Municipal Officials (N=7)
Health Hazard	1	Weeds & Algae
Taste & Odour	2	Health Hazard
Weeds & Algae	3	Taste & Odour
Floating Materials	4	Shoreline Debris
Dead Fish	5	Dead Fish
Shoreline Debris	6	Flooding
Colour	7	Floating Materials
Erosion	8	Erosion
Flooding	9	Colour

The rankings of the two respondent groups in Table 4.2.4 are significantly similar. Health Hazard, Taste and Odour and Weeds and Algae are the three major problems. They are also perhaps the three items of the list most detrimental to recreational use of any body of water. Floating Materials, Dead Fish and Shoreline Debris - less harmful but more visible

* See "An Assessment of Water Pollution Control in the City of London", Ministry of the Environment, 1974.

types of pollution - appear to be secondary problems for the City of London. They are particularly detrimental to aesthetic uses of the watercourse which are important uses as seen from the results of questions 3 and 4 for this region.

Question 7

Table 4.2.5: Perceived Causes of Water Quality Problems; Region 3

Cause	General Public (N=55)	Municipal Officials (N=6)
Municipal Waste	48	3
Industrial Waste	38	5
Agricultural Runoff	27	4

Question 8

Table 4.2.6: Perceived Water Management Priorities; Region 3

General Public (N=56)	Ranking	Municipal Officials (N=7)
Municipal Waste Treatment	1	Municipal Waste Treatment
Industrial Waste Treatment	2	Industrial Waste Treatment
Development and Land Use Control	3	Fish & Wildlife Protection
Domestic and Agricultural Waste Treatment	4	Recreation
Recreation	5	Domestic and Agricultural Waste Treatment
Fish & Wildlife Protection	6	Development and Land Use Control
Water Quality	7	Water Quality
Erosion	8	Erosion
Water Quantity	9	Flooding
Flooding	10	Water Quantity

From Table 4.2.6 it is clear that waste treatment of all kinds is the first water management priority for Region 3. Secondary priorities are Fish and Wildlife Protection, Recreation, and Development and Land Use Controls. Priorities are fairly consistent between the two respondent groups and reflect the urban nature of this region. Absolute ratings given to Municipal and Industrial Waste Treatment, especially by general public respondents, were far higher than those given to all other items.

Question 9

Table 4.2.7: Land Use Priorities; Region 3

	Agric.	Commercial	Indust.	Recreation	Residential
General Public (N=52)	15	1	3	51	18
Municipal Officials (N=6)	5	0	0	4	1

Table 4.2.8: Desired Rate of Growth Relative to Present Rate of Growth; Region 3

	Increase	Decrease	Remain Same
General Public (N=56)	11	24	21
Municipal Officials (N=7)	1	1	5

The recreational land use priority among urban general public respondents indicated in Table 4.2.7 is consistent with results concerning water uses and with concerns expressed by interest groups and the London P.U.C. as discussed in section 3.1.

Table 4.2.8 shows clearly that the large majority of respondents from this region would prefer the same or a decreased rate of growth.

4.3 SUMMARY - REGION 3

- Sewage disposal requirements of the City of London are a major consideration in this region. Waste assimilation limitations or guidelines applied to the Thames River and possible sewage disposal alternatives must be considered in light of these requirements.
- Waste treatment, especially urban municipal and industrial, are priority items for water management in this region.
- Recreation is a high priority water use, particularly among the London City population. Also in this regard, clarification as to water use regulation enforcement is required.
- More apparent types of pollution (odour, water colour, shoreline debris, floating materials) detract considerably from aesthetic appreciation of the watercourse which is a major use reported by respondents.

- The water quality is seen to range from very poor to fair and to have improved considerably over recent years, especially within the City of London.
- A similar or decreased rate of growth to that of the present is desired in this region.
- The water quality of municipal drain effluent should be closely investigated.
- Guidelines for floodplain protection and snow dumping in the floodplain are requested by the London Public Utilities Commission.
- Increased research into waste disposal and flood control alternatives is recommended as part of a more interdisciplinary approach to water management.

CHAPTER 5

REGION 4

5.1 INTERVIEW RESULTS

Parties Interviewed:

Official representatives of:

- City of Woodstock and the Town of Ingersoll
- Townships of Blandford, East Zorra, Dereham, East Nissouri, North Oxford and West Zorra
- Oxford Health Unit
- Ontario Ministry of Agriculture and Food
- Seven interest groups (see Appendix 1)

Woodstock, the major urban municipality in this region, stated that greater use of Gordon Pittock reservoir for public recreation is its first priority. Other major concerns expressed dealt with surface and ground water quality and flow levels in the Thames River. There have been frequent reports of well-water contamination and the river water quality is poor. In August, 1973, the city approved construction of a municipal swimming pool to replace the recreational swimming area at Southside Pond, which had to be closed because of bacterial contamination. The Town of Ingersoll, some twelve miles downstream from Woodstock on the Thames River, also expressed the need to increase recreational facilities along the river and, indirectly, the concomitant requirement for improved water quality. Stated to be more important to this town, however, was finding a solution to the recurrent flooding experienced here and meeting the increasing demand upon its water supply systems resulting from new developments.

There was considerable consistency in priorities of water management expressed by township officials. All townships stated the need for improved control over agricultural runoff and waste management from concentrated feedlot and dairy operations. Township officials, most of whom were farmers themselves, felt that most farmers are very conscientious about waste management and fertilization practices, but that there are also many examples of either lack of concern or ignorance in this respect. They suggested a more visible education program, perhaps using television, combined with stronger enforcement of environmental protection legislation to deal with this problem.

Another priority expressed by townships was the need for and better recreational facilities along the water courses. The overriding obstacle to recreational use of the water was seen to be bacterial pollution, poor colour and odour of the water. Higher water levels in Gordon Pittock Lake are also desired. In connection with improved recreational facilities, it was

stated that agriculture was the land use priority for this region and therefore recreational developments should be planned so as not to impinge upon prime agricultural land. It was suggested, for example, that gravel quarries be developed for recreational use and that small dams rather than larger ones be considered to provide recreational waters. Protection of agricultural land from urban sprawl was also mentioned as a need.

With respect to water quality, the Oxford Health Unit cited agricultural and urban runoff as suspected causes of bacterial contamination. Poor design of septic tanks is suspected of causing groundwater contamination in the Innerkip area.

Comments were received from farmers, conservationists and naturalists at a meeting with interest group representatives in Woodstock. The farmers felt primarily that the maintenance and operation of municipal drains and bypass ponds should receive greater attention with respect to cost and operation, and that the effect of ponds on the water table should be studied. It was suggested that perhaps municipal drains should be fenced off to keep out livestock, but that farmers should be compensated for any loss of arable land. It was also suggested that building more small bypass ponds may reduce the need for larger dams, in which case farmers should receive greater incentives and subsidies to build such ponds. Farmers also felt that livestock grazing and watering along the river presented little threat to river and stream edges, but that it did help control weed growth.

Conservationists urged a co-ordinated government policy with respect to conservation, e.g. promotion of tree plantation, and suggested that the study team's aquifer maps be combined with ARDA land use maps for distribution to all municipalities and planning agencies. The naturalists urged that non-economic values, e.g. maintaining cool waters, woodlots and natural habitats for fish and wildlife, receive more emphasis in relation to economic considerations than they have in the past.

Township officials made some additional comments which are summarized below.

- There should be increased consultations between townships and the Ontario Ministry of Agriculture and Food, especially concerning the issuing of compliance certificates which sometimes approve buildings contravening municipal bylaws.
- The townships of East Nissouri and North Oxford are opposed to the proposed Thamesford dam on the grounds that they would lose valuable farmlands and gain no benefits. Their priority is agriculture over recreation.

5.2 QUESTIONNAIRE RESULTS

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Questions 3 and 4

Table 5.2.1: Water Uses of the Thames River; Region 4

	Uses	Actual		Desired	
		N=25	N=5	N=25	N=6
		G.P.	M.O.	G.P.	M.O.
Water Supply	Domestic	0	0	3	1
	Industrial	1	0	3	0
	Fire Protection	1	2	3	2
	Irrigation	1	1	2	1
	Livestock Watering	6	2	5	2
Recreational	Fishing	8	2	15	3
	Boating	8	1	12	3
	Waterskiing	0	1	2	1
	Swimming	7	2	15	4
	Hunting	0	1	0	1
Aesthetic	Hiking	13	1	16	2
	Picnicking	11	3	16	3
	Sightseeing	14	2	19	2
	None	0	2	0	1

Question 5 (See Tables 5.2.2 and 5.2.3)

The differences between municipal official responses and general public responses could be attributed to the lack of municipal official respondents from the City of Woodstock, as mentioned above. The urban general public perceives a lower water quality than the non-urban municipal officials.

REG I ON 4 — Question 5

TABLE 5.2.2: Perceived Water Quality, General Public

		PRESENT (N = 24)					
		VP	P	F	G	E	
PAST (N = 24)	VP		1				VERY POOR
	P		4	3			POOR
	F	5	7	1			FAIR
	G		1		2		GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

TABLE 5.2.3: Perceived Water Quality, Municipal Officials

		PRESENT (N = 6)					
		VP	P	F	G	E	
PAST (N = 6)	VP						VERY POOR
	P		1				POOR
	F			2			FAIR
	G			2	1		GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

Question 6

Table 5.2.4: Rankings of Water-Related Problems; Region 4

General Public (N=25)	Ranking	Municipal Officials (N=6)
Weeds & Algae	1	Health Hazard
Health Hazard	2	Taste & Odour
Taste & Odour	3	Colour
Dead Fish	4	Shoreline Debris
Floating Materials	5	Flooding
Shoreline Debris	6	Weeds & Algae
Colour	7	Erosion
Flooding	8	Floating Materials
Erosion	9	Dead Fish

Question 7

Table 5.2.5: Perceived Causes of Water Quality Problems; Region 4

Cause	General Public (N=25)	Municipal Officials (N=6)
Municipal Waste	16	4
Industrial Waste	13	3
Agricultural Runoff	18	4

Question 8

Table 5.2.6: Perceived Water Management Priorities; Region 4

General Public (N=25)	Ranking	Municipal Officials (N=6)
Industrial Waste Treatment	1	Industrial Waste Treatment
Municipal Waste Treatment	2	Municipal Waste Treatment
Domestic and Agricultural Waste Treatment	3	Development and Land Use Control
Fish & Wildlife Protection	4	Fish & Wildlife Protection
Water Quality	5	Recreation
Development and Land Use Control	6	Water Quantity
Flooding	7	Domestic and Agricultural Waste Treatment
Recreation	8	Water Quality
Erosion	9	Flooding
Water Quantity	10	Erosion

Table 5.2.6 indicates that waste treatment, particularly industrial and municipal, and protection of fish and wildlife are priority considerations in water management planning for this region.

Question 9

Table 5.2.7: Land Use Priorities; Region 4

	Agric	Commercial	Indust.	Recreation	Residential
General Public (N=23)	13	25.3	3	18	4
Municipal Officials (N=6)	5	1	0	4	2

Table 5.2.8: Desired Rate of Growth Relative to Present Rate of Growth; Region 4

	Increase	Decrease	Remain Same
General Public (N=25)	7	5	13
Municipal Officials (N=6)	3	0	3

5.3 AN EXPERIMENT WITH VIDEOTAPE

As part of the Public Consultation Program it was proposed that a pilot project be conducted in a suitable community whereby videotape equipment be made available to a local citizens' group for the purpose of stimulating citizen participation in the study. Accordingly, the City of Woodstock was chosen and Mr. Ken Ross was contacted and agreed to undertake such a project with equipment provided by the Ontario Educational Communications Authority (OECA) for the purpose of stimulating public involvement and the expression of opinions with regard to local environmental concerns including the Thames River Basin Study. Mr. Ross is active in his local ratepayers' group and has, in the past, been associated with Woodstock's Pollution Probe, a recycling program, and the organization of an environmental Earth Week. Mr. Ross contacted other interested individuals who joined with him in the project to form a group called WATER - Woodstock's Action Team for Environmental Response.

On August 7, 1973, OECA personnel conducted a video workshop for the members of WATER whereupon an estimated fifty interviews were conducted and taped by the group on the streets of Woodstock and at surrounding recreational sites (e.g. Innerkip quarries). This

taped material was edited down to a twenty minute video presentation with a view to broadcasting over local cable. It was hoped that the taped interviews could be shown and commented upon by a panel including a member of the study team, Mr. Ross, and local municipal, agriculture and commerce officials. Unfortunately, technical difficulties prevented the show from going to air and thus the impact that a video presentation might have had was lost.

The Citizens' committee did not formulate or pursue its findings.

5.4 SUMMARY - REGION 4

- Waste treatment of all kinds, municipal, industrial and agricultural, must be improved to accommodate increased recreational uses of the Thames River watercourse.
- More stringent enforcement of environmental protection legislation, particularly with respect to intensive feedlot and dairy waste management is required. An educational program addressing agricultural practices in general is suggested.
- Agriculture is the land use priority in the region and must be protected from urban impingement.
- There is opposition to the Thamesford dam in the area where it is proposed on the basis that there is small local benefit to be gained in return for prime agricultural land that would be taken up.
- Agricultural and urban runoff are suspected causes of the major bacteriological contamination of waters in substantial parts of this region.
- The effects of the operation of municipal drains and bypass ponds upon water quality and quantity should be more carefully studied. Responsibility for municipal drain maintenance should be reconsidered in light of any findings from such studies.
- A co-ordinated government policy of land and water conservation and greater emphasis upon non-economic values is urged. Distribution of aquifer and land use maps to all municipalities and planning agencies is suggested.
- Increased provincial-municipal consultation, especially in the area of issuance of permits to build farm structures, is requested.

- Water quality is seen to be poor and deteriorating along the Thames River near Woodstock. It is seen to be fair in more rural parts of the region with little change over the past ten years.
- Weeds and algae, bacterial pollution, taste, odour and colour are seen as the major water problems in this region precipitated by municipal waste, industrial waste and agricultural runoff alike.
- The majority of respondents would like the rate of growth of the area to remain as it is.

CHAPTER 6

REGION 5

6.1 INTERVIEW RESULTS

Parties interviewed:

Official representatives of

- The townships of Blanshard, Fullarton and North Easthope
- Perth-Stratford Health Unit,
- Four interest groups (see list Appendix 1)

The three townships interviewed in this region expressed somewhat varied priorities with respect to the study objectives and areas of recommendation. Conservation was the primary concern for North Easthope Township. In particular, they expressed the need for greater co-ordination among public agencies in the planning of hydro and transportation corridors such that these may be more congruent and overlapping thereby preserving needed woodlots and bushland in this area. This conservation measure would also affect groundwater and headwater quality and quantity in a positive way, provide protection from wind erosion, and preserve wildlife habitat. The township has taken measures of its own by requiring permits for bushland clearing and by placing an 18 inch diameter minimum on hardwood cutting, but cites its frustration at three separate corridors running through its area (hydro, rail and highway) and a fourth (highway) under construction. Another conservation measure proposed was improved hunting regulations to preserve wildlife.

Finally, this township expressed concern over municipal drain management and inter-township co-ordination. If an upstream township upgrades its drains, the downstream townships must follow suit in order to contain the flows. North Easthope is presently in this situation but feels it does not require improved drainage, would therefore gain nothing from this expenditure, and would only contribute to higher peak flows and increased flooding and erosion downstream. The township officials feel this is a concern for the Conservation Authority, but claim to have received no comment from the U.T.R.C.A. on this issue in two years.

Both Fullarton and Blanshard Townships felt an important priority to be the increased enforcement of environmental protection laws and prosecution of offenders. Specific reference was made to feedlot waste disposal in this regard. Both townships also expressed a need for improved and more lent consultations between local governments and provincial agencies, especially as concerns provincial projects and programs in their areas. In addition,

Blanshard township expressed concern with increasing residential development along riverways, suggesting that guidelines should be forthcoming as to limitations on residential development.

Fullarton Township expressed major concerns with regard to the proposed Glengowan dam and requested information on the following questions:

- what effect will the dam have on water quality upstream?
- how will the dam be managed and what variations in water levels can be anticipated?
- what ecological changes in the reservoir area can be expected, e.g. due to silt buildup, and should flora be swept clear in the proposed reservoir area?

Township officials were primarily concerned with maintaining good water quality, preserving fish life and providing for maximum recreational benefits of the proposed reservoir.

The major and only concern expressed by the Perth-Stratford Health Unit dealt with the bacteriological contamination of surface waters which, in 1973 for the first time, caused Lake Victoria and the Mitchell reservoir to be closed to swimmers.

Concern with feedlot waste disposal and the need for stronger legislation enforcement was reiterated at the Stratford meeting with interest group representatives. In response to the study team's statement that an investigation of nutrient levels in rivers in relation to various land uses constituted one part of the study, agriculturalists suggested sampling of municipal drain waters and publication of resulting water quality data as necessary to support any possible contention that agricultural runoff contributes significantly to high nutrient levels in river waters. They also suggested studies on the effects of chemical fertilizers, insecticides and weed killers on soil capacity for bacterial breakdown.

Naturalists urged that summer and-fall water draw-downs at Wildwood reservoir continue as this provides good marshland for migrating birds in the fall. The anglers and hunters recommended shallow dams as preferable to deep reservoirs for fish life. These latter two comments represent a direct conflict with recreational uses of reservoirs which require consistent high water levels.

6.2 QUESTIONNAIRE RESULTS

Over fifty percent (7/13) of general public respondents were from the City of Stratford.

Questions 3 and 4

Table 6.2.1: Water Uses of the Thames River; Region 5

Uses	Actual		Desired		
	N=13	N=5	N=12	N=5	
	G.P.	M.O.	G.P.	M.O.	
Water Supply	Domestic	0	0	2	0
	Industrial	0	0	0	0
	Fire Protection	1	1	3	1
	Livestock Watering	1	2	0	2
Recreational	Fishing	5	3	8	5
	Boating	5	2	4	1
	Waterskiing	0	1	1	1
	Swimming	3	1	6	2
Aesthetic	Hunting	1	2	2	2
	Hiking	6	2	6	2
	Picnicking	5	3	5	5
	Sightseeing	10	1	8	2
	None	0	1	1	0

Table 6.2.1 indicates that aesthetic uses (hiking, picnicking, sightseeing) of the watercourse are primary in Region 5 and are reasonably well met. Fishing and swimming are the most frustrated uses.

Question 5 (see Tables 6.2.2 and 6.2.3)

The differences between the two respondent groups' evaluation of water quality in this region may be due to the large percentage of general public respondents from the major urban centre in the region, Stratford. None of the municipal official respondents reside in Stratford. This city has been constructing a tertiary treatment facility at its sewage plant during the course of this study, indicating a need for improved sewage treatment. Studies show poor water quality in the Avon River. Taking the municipal official responses as indicative of rural water quality in this region suggests better water quality in the headwaters than her parts of the Thames River.

REGION 5 — Question 5

TABLE 6.2.2: Perceived Water Quality, General Public

		PRESENT (N = 13)					
		VP	P	F	G	E	
PAST (N = 13)	VP	1	1				VERY POOR
	P	1	1	3			POOR
	F			1			FAIR
	G	2	3				GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

TABLE 6.2.3: Perceived Water Quality, Municipal Officials

		PRESENT (N = 5)					
		VP	P	F	G	E	
PAST (N = 5)	VP	1					VERY POOR
	P						POOR
	F			2	1		FAIR
	G				1		GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

Question 6

Table 6.2.4: Rankings of Water-Related Problems; Region 5

General Public (N=13)	Ranking	Municipal Officials (N=5)
Weeds & Algae	1	Weeds & Algae
Colour	2	Hazard
Dead Fish	3	Dead Fish
Taste & Odour	4	Flooding
Health Hazard	5	Colour
Floating Materials	6	Erosion
Erosion	7	Taste & Odour
Shoreline Debris	8	Floating Materials
Flooding	9	Shoreline Debris

Question 7

Table 6.2.5: Perceived Causes of Water Quality Problems; Region 5

Cause	General Public (N=10)	Municipal Officials (N=5)
Municipal Waste	7	2
Industrial Waste	7	2
Agricultural Runoff	5	2

Question 8

Table 6.2.6: Perceived Water Management Priorities; Region 5

General Public (N=13)	Ranking	Municipal Officials (N=5)
Fish & Wildlife Protection	1	Flooding
Recreation	2	Municipal Waste Treatment
Development & Land Use Control	3	Industrial Waste Treatment
Municipal Waste Treatment	4	Water Quality
Industrial Waste Treatment	5	Fish & Wildlife Protection
Domestic & Agricultural	6	Recreation
Waste Treatment Water Quality	7	Domestic & Agricultural Waste Treatment
Flooding	8	Development & Land Use Control
Erosion	9	Erosion
Water Quantity	10	Water Quantity

The general public rankings reflect exactly the priorities expressed and reported in Section 6.1. To recapitulate, these were the need for improved conservation measures (protection of fish and wildlife, control over land use and development), the need for more recreational facilities (this is more explicit in Table 6.2.1) and the need to enforce environmental protection legislation more forcefully, especially with regard to waste disposal. This latter point implies an improvement in water quality and corroborates the waste treatment and water quality priorities listed above. Municipal officials also gave high rankings to waste treatment, water quality, fish and wildlife protection and recreation.

Question 9

Table 6.2.7: Land Use Priorities; Region 5

	Agric.	Commercial	Indust.	Recreation	Residential
General Public (N=13)	5	0	0	11	2
Municipal Officials (N=5)	3	2	1	3	3

A clear recreational land use priority is further indicated here by the general public.

Table 6.2.8: Desired Rate of Growth Relative to Present Rate of Growth; Region 5

	Increase	Decrease	Remain Same
General Public (N=13)	1	3	9
Municipal Officials (N = 5)	2	0	3

6.3 SUMMARY - REGION 5

- Enforcement of environmental protection legislation, particularly with reference to waste disposal of all types, should be more forceful and should include prosecution of offenders.
- Aesthetic and recreational uses of waterways are primary in this region. The former are reasonably well met, but the latter are somewhat frustrated.

- Conservation of woodlots, fish and wildlife and improvement of water quality through better waste treatment are management priorities.
- Water quality is seen to range from poor to good with better water quality in rural areas, poorer water quality near urban centres, particularly Stratford.
- Specific details of the proposed Glengowan dam are requested including its effects on water quality, anticipated water level variations and ecological effects.
- Sampling of municipal drain waters is suggested.
- Weeds and algae and bacterial pollution are the major problems related to water quality in this region.
- Recreation is the land use priority, especially near Stratford.
- The present rate of growth is desired in the urban areas and slight increases in growth rate appear desirable in the rural areas of this region.
- Inter-township co-ordination of municipal drain development is required.
- Greater municipal-provincial liaison is requested.

CHAPTER 7

THE FARMERS' VIEWPOINT

Question number ten of the questionnaire required respondents to indicate their occupation according to eight possible categories. As can be seen from the previous five chapters data generated by this question was used to separate respondents into two groups: general public and municipal officials. There were one hundred and twenty-six (126) general public and thirty-four (34) municipal official respondents to the questionnaire from the entire study area*. From among these groups was selected a third group, farmers, for separate analysis. There are three reasons for selecting farmers as a separate group. First, agriculture represents by far the major land use within the study area. The study area consists of some of the most productive agricultural land in the world and to solicit the first-hand opinions of those individuals most directly responsible for this primary industry would only seem common sense. Many comments received by the study team related directly to agriculture, agricultural practices and support services for the agricultural industry. Third, farmers themselves expressed great interest in the study and were well represented at meetings held by the study team and among questionnaire respondents.

7.1 INTERVIEW RESULTS

This section extracts from the previous five chapters those comments made by representatives of farmers' groups such as Farmers' Unions, the Federation of Agriculture and Soil and Crop Improvement Associations. Above all, these groups frequently expressed the feeling that farmers were cast as the scape-goat for poor water quality. In areas where dams are proposed, farmers' representatives united strongly against the flooding of prime agricultural lands for the benefit of urban centers and farmlands downstream. The land use priority in the Thames River basin is agriculture. It was felt that urban sprawl and residential-recreational development are taking up significant portions of agricultural lands. Furthermore, when farmers gain the impression that reservoir management becomes increasingly governed by recreational considerations (which some feel is the case) they become even more recalcitrant with respect to giving up farm lands. Only urgently required flood control is a justifiable cause for flooding prime agricultural land, and only after all alternatives have been thoroughly investigated. In cases where farmers' lands are flooded, adequate compensation must be available.

* *Additional questionnaires were received after computer analysis. These are included in a discussion of results for the entire study area, Section 8.*

Other comments from farmers included the suggestions that municipal drain effluent be sampled and that research be undertaken to relate quantities of chemical application to soils to chemical content in runoff waters and to soil capacity for bacterial activity. The question of municipal drain maintenance (keeping clear of vegetation and livestock) was also mentioned. If municipal drains should be fenced off from livestock, would farmers be compensated for any loss of land that may be involved?

7.2 QUESTIONNAIRE RESULTS

There were twenty-five farmer respondents from the entire study area. The strongest farmer representation comes from Region 4 (10 respondents), the weakest from Region 3 (2 respondents).

Questions 3 and 4

Table 7.2.1: Water Uses of the Thames River; Farmers

	Uses	Actual (N=25)	Desired
Water Supply	Domestic	2	3
	Industrial	0	3
	Fire Protection	4	6
	Irrigation	5	8
	Livestock Watering	13	11
Recreational	Fishing	10	16
	Boating	3	8
	Waterskiing	2	3
	Swimming	4	9
	Hunting	5	7
Aesthetic	Hiking	4	6
	Picnicking	6	10
	Sightseeing	8	10
	None		

In general, water supply and aesthetic uses are reasonably well met, although not entirely to satisfaction, and most recreational uses of the watercourse are relatively highly desired but frustrated.

ENTIRE BASIN

TABLE 7.2.2: Perceived Water Quality, Farmers

		PRESENT (N = 24)					
		VP	P	F	G	E	
PAST (N = 23)	VP	3					VERY POOR
	P		2	2			POOR
	F	2	1	6	3		FAIR
	G			1	3		GOOD
	E						EXCELLENT
	N/R		1				NO RESPONSE

Question 5 (See Tables 7.2.2 and 7.2.3)

The majority of respondents evaluated the water quality as ranging from poor to good. This represents a slight positive shift in perceived water quality from results of the regional analyses and supports the conclusion drawn from the Region 5 analysis that water quality in the rural areas is perceived to be better than that near urban centres.

Question 6

Table 7.2.3: Rankings of Water-Related Problems; Farmers

<u>Ranking</u>	<u>Problems (N=25)</u>
1	Flooding
2	Weeds and Algae
3	Erosion
4	Colour
5	Taste and Odour
6	Health Hazard
7	Shoreline Debris
8	Dead Fish
9	Floating Materials

It should be noted that according to the absolute ratings, rankings 1, 2, and 3 rated considerably higher than rankings 4, 5 and 6 which in turn were also rated considerably higher than rankings 7, 8 and 9. The high ratings given to flooding and erosion can be understood insofar as they represent a direct threat to the land and to crops, the farmers' primary asset. There is a conflict here insofar as protection of downstream farmland may require the flooding of upstream farmlands near suitable dam sites. The problem of excess weeds and algae present a particular threat to fish life, and it will be recalled that fishing is a priority water use reported by farmers.

Question 7

Table 7.2.4: Perceived Causes of Water Quality Problems; Farmers

<u>Cause</u>	<u>Response (N=24)</u>
Municipal Waste	17
Industrial Waste	14
Agricultural Runoff	9

Farmers perceive agricultural runoff to be a significantly less important source of water pollution than municipal or industrial wastes.

Question 8

Table 7.2.5: Perceived Water Management Priorities; Farmers

<u>Ranking</u>	<u>Priority (N=24)</u>
1	Industrial Waste Treatment
2	Municipal Waste Treatment
3	Flooding
4	Fish & Wildlife Protection
5	Development & Land Use Control
6	Water Quality
7	Recreation
8	Domestic & Agricultural Waste Treatment
9	Erosion
10	Water Quantity

The primary concern with industrial and municipal waste treatment confirms the results from Question 7, Table 7.2.4, that these wastes are perceived to cause most water quality degradation relative to agricultural wastes or runoff. Control of flooding, development and land use are seen as necessary to maintain the study area's agricultural base as reported in Section 7.1. The final major priority is the protection of fish and wildlife which correlates positively with the earlier reported importance of fishing to farmers.

Question 9

Table 7.2.6: Land Use Priorities; Farmers

	<u>Agric.</u>	<u>Commercial</u>	<u>Indust.</u>	<u>Recreation</u>	<u>Residential</u>
(N=23)	22	3	2	10	4

These results reflect the opinion that agriculture is and should be the primary land use in the study area and that use of land for recreational purposes is also desirable when it does not conflict with agriculture.

Table 7.2.7: Desired Rate of Growth Relative to Present Rate of Growth; Farmers

	<u>Increase</u>	<u>Decrease</u>	<u>Remain Same</u>
(N=24)	6	11	7

The majority of respondents wish to maintain the present rate of growth. A considerable number, however, would like to see an increased rate of growth. This would appear to be in contradiction to the earlier described concern over increased urban impingement on farmlands.

7.3 SUMMARY - FARMERS

- The land use priority of the Thames River basin is agriculture and should remain so.
- Industry, urban residences and urban service facilities, including dams and reservoirs should be controlled so as not to impinge upon prime agricultural lands.
- There should be adequate compensation for farm lands flooded or fenced off for reservoirs or municipal drains.
- Water supply and aesthetic uses of the Thames River watercourse are reasonably well met. Recreational uses of the watercourse are not adequately met.
- Water quality is perceived as ranging from fair to good with little change over the past ten years.
- Improved municipal and industrial waste treatment are required to improve water quality.
- Flooding, erosion and profuse weeds and algae are the main water-related problems.
- Protection of fish and wildlife is an important management priority.

CHAPTER 8

ENTIRE BASIN

This chapter presents an overview of public response for the entire study area as reported through the questionnaire. It includes results from questionnaires received after the date regional analysis was begun, thereby adding twenty-eight general public responses and one municipal official response to bring the totals to 154 and 35 respectively. Also included in this section are the additional comments made in spaces labelled "other" on the questionnaire and in response to question 11.

The overall summary constitutes Chapter 1 of the report and is not repeated here.

8.1 QUESTIONNAIRE RESULTS

Questions 3 and 4

Table 8.1.1: Water Uses of the Thames River; Entire Basin

	Uses	Actual		Desired	
		N=152 G.P.	N=30 M.O.	N=152 G.P.	N=32 M.O.
Water Supply	Domestic	10	1	20	7
	Industrial	4	3	9	4
	Fire Protection	13	9	16	10
	Irrigation	7	6	21	7
	Livestock Watering	12	10	20	10
Recreational	Fishing	56	20	86	25
	Boating	69	12	84	15
	Waterskiing	5	4	23	10
	Swimming	35	6	103	20
	Hunting	9	8	19	8
Aesthetic	Hiking	92	7	99	13
	Picnicking	85	18	97	22
	Sightseeing	98	16	106	16
	None	10	5	6	3

Other Uses Indicated:

Use	Actual	Desired
Nature Study	7	3
Educational (Field Trips, Student Water Testing)	5	2
Canoeing	3	3
Farm Drainage Outlet	4	4
Photography	2	1
Camping	2	2
Wildlife Sanctuary	1	3
Children's Playground	0	1
Bicycle Paths	0	2

Aesthetic uses of the watercourse (hiking, picnicking and sightseeing) are highly desired and appear to be adequately met. Also highly desired are three recreational uses, swimming, fishing and boating, but these are not adequately satisfied, especially "swimming" which is the most frustrated use. Water supply uses which are not as highly desired, are nevertheless somewhat frustrated. In particular domestic water supply, irrigation and livestock watering are inadequately met uses.

These patterns of use were consistent throughout all regions of the study area with the exception noted for farmers whose primary actual and desired uses were livestock watering, irrigation and fishing.

Question 5 (See Tables 8.1.2 and 8.1.3)

Municipal official respondents tended to evaluate water quality as being somewhat higher than did the general public. As noted in the discussion of some regional analyses, this could reflect the low representation of urban dwellers among municipal official respondents (only two of whom reside in a major urban area i.e. Stratford, Woodstock, London or Chatham).

ENTIRE BASIN

TABLE 8.1.2: Perceived Water Quality, General Public

		PRESENT (N = 152)					
		VP	P	F	G	E	
PAST (N = 142)	VP	15	19	10			VERY POOR
	P	4	19	21	2		POOR
	F	8	11	12	4		FAIR
	G	2	7	2	4		GOOD
	E	2					EXCELLENT
	N/R	1	4	3	2		NO RESPONSE

TABLE 8.1.3 : Perceived Water Quality, Municipal Officials

		PRESENT (N = 33)					
		VP	P	F	G	E	
PAST (N = 33)	VP	4	2	2			VERY POOR
	P		3	2	1		POOR
	F	1	1	11	2		FAIR
	G			2	2		GOOD
	E						EXCELLENT
	N/R						NO RESPONSE

Question 6

Table 8.1.4: Rankings of Water-Related Problems; Entire Basin

General Public (N=154)	Ranking	Municipal Officials (N=33)
Weeds & Algae	1	Health Hazard
Health Hazard	2	Weeds & Algae
Taste & Odour	3	Erosion
Colour	4	Taste & Odour
Dead Fish	5	Colour
Floating Materials	6	Flooding
Shoreline Debris	7	Dead Fish
Erosion	8	Shoreline Debris
Flooding	9	Floating Materials

Other problems noted:

- Power boats creating noise and water pollution;
- High water temperatures due to reservoirs;
- Unsteady flows;
- High bacterial counts (health hazard);
- Lack of adequate shoreline cover;
- Decrease in aquatic species;
- Scum on water surface;
- High turbidity;
- Lack of overall drainage area management.

Table 8.1.4 does not provide a good indication of water-related problems for the entire study area as there is considerable disparity in problem rankings from region to region. For example, weeds and algae did not rank as a significant problem in the Lower Thames River, Regions 1 and 2. However, the table does show a significant similarity between general public and municipal official responses with the exception that municipal officials ranked "erosion" and "flooding" considerably and consistently higher than did the general public. This suggests a greater feeling of urgency to control erosion and flooding control in rural areas, with exception of Chatham for which flooding problems were specifically mentioned. This is further suggested by the high ranking given to "flooding" and "erosion" by farmers.

Question 7

Table 8.1.5: Perceived Causes of Water Quality Problems; Entire Basin

Cause	General Public (N=150)	Municipal Officials (N=33)
Municipal Waste	116	18
Industrial Waste	100	19
Agricultural Runoff	75	20

Other causes mentioned:

- Stagnation-lack of water movement
- Irrigation canals
- Public carelessness
- River bottom (turbidity)
- Recreation
- Lack of planning, co-ordination and management
- Erosion
- Proximity of gravel pits to streams and river
- Poor dam design

From these results, it can be said that all three types of waste are seen to be major contributors to water quality degradation in the Thames River watershed. It is noteworthy that the largely non-urban* municipal official respondent population considered agricultural runoff to be an equal or greater cause of water quality degradation than municipal and industrial wastes. This is contrary to results from the farmer respondent group who considered agricultural runoff to be a considerably less significant contributor to water quality degradation than municipal and industrial wastes. The general public respondents also considered agricultural runoff to be a less significant water pollutant.

* *"non-urban" meaning "not living in a major urban centre" as opposed to "rural" meaning "living on a farm and not in a city, town or village".*

Question 8

Table 8.1.6: Perceived Water Management Priorities; Entire Basin

General Public	Ranking	Municipal Officials
Municipal Waste Treatment	1	Industrial Waste Treatment
Industrial Waste Treatment	2	Municipal Waste Treatment
Fish & Wildlife Protection	3	Fish & Wildlife Protection
Development and Land Use Control	4	Flooding
Domestic and Agricultural Waste Treatment	5	Development and Land Use Control
Recreation	6	Water Quality
Water Quality	7	Domestic and Agricultural Waste Treatment
Flooding	8	Recreation
Erosion	9	Erosion
Water Quantity	10	Water Quantity

The only other priority mentioned was the prevention of human carelessness with respect to water conservation.

Industrial and Municipal Waste Treatment received consistently high rankings in all regions as well as among farmers. Fish and Wildlife Protection ranked high in three of the five regions and among farmer respondents. Otherwise, there is considerable variation in priority rankings from region to region. Flooding ranked high in Region 1 and among farmers. As noted above, flooding received consistently higher ranking from municipal officials than from the general public. This is again reflected in Table 8.1.6. Domestic and Agricultural Waste Treatment received relatively high rankings in Regions 1, 3 and 4. Recreation received relatively high rankings in Regions 3 and 5 as did Development and Land Use Control in Region 2.

Question 9

Table 8.1.7: Land Use Priorities; Entire Basin

	Agric.	Commercial	Indust.	Recreation	Residential
General Public (N=147)	73	7	11	120	39
Municipal Officials (N=31)	26	5	5	18	11

The high priority given to recreational land use by the general public reflects the large number of urban resident respondents in this group. From the regionally analysed responses, all Stratford, London and Chatham resident respondents indicated recreation as a land use priority. London City resident respondents also were by far the major proponents of residential land use.

From table 8.1.7 it can be concluded that agriculture and recreation are top priority land uses and that residential development is a distant second. This pattern holds true throughout all regions of the study area.

Table 8.1.8: Desired Rate of Growth Relative to Present Rate of Growth; Entire Basin

	Increase	Decrease	Remain Same
General Public (N=153)	29	43	81
Municipal Officials (N=34)	13	1	20

The majority of respondents in both groups prefer to maintain the present rate of growth. This pattern is sustained throughout all the regions with the exception that general public respondents in Region 3 slightly preferred a decrease in rate of growth. There was a higher preference for decreased rate of growth among respondents from London, Woodstock and Chatham compared to other regions of the study area. The general public respondents from these urban areas expressed equal preference for a decreased rate of growth as for continuation of the present rate. Municipal officials consistently expressed greater preference for an increased rate of growth than did the general public.

8.2 Additional Comments (question 11)

The respondent occupation group with the highest response rate to question 11 is farmers. Only 17 percent of this group had no additional comments. Occupational categories in order of decreasing response rate to this question are:

students, professionals, elected officials and civil servants, businessmen and housewives.

The comments are here presented according to river stretches and municipalities to which they pertain.

Chatham:

- Improved industrial and municipal waste treatment facilities are required.
- Wake control as opposed to speed control of power boats is required to protect against riverbank erosion.
- Dam construction would stabilize water levels and allow for better irrigation.
- Legislation and programming to conserve fish and wildlife, aesthetic and recreational properties of the Thames River are required.

Lower Thames:

- Farmland must be protected from encroaching urbanization and recreational development.
- Flood and erosion control combined with wiser agriculture practices could enhance recreational and aesthetic potentials of the Thames River basin.
- Dam building should be prevented (Region 2).
- More anti-pollution legislation is required.
- Effects of gravel pit location upon ground water and erosion should be studied.

London:

- Recreational potential of the Thames River in London is not realized. Emphasis should be placed on canoeing, swimming, hiking and picnicking.
- Land use controls are required to protect the floodplain from development and commercialization.
- Pollution sources of all types need to be more strictly controlled through the use of enforcement officers and by prosecution of legislative breaches. Waste treatment facilities need improvement.
- Power boats should be restricted. The Thames is not a large enough body of water for their use.
- Waterways should be maintained in their natural state as far as possible; dam building and channelization should be restricted.

Thames River above London:

- Better control over agricultural practices is required.
- Floodplain conservation measures are needed.
- Better sewage treatment facilities are required.
- Prevent poaching; protect and encourage agricultural and recreational land uses.

Gordon Pittock Reservoir:

- A more constant high water level should be maintained.
- There is too much algae in the lake.
- Restrict power boats and dogs in this area.
- Swamps should be preserved to provide wildlife habitat
- and for their water retention function. The latter would help eliminate the need for dam construction.
- A means for transporting fish from below the dam into the reservoir is needed.

Middle Thames River:

- Preserve agricultural land above all else.
- Improve water quality.
- Provision of a green belt area, stronger conservation
- measures and a reforestation program would be appropriate
- to help preserve the unique nature of this area.

North Thames River:

- Restriction of agriculture at stream edges is needed to help control nutrient enrichment of waters and provide better public access to waterways for recreation.
- Unique swamp and marsh areas must be protected.
- Prohibit power boating on Wildwood reservoir.

- Protect the floodplain through better land use planning.
- Improve sewage treatment facilities in small towns.

An overview of these comments indicates concern on the part of respondents with three major areas: water quality, flood control techniques, and recreation and conservation.

There is widespread agreement that sewage treatment should be upgraded to improve water quality. Comments from four areas referred to dams, but only Chatham area respondents favoured dam construction. Upstream comments opposed dams for the primary reasons of fish and wildlife habitat protection and the preservation of prime agricultural land. Comments favouring improved recreational facilities and access to waters were made primarily in high population areas in the Upper Thames basin. This directly reflects results from other parts of the questionnaire which show a high demand for recreation in urban centres. It should be noted that comments referring to recreation and agriculture are qualified in their support of these land and water uses by a recognition of the necessity of controls. For example, it is suggested that power boating upstream from Chatham be severely restricted and that the Thames watercourse recreational development emphasize non-motorized boating, swimming and aesthetic uses such as hiking and picnicking. Similarly, controls over agriculture-limiting cultivation at stream edges and ensuring good waste management-are recommended.

Conservation comments address the questions of fish and wildlife habitat preservation and floodplain protection. The opinion is expressed that dam construction should be a last resort to be turned to only for control of severe flooding and after natural conservation measures have been considered.

The picture that emerges from these comments, then, is one that emphasizes conservation and recreational and agricultural land and water uses as management priorities. The attendant qualifications with respect to recreation and agriculture and the recognition that flood control is important indicates sufficient flexibility and understanding to suggest that a balance of priorities can be achieved.

CHAPTER 9

METHODOLOGY

The format adopted for PCP was a limited version of that proposed by Katherine Warner¹. According to Warner, the mechanism for public involvement found to be most useful by planning agencies are citizen advisory boards, informal contacts with local officials and citizens, and public meetings. For regional water resources planning, the informal contacts mechanism is considered to be most valuable according to Warner's survey of planning agencies. Accordingly, the following techniques were used in the Public Consultation Program.

9.1 PUBLICATIONS

Two major publications in the form of "information bulletins" supplemented by press releases and advertisements in newspapers and on radio were circulated throughout the study area. The first such bulletin (June 1973) was a brief, eight page outline describing the study and advising the public how they can take part. It included a clip-out coupon whereby the general public could request the questionnaire. This represented the major mode of questionnaire distribution, supplemented by advertisements with similar coupons placed in local daily newspapers in late August, 1973. The overall result was that relatively few (154) questionnaires were received for a study population of four hundred thousand (400,000) and that no statistical control could be applied.

Nevertheless, it was felt that participants who did use the questionnaire would be highly motivated citizens who took the trouble to obtain, complete and return the questionnaire and that the quality of response would be high. These assumptions would appear to have been borne out as evidenced by the considerable consistency in the response pattern and relative lack of factual error found. It must be clearly stated, however, that there can be no presumption of statistical validity for the questionnaire responses.

The second Bulletin (April 1974) represented a non-technical interim report presenting the findings of the study team and posing questions to the public concerning areas of major conflict and water management policy. The Environmental Hearing Board of Ontario invited briefs in response to this Bulletin report for presentation at the public meetings which followed in May, 1974. It was intended that response to the April 1974 Bulletin would provide the study team with a final indication of public thinking on the specific water management issues presented before finalizing recommendations.

¹ Warner, Katharine P.; *Public Participation in Water Resources Planning; University of Michigan, July 1971.*

9.2 QUESTIONNAIRE

The distribution method employed for the questionnaire is discussed above. All questionnaire data was computerized and programmed for simple tabular print-out with several different sorts. A sort by occupation (question 10) was used to separate general public respondents from municipal official respondents. Municipal official respondents include elected council members, municipal clerks, and a planning board member. Some municipalities submitted a single questionnaire for the entire council, while others left it to the initiative of individual council members to complete the questionnaire. As a result, there were as many as three questionnaires received from individual officials for some municipalities, but only one questionnaire from the entire council for others. This distinction was not accounted for in the data analysis. Municipal official questionnaire response data should be seen primarily as an indicator of the thinking of officials at this level of government in comparison with the general public. This is in fact how the data is discussed in the report. This computer sort was also used to separate out farmer respondents as discussed in Chapter 7.

Two further computer sorts were used to order the data for simple recording in tabular form. Finally, questionnaire returns were ordered by township, which allowed for data analysis by regions. A word about the region delineation is found in section 9.3 below.

The questions asked in the questionnaire were all quite straight forward. Responses to questions one and ten were used as indicated above. Question two, which asks the respondent to indicate to which area of the river basin his/her comments apply, was not used. Rather, data was organized according to the residence location of the respondent as determined from question one.

Questions three and four were well answered. In analysis, data indicating actual use made of the watercourse (question three) was compared to data indicating desirable use (question four). In this way it was determined which uses are most prevalent and also which uses are adequately met.

Questions five and seven were answered well with no apparent ambiguities in the response data. Questions six and eight, the ranking questions, did present problems for some respondents who felt that it was meaningless if not impossible to compare the items they were asked to rank, especially in question eight. A table of rankings given was prepared and aggregate ranking for each region as well as for the entire study area was derived by taking

* A copy of *the questionnaire can be found in Appendix 3.*

the sum of the inverse of rankings given; eg. if "recreation" received the following rankings:

Ranking	1	2	3	4	5	6	7	8	9
Recreation	2	1	0	3	3	0	0	2	0

then the sum of the inverse of rankings given is:

$$2/1 + 1/2 + 0/3 + 3/4 + 3/5 + 0/6 + 0/7 + 2/8 + 0/9 = 4.1$$

The item receiving the highest total value in this way receives the overall ranking of 1. Descending values give descending rankings.

Question 9(a and b) results were simply tabulated as presented in chapters 2-8.

9.3 THE REGIONS

The river basin was divided into five regions to facilitate communication and data analysis. It was also felt that it would be useful to ascertain differences in public opinion from one area to the next within the river basin. The regions were chosen as follows:

- Region 1
 - from river mouth to east boundaries of Zone and Orford townships.
 - includes one city, four towns, two villages and portions of thirteen townships.
 - major historical water management concerns here have been flooding and erosion.

- Region 2
 - from west boundaries of Mosa and Aldborough townships to east boundaries of Lobo and Delaware townships.
 - includes five villages (including Rodney, West Lorne and Dutton which lie on the watershed boundary) and portions of eight townships.
 - this region is directly downstream from the City of London.
 - the proposed Wardsville dam, if constructed, would affect the river along almost the entire length of this region.
 - major pickerel spawning grounds lie within this region.

- Region 3
 - includes the City of London, all adjacent townships plus the townships of Biddulph and North Dorchester, for a total of one city and six townships.
 - a significant percentage of land use is urban residential, industrial and commercial.
 - major water management concerns in the past have been water quality, sewage treatment and urban runoff control.

- Region 4
 - includes all portions of Oxford County within the watershed; one city, one town, three villages and all or parts of nine townships.
 - includes the site of the proposed Thamesford dam.
 - major water management concerns have been water quality in the Thames River and Gordon Pittock reservoir, and sewage treatment.

- Region 5
 - this region includes all portions of Perth County within the watershed plus Usborne Township in Huron County; one city, two towns and ten townships.
 - includes the site of the proposed Glengowan dam.
 - major water management concerns have been water quality of the Avon River and conservation of headwaters.

As can be seen from the above, region delineation is according to certain water resource and land use characteristics and existing municipal boundaries.

9.4 SELECT GROUP MEETINGS, PHASE I

A first round of meetings was held in July and August 1973, with the Upper and Lower Thames Conservation Authorities, municipal representatives and select interest groups throughout the study area. The purpose of these meetings was threefold:

- (i) to advise key individuals and groups of the nature and purpose of the Thames River Basin Study.
- (ii) to solicit immediate general response from these groups and individuals as to their views and priorities on water management and related concerns; and
- (iii) to apprise them of the study team's desire to receive continuing input from them through the Public Consultation Program.

The initiative on the part of the study team in arranging these meetings was well received and many concrete suggestions and comments were made as can be seen by reading subsections 1 of chapters 2 through 8 of this report. Information gained from these meetings served as a major source of data upon which this report is based. The consistency between interview and questionnaire results lends validity to the questionnaire results in particular, and somewhat compensates for the lack of a statistical base for the questionnaire data.

Meetings with special interest groups were held in Chatham, London, Woodstock and Stratford. None of these centres fall into Region 2 of the study area. It was preferred to report results from interest group meetings as they occurred and it is for this reason that interest group comments pertaining to Region 2 are found in the discussion of regions 1 and 3 where results from the Chatham and London meetings are presented.

9.5 PUBLIC MEETINGS, PHASE II

From October 1973 to March 1974, the study team was engaged in completing its technical studies, preparing a non-technical interim report* and preparing for a final round of full public meetings which were held in May 1974. Five series of two meetings each were held throughout the study area; one in each of the five regions described above. These meetings were presided over by the Environmental Hearing Board, a body entirely separate from the study team. Briefs were solicited and the general public was invited. The study team gave an audio-visual presentation at the commencement of each meeting.

A total of 250 people attended these meetings and 56 briefs were submitted, albeit 37 of these represent a project from a Norwich District Secondary School geography classroom. While the attendance at these meetings was somewhat less than anticipated, the variety and quality of opinions expressed in response to the interim report was excellent.

The decision to have the Environmental Hearing Board conduct the meetings and submit an independent report serves as a final check on the study team to ensure impartiality in its interpretation of data and comments received through the Public Consultation Program. The Hearing Board's report should be referred to for further information concerning these meetings. An attempt is made in the summary (Chapter 1 of this report) to comment upon and interpret the Hearing Board's report in the context of the overall Public Consultation Program.

* *Thames River Basin Study Water Management Bulletin, Ontario Ministry of the Environment, 1974.*

APPENDIX I

TABLES OF PARTICIPANTS

Showing form of participation

PHASE I

MUNICIPALITY		PARTICIPATION		
County	Twp, City or Town	Meeting	Questionnaire	
			Requested	Returned
Huron	Usborne Twp		x	x
Kent	Chatham City	x		
	Town of Blenheim		x	x
	Town of Bothwell		x	
	Town of Ridgetown		x	x
	Town of Tilbury		x	x
	Village of Highgate	x	x	x
	Village of Thamesford	x		
	Camden Twp	x		
	Chatham Twp		x	x
	Dover Twp	x		
	Harwich Twp		x	
	Howard Twp	x		
	Orford Twp	x		
	Raleigh Twp		x	
	Romney Twp			
	Tilbury East Twp			x
Zone Twp	x			
Elgin	Village of Rodney	x	x	x
	Village of West Lorne	x		
	Aldbrough Twp	x	x	x
	Dunwich Twp	x		
	Southwold Twp	x		
Middlesex	London City	x		
	Village of Glencoe	x		
	Village of Wardsville		x	x
	Biddulph Twp	x		
	Caradoc Twp	x		
	Delaware Twp		x	x
	Ekfrid Twp			
	Lobo Twp	x	x	x
	London Twp		x	x
	Mosa Twp	x		
	W. Nissouri Twp		x	x
Westminster Twp		x	x	
N. Dorchester Twp		x	x	

. . . continued

PHASE I (continued)

County	MUNICIPALITY		PARTICIPATION	
	Twp, City or Town	Meeting	Questionnaire Requested	Returned
Oxford	City of Woodstock	x		
	Town of Embro	x		
	Village of Tavistock		x	x
	Blandford Twp	x		
	Dereham Twp	x		
	East Nissouri Twp	x		
	East Oxford Twp			
	Village of Beachville		x	x
	North Oxford Twp	x	x	x
	West Oxford Twp		x	x
	East Zorra Twp	x		
	West Zorra Twp	x	x	x
Perth	City of Stratford		x	x
	Town of St. Marys		x	x
	Town of Mitchell		x	
	Blanshard Twp	x		
	Downie Twp		x	x
	North Easthope Twp	x		
	South Easthope Twp		x	x
	Ellice Twp		x	
	Fullarton Twp	x		
Hibbert Twp		x	x	
Essex	Mersea Twp		x	x
	North Tilbury Twp		x	x
	West Tilbury Twp		x	
	61	30	34	26

Note: For some municipalities more than one questionnaire was submitted by individual council members.

PHASE I

INTEREST GROUP PARTICIPATION

<u>Meeting Location</u>	<u>Represented</u>
Stratford	Stratford Field Naturalists Ontario Federation of Anglers and Hunters Upper Thames River Conservation Authority Perth County Federation of Agriculture
Woodstock	Oxford Men of the Trees Ontario Ministry of Agriculture and Food Ingersoll Nature Club Oxford Federation of Agriculture Oxford Soil and Crop Improvement Assoc. Oxford Junior Farmers' Assoc. W.A.T.E.R. (Woodstock Action Team for Environmental Response)
London	Fanshawe College; Man and Resources Program U.W.O. Geography Department James F. McLaren Consultants Middlesex Soil and Crop Improvement Society Ontario Federation of Anglers and Hunters Save the Medway Committee
Chatham	Elgin Federation of Agriculture Ontario Institute of Agrologists Kent-Chatham Health Unit National Farmers' Union, Local 308 Kent Federation of Agriculture Man and Resources Program (John McGregor S.S.) Kerr Farms Kent Cloverleaf Conservation Club

Meetings were also held with the Band Councils of the Moraviantown, Caradoc and Oneida Indian Reserves, and with Medical Officers of Health in the Thames Basin.

PHASE II PARTICIPATION

PUBLIC HEARING	DATE	WRITTEN SUBMISSION
Chatham	May 6, 1974	Lower Thames Valley Conservation Authority Kent Federation of Agriculture
Glencoe	May 7, 1974	West Elgin Naturalist Club Mr. Dougald Murray Aldborough Twp Southwold Twp
Woodstock	May 9, 1974	Mr. B.J. Van den Hazel Union Drawn Steel Mr. J. Fleming, UTRCA Mr. Steinberg Students of Norwich District Secondary School
Stratford	May 10, 1974	City of Stratford Wildwood Sailing Club Downie Twp Mrs. A. M. Wilson Mr. Jack Payton Mr. Calvin Innes
London	May 13, 1974	Ontario Federation of Anglers and Hunters National Farmers Union, Local 341 Elgin County City of London Upper Thames River Conservation Authority

APPENDIX II

SUBMISSIONS TO
THE THAMES RIVER BASIN STUDY TEAM,

PHASE I

HYDRO ELECTRIC SYSTEM,
WATERWORKS,
PARKS AND RECREATION



THE PUBLIC UTILITIES COMMISSION
Address All Communications to the General Manager

R. G. HARRIS, Chairman
JANE BIGELOW, *Mayor*, Vice-Chairman
J. LES THOMAS, *Commissioner*
R. G. VAN HORNE, B.A., Commissioner
E. LARRY GLASS, Commissioner

A. L. FURANNA, P.ENG., M.E.I.C.,
General Manager

September 27, 1973

Ministry of the Environment,
40 St. Clair Ave. W.,
Toronto, Ontario.

Attention - Mr. C. Hawssman

Dear Mr. Hawssman: Re: Thames River Basin Study

The Commission was pleased with your presentation at its last meeting on September 18th, and wish to present their points of view on certain aspects of the Thames river use.

The responsibility of the Public Utilities Commission and the City of London includes parks and recreation. In view of the fact that many park areas are in the river valley gives the Commission considerable interest in the Thames River Basin. Specifically, the Commission is involved in the following valley development:

- (1) Recommendations to the U.T.R.C.A. for the construction of river bank erosion protection work.
- (2) Development and maintenance of all flood plain lands secured by the City through the U.T.R.C.A. whether these lands are developed for some formal park or recreation use or left as natural areas.
- (3) Clean-up programs along the river banks done mainly under Winter Works programs.
- (4) Clean-up of the river bottom to clear rubbish or maintain minimum water depth for selective boating.
- (5) The Commission has encouraged and developed small boating on the river and provided docks at various locations and a canoe rental facility at Greenway Park.

In relation to the above program some problems have arisen which the River Basin Study may assist in resolving.

- (1) The conflict between the river use for canoes and rowing and its use by fast power boats and water skiing. The latter uses present a hazard to the slow moving craft. The City Police Department in co-operation with the Public Utilities Commission and the Fire Department has established a river patrol which operates under the authority of the Criminal Code to enforce safe boating practices. This has been a most beneficial addition to the City's recreational services. However, the jurisdiction over the river, being a navigable stream, is with the Federal Government and there is no Act which adequately controls the water use in rivers such as the Thames. We have years of correspondence with the Federal Department of Transport and it is our understanding now that some new legislation is before the Attorney General.
- (2) While the river water quality is very much improved, there is concern for water skiing and those who choose to swim and dive in the river, particularly in the vicinity of the dam at Springbank Park. This matter is now being further considered by a joint representative group of the U.T.R.C.A., Police Department, Medical Officer of Health and Public Utilities Commission.
- (3) The use of the flood plain is another concern. As noted, much of the river valley is being used for park or recreational land; therefore, it is necessary, for the fullest and best use of the property, that certain buildings related to recreational or parks use be permitted within the flood plain. Such buildings, or facilities, would include baseball diamonds, soccer or football fields, tennis courts and parking areas. Also, related buildings such as washrooms, fieldhouses, shelters, boat houses and even camp buildings. It is recognized that the design and construction of such buildings should be so as to give the maximum protection from flooding or ice flows. They should be located at the most practical elevation within the flood plain to accomplish these purposes, but occasional flooding should be an accepted probability.
- (4) Snow dumping off city streets has become questioned within the flood plain. It is, therefore, required that some terms of reference be established which will serve both the municipal requirements for disposing of the snow and at the same time protecting both the river and the ground from undue contamination.

Further the Commission would be interested in learning from you if there are any more efficient ways than the City's funds may be spent to protect and develop the river basin within the city limits than on its existing programs.

We hope that these thoughts may assist you with your study and that some reference may be made to them in your report.

Yours very truly,

THE PUBLIC UTILITIES COMMISSION

Al Furanna

AL F:S

General Manager

SAVE THE MEDWAY

R. R. # 3, ILBERTON, Ontario
Policy Statement, September 2, 1973

1. We commend the Ontario Ministry of the Environment for initiating the Thames River Basin Study.
2. We welcome the opportunity to meet with the Thames River Management Team regarding all pertinent aspects of the Medway and public involvement in developing watershed policies.
3. We stand for the maximum possible enjoyment of the Medway in perpetuity.
4. We deplore the three-year history of the Ministry of the Environment, its predecessors, commissions and boards which have been negative to public involvement in the Medway and other watersheds.
5. We are affronted that the Ontario Government has accepted the philistine statement that "Children shouldn't be so stupid as to go into the Medway".
6. We are concerned at the over emphasis on engineering solutions to watershed management.
7. We oppose the use of prime agricultural land for sewage lagoons and the use of streams to convey waste elsewhere.
8. We urge acceptance of the philosophy that our actions on the many tributaries directly influence the quality of the Great Lakes.
9. We recommend a multi-disciplinary approach in watershed management. The Medway has many attributes which suggest its use in a pilot project.
10. We regret the absence of Medway data in the Ontario Government presentation.
11. We are alarmed by the evidence of gross pollution and erratic streamflow of the Medway revealed by our own research.
12. We recommend increased research and dissemination of information in waste disposal.
13. We urge swift reform of the Environmental Hearing Board.
14. We request an on-going mechanism for conserving the Medway and minimizing harmful change.

APPENDIX III
THE QUESTIONNAIRE

THAMES RIVER BASIN STUD' QUESTIONNAIRE

INSTRUCTIONS

Read the questions carefully and place and "X" in the space next to the appropriate response(s) (unless otherwise instructed as in questions 6 and 8). You may choose as many alternatives to each question as you feel appropriate.

The terms water, watercourse, waterways refer only to the waters of the Thames River, its branches and tributaries and do not include other water sources such as wells. If your comments apply to these groundwater resources, you may make such comment in the space provided in some questions under "other" or as additional comments in question 11. If you do so, please indicate clearly the type of water resource you are referring to.

Return the questionnaire in the stamped, pre-addressed envelope.

- 1) Where do you live? Indicate municipality or township.

 _____ 7,8
- 2) To which area of the Thames River Basin do your comments apply?
- | | | |
|--|--------------------------------|--------|
| Entire Basin | _____ | 9 |
| Upper Thames: (upstream from London) | <i>North branch</i> _____ | 10 |
| | <i>South branch</i> _____ | 11 |
| | <i>Middle branch</i> _____ | 12 |
| Lower Thames: (downstream from London) | <i>London to Chatham</i> _____ | 13 |
| | <i>Chatham to mouth</i> _____ | 14 |
| Tributary(ies) (Specify). | _____ | |
| | _____ | |
| | _____ | 15, 16 |

3) At present, what use (s) do you make of the watercourse?

Water Supply	<i>Domestic</i>	_____	17
	<i>Industrial</i>	_____	18
	<i>Fire Protection</i>	_____	19
	<i>Irrigation</i>	_____	20
	<i>Livestock watering</i>	_____	21
Recreational:	<i>Fishing</i>	_____	22
	<i>Boating</i>	_____	23
	<i>Waterskiing</i>	_____	24
	<i>Swimming</i>	_____	25
	<i>Hunting</i>	_____	26
Aesthetic:	<i>Hiking</i>	_____	27
	<i>Picnicking</i>	_____	28
	<i>Sightseeing</i>	_____	29
None		_____	30
Other (Specify):	_____		31, 32

4) What uses would you like to make of the watercourse?

Water Supply:	<i>Domestic</i>	_____	33
	<i>Industrial</i>	_____	34
	<i>Fire Protection</i>	_____	35
	<i>Irrigation</i>	_____	36
	<i>Livestock watering</i>	_____	37
Recreational:	<i>Fishing</i>	_____	38
	<i>Boating</i>	_____	39
	<i>Waterskiing</i>	_____	40
	<i>Swimming</i>	_____	41
	<i>Hunting</i>	_____	42
Aesthetic	<i>Hiking</i>	_____	43
	<i>Picnicking</i>	_____	44
	<i>Sightseeing</i>	_____	45
None		_____	46
Other	_____		47, 48

5) How would you evaluate the past (10 yrs) and present water quality of the waterway?

Past	<i>Very poor</i>	_____	49
	<i>Poor</i>	_____	50
	<i>Fair</i>	_____	51
	<i>Good</i>	_____	52
	<i>Excellent</i>	_____	53
Present	<i>Very poor</i>	_____	54
	<i>Poor</i>	_____	55
	<i>Fair</i>	_____	56
	<i>Good</i>	_____	57
	<i>Excellent</i>	_____	58

6) Please indicate and rank in decreasing order of importance (assign number 1 to the most important problem, number 2 to the second most important and so on) which of the following problems related to the basin water resources you are concerned about.

Colour	_____	59
Taste & Odour	_____	60
Weeds & Algae	_____	61
Dead Fish	_____	62
Floating materials	_____	63
Shoreline debris	_____	64
Erosion	_____	65
Flooding	_____	66
Health Hazard	_____	67
Not concerned about any problems	_____	68
Other (Specify) _____	_____	69, 70

7) What, in your opinion, caused the water quality problems in your area?

Municipal Waste	_____	7
Industrial Waste	_____	8
Agricultural runoff	_____	9
No problems	_____	10
Other (Specify) _____		11, 12
<hr/>		

8) Please indicate and rank in decreasing order of importance (as in question 6) which of the following water uses or problems associated with water resources should receive greater emphasis:

Recreation	_____	13
Flooding	_____	14
Erosion	_____	15
Waste Treatment: <i>Municipal</i>	_____	16
<i>Industrial</i>	_____	17
<i>Domestic & Agricultural</i>	_____	18
Protection of Fish & Wildlife	_____	19
Control of Development & Land Use	_____	20
Water Supply; <i>Quality</i>	_____	21
<i>Quantity</i>	_____	22
Other (Specify): _____		23, 24
<hr/>		

9a) Which land use priority (ies) would you like to see applied in your area?

Agricultural	_____	25
Commercial	_____	26
Industrial	_____	27
Recreational	_____	28
Residential	_____	29

