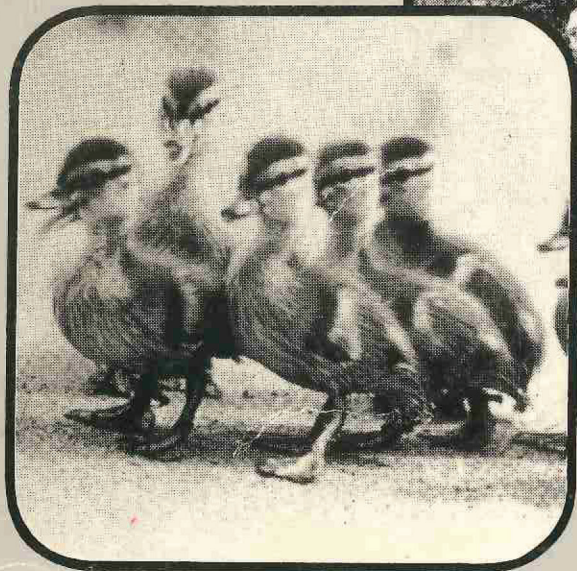
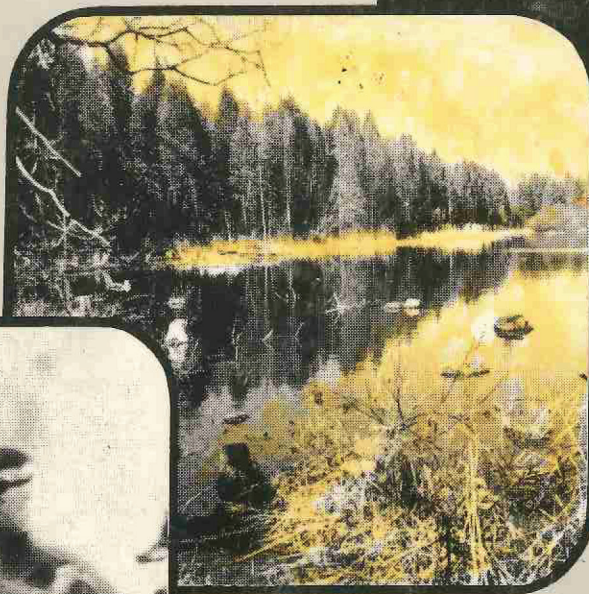
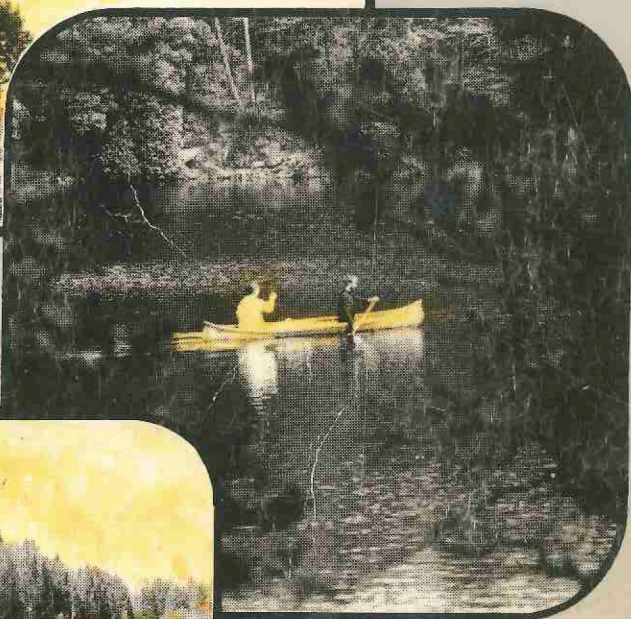
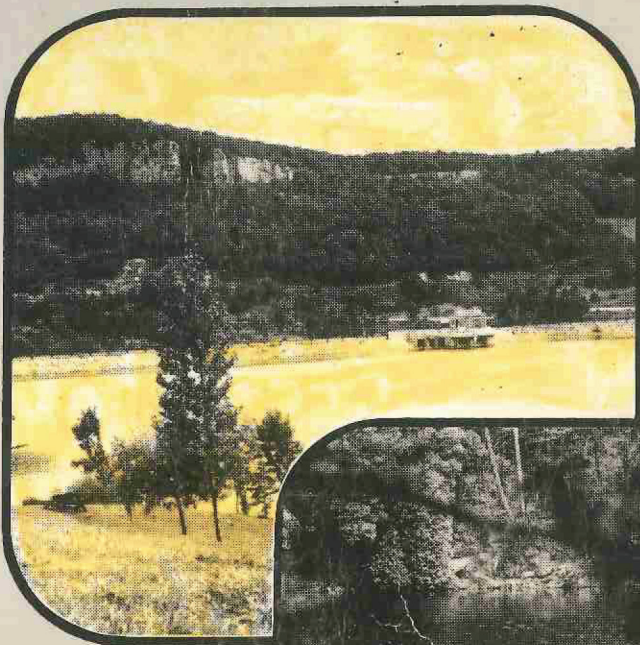


# INTERIM WATERSHED PLAN



Halton Region  
Conservation  
Authority

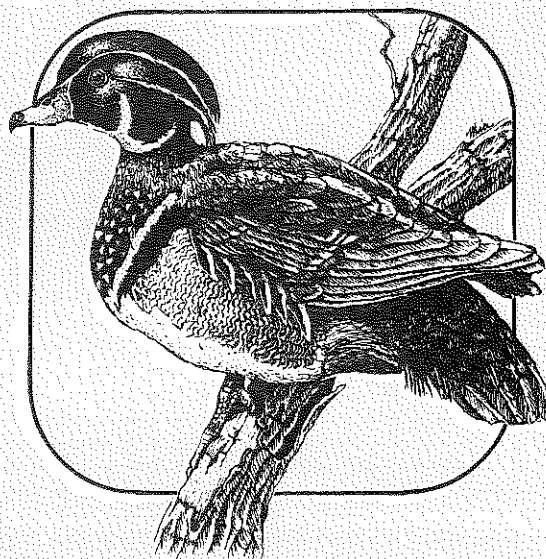


Ministry of  
Natural  
Resources



Ontario





## Introduction to Watershed Planning

## 1.0 INTRODUCTION TO WATERSHED PLANNING

### 1.1 Natural Resource Management in the Halton Region Conservation Authority's Watershed

In response to the request from the Ministry of Natural Resources for the province's Conservation Authorities to prepare Watershed Plans, the Halton Region Conservation Authority hereby submits its document in the form of an Interim Watershed Plan and recognizes the value of the Plan to itself, its municipalities, the residents of the watershed and to the Ministry of Natural Resources.

The success of any natural resource management plan depends upon the close cooperation between the various government bodies involved in such management. The Authority has a mandate to provide a resource management plan on a watershed basis in cooperation with local municipalities and the Province of Ontario. The various interests and philosophies to resource management are brought together at the Conservation Authority level and it is through this partnership that the watershed plan can reflect local conditions and represent provincial policies on specific resource management issues.

The development and implementation of the plan requires a cooperative effort and close working relationship between all levels of government involved in management of our natural resources. This plan reflects the particular characteristics of the Halton watershed and has combined the Provincial interests with the watershed resources to provide direction to the role the Authority will play in the future.

## 1.2 Statement of Role and Mandate

The resource management program of the Halton Region Conservation Authority is based on the responsibilities as defined in the Conservation Authorities Act. The legislation provides for the adoption and implementation of a program which responds to needs of individual watersheds and reflects the resource characteristics and growth pattern for the Authority's watershed.

"Section 20. The objects of an authority are to establish and undertake, in the area over which it has jurisdiction, a program designed to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals. R.S.O. 1970, c. 78 s. 19.

Section 21. For the purposes of accomplishing its objects, an authority has power,

- a) to study and investigate the watershed and to determine a program whereby the natural resources of the watershed may be conserved, restored, developed and managed;
- b) for any purpose necessary to any project under consideration or undertaken by the authority, to enter into and upon any land and survey and take levels of it and make such borings or sink such trial pits as the authority considers necessary;
- c) to acquire by purchase, lease or otherwise and to expropriate land that it may require, and, subject to the approval of the Lieutenant Governor in Council, to sell, lease or otherwise dispose of land so acquired;
- d) to lease for a term of one year or less, without the approval of the Lieutenant Governor in Council, land acquired by the authority;
- e) to purchase or acquire any personal property that it may require and sell or otherwise deal therewith;
- f) to enter into such agreements for the purchase of materials, employment of labour and such other purposes as may be necessary for the due carrying out of any project;
- g) to enter into agreements with owners of private lands to facilitate the due carrying out of any project;
- h) to determine the proportion of the total benefit afforded to all the participating municipalities that is afforded to each of them;



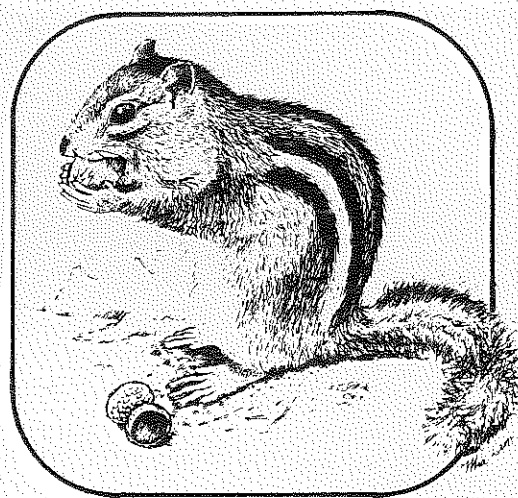
- i) to erect works and structures and create reservoirs by the construction of dams and otherwise;
- j) to control the flow of surface waters in order to prevent floods or pollution or to reduce the adverse effects thereof;
- k) to alter the course of any river, canal, brook, stream or watercourse, and divert or alter, as well temporarily as permanent, the course of any river, stream, road, street or way, or raise or sink its level in order to carry it over or under, on the level of or by the side of any work built or to be built by the authority, and to divert or alter the position of any water-pipe, gas-pipe, sewer, drain or any telegraph, telephone or electric wire or pole;
- l) to use lands that are owned or controlled by the authority for such purposes, not inconsistent with its objects, as it considers proper;
- m) to use lands owned or controlled by the authority for park or other recreational purposes, and to erect, or permit to be erected, buildings, booths and facilities for such purposes and to make charges for admission thereto and the use thereof;
- n) to collaborate and enter into agreements with ministries and agencies of government, municipal councils and local boards and other organizations;
- o) to plant and produce trees on Crown Lands with the consent of the Minister, and on other lands with the consent of the owner, for any purpose;
- p) to cause research to be done;
- q) generally to do all such acts as are necessary for the due carrying out of any project. R.S.O. 1970 c. 78, s. 20."

Under the provisions of Sections 28, 29 and 30 of the Conservation Authorities Act, the Authority is empowered to enact regulations to enable the Authority to carry out its mandate.

"Section 28. The Halton Region Conservation Authority administers Ontario Regulation 164, R.R.O. 1980, pertaining to fill placement, flood plain occupation, construction activities and alterations to watercourses within the Authority watershed. The regulation defines the area wherein the Authority's permission is required for works and the extent of the regulations. It also establishes the procedures to be followed regarding application, hearings and appeals. As mapping studies are completed, revisions to Ontario Regulation 164, R.S.O. 1980 will be submitted to the Province of Ontario for adoption.

Section 29. The Halton Region Conservation Authority has approved Ontario Regulation 133, R.S.O. 1980, which applies to lands owned by the Authority. This regulation governs the public use of Authority lands and establishes appropriate conditions, terms, fees and permits which may apply. Amendments to the regulation may be required in the future related to the public use and fee structures for public use of Authority lands and facilities.

Section 30. These regulations establish the procedure to be followed in administering the operation of the Authority's business. Such items as the calling of meetings, recording minutes of meetings, powers and duties of the Authority staff, designation of signing officers and the delegation of power to the Executive Committee are in place at the present time."



## Preparation of the Watershed Plan



#### 4.0 PHYSICAL CHARACTERISTICS OF THE HALTON REGION CONSERVATION AUTHORITY WATERSHED

##### 4.1 Location

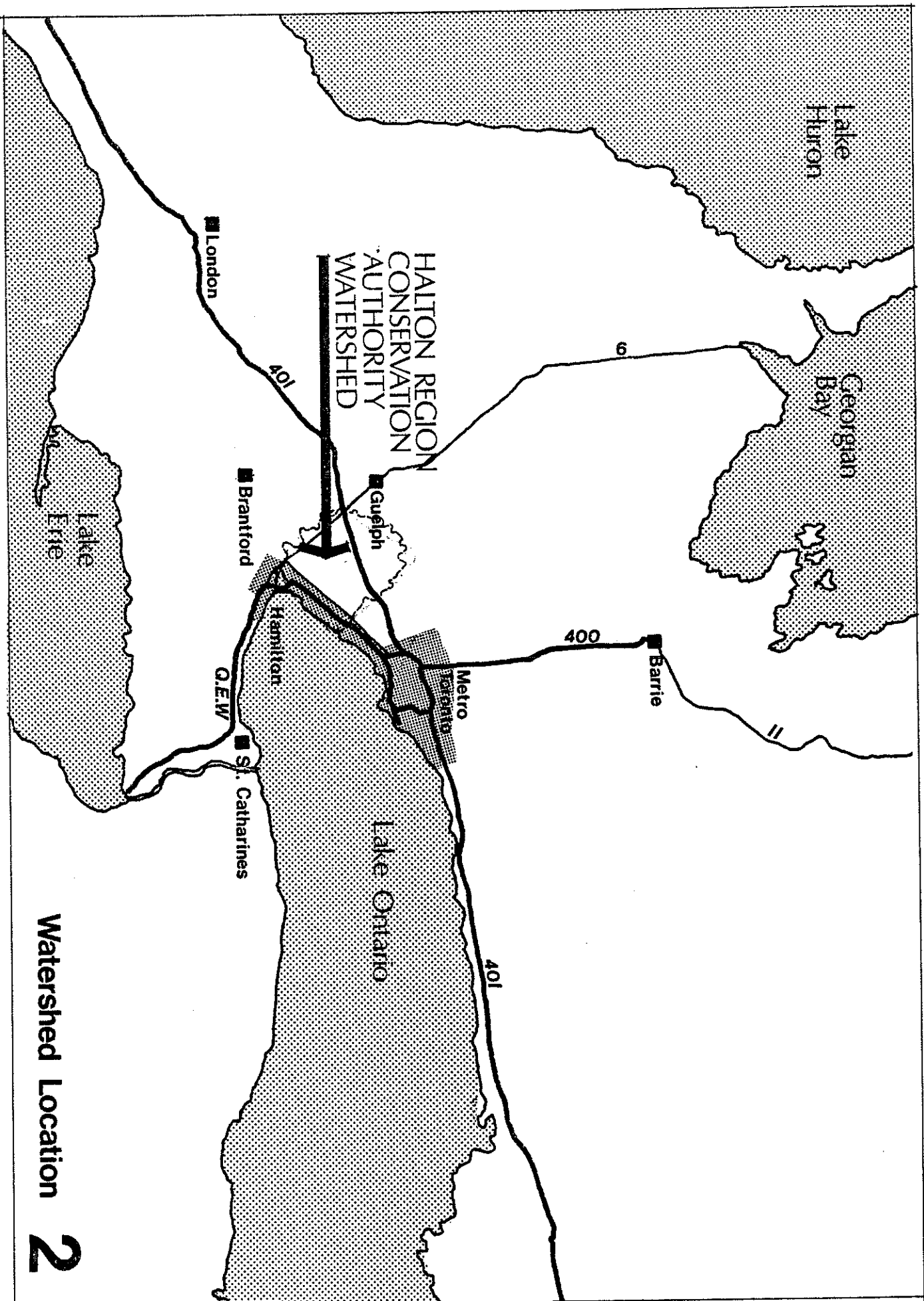
The watershed of the Halton Region Conservation Authority is comprised of the drainage basins of the Grindstone, Bronte, Sixteen Mile, and Joshua's Creeks from their headwaters to their confluences at Lake Ontario, to a point four miles offshore. These watercourses in the west, central and eastern portions of the watershed, respectively, and their confluences in the south, to the offshore limit of four miles, basically define the boundaries of the Authority's area of jurisdiction or watershed.

The 404 square mile (1046.3 square kilometres) watershed is within the Golden Horseshoe area of south - central Ontario and primarily within the provincial tourism area referred to as Festival Country. The watershed boundary contains part of the Regional Municipality of Hamilton/Wentworth, Township of Puslinch, the Regional Municipality of Halton, and the Regional Municipality of Peel. Map No.2 locates the watershed within a regional and provincial context.

The abutting Conservation Authorities are the Hamilton Region Conservation Authority to the west; the Grand River Conservation Authority to the north; and the Credit Valley Conservation Authority to the east.

In terms of overland distance from urban centres outside of the watershed the following indicates the approximate distance from the Authority office in Milton.

	<u>Miles</u>	<u>Kilometers</u>
St. Catharines	35	56
Hamilton	20	32
Brantford	38	23
Guelph	40	64
Kitchener-Waterloo	25	40
Metropolitan Toronto	25	40



Watershed Location **2**

## 4.2 Climate

The Great Lakes area is unique in North America and shares similar climatic conditions with only four (4) areas in the world, those being in Eurasia. The North American situation in the Great Lakes area occurs primarily due to the existence of the large bodies of water within the region. This occurs nowhere else in the world.

The watershed of the Halton Region Conservation Authority is located in this climatic area, referred to specifically as the Great Lakes - St. Lawrence Region. The main influence is commonly termed the 'lake-effect'. The climate is essentially continental in nature modified by the Great Lakes. This modification decreases with distance from the Great Lakes and in the Halton watershed, this begins to occur at the extreme northern boundary of the watershed.

Since each of the Great Lakes differs from the others in terms of depth, surface area and alignment, climatic conditions also differ for the lands bordering them. The Halton Region Conservation Authority watershed lies in the lee of Lake Ontario, so that it is this lake which is of interest.

The maximum depth of the lake is 802 feet (245 meters), which is third in depth to Lake Superior and Michigan. The average depth, however, is 283 feet (86 meters) and signifies it as the second deepest lake next to Lake Superior. Generally, this produces primarily open water during the entire year and a relatively cold water temperature during most of the year. Winds off of the lake are cooled and wind velocities are reduced compared to the speeds over frozen lake surfaces.

The surface area of Lake Ontario is 7,550 square miles (19,554 km<sup>2</sup>) second smallest of all the Great Lakes. The alignment is essentially east-west and it lies in the most southerly latitudes of Ontario.

In terms of climatic sub-regions, the Halton Region Conservation Authority watershed is divided into three reflecting varying conditions based on latitude, altitude, relief and proximity to Lake Ontario. The three sub-regions moving from Lake Ontario northwards are Lake Erie Counties, South Slope and Huron Slopes, and are denoted on Map No. 3.



The accompanying Figure 4.2.1. relates the varying conditions within the three sub-regions and indicates how the moderating effect from Lake Ontario decreases over a relatively short distance not exceeding 40 km (25 miles). Therefore, Lake Ontario has minimal effect on climatic conditions 40 km (25 miles) inland.

#### 4.2.1 General Seasonal Conditions:

##### (i) Spring/Summer:

All in all, the lake produces a delayed spring due to the cooling of southerly spring breezes passing over the cold water. Summer (July) mean daily temperatures are above  $21^{\circ}\text{C}$  in the urban centres to the east and lower in the western end of the basin. The lake effect produces minimal cloud cover (250 - 300 hours/month) in the summer resulting in average levels of rainfall of 75mm for each month of June, July and August. On the average, rainfall is measurable for ten days per month.

These summer conditions create an area of warm summer days, however, cooler than the urban centres to the east. The days are tempered by cooling breezes from Lake Ontario in the southern portion of the watershed.

##### (ii) Winter

In the winter Lake Ontario provides three to four months mean daily temperatures below  $0^{\circ}\text{C}$  and an abundance of snowfall in the lee of the Lake. Cool Arctic air passes over the Lake and produces cloud cover and snowfall. The mean annual snowfall for Hamilton and Toronto is 100 and 140cm respectively, with the Halton Region lying in the central portion of this strip along the northern shoreline.

Fog is a frequent condition due to the surface water temperature being considerably lower than that of the surrounding land. Moisture-laden southern winds are quickly cooled by the lake and condensation occurs and fog forms. Fog is prevalent from mid-March to the end of the summer.

### (iii) Autumn

Autumn occurs in about the last half of September with a mean daily temperature of 16 degrees centigrade. Frost generally occurs in mid-October, with freezing in the evenings occurring approximately the first week of December. Cloudiness continues and hours of daily bright sunshine per month drops to 15 hours from 150 - 300 hours in the summer. Late autumn rain storms are intense. The autumn season is the time when there is the greatest probability for hurricanes to occur in Southern Ontario and for this reason such storm events are used for calculating flood plain limits.

### 4.2.2 Impact

In terms of activities in the watershed, the climate lends itself to providing for the potential of year-round recreation with ideal weather conditions.

The area also promotes good growing conditions for field crops and tree growth. Water supply is provided in varying degrees but with good water management techniques, all seasonal variations can be modified. The yearly precipitation levels serve to maintain natural headwater source areas vital to stream flows through the year, primarily in low flow periods. However, the reservoirs operated by the Authority, must augment low flows in populated serviced areas. Periods of intense and frequent rain storms can create flooding problems, however, water management measures and well defined, steep valleys help to alleviate these problems.

There is potential in the watershed to provide more suitable conditions for climatic recreation for the nearby urban areas outside the Great Lakes - St. Lawrence Region, since there are cooler summers and heavier snowfall for summer and winter recreational activities, respectively.

## 2.0 PREPARATION OF THE WATERSHED PLAN

### 2.1 The Halton Region Conservation Authority's Approach

Watershed planning expressed in its simplest terms is defining a resource, identifying problems, and recommending solutions. Such planning has been carried out on an ongoing basis by the Halton Region Conservation Authority and its member municipalities since the early 1960's when resource inventories were completed, and the Twelve Mile and Sixteen Mile Creek Conservation Authorities were formed. To a great extent the 1958 Sixteen Mile Creek Report, and the 1960 Twelve Mile Creek Report have been the guiding documents behind the acquisition of forestry tracts, development of conservation areas, and the establishment of flood control reservoirs. In addition to these primary documents, special reports regarding flooding in Milton, Grindstone Creek flooding and drainage, and development of the Lake Ontario waterfront have given direction to more recent programs of the Halton Region Conservation Authority. In the last three years, special flood plain mapping and flood risk analysis for the Bronte and Grindstone Creeks have been carried out. 1983 will see the continuation of this program with mapping of the Sixteen Mile Creek.

At the municipal level, storm water management manuals have recently been developed for Burlington and Oakville and several reports on watercourses draining directly into Lake Ontario have provided directions for the treatment of urban watersheds in Burlington and Oakville. Flamborough Township completed its Drainage Policies and Criteria Manual for both rural and urban development. As well, the Regional Municipalities of Hamilton-Wentworth and Halton, jointly with their member Conservation Authorities have carried out studies defining environmentally sensitive areas. Add to these studies, provincially significant natural areas, Ministry of Natural Resources district land use strategy planning, the development of a plan for the Niagara Escarpment, and the Parkway Belt West Plan, and it becomes apparent that a consolidation and evaluation of existing resource information and Authority programs is required if the Conservation Authority is to plan an effective role in the future. The Halton Region Conservation Authority is therefore formalizing its program planning in order to consolidate its activities and define program areas and funding directions for the next 5 to 15 years by preparing a Watershed Plan.



## 2.2 Benefits of the Plan

In order to provide a strong basis for management of the Halton Region Conservation Authority's watershed, preparation of a watershed-based plan is essential. Advantages to preparing the Watershed Plan are:

2.2.1 A recognition that the Halton Region Conservation Authority and its watershed has special characteristics that require specific programs and policies.

2.2.2 Defining the goals, policies, strategies and projects for each program area of the Authority.

2.2.3 To obtain recognition and appreciation of Authority programs, either existing or planned, by the member municipalities, the Ministry of Natural Resources and the residents of the watershed and other Ontario resource management Ministries and agencies. This recognition and appreciation may result in policy revisions on the part of the Authority and/or the Ministry of Natural Resources.

2.2.4 To identify strengths and weaknesses in Authority programs and policies.

2.2.5 To update the roles of the watershed municipalities in natural resource management in the Halton Region Conservation Authority's watershed.

2.2.6 To allow for public input into natural resource management in the Halton Region Conservation Authority's watershed.

## 2.3 Staging of the Preparation

The Watershed Plan will be developed over a span of two years from January 1983 to December 1984, and will be prepared in two stages.

### A. Stage One - Interim Watershed Plan

An initial or 'Interim Watershed Plan' is submitted as stage one in the process to the Ministry of Natural Resources, after which the preparation of the final Watershed Plan will begin.

The Interim Watershed Plan provides an overview of known resource management issues, studies, programs, policies and projects of the

Authority given in an historical context and projected from 1983 to 1988. It also identifies possible new directions for watershed programs with recommendations for further background and documentation to be provided in the final Watershed Plan.

#### B. Stage Two - Final Watershed Plan

The Interim Watershed Plan will be circulated to member municipalities, Provincial and Federal government ministries, special boards and agencies and the general public for further input and review. The final watershed plan will reflect the responses and evaluation of the interim plan and is intended to provide the direction of the Halton Authority's resource management programs up to the turn of the century.

### 2.4 Internal Preparation and Review Process

The preparation of the Watershed Plan in both stages has and will continue to be the responsibility of senior management of the Authority and a contract consultant. Review and approval of the Plan is the responsibility of the Authority membership and by this, the Plan with subsequent amendments, will become one of the main official policy and planning documents used by the Authority for the next fifteen to twenty years.

### 2.5 External Review Process

It is essential that in the watershed planning process that the public, watershed municipalities and ministries play a role in forming policies, programs and projects set out in the final Plan. The great difficulty lies in how to provide an effective means for interested parties to have input and in how to weigh the input received. The approach taken to date for the preparation of the Interim Plan has included formation of a Steering Committee and consultations with the Ministry of Natural Resources, the Ministry of the Environment, Environment Canada, the Ontario Ministry of Agriculture and Food and the Royal Botanical Gardens.

The Steering Committee is to continue meeting through the preparation of the Watershed Plan and is comprised of one staff member of each watershed area and Regional municipality and the Regional and District offices of the Ministry of Natural Resources. Each member is to be the contact person through which the Authority will receive background information and input into the plan. For the Interim Watershed Plan, this input has been obtained by means of a questionnaire directed to all program areas of the Authority. This exercise with the questionnaire has been beneficial to all parties in identifying and updating data bases, attitudes, future directions and project budgeting.

The consultation with the Ministry of Environment, Environment Canada, the Ministry of Agriculture and Food and the Royal Botanical Gardens has centred on the discussion of complementary and perhaps overlapping aspects of their programs and those of the Authority. With this information, the Authority is able to view its programs in light of how they may be promoted through appreciation and understanding by these four main environmentally-based ministries and organizations.

### Public Participation

Input from the watershed residents will be solicited through a newsletter and open-house respectively regarding the two stages of preparation of the Watershed Plan as follows:

- i) Upon Completion of the Interim Watershed Plan
- ii) Upon Completion of a Draft Watershed Plan



# **The Halton Region Conservation Authority**



**3.0**

### 3.0 THE HALTON REGION CONSERVATION AUTHORITY

#### 3.1 Background and History

##### A. Background

In 1946, the Province of Ontario enacted the Conservation Authorities Act to create a Government Organization with the ability to promote and to develop conservation programs on a watershed basis. At the present time, a total of thirty-nine Conservation Authorities have been established to undertake a natural resources program reflecting the following basic concepts.

##### i) Watershed Jurisdiction

An individual Conservation Authority is established with jurisdiction over one or more watersheds as a management unit. This stewardship encompasses all aspects of resource management including flood control, flood plain management, erosion control, reforestation and forestry management, fish and wildlife management and the provision of public open space known as Conservation Areas.

##### ii) Municipal-Provincial Partnership

The cost of implementing the resource management program is shared between the Municipalities in the watershed and the Province of Ontario. The degree of cost sharing has fluctuated over time, however, this principle has ensured that the program of each Authority reflects the Provincial interest and addresses the problems encountered at the local level.

##### iii) Local Initiative and Involvement

The strength of the Conservation Authorities movement comes from the emphasis on local initiative and involvement. After two-thirds of the Municipalities voted in favour of establishing a Conservation Authority, the Province of Ontario passed an Order-in-Council for each

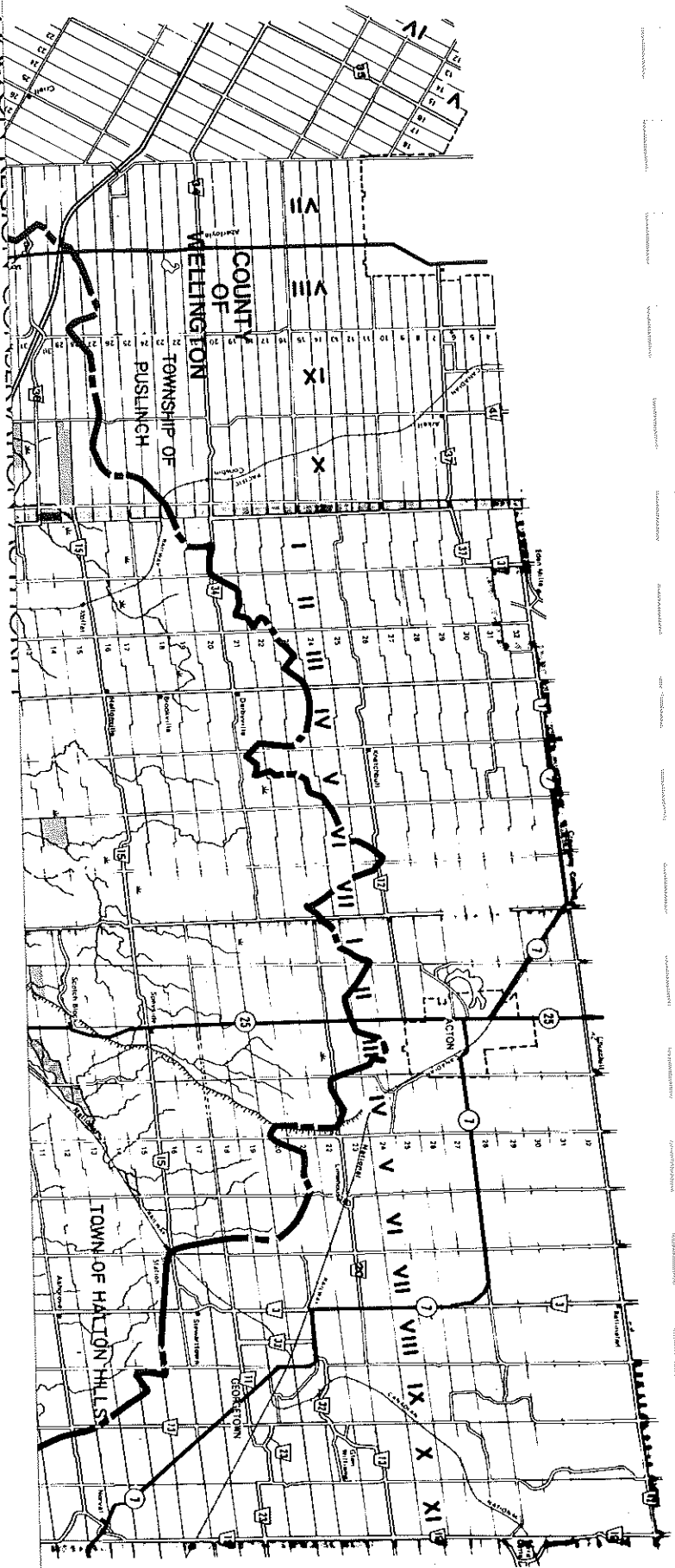
Authority as an autonomous corporate body empowered to undertake programs to further the conservation, restoration, development and management of natural resources. Local residents of the watershed agreed to assume the responsibility of running the Conservation Authority and required that the people living close to the problem, had to recognize and solve the problems. It has resulted in a system whereby a resource management program has been implemented that responds to the needs of the watershed and reflects the economic, cultural and democratic wishes of the watershed residents.

These basic concepts enable the Conservation Authority to be flexible in their approach to resource management and therefore no two Authorities are exactly alike. In urban locations, programs have concentrated on flood protection, flood plain management and erosion control. In rural locations, the programs have concentrated on reforestation, conservation land use practices and source area protection of water resources, and the establishment of conservation areas. Therefore, the Conservation Authorities have shown that they can meet the demands placed on the resource base resulting from changing requirements, conditions and growth patterns.

## B. History

The Halton Region Conservation Authority was established on December 30, 1963 from the amalgamation of two former Conservation Authorities, namely the Sixteen Mile Creek Conservation Authority established in 1956 and the Twelve Mile Creek Conservation Authority, established in 1958. The Authority's area of jurisdiction includes 1,044 square kilometers, 948 square kilometres on land and 96 square kilometers water-based. This comprises all watersheds of all streams entering into Lake Ontario from Joshua's Creek to Grindstone Creek, as well as a distance of four miles off the shoreline of Lake Ontario as defined in Order-in-Council 1386/73. (Map No. 1)

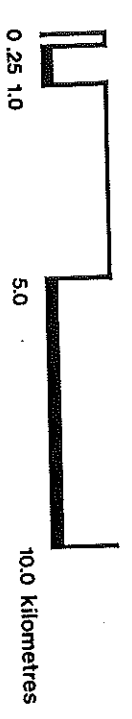
The Authority has four participating Municipalities, namely, the Regional Municipality of Halton, the Regional Municipality of Hamilton/Wentworth, the Regional Municipality of Peel and the Township of Puslinch. In 1982, the watershed population was 254,520 and contained an equalized assessment value of \$4,872,074,251.00.



# INTERIM WATERSHED PLAN

WATERSHED

10 (a)



## Legend

--- H.R.C.A. Watershed Boundary

### 3.1.1 Organization

#### A. Municipal-Provincial

The Authority's Member Municipalities and the Province of Ontario appoint Members to the Authority in accordance with Sections 2 (2) and 14 (6) of the Conservation Authorities Act, R.S.O. 1980, Chapter 85, giving the following membership distribution of the eighteen Members:

Province of Ontario	3 members
Regional Municipality of Halton	11 members
Regional Municipality of Hamilton/Wentworth	2 members
Regional Municipality of Peel	1 member
Township of Puslinch	1 member

The administration, implementation and Authority policies for the resource management program are carried out under the direction and approval of the Authority Membership. The Authority Membership is assigned to one of four Advisory Boards, each having its own terms of reference and responsibility for developing the program strategy and recommended solutions for Authority consideration and approval. The existing Advisory Boards consist of:

- Finance and Administration
- Water Management
- Conservation Areas and Community Relations
- Resource Planning and Fill and Flood Plain Regulations

The nine-Member Executive Committee, consisting of the Chairman and Vice Chairman of the Authority, the Chairman of each Advisory Board and three Members At Large, are responsible for the administration of the Authority and act as a Hearing Board for applications under Section 27 of the Conservation Authorities Act, R.S.O. 1980, Chapter 85.

The Executive Committee, each Advisory Board and the Full Authority meet on a monthly basis. Upon adoption by the Authority Membership, projects and programs are submitted to the Ministry of Natural Resources for technical and funding approval under Section 24 and 40 of the Conservation Authorities Act, R.S.O. 1980, Chapter 85.

The Chairman and Vice Chairman of the Authority are elected annually, by the Members, from the total Membership.

In 1974, the Halton Region Conservation Foundation was formed to create and operate a fund to be used exclusively for the benefit of the Halton Region Conservation Authority in advancing a program in resource management within the Watershed under the jurisdiction of the Halton Region Conservation Authority.

The Foundation has a fifteen Member Board of Directors who are appointed to the Foundation for three year terms by the Conservation Authority.

#### B. Staffing Organization

Section 18 (1) of the Conservation Authorities Act empowers the Authority to appoint such employees as it considers necessary to carry out the resource management program. With the amalgamation of two Conservation Authorities in 1963 to form the Halton Region Conservation Authority, it was evident that the Authority had to provide the staff resources to effectively develop a strategy to deal with the resource management issues. Between 1963 and 1969, the Authority provided a staff complement to administer the financial and operational services while the Province of Ontario provided the technical staff to advise the Authority on resolving the issues and developing the initial program.

In 1969, the Province of Ontario encouraged the Authority to provide its own technical resource management staff to advise the Authority on the delivery of the resource management program for the Halton Watershed. To date, the Authority's full time staff complement consists of sixty-six employees assigned to one of the four Administrative units of the organization, as follows:



Unit	Staff Complement	Function
Administration	13	<ul style="list-style-type: none"> <li>- Program Administration</li> <li>- Program-Municipal Liaison</li> <li>- Financial Management</li> <li>- Corporate Management</li> <li>- Development of Program Policy and Strategy Related to Issues</li> </ul>
Water and Related Land Management	16	<ul style="list-style-type: none"> <li>- Flood Control</li> <li>- Operation of Flood Protection Structures</li> <li>- Flood Warning System</li> <li>- Flood Plain Management</li> <li>- Land Use Planning</li> <li>- Forest Management</li> <li>- Public Relations</li> <li>- Conservation Education</li> <li>- Conservation Services</li> <li>- Water Quality Monitoring</li> </ul>
Conservation and Recreation Land Management	7	<ul style="list-style-type: none"> <li>- Planning and Development of Conservation Areas</li> <li>- Fish and Wildlife Management</li> <li>- Information and Interpretation</li> </ul>
Field Operations	30	<ul style="list-style-type: none"> <li>- Construction of Conservation Works and Projects</li> <li>- Maintenance and Security of Authority Properties</li> <li>- Delivery of Conservation Services Program</li> <li>- Flood Emergency Response</li> <li>- Operation of Revenue Producing Programs in Conservation Areas</li> </ul>

- Central Workshop Operation, including Motor Pool, Radio Dispatch, Carpentry, Paint and Mechanics Shops
- Delivery of Forestry and Wildlife Programs

The 1983 salary and benefit costs total \$1,800,000.00 for the existing full time staff complement of sixty-six employees. The 1983 Authority and Staff Organization charts are illustrated as follows in Figures 3.1.1 and 3.1.2.

Figure 3.1.1.

HALTON REGION CONSERVATION AUTHORITY

Organization Chart - 1983

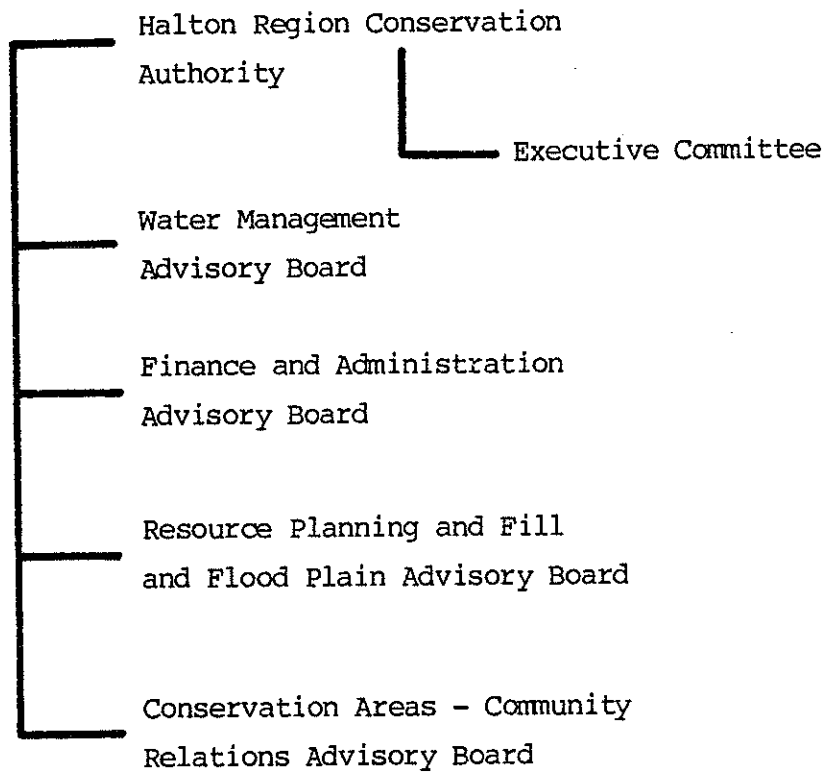
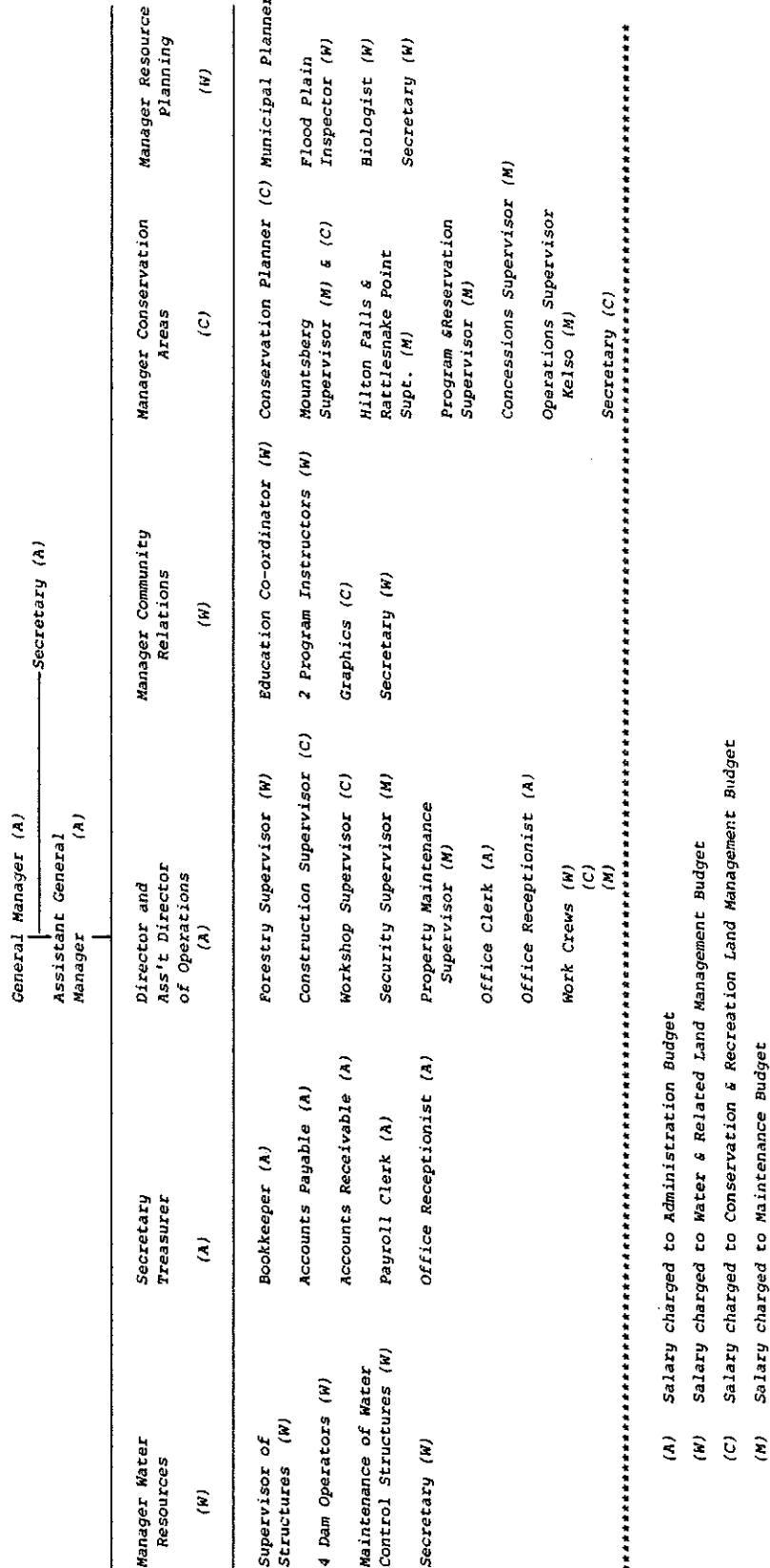


Figure 3.1.2

ORGANIZATION CHART



### 3.2 Funding Structure

The Conservation Authorities Act provides for the Province of Ontario to make grants to an Authority and enables the Authority to levy its participating Municipalities to finance the administration costs, operating costs and implementation costs of capital projects. The grants provided by the Province through the Ministry of Natural Resources are classified as conditional grants applicable only to those costs of the total Authority program which the Province deems eligible for the grants. The levy to the participating Municipalities consists of two types, a general levy, which represents each Municipality's share of the administration, operation and project cost deemed by the Authority to be equally benefitting to all Municipalities; and a special benefitting levy represents the cost which designated capital projects provide to one Municipality or a portion of a Municipality.

The Federal Government has also participated in funding major remedial flood control and water conservation projects. Following passage of the Canada Water Conservation Assistance Act in 1953, the Halton Authority received a Federal Government grant of 37.5% of the cost of constructing the Morrison-Wedgewood Flood Diversion Channel in Oakville. At the present time, the Federal Government is assisting with the flood plain mapping program on designated watercourses under the Federal/Provincial Flood Damage Reduction Agreement.

The Authority also raises funds through user fees at Authority operated facilities, through rental of Authority-owned property, from charges made for Authority services, and through other agencies such as Wintario. Organizations such as the Nature Conservancy of Canada have contributed substantial funding to the Authority to acquire Niagara Escarpment holdings and environmentally sensitive properties, while the organizations such as the Bruce Trail Association, Heritage Trust, Community Service Clubs and Conservation Clubs have contributed finances and other resources to implement components of a particular conservation project.

The Halton Region Conservation Foundation receives donations from individuals, organizations, foundations and corporations which are used by the Authority to augment the Authority's funding for special projects such as the restoration of the Neutral Indian Village site at the Crawford Lake Conservation Area.

The Provincial policy on the level of grants to the Authorities on various programs has changed significantly over the years. In 1970, dams and reservoirs, flood plain mapping, engineering studies related to flood control, maintenance on dams and reservoirs and Niagara Escarpment land acquisition, were funded at 75% grant levels.

Administration costs, flood control channels, streambank erosion, flood plain acquisition, acquisition of land and development costs for conservation areas were funded at a 50% grant level. In 1976, the Province redefined administration costs under Section 1 (a) of The Conservation Authorities Act and established two new program categories; Water and Related Land Management Programs and Conservation and Recreation Land Management Programs. Technical staff salaries and benefits associated with the two new program categories were transferred from administration costs along with expenses connected with exhibits, visual equipment and printed matter for educational and public relations purposes and all expenses necessary for carrying out capital projects of the Authority. The Province also introduced, at the same time, a policy of allocating supplementary grants above the base grant policy if the Authority watershed lacked sufficient population and assessment base to finance the necessary resource management program. The supplementary grant policy varies from zero to 40% above the basic program grant. The Halton Authority does not qualify for the supplementary grant nor is it expected that it ever will. The net result of this change in Provincial grant policy has been a decrease in Provincial grant rate to the Authority programs and an increase in the Municipal share of the funding for the program.

The following Figure 3.2.1. details the categories of expenditures, the level of Provincial-Municipal contribution and 1983 budget costs:



Figure 3.2.1.  
Provincial - Municipal Contributions  
1983 Budget Costs

CATEGORY	PROVINCIAL GRANT RATE	MUNICIPAL FUNDING RATE	1983 BUDGET	% OF TOTAL BUDGET
ADMINISTRATION	50%	50%	\$ 750,400.00	27.1%
WATER AND RELATED LAND MANAGEMENT:				
Program Administration	55%	45%	579,300.00	21.0%
Hydrology Studies and Engineering	55%	45%	100,000.00	3.6%
Capital Projects	55%	45%	427,000.00	15.5%
Flood Plain Mapping (1)	40%	10%	125,000.00	4.5%

(1) Federal Contribution - 50%

CONSERVATION AND RECREATION  
LAND MANAGEMENT:

Program Administration	50%	50%	231,800.00	8.4%
Capital Projects	50%	50%	175,450.00	6.4%
Operation and Maintenance of Authority Properties	0%	100%	315,100.00	11.4%
Equipment Purchases	0%	100%	59,650.00	2.1%

The 1983 Budget of \$2,763,700.00 consisted of the following funding sources:

Province of Ontario Grants	\$ 1,237,290.00	44.8%
Municipal Levies	1,420,080.00	51.5%
Federal Government Grant	62,500.00	2.2%
Nature Conservancy of Canada	43,830.00	1.5%

3.2.1 Ministry of Natural Resources Policy on Grants to Conservation  
Authorities

Section 40 of The Conservation Authorities Act authorizes the Minister of Natural Resources to pay grants to the Conservation Authorities out of funds appropriated by the Legislature in accordance with conditions outlined by an Order-in-Council.

The following classification of expenditures determine the eligibility of the expense for grant purposes:

Classification

A. Administrative Expenditures

Eligible Expenditures

Wages and Benefits

- Office and Administrative Staff Salaries
- Authority Share of Employee Benefits for Regular and Casual Staff

Travel and Expenses

- Authority Members' Per Diems and Mileage and Expenses Incurred while on Authority Business
- Salary or Honourarium of Chairman and Vice Chairman
- Mileage and Expenses Incurred by the Administrative Staff while on Business of the Authority

Equipment Purchases and Rental

- All Office and Computer Equipment
- Charges for Equipment and Vehicles used for Administrative Purposes

Materials and Supplies

- Postage, Office Stationery and Office Supplies
- Maintenance of Office Equipment
- Printing of Business Cards and Directories

Rent and Utilities

- Telephone Service and Charges for Administrative Office
- Light, Heat, Power and Water Charges for Administrative Office
- Rent of Administrative Office Space

Rent and Utilities cont'd.

- Janitorial Charges and Maintenance of Administrative Office and Grounds

General

- Audit Fees
- Legal Fees not Associated with a Project or Regulation Enforcement
- Bank Charges
- Taxes and Insurance for Administrative Office
- Reference and Technical Books, Memberships and Subscriptions
- Association of Ontario Conservation Authorities Annual Levy
- Tender Advertisements for Office Equipment, Staff and Services

B. Water and Related Land Management Expenditures

Program Administration

- Technical and Program Staff Salaries, Benefits and Expenses
- Charges for Authority Owned Vehicles and Equipment used for Program Purposes

Operation and Maintenance of Water Control Structures

- Regular and Casual Staff Wages to Operate and Maintain, on a Daily Basis, Dams, Diversion Channels, Channelization Projects and Erosion Control Structures Related to Flood Protection
- Charges for Authority Owned Equipment and Vehicles used for Operating and Maintaining Water Control Structures

Operation and Maintenance of Water  
Control Structures cont'd.

- Materials, Supplies and Parts required for the routine Operation and Maintenance of Water Control Structures
- Maintenance of Land associated with Water Control Structures

Major Maintenance of Water Control  
Structures

- Costs associated with Replacement of Defective Components of a Water Control Structure
- Costs associated with Improvements to an existing Authority Owned Structure to ensure optimum Flood Control Protection

Conservation Services

- Private Land Assistance Programs related to Water Management

Community Relations

- Tours and Special Events related to Water Management
- Advertising and Media Materials, Publications and Brochures, Photography, Exhibits and Program Supplies associated with Water Management

Utility Services

- Property Taxes, Insurance costs, Rent and Utility costs associated with Water Management Program

General Expenses

- Uniforms for Authority Staff working within the Water Program
- Equipment Purchases and Radio Communications System required for Water Program.
- Stream Flow Monitoring and Flood Forecasting

General Expenses cont'd.

- Flood Emergency response
- Water Quality Monitoring
- Fisheries Habitat Improvement Projects
- Appraisals and Options on Property related to Water Management
- Legal and Consulting Fees for Enforcement of Water Management Regulations
- Reference Materials and Technical Journals related to Water Management

Urban/Rural Drainage

- Project costs or Study costs associated with Storm Water Management
- Project costs or Study costs associated with Drainage Improvements in the rural area that enhance the Water and Related Land Management Program

Forest Management/Reforestation

- Management costs, Development costs on Authority owned Forestry Tracts

Soil Erosion and Sedimentation

- Erosion Control Studies and Projects that control Slope Stability and Reduce Sediment Load in Watercourses

C. Water and Related Land Management Capital

Surveys and Engineering Studies,  
Flood Control

- Flood Plain, Fill and Construction, Hazard Land and Sensitive Area Mapping

Surveys and Engineering Studies,  
Flood Control cont'd.

- Hydrology Engineering Studies
- Environmental Assessment and Impact Studies associated with Water Management Projects
- Resource Inventory Studies related to Water Management

Surveys and Engineering Studies,  
Erosion Control

- Preliminary Engineering Studies related to Lake Ontario Shoreline Protection and Stabilization of Watercourse Embankments
- Environmental Assessment and Impact Studies associated with Shoreline and River Bank Erosion

Flood Control Projects

- Dams and Weirs
- Reconstruction of existing Dams or removal of same
- Channel Improvements
- Dykes and Diversions
- Land Acquisition and related Works required to implement Flood Control measures
- Engineering Design and Contract Supervision costs of Flood Control Projects

D. Conservation and Recreation Land Management

Program Administration

Wages and Expenses

- Technical and Program Staff Salaries and Expenses
- Charges for Authority Owned Equipment and Vehicles used for Program



Conservation Services

- Private and Public Land Assistance Programs related to Wildlife and Fisheries Habitat Improvement and Forest Management

Information & Interpretation

- Public Relations, Media Materials and Supplies, Demonstration Programs related to Promoting Outdoor Recreation and Wise Land Use Practices

Utilities

- Property Taxes, Rent, Insurance and Utility Costs associated with Non Revenue Producing Lands in the Conservation and Recreation Program

General

- Uniforms and Staff Training for Authority Staff working within the Program
- Central Workshop
- Program related Field Communications System
- Reference and Technical Journals and Computer Equipment used in the Program

E. Conservation and Recreation Land Management - Capital

Surveys and Studies

- Conservation Areas Planning including Site Plans and Master Plans
- Visitation Surveys, Inventory Studies

Capital Projects

- Development of Facilities on Authority Owned Land related to a Conservation and Recreation Objective

Capital Projects cont'd.

- Acquisition of Land related to a Conservation and Recreation Objective
- Recreational Components of a Waterfront Program
- Office and Central Workshop

F. Non Eligible Expenditures for Provincial Grants

- Taxes, Insurance and Utility Costs on all Revenue Producing Property
- Machinery and Equipment Purchases
- Staff Wages for Operating Revenue Producing Programs
- All Daily and Annual Maintenance and Replacement Costs in Conservation Areas
- All Daily and Annual Operating Costs to Revenue Producing Properties
- Property Security Costs
- Operation of Demonstration Programs, eg. Sawmill, Maple Syrup

### 3.3 Progress Report - 1956 to 1983

The Halton Region Conservation Authority was established in 1963 through the amalgamation of two former Conservation Authorities known as the Sixteen Mile Creek Conservation Authority and the Twelve Mile Creek Conservation Authority. When the latter two Authorities were established, the Province of Ontario conducted a survey of the two watersheds and published a report containing recommendations for undertakings by each Conservation Authority. A review has been made of the recommendations contained in the Sixteen Mile Creek Conservation Authority Report, published in 1958, and the Twelve Mile Creek Conservation Authority Report, published in 1960. The following summarizes the recommendations contained in the original Reports and the disposition of those recommendations since 1958 and 1960:

Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

---

Land

- |  |  |
|--|--|
| 1. Investigate the watercourse of the subsurface sands and gravels north of Milton and Hornby.   | Municipalities and Ministry of the Environment undertook the studies to quantify the subsurface water resources; the Conservation Authority assisted in protecting the resources under the Planning Act, acquiring important source area lands and passed regulations under Section 28 of the Conservation Authorities Act.            |
| 2. Authority exercise some control over the manner in which quarries, gravel and sand pits are exploited and left after such exploitation. | Passed Regulations under Section 28 of the Conservation Authorities Act; encouraged Province of Ontario to legislate rehabilitation and licencing under the Pits and Quarries Control Act; protected the Niagara Escarpment face by acquiring 150 feet along pit and quarry properties to prevent exploitation of the Escarpment face. |
| 3. Authority lend support to Municipal development plans.  | Authority comments on all land use changes under the Planning Act, Niagara Escarpment Plan and Parkway Belt West Plan.   |
| 4. Authority urge the retention of the best land for agricultural use.   | Attempt to achieve this as a commenting Agency under the Planning Act, however, retention is the primary responsibility of the Ministry of Agriculture and Food and Municipalities under the Planning Act.   |
| 5. Authority review drainage works prior to installation.  | Review is made under the Municipal Drainage Act.   |
| 6. Authority assist in control and renovation of existing gullies and grassed waterways.   | Program was established under Conservation Services but was discontinued as Ministry of Agriculture and Food took the lead role responsibility.  |
| 7. Authority support Farm Pond Program.  | Financial and technical assistance program was implemented and is now administered by the Ministry of Agriculture and Food.  |

Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

Land...cont'd

- |  |  |
|--|--|
| 8. Authority publicize the services and advice available to farmers from various agencies. | Carried out in co-operation with the Ministry of Agriculture and Food. |
|--|--|

\*\*\*\*\*

Forests

- |   |   |
|---|---|
| 9. Establish an Authority Forest by a program of acquisition and planting until 7,208 acres are acquired and reforested.    | Authority has acquired approximately 2,000 acres of the total recommended for purchase; the possibility of acquiring all of the properties is questionable due to estate residential and aggregate use. |
| 10. Provide a planting service at a nominal cost for private reforestation and offer a subsidy for trees planted privately. | Private Tree Planting Assistance Program is still in operation but no subsidy program for trees planted privately.  |
| 11. Establish woodlot improvement demonstration on Authority property or on private property by agreements.                 | Woodlot improvement projects carried out on Authority property only.  |
| 12. Authority carry out woodlot thinning and improvements on private forest lands or provide a subsidy to landowners.       | Not implemented   |
| 13. (a) Publish bulletins on the disadvantages of woodlot grazing.  | Implemented as part of the Watershed Bulletins and Publications under Community Relations.  |
| (b) Improve County Woodlot Fencing By-law to more effectively control woodlot grazing.                                      | Woodlot Fencing By-law could not be legally enforced.<br>Tree Cutting By-laws have been re-written and Conservation Authority acts as enforcement agency for Regional Municipality of Halton.           |

Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

Forests...cont'd

- |  |   |
|--|---|
| 14. Authority publicize the need and methods of reforestation and woodlot management by way of tours, demonstrations, and field trips.                   | Implemented as part of the Community Relations Program.   |
| 15. Encourage and co-operate in research to find methods of managing plantations and natural woodlots.   | Not implemented since Ministry of Natural Resources is doing this research for the benefit of private woodlot owners in Ontario.  |
| 16. Encourage landowners to convert to productive forests such parts of the 2,172 acres of scrubland as cannot be restored to agricultural use.          | Implemented on a voluntary basis through Tree Planting Assistance Program of the Authority and Woodlot Improvement Agreements through Ministry of Natural Resources and through actions taken in 14. above. |
| 17. Authority co-sponsor the Farm Tree Movement and 4-H Forestry Clubs.  | There has not been any success in establishing private forest properties as Certified Tree Farms. The Authority has co-sponsored 4-H Conservation Clubs through the Ministry of Agriculture and Food.       |
| 18. Authority investigate, publicize and urge the implementation of best methods for protecting woodland and plantations from fire, insects and disease. | Identified as the responsibility of the Ministry of Natural Resources' mandate to co-ordinate, implement and control.   |
| 19. The Authority encourage the establishment of windbreaks, shelterbelts and snowfences.  | Windbreaks and shelterbelts were established under the Conservation Services Program and demand from private landowners warrants continuation of the program.   |

\*\*\*\*\*

Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

Water

20. Authority set up an Advisory Committee on pollution control.

Authority enacted Regulation 164 under Section 28, Conservation Authorities Act, to control pollution as defined in the Regulation. The Authority in co-operation with the Ministry of the Environment, established a Water Quality Monitoring Program throughout the Watershed; stations are established for year-round sampling, analysis and follow-up should abnormal analysis require action.

21. &

22. Authority purchase the necessary lands for proposed channel improvements in the Town of Milton.

Project was implemented in 1972 and the last phase of the work still remains to be completed.

23. &

24. Observation test wells be established to record fluctuations of the watertable where large quantities of water are withdrawn from the subterranean reservoirs.

The subterranean reservoirs have been identified and quantified by Ministry of the Environment and Municipalities; monitoring of the withdrawal rates and natural recharge of the aquifers is carried out by Ministry of the Environment and the Municipalities.

25. Lands for possible reservoir sites be purchased for flood control or water storage.  
Recommended sites:

- (a) Glenorchy Reservoir in Lot 20, Conc. II, N.D.S., Trafalgar Twp.

No property acquisition undertaken and no reservoir constructed.

- (b) The Forks Reservoir in Lots 24 and 25, Conc. I, N.D.S., Trafalgar Twp.

No property acquisition undertaken and no reservoir constructed.

- (c) Boyne Reservoir in Lot 26, Conc. II, N.D.S., Trafalgar Twp.

No property acquisition undertaken and no reservoir constructed.

- (d) Milton West Reservoir in Lot 2, Conc. II, Esquesing Twp.

No property acquisition undertaken and no reservoir constructed.



Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

Water...cont'd

(e)Milton East Reservoir in Lot 1,  
Conc. III, Esquesing Twp.

No property acquisition undertaken and no reservoir constructed.

The Authority did construct three reservoirs for flood control and water storage, known as Kelso and Hilton Falls Reservoirs, on the West Branch of the Sixteen Mile Creek and Scotch Block Reservoir, on the Middle Branch of the Sixteen Mile Creek. These three sites were selected over the five sites in the Report because of greater storage capacity, increased flood protection and better cost benefit.

26.That 15 sites be acquired throughout the Watershed for the construction of Community Ponds, preserve certain important natural features and provide public lands for residents of the Watershed to have areas for recreation and relaxation.

Three of the recommended sites were acquired by Municipalities for local park sites: Mill Pond by the Town of Milton, Hornby Park by Halton Hills and Drumquin Park by Town of Oakville.

The Milton Heights site was combined with the construction of the Kelso Reservoir to provide a land area for recreation consisting of 572 acres.

The Campbellville North site is now the Hilton Falls Conservation Area, consisting of 1,271 acres of land.

Campbellville Community Pond, a 3 acre parcel developed by the Authority in the village of Campbellville.

Drumquin South,70 acre parcel acquired in 1959 and is known as Sixteen Valley Conservation Area.

Esquesing Conservation Area, 37 acre parcel in Lot 8, Conc. I, Esquesing Township, acquired in 1958.

Authority acquired 75 acres of flood plain and valley lands south of Highway 5 on the Sixteen Mile Creek and the lands are leased to the Town of Oakville for recreation and open space use.

\*\*\*\*\*

Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

Wildlife

27. Consider stocking of Hungarian Partridge in north part of watershed.

Stocking program was initiated but with limited success.

28. Stocking of fish be carried out only where biological conditions of streams are suitable or are improved to support a sport fishery program.

Fish stocking of streams carried out by Ministry of Natural Resources.

29. Authority make arrangements with Ministry of Transportation and Communications concerning sections of trout streams along Highway 401.

No such agreements made.

30. Authority consider purchasing a section of the Upper Branch of the Sixteen Mile Creek for a demonstration of stream improvement and for public fishing.

A major section of the Sixteen Mile Creek was acquired in the Kelso and Hilton Falls land assembly. Some stream and habitat work has been carried out while the Kelso Reservoir is stocked for public fishing opportunities.

\*\*\*\*\*

Recreation

That the Authority acquire any or all of the following areas for conservation and recreation:

(1) Halton View

A 125 acre land assembly in Lots 14 and 15, Conc. III, Esquesing Twp.

Not implemented to date, but recommendation still has merit under the Niagara Escarpment Plan.

(2) Scotch Block Conservation Area

A 133 acre land assembly in part of Lots 9 and 10, Conc. II, Esquesing Twp.

This recommendation was abandoned and it is not expected to be implemented in the future due to existing residential usage.

Sixteen Mile Creek Conservation Authority Report, 1958

Recommendations:

Action Taken as of 1983

Recreation...cont'd

(3) Escarpment Conservation Area

A 93 acre land assembly in the east half of Lots 9 and 10, Conc. I, Esquesing Twp.

Between 1962 - 1967, the Authority assembled 69 acres in part of Lots 7 and 8, Conc. VIII, Nassagaweya Township, and part of Lots 9 and 10, Conc. I, Esquesing Township; the property is a 200 foot strip of land that contains the Niagara Escarpment brow and talus slope; was acquired to prevent excavation of the scarp face by aggregate industry.

(4) Twin Waters Conservation Area (Glenorchy)

A 70 acre land assembly in Lots 25, 26, and 27, Concs. I and II, N.D.S., Oakville.

No land assembly has been initiated by the Authority; the majority of the land has been purchased by the Province under the Parkway Belt West Plan for transportation and utility corridors; Ontario Land Corporation also own some of the land; the original recommendation is still valid today and the Authority has been approached by the Province to consider acquisition or leasing the valley lands from the Province that are surplus to Provincial needs.

(5) Oakville Conservation Area

A 300 acre land assembly in part of Lots 18 to 21, Conc. I, S.D.S. Town of Oakville; valley lands table lands to be developed as a major open space area near urban Oakville.

The recommended tracts of land were not purchased by the Authority. Urban development has now expanded to the table land that was included in the original proposal. The Authority has limited any potential public land assembly to dedications under the Planning Act and applying Section 28 Regulations to the valley lands to protect and preserve the valley and the Sixteen Mile Creek from urban encroachment. Ultimately, the valley lands from Upper Middle Road to Highway 5 may be assembled by the Authority as circumstances warrant.

\*\*\*\*\*

## Twelve Mile Creek Conservation Report, 1960

### Recommendations:

### Actions Taken as of 1983:

#### Forests

- |  |   |
|--|---|
| 1. Provide a planting service at a nominal cost for private reforestation and offer a subsidy for trees planted privately.                                       | Private Tree Planting Assistance Program is still in operation but no subsidy program for trees planted privately.  |
| 2. Encourage landowners to convert to productive forests such parts of the 4,593 acres of scrubland as cannot be restored to agricultural use.                   | Implemented on a voluntary basis through Tree Planting Assistance Program of the Authority and Woodlot Improvement Agreements through the Ministry of Natural Resources.  |
| 3. Establish an Authority Forest by a program of acquisition and planting until 9,704 acres are acquired and reforested.   | Authority has acquired approximately 3,500 acres of the total recommended for purchase; the possibility of acquiring all of the properties is questionable, however, those that will provide a multitude of conservation benefits will be considered in the future.   |
| 4. Establish woodlot improvement demonstrations on Authority property or on private property by agreement.   | Woodlot improvement projects carried out on Authority property only.  |
| 5. Authority carry out woodlot thinning and improvements on private forest lands or provide a subsidy to landowners.   | Not implemented.  |
| 6. The Authority co-operate with County Governments in the application of its woodlot fencing by-law to stimulate action towards elimination of woodlot grazing. | Woodlot Fencing By-laws could not be legally enforced.<br>County Tree Cutting By-laws in the Region of Halton, Region of Hamilton-Wentworth and Wellington County have been re-written; the Conservation Authority acts as enforcement agency for the Tree Cutting By-law in the Regional Municipality of Halton; the Region of Hamilton-Wentworth and Wellington County have their own enforcement officers under their by-laws. |

Twelve Mile Creek Conservation Report, 1960

Recommendations:

Actions Taken as of 1983:

Forests...cont'd

7. Authority act as co-sponsor for the tree farm movement, woodlot meetings and 4-H Forestry Club.

There has not been any success in establishing private forest properties as certified tree farms; the Conservation Authority co-operates with the Ministry of Natural Resources in promoting improved woodlot management practices by private landowners and the Authority has co-sponsored 4-H Conservation Clubs through the Ministry of Agriculture and Food.

8. The Authority publicize the need and methods of reforestation and woodlot management by way of tours, demonstrations and field trips.

Implemented as part of the Community Relations Program of the Authority.

9. Encourage and co-operate in research to find methods of managing plantations and natural woodlots.

A five-year research project was undertaken in co-operation with the University of Guelph on determining the impact on growth rates for plantation growth by applying the various rates of chemical fertilizer; the research program was discontinued in 1974.

10. The Authority investigate, publicize and urge the implementation of best methods for protecting woodland and plantations from fire, insect and disease.

Identified as the responsibility of the Ministry of Natural Resources' mandate to co-ordinate, implement and control.

11. Authority encourage the establishment of windbreaks, shelterbelts and snow fences.

Windbreaks and shelterbelts were established under the Conservation Services Program, but demand from private landowners has declined to such an extent that none have been installed recently.

\*\*\*\*\*

## Twelve Mile Creek Conservation Report, 1960

### Recommendations:

### Actions Taken as of 1983:

#### Water

12. That the Authority have automatic recording system gauges installed on the Twelve Mile Creek near Zimmerman, Carlisle and Mountsberg.

The Conservation Authority has implemented this recommendation and expanded the program so that the entire watershed will be included in a data collecting system suitable for recording stream flow and the operation of a flood warning system.

13. &

14. The Authority act to prevent further encroachment on the flood plains of the Twelve Mile Creek and its tributaries.

The Conservation Authority has completed flood plain mapping on the Twelve Mile (Bronte) Creek to delineate the limit of the flood vulnerable areas where existing development is situated; the entire watershed will have up-to-date flood plain mapping on the Bronte (Twelve Mile) Creek under the Federal/Provincial Flood Damage Reduction Program., by 1984. The Authority has passed Regulations under Section 28 of the Conservation Authorities Act and administers those Regulations in conjunction with applications under the Planning Act to ensure no further urban encroachment is permitted into the flood plains.

15. The Authority proceed with a flood control project at Morriston, including regulation of the lake as a flood control reservoir.

This project was considered but after preliminary engineering and property acquisitions were considered, the project was abandoned, based on the limited cost benefit that would result from the project.

16. The Authority carry out demonstrations of roadbank and gully erosion control.

No demonstrations were implemented, however, municipalities and drainage works under the Municipal Drainage Act, were encouraged to have due regard for erosion protection measures on their works.

17. That the Authority acquire the necessary lands for the Mountsberg, Freelon and Strabane Reservoirs.

The Authority implemented the recommendation for the Mountsberg Reservoir and constructed the Dam in 1962. The Freelon and Strabane Reservoir sites have not been implemented to date due to the limited storage capacity available from the sites.

## Twelve Mile Creek Conservation Report, 1960

### Recommendations:

### Actions Taken as of 1983:

#### Water...cont'd

18. The Authority establish a program to continue pond development with special priority being given to a program at Carlisle and Morriston.

No action taken regarding the Morrison 10 acre site since the body of water is privately owned. The Authority acquired 30 acres of flood plain land on the Bronte (Twelve Mile) Creek through the Village of Carlisle.

\*\*\*\*\*

#### Wildlife

19. Landowners be encouraged to improve their land for wildlife by elimination of grazing in woodlots, by constructing farm ponds and by carrying out planting of various vegetative covers along the streambanks and hedgerows.

The Authority, through the Ministry of Agriculture and Food, has encouraged the fencing of all woodlots and implemented a program for farm pond construction which was subsequently transferred to the Ministry of Agriculture and Food for administration purposes. Planting of vegetative plants is available under the Conservation Services Program on a site specific basis.

20. Stocking of fish be carried out only where biological conditions and streams are suitable or are improved to support a sport fishery program.

Fish stocking of streams carried out by the Ministry of Natural Resources.

21. The Authority encourage the development and management of farm fishing ponds.

No action taken on implementation of this recommendation.

\*\*\*\*\*

#### Recreation

The Twelve Mile Creek Conservation Authority consider the acquisition

## Twelve Mile Creek Conservation Report, 1960

### Recommendations:

### Actions Taken as of 1983:

#### Recreation...cont'd

and development of the following areas for conservation and recreational purposes:

##### (1) Rattlesnake Point

A 240 acre land assembly in Lots 1 & 2, Concs. IV & V, Nassagaweya Twp., and Lots 11 to 15, Concs. IV & V, Burlington.

The Authority acquired 540 acres between 1961 and 1980.

##### (2) Calcium Pits Conservation Area

A 90 acre land assembly in Lots 11 to 13, Conc. II, Burlington.

No property assembly carried out by the Conservation Authority, however, part of the recommended site was donated to the Ontario Heritage Foundation and is under the management agreement with the Ministry of Natural Resources. It is anticipated that the property will be transferred for management purposes to the Conservation Authority, in conjunction with future acquisition as per the original recommendation.

##### (3) Bronte Gorge Conservation Area

A 130 acre land assembly in Parts of Lots 7 & 8, Concs. I & II, Burlington, and Lots 1 & 2, Conc. VII, Flamborough.

No property assembly completed to date by the Conservation Authority, however, development has been kept out of the Bronte (Twelve Mile) Creek Valley system, under Section 28 Regulations of the Authority and development control restrictions under the Niagara Escarpment Plan; future acquisition in this area is a possibility.

##### (4) Mount Nemo Conservation Area

A land assembly of 262 acres in Parts of Lots 1 to 4, Conc. IV, Burlington.

The Conservation Authority acquired 245 acres in 1958 to preserve the prominent land feature of the Niagara Escarpment.



Twelve Mile Creek Conservation Report, 1960

Recommendations:

Actions Taken as of 1983:

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Recreation...cont'd

(5) Meanders Conservation Area

A land assembly of 95 acres in Lots 2, 3 & 4, Conc. I, N.D.S., Burlington.

No land assembly implemented by Conservation Authority; protection of the valley system and its natural features has been controlled by applying Regulations passed under Section 28 of the Conservation Authorities Act and development restrictions imposed under the Planning Act.

(6) Bronte Bend Conservation Area

A land assembly of 115 acres consisting of the valley lands in Lots 31 to 34, Concs. II & III, N.D.S., Burlington.

The Conservation Authority acquired the valley lands, however, title was transferred to the Province of Ontario to be included in the Provincial land assembly for the establishment of the Bronte Creek Provincial Park.



## **Physical Characteristics of the Halton Region Conservation Authority's Watershed**

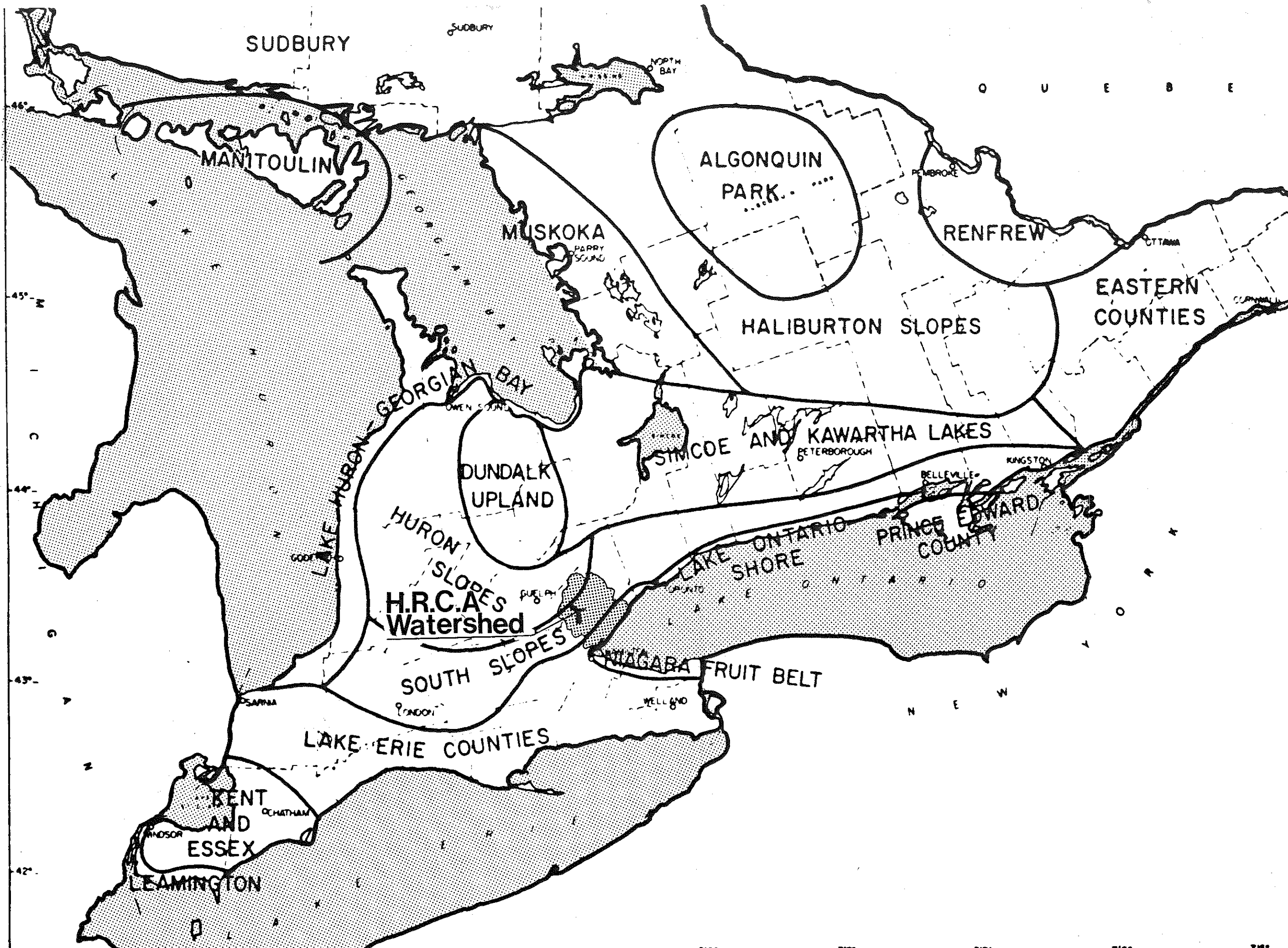


Figure 4.2.1.

CLIMATIC DATA FOR HALTON REGION CONSERVATION AUTHORITY WATERSHED

Climatic Sub-regions

Climatic Conditions	Lake Erie Counties	South Slopes	Huron Slopes
Mean annual temperature	8	7	6
Length of growing season*	205	203	200
Length of frost-free period	155	145	140
Mean minimum temperature for April	2	2	1.0
Mean minimum temperature for October	6	4	3
Mean annual precipitation	762mm	787mm	815mm
Mean annual heat units for corn (CHU)	3,100	2,900	2,700
Mean Precipitation (May-September)	356mm	356mm	381mm
Moisture deficiency	102mm	76mm	51mm

\* Based on a minimum temperature of 6 degrees centigrade

### 4.3 Physiography

The area within the watershed of the Halton Region Conservation Authority is comprised of five (5) physiographic regions and these are characterized by four (4) main physiographic features.

The physiographic regions as named by Chapman and Putman are: Horseshoe Moraine, Flamborough Plains, Iroquois Plain, Peel Plain and South Plain. The features within these include the Niagara Escarpment, till plains, clay plains and moranic hills. The Halton Region Conservation Authority's watershed can be described through the above noted physiographic regions. However, to begin, the area is dominated by the main feature in Southern Ontario - the Niagara Escarpment.

#### 4.3.1 Niagara Escarpment

The Niagara Escarpment and its associated landforms are unique and form a vital resource for the Authority's watershed. The cliffs display the Silurian dolomites, while the lower slopes are carved from the erosive Queenston red shale and greenish siltstone. Exposed are the Cataract and Clinton groups of white and grey sandstones, grey shales and buff Lockport dolomite. The most resistant of these are the dolomites.

One of the mesa-like outliers of the Escarpment is located near Milton; it is approximately four square miles (10.3km) in size and is called the Milton Outlier. It is separated from the main body of the upland by a former deep river valley filled with glacial stream deposits which is located between Crawford Lake and Rattlesnake Point. This valley is commonly known as the Nassagaweya Canyon.

The headwaters of the Bronte, Grindstone and Sixteen Mile Creeks are for the most part located in the lands above the Niagara Escarpment and are protected by forest cover. In addition, the majority of the landholdings of the Conservation Authority are Escarpment related and emphasize prominent features of the Escarpment. These include Mount Nemo, Crawford Lake, Rattlesnake Point, Kelso Bluffs, Hilton Falls, Esquesing Conservation Areas and the forest tracts of Crawford Lake, Escarpment, Lake Medad, Kiwanis, Twiss and Tirion. The total acreage of these properties is

3662.63 acres (1462.7ha) which represents 58.5% of the total Authority land holdings.

A major impact on the Escarpment has come about through aggregate mining in the various pits and quarries. The resource is of excellent quality, however, conflicts with other uses exist. The Niagara Escarpment is an important commercial mineral resource with limestone deposits above the shale deposits on the downslope and with sand and gravel deposits within the Escarpment glacial re-entrant valleys. The Authority has discussed a review process for applications for licence under the Pits and Quarries Act with the District office of the Ministry of Natural Resources. At the present time the Authority is not on the designated circulation list for such applications and since many of the high potential aggregate reserves are located in areas of environmental interest to the Authority, the Halton Region Conservation Authority's involvement in licencing is crucial to the Authority's watershed management program. Section 4.4.5 of this Plan outlines in more detail how the Authority perceives the impact of the mining of aggregates on natural resources in the watershed.

#### 4.3.2 Physiographic Regions

The following physiographic regions are listed in a geographic manner moving from Lake Ontario to the northern reaches of the Conservation Authority's watershed and are denoted on Map No. 4.

##### A. Iroquois Plain

Formerly flooded by glacial Lake Iroquois and known as that portion of the plain beginning with the gravel bar lying through Aldershot, the Iroquois Plain has a distinctive shoreline cut in the red Queenston shale. The shale is overlain with clay till and lacustrine sand.

The shoreline known as the Iroquois ridge follows a general line of direction associated with Highway #2 in Aldershot to that of the Queen Elizabeth Way eastward. The ridge affects the watercourse systems crossing it by creating well-defined valleys above the ridge and ill-

defined valleys and wider flood plains below the ridge and closer to Lake Ontario.

The former lake left barrier beaches across Bronte Creek and Sixteen Mile Creek. The present shoreline of Lake Ontario covers the mouth of these two watercourses, enabling these confluence areas to be used for pleasure marine activities within the harbours.

#### B. South Slope

The South Slope of the interlobate moraine (Oakridges Moraine) includes a strip of southern and northern Peel Plain and lies immediately east of the Iroquois Plain and the shore of Lake Ontario.

The Trafalgar Moraine abuts the South Slope and is characterized by kettle and knob relief and reddish clay containing a great deal of Queenston shale.

This area is a part of a large area of Halton which is characterized by till deposits and is particularly shallow and fluted in the area south of the Peel Plain. Flutings are small scale ridges and depressions created by the glacial scraping over the bedrock.

Also, due to the presence of the Trafalgar Moraines, the area is characterized by undrained irregular depressions between the knobs. These also carry abandoned stream channels, now oversized for the existing streams.

#### C. Peel Plain

Level-to-undulating, the Peel Plain contains clay loam soils in which the Bronte and Sixteen Mile Creeks have cut deep valleys. The clay plain is the particular feature of this physiographic region.

The soils are well suited to the livestock/dairy industry and represents the agricultural community in this immediate area with primarily Class 2 soils.

There are no large undrained depressions, swamps or bogs on the plain. Few aquifers exist and water supply can be a problem. However, the area can support mixed farming practices. There are small isolated sand pockets in Concessions VIII and IX, Town of Milton (Trafalgar) suited for market gardening.

In terms of the origin of the plain, it is the original site of Peel Lake. This lake was formed by an ice lobe which was water dammed against the Oakridges Moraine (north of the Halton area) and the Niagara Escarpment. The Peel 'ponding' was therefore located between the South Slope and the Escarpment.

The deposits within the lake are now evident in the Peel Plain with a clay loam profile. The shoreline is not marked with continuous beaches or shorecliffs. The result of submergence has been smoothing of the till surface and the deposition of just enough clay to produce a Peel clay loam. One outlet of Lake Peel is the Lake Medad channel between 800 feet and 812.5 feet a.s.l. A secondary, lower outlet was near Mount Nemo.

#### D. Flamborough Plain

This area is characterized by shallow drift above the Niagara Escarpment and acts as an excellent source of permanent flow to Grindstone Creek, Bronte Creek and Sixteen Mile Creek through its swamps and gravels. One prime area, identified as an environmentally sensitive area is the Moffat (Badenoch) Swamp in the northeastern corner of the watershed.

The suitability for agriculture is poor with soil classes ranging from four to seven due to the stoniness and shallow depth of the soil.

#### E. Horseshoe Moraines

The area featuring the Horseshoe Moraines is described as one with a belt of moderately hilly topography located between Acton and



Guelph in the northwestern corner of the Halton watershed. An old spillway exists with broad gravel and sand terraces and swampy floors. Ideal cross-sections can be seen at the Highway 401 alignment and along Highway 6, in Puslinch Township. The small kettles below the slopes contain water in the spring and early summer. The large deposits of sand and gravel promote mining and good drainage within the area. The main value of this area is due to its source areas, vital to flood control and recharge schemes, water supplies and wildlife.

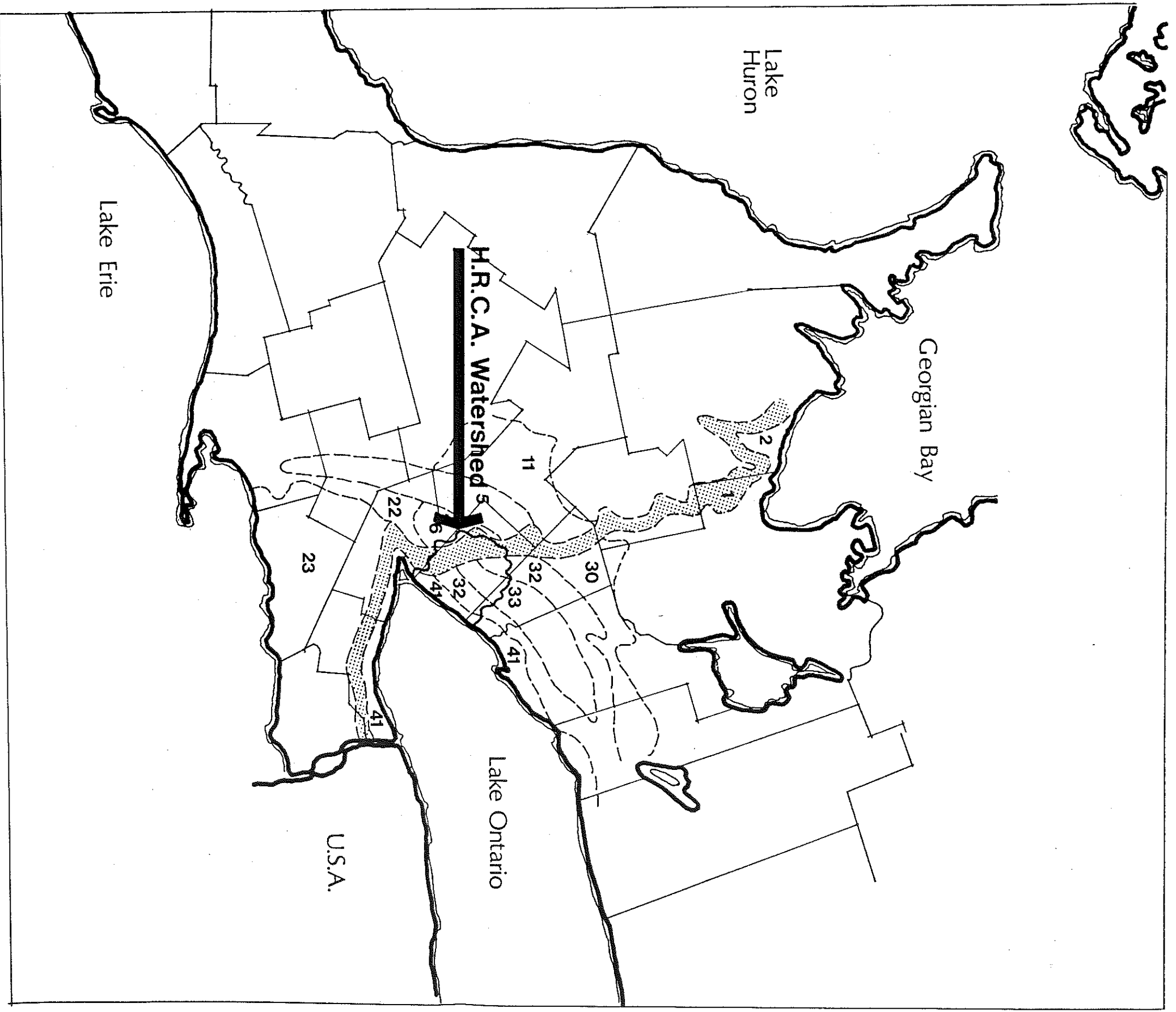
#### 4.3.3. Summary

The physiography of the Halton Region Conservation Authority's watershed, particularly due to the presence of the Niagara Escarpment, creates an extremely scenic and resource-rich environment. Such an area is well suited to such outdoor recreational activities as nature-oriented education programs, hiking, skiing, and rock climbing. The feature also lends itself to affecting stream flows through provision of source areas and creation of distinct valley shapes. The aggregate resource is such that the area is the location of a number of pits and quarries.

In addition to the Niagara Escarpment, the Flamborough Plain and Horseshoe Moraines, located in the westerly half of the watershed are important as recharge areas for groundwater and low flow augmentation for the Bronte, Grindstone and Sixteen Mile Creeks. The area also provides significant flood storage and wildlife habitat due to the abundance of headwater swamps which are in need of continuous protection.

The Peel Plain with its clay soils generates rapid runoff to the stream systems and does not contribute significantly to groundwater recharge for this area. Water supply must be derived from Lake Ontario for high demand cases, particularly as urbanization extends northward from Oakville and Burlington.

The Lake Iroquois shoreline creates well-defined valleys above its ridge and ill-defined valleys below its ridge creating the potential for extensive flooding in this lower area.



legend

- 1 Niagara Escarpment
- 2 Beaver Valley
- 5 Horseshoe Moraines
- 6 Flamborough Plain
- 11 Guelph Drumlin Field
- 22 Norfolk Sand Plain
- 23 Haldimand Clay Plain
- 30 Oak Ridges
- 32 South Slope
- 33 Peel Plain
- 41 Iroquois Plain

HALTON REGION CONSERVATION AUTHORITY  
**INTERIM**  
**WATERSHED PLAN**

WATERSHED : PHYSIOGRAPHIC ZONES

adapted from L.J. Chapman

#### 4.4 Significant Watershed Characteristics

The basis of any Conservation Authority's Watershed Plan is the significance of individual watersheds in relation to those in other basins in Ontario and how special features are incorporated into the Conservation Authority's programs and priorities.

The Halton Region Conservation Authority has identified significant characteristics within its watershed and through these, emphasizes the need for resource management on a watershed basis.

The significant or special characteristics for the Halton Authority and its watershed can be categorized as follows.

- 4.4.1 Significant/Unique Physical Features
- 4.4.2 Provincial and Other Public Lands (designated or owned)
- 4.4.3 Rural/Urban Mix
- 4.4.4 Role in Recreation
- 4.4.5 Aggregate Extraction and Aggregate Reserves
- 4.4.6 Watercourse and Shoreline Features
- 4.4.7 Lake Ontario Shoreline - Waterfront Plan
- 4.4.8 Significant/Unique Heritage Features

##### 4.4.1 Significant/Unique Physical Features

The following features of the Halton Region Conservation Authority's watershed have both provincial and watershed significance and contribute to the educational value of the area; provide natural viewsheds and impact on water management. There is pressure from time to time to permit development in the area of these features despite their value and the Authority through its information, education, conservation recreation and water management programs continues to protect or to urge appreciation of them wherever possible. (Maps No. 5, 6 & 7)

##### 4.4.1.1 Provincially Significant Earth Science Areas

- Lowville Re-entrant Valley
- Dundas/Waterdown Area
- Halton Till
- Freelon Esker

#### 4.4.1.2 Provincially Significant Life Science Areas

- Beverly Swamp
- Halton Forest North
- Halton Forest South
- Crawford Lake - Milton Outlier Valley
- Lowville Bronte Creek Valley
- Mount Nemo Escarpment
- Bronte Creek Provincial Park
- Iroquois Shoreline Woods

#### 4.4.1.3 Environmentally Sensitive Area (as defined in the Municipal Official Plans)

	<u>Municipality</u>
- Royal Botanical Gardens - Coates Paradise	Regional Municipality of Hamilton/Wentworth
- Lake Medad	
- Mountsberg	
- Bronte Creek Ravine	
- Carlisle Swamp	
- Clappison Escarpment Woods	Regional Municipality of Halton
- Bridgeview Valley	
- Grindstone Creek Valley	
- Sassafras Woods	
- Waterdown Escarpment Woods	
- Nelson Escarpment Woods	
- Lake Medad and Medad Valley	
- Mount Nemo Escarpment Valley	
- Lowville-Bronte Creek Escarpment Valley	
- Bronte Creek Valley	
- Bronte Burloak Woods	
- Fourteen Mile Creek Valley	
- Iroquois Shoreline Woods	
- Wildflower Woods	
- Joshua Creek Valley	
- Sixteen Mile Creek Valley	

- Milton Heights
- Crawford Lake-Rattlesnake Point Escarpment Woods
- Calcium Pits
- Guelph Junction Woods
- Moffat Swamp
- Brookville Swamp
- Speyside Escarpment Woods
  
- Mountsberg Wildlife Area                      Wellington County
- Moffat Marsh                                      (Puslinch Township)
- Fish Hatchery Swamp

The total acreage covered by the above environmentally sensitive areas by municipality is as follows.

	<u>Ha.</u>	<u>Acre</u>	
Region of Halton	7200.5	17,785	
Region of Hamilton/ Wentworth	1491.2	3,683	
Wellington County	562.0	1,388	
Total	<u>9253.7</u>	<u>22,856</u>	<u>8.8 %</u> of Watershed

#### 4.4.1.4 Niagara Escarpment

The Niagara Escarpment is a prominent feature in the Conservation Authority's watershed and has unique and significant values regarding education, local climate, water supplies, aggregate supplies, wildlife and the sheer beauty of the feature itself.

#### 4.4.2 Provincial and Other Public Major Open Space Lands

The Halton Region Conservation Authority has substantial acreage of land which have been purchased by a variety of government ministries and agencies. Some of the lands were purchased specifically for public open space, while others were purchased for such uses as utility - transportation corridors or for future urban development, yet these lands contain significant natural resources and environmental assets to the watershed.

These areas are listed below in Figure #4.4.1 and are discussed in more detail in Section 4.5 of this Plan in terms of possible management by the Authority in future years for its programs in conjunction with the Province's desire to provide public open space or to protect certain environmentally sensitive or significant lands.

Figure 4.4.1  
Provincial and Other Public Major Open Space Lands  
Halton Watershed

Major Public Open Space Lands in H.R.C.A. Watershed	Proposed to be Acquired		Acquired	
	Ha.	A.	Ha.	A.
Parkway Belt West Plan	3,743	9,243	2,687	6,636 *
Ontario Land Corporation			1,481	3,658
M.N.R. Agreement Forest (Municipally owned)			690	1,704
H.R.C.A. Lands			2,501	6,181
Totals	3,743	9,243	7,379	18,179

- \* PUBLIC AGENCIES - Royal Botanical Gardens, Bronte Creek  
Provincial Park, Municipal Parks, Ontario - 4,490 ac  
Hydro and Ontario Heritage Foundation. (1,818 ha)
- Ministry of Government Services - 2,146 ac  
( 869 ha)

Note: Total acreage acquired includes only major open space municipal lands.

#### 4.4.3 Rural/Urban Mix

The Halton Region Conservation Authority's watershed is characterized by a predominantly rural area, covering approximately two-thirds of the watershed, while serviced urban areas are located in the remaining one-third of the watershed. The major population centres are located south of

Highway #5 in Oakville and Burlington, while Milton and Waterdown make the other major population centres.

As urbanization extends northward from Burlington and Oakville, the watersheds of the Bronte, Sixteen Mile and Grindstone Creeks will be subject to additional development, however, this is not expected to exceed more than 10% of these total watersheds in the foreseeable future. In the case of the Fourteen Mile Creek and Joshua's Creek watersheds, urban development will extend to Highway #5, leaving approximately one third of each watershed in a rural state. The watersheds which are anticipated to be entirely urbanized are located in Burlington and Oakville and these watersheds originate in the Highway #5 area and each discharges directly to Lake Ontario. These watercourses are Falcon, Indian, Hager, Rambo, Roseland, Tuck, Shore Acres, Appleby, Sheldon, Taplow, Morrison and Wedgewood Creeks.

#### 4.4.4 Role of Recreation

The watershed of the Halton Authority contains parts of three Regional Municipalities, Halton, Hamilton - Wentworth and Peel. The regional municipalities make up 85% of the area of the Halton watershed and contains the majority of the existing 225,000 residents in the watershed.

The Official Plans for the regional municipalities have designated the Conservation Authorities as the lead agencies responsible for providing open space and outdoor recreational opportunities on a regional basis to serve the needs and the demands for such opportunities by their respective citizens. The Halton Authority has accepted this role and through a co-operative effort with the watershed municipalities, will continue to provide this essential and complimentary service.

#### 4.4.5 Aggregate Extraction and Aggregate Resources

The Niagara Escarpment is recognized as one of the most valuable natural deposits of good quality limestone as well as one of the most important scenic and recreational landforms in Southern Ontario. The Escarpment is a

dominant feature in the Halton watershed and it is subjected to a number of competing land uses including, aggregate extraction, residential development, agricultural uses, forestry, open space and recreation. Due to the proximity of the Halton watershed to the major metropolitan urban centres of Toronto, Hamilton and Kitchener, the Niagara Escarpment has provided a substantial amount of limestone aggregates for urban expansion and the provision of major transportation systems by the provincial and municipal governments in Southern Ontario.

The talus slopes of the Escarpment, glacial spillways and flood plains of watercourses provide some of the best desposits of natural sand and gravel. The demand for all types of aggregate resources is anticipated to continue to grow, such that the existing licenced areas may exhaust their resources by the end of the century; therefore, requests to licence additional known reserves throughout the watershed will intensify.

The Ministry of Natural Resources is responsible for licencing all properties under the Pits and Quarries Control Act. The Ministry has licenced some 343 hectares (848 ac) of land for sand and gravel extraction and some 1,631 hectares (4,028 ac) of land for limestone extraction in the Halton watershed. Known reserves for the future supply of sand, gravel and limestone aggregate indicate that 792 hectares (1,955 ac) of unlicenced but available sand and gravel deposits and 16,830 hectares (41,555 ac) of unlicenced but available limestone aggregates exist in the watershed.

The Niagara Escarpment performs an important hydrological function in the management of water in the Halton watershed. The majority of the streams and watercourses originate in the Escarpment and the Escarpment functions like a natural reservoir in that rainfall is absorbed and gradually seeps its way downward to appear as innumerable springs on the talus slopes of the Escarpment. In addition, the Sixteen Mile Creek, tributaries of the Bronte Creek, and the Grindstone Creek are flowing on a year-round basis throughout the Escarpment with the associated swamps and flood plains acting as holding areas and decreasing the peak runoff in the downstream sections of the valleys. Quarries or Pits located in the headwater source area of streams and on the Escarpment can result in diversions and the relocation of these streams and redirect the migration of groundwater towards the excavations. Surface drainage and groundwater then have to be



pumped or drained away from the aggregate site. Flood plains of watercourses that contain aggregate reserves are often regulated by the Authority because of their susceptibility to flooding. The Regulation controls the placing of fill, construction and any alterations to the watercourses. In some instances, such Regulation is in conflict with the objective of aggregate extraction and further conflicts may arise since it is anticipated that the demand for expansion of licenced aggregate sources and the environmental impact of such licences will increase in the future. The existing licenced aggregate operations within the Halton watershed exemplify, in some instances, the problem between surface drainage, depletion of groundwater sources and the impact on flood plains as noted in Figure 4.4.2.

Licenced Aggregates - Halton Region Conservation Authority Watershed

Map No.	Owner	Lot	Conc.	Original Municipality	Pit	Quarry	Licensed Area Acres (Hectares)	H.R.C.A. Concerns
1	Cetinski	Pt. 10	10	E. Flamborough	X		15.61 ( 6.32 )	
2	Coverdale	Pt. 2	8	E. Flamborough	X		21.2 ( 8.58 )	
3	Posavad	Pt. 3	8	E. Flamborough	X		20.8 ( 8.42 )	
4	Canada Crush Stone	9, 10, 11, 7, 8, 9	3 4	W. Flamborough		X	977 (395.68)	
5	Steelley Ind.	Pt. 10	4	W. Flamborough		X	48.4 ( 19.6 )	
6	Canada Brick	Pt. 3	1 N.D.S.	Nelson		X Shale	39.5 ( 15.9 )	Alteration of Bronte Creek Flood Plain Excavation Siltation and Erosion Control Rehabilitation Plan
7	Genstar	8	1	Nelson	X		100 ( 40.5 )	Impact on Escarpment and Valley of Bronte Creek
8	Genstar	1, 2	3	Nelson		X	500 (202.5 )	
9	Halton Ceramics	Pt. 11, 12	1	E. Flamborough		X Shale	5 ( 2.1 )	Rehabilitation Plan Siltation Control
10	National Sewer Pipe	Pt. 2, 3 1, 2, 3	1 2	E. Flamborough		X Shale	179 ( 72.5 )	Headwaters of Falcon and Indian Creeks Siltation Control Management Related to Proposed Sanitary Landfill Use
11	Salco	8	2	Nelson	X		59.59 ( 20.89 )	Drainage of Subsurface and Surface Waters Siltation of Bronte Creek

Figure 4.4.2

Licensed Aggregates - Halton Region Conservation Authority Watershed

Map No.	Owner	Lot	Conc.	Original Municipality	Pit	Quarry	Licensed Area Acres (Hectares)	H.R.C.A. Concerns
12	Barnes	Pt. 19	5	Esquesing		X Sandstone	100 ( 40.5 )	Source Area of Tributary Stream, Sixteen Mile Creek
13	Dufferin Aggregates	10, Pt. 8, 9 10, 11 Pt. 7, 8, 9, 12 & 13	7	Esquesing Nassagaweya		X X	889 ( 74.5 ) 889 ( 360 )	Source Area for Sixteen Mile Creek Diversion and Alteration of Watercourse
14	Indusmin	Pt. 22, 23 Pt. 21, 22, 23, 24	3 4	Esquesing		X	( 575 )	Impact on Groundwater Drawdown Proposed Operation and Rehabilitation Plan, Impact on Hilton Falls Dam, Kelso Dam, Low Flow Augmentation of Sixteen Mile Creek
15	Campbellville Gravel Supply	Pt. 5 Pt. 6	6 4	Nassagaweya Nassagaweya	X X		39.2 ( 15.9 ) 54.8 ( 22.2 )	Rehabilitation Plan Flood Plain of Sixteen Mile Creek Siltation Control
16	David, Lloyd George Ltd.	Pt. 12, 13	4	Nelson	X		134 ( 54.3 )	Depth of Excavation and Impact on Groundwater
17	Indusmin	Pt. 7, 8	6	Nassagaweya		X	300 ( 121.5 )	Impact on Groundwater, Blasting Adjacent to Hilton Falls Dam

Figure 4.4.2

## Licenced Aggregates - Halton Region Conservation Authority Watershed

Map No.	Owner	Lot	Conc.	Original Municipality	Pit	Quarry	Licensed Area Acres (Hectares)	H.R.C.A. Concerns
18	Milton Brick Brick	Pt. 1, 2	7	Nassagaweya	X		36.47 ( 14.77 )	Rehabilitation Plan Erosion Control and Siltation Control
19	Milton Limestone	Pt. 1, 2	7	Nassagaweya		X	231.40 ( 93.7 )	Niagara Escarpment and Kelso Conservation Area
20	Springbank Sand & Gravel	Pt. 12	4	Nelson	X		128.4 ( 52. )	Rehabilitation Plan Limestone Creek
21	Warren Paving	Pt. 11	4	Nelson	X		100.6 ( 40.7 )	Rehabilitation Plan Limestone Creek
22	Springbank Sand & Gravel	Pt. 6, 7	2	Nassagaweya	X		145. ( 58.7 )	
							<u>4875.97 (1974.77)</u>	

#### 4.4.6 Watercourse and Shoreline Features

The Bronte and Sixteen Mile Creeks cut through the Halton Till Plain and have developed well-defined U-shaped valleys. The Grindstone Creek on the other hand has developed a deeply incised V-shaped valley as it flows over limestone of the Niagara Escarpment; cuts through the shale of the bedrock underlying the Escarpment and descends rapidly to Hamilton Harbour. In terms of water management, these two types of valleys generally contain flood flows, however, they are susceptible to erosion and slope instability and are subject to specific controls for development adjacent to valley walls.

Another physiographic feature affecting water management is the Iroquois Shoreline in Oakville and Burlington. In areas upstream of the Iroquois shoreline, the valleys are small but incised and box-shaped with significant flow capacities. Below the Iroquois shoreline the valleys are ill-defined and extensive flooding potential exists in Burlington and Oakville.

The Lake Ontario shoreline is predominately urbanized, however, there are areas of open space and several flood plains of inland watercourses interspersed along the shoreline. The shoreline is an important feature requiring erosion control protection. The provision of an adequate land base to permit use for water activities on Lake Ontario is of critical importance in the Halton watershed and warrants implementation of those projects outlined in Section 10.0 of this Plan.

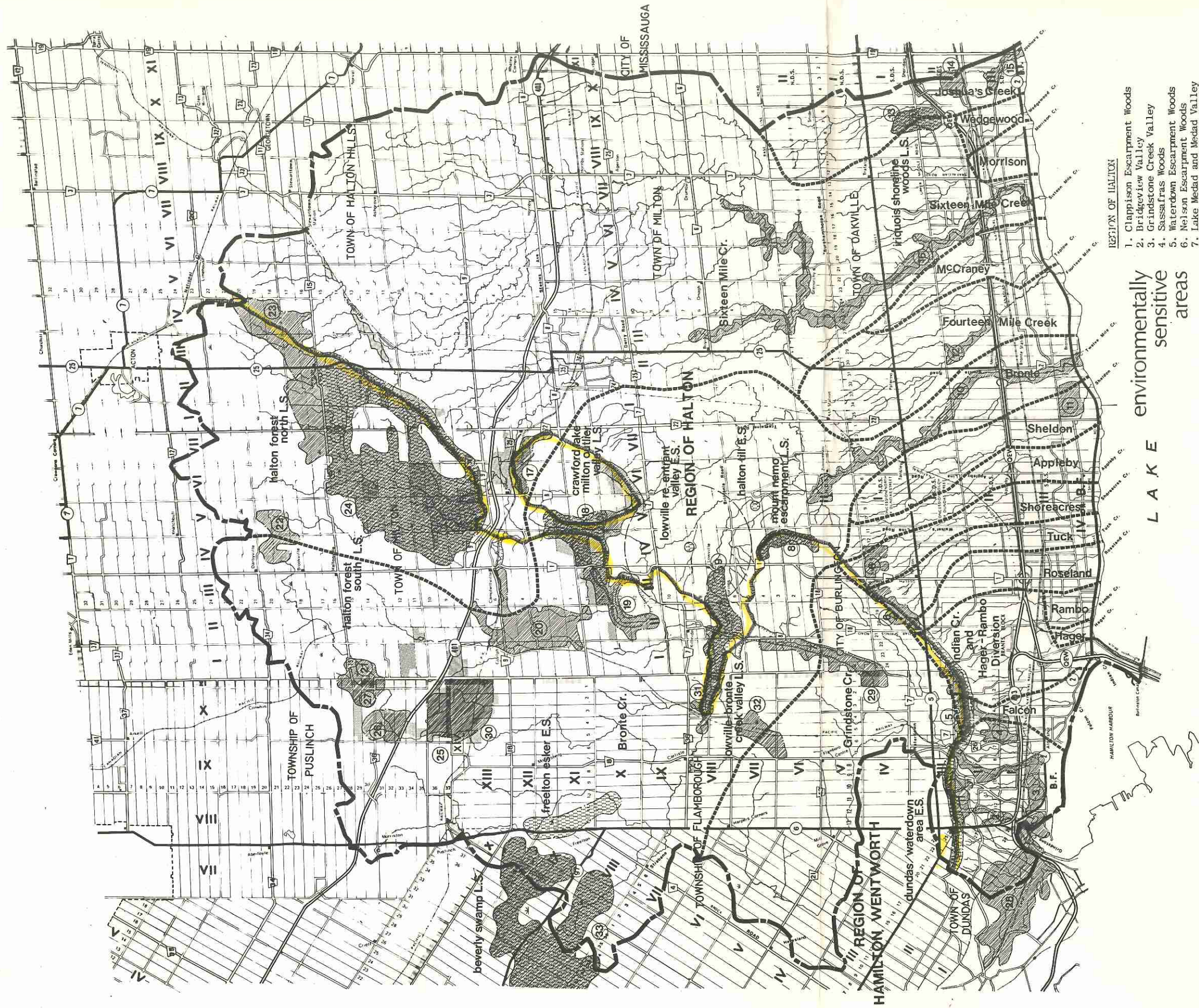
From a fisheries aspect, the Bronte Creek system and a portion of the Sixteen Mile Creek system provide a cold water habitat for fish, providing excellent fishing opportunities and a fisheries resource which is disappearing in many areas of Southern Ontario. (Map No. 6)

The stocking of brown trout and salmon, by Cambridge District, Ministry of Natural Resources, in Bronte Creek for provision of a lake-sport fishing resource, encourages use of the lakeshore for public access and provides an outdoor recreational use in that portion of the Conservation Authority's watershed.

#### 4.4.7 Significant/Unique Heritage Features

The Indian Village discovered at Crawford Lake Conservation Area is one of the most accurately dated pre-historic Indian Villages in Canada. The village has been dated through sediment cores taken from Crawford Lake. The lake itself, as an archaeological feature, is unique to the area and supplements the Authority's conservation and heritage education program as it relates to the historical use and management of natural resources.





HALTON REGION CONSERVATION AUTHORITY

# INTERIM WATERSHED PLAN

## SUBWATERSHEDS AND SIGNIFICANT FEATURE



environmentally  
sensitive  
areas

L A K E

REGION OF HALTON

1. Clappison Escarpment Woods
2. Bridgeview Valley
3. Grindstone Creek Valley
4. Sassafras Woods
5. Watdown Escarpment Woods
6. Nelson Escarpment Woods
7. Lake Medad and Medad Valley
8. Mount Nemo Escarpment Valley
9. Lowville-Bronte Creek Escarpment Valley
10. Bronte Creek Valley
11. Bronte Burloak Woods
12. Fourteen Mile Creek Valley
13. Iroquois Shoreline Woods
14. Wildflower Woods
15. Joshua's Creek Valley
16. Sixteen Mile Creek Valley
17. Milton Heights
18. Crawford Lake-Rattlesnake Point Escarpment Woods
19. Calcium Pits
20. Guelph Junction Woods
21. Moffat Swamp
22. Brookville Swamp
23. Speyside Escarpment Woods
24. Hilton Falls Complex

WELLINGTON COUNTY

25. Mountsberg Wildlife Area
26. Moffat Marsh
27. Fish Hatchery Swamp

REGION OF HAMILTON-WENTWORTH

28. Royal Botanical Gardens
29. Cootes Paradise
30. Lake Medad
31. Mountsberg Wildlife Area
32. Bronte Creek Ravine
33. Carlisle Swamp
34. Beverly Swamp

Environmentally Sensitive Area  
Provincially Significant Area  
E.S. Earth Science  
L.S. Life Science

Watershed Boundary

Subwatershed Boundary

Niagara Escarpment

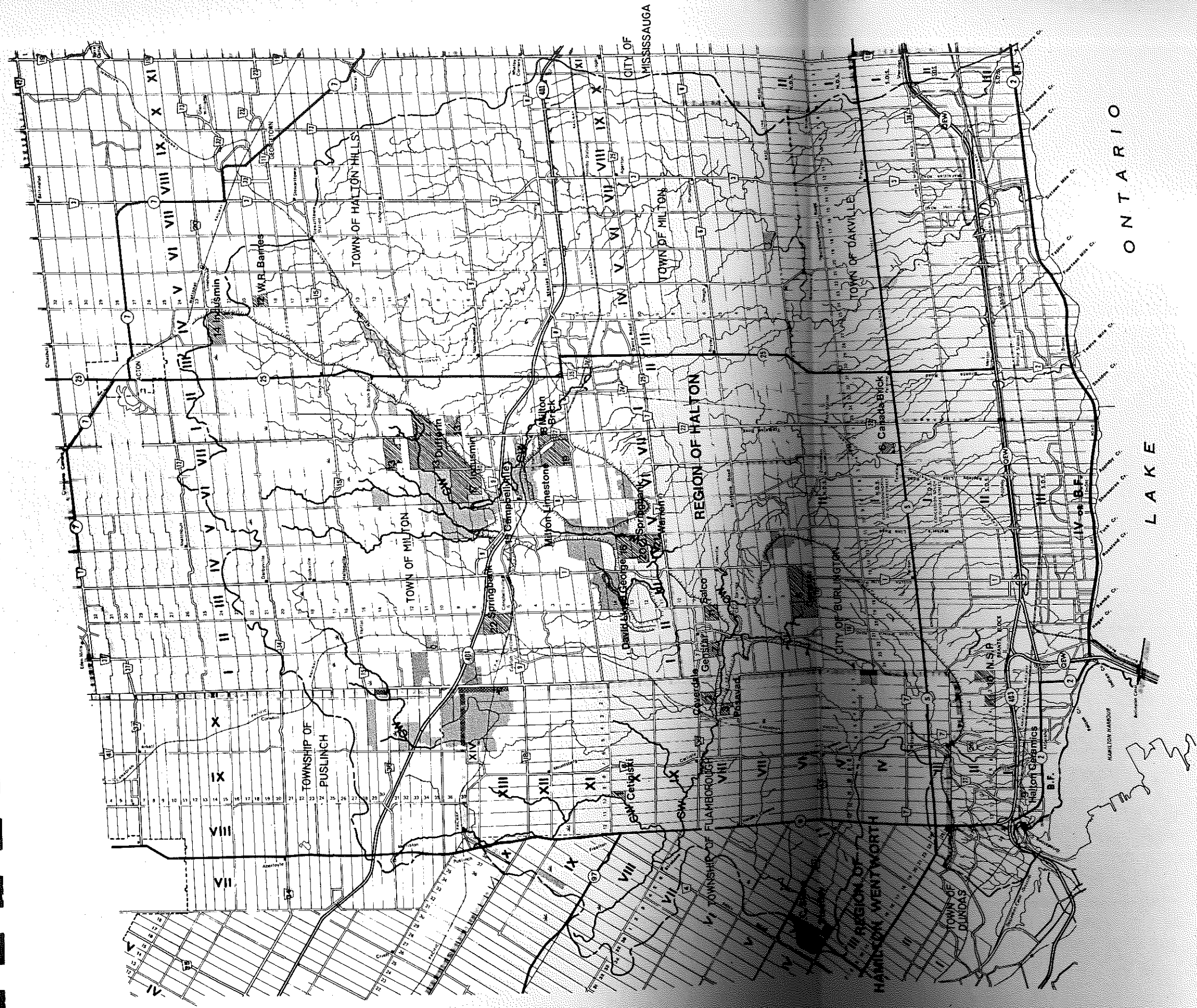
Environmentally Sensitive Area

Provincially Significant Area

E.S. Earth Science

L.S. Life Science

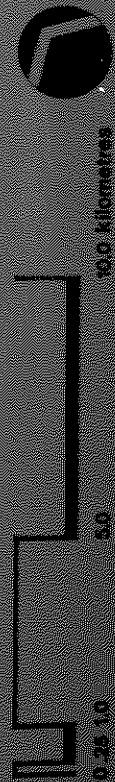




HALTON REGION CONSERVATION AUTHORITY

# INTERIM WATERSHED PLAN

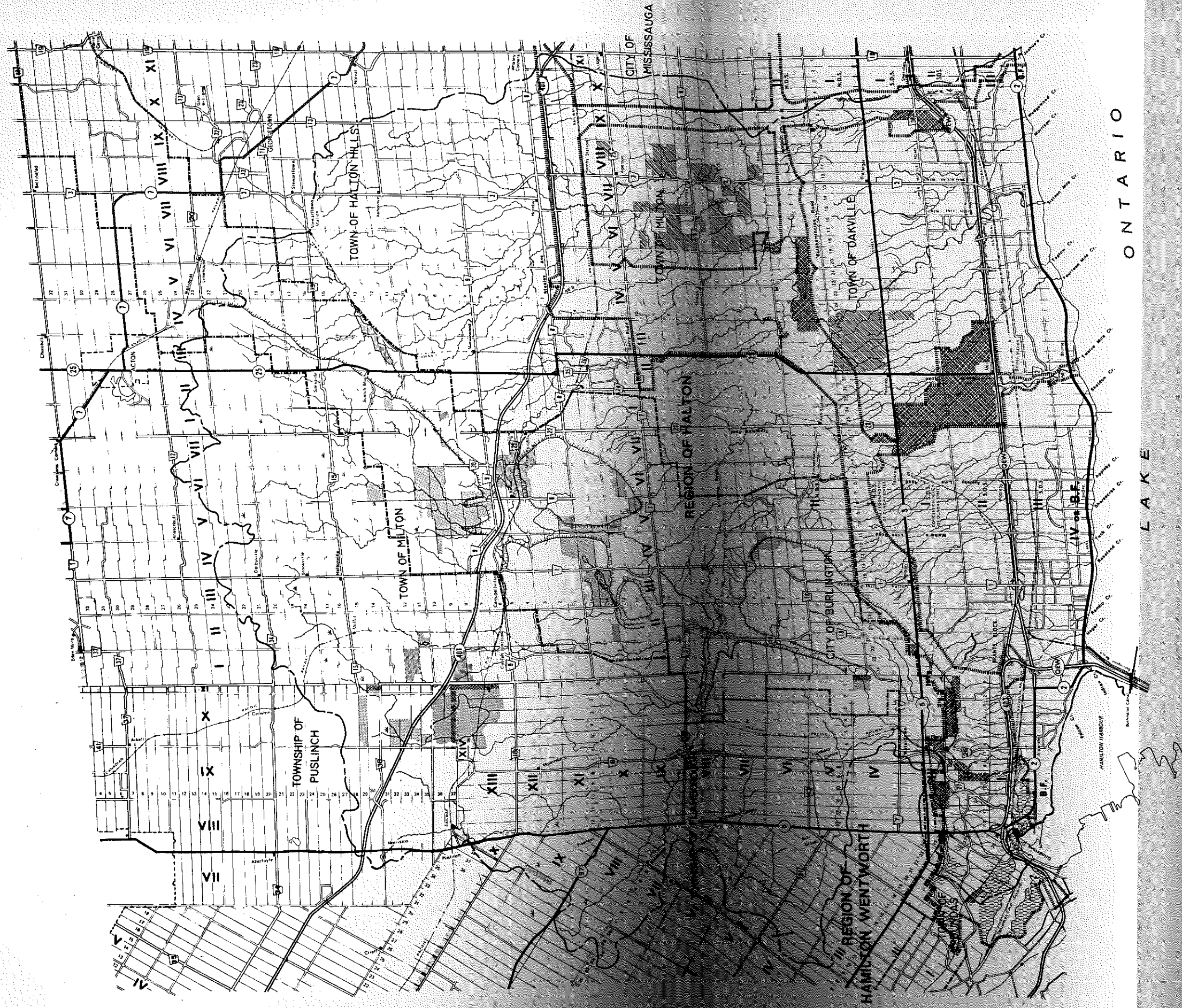
COLD WATER STREAMS  
LICENSED PITS AND QUARRIES



## Legend

-  Licensed Pits and Quarries
-  Cold Water Stream



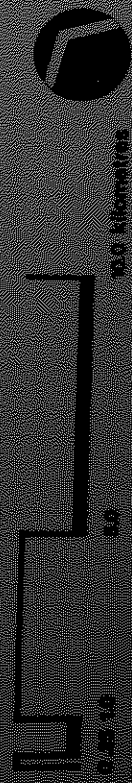


# HALTON REGION CONSERVATION AUTHORITY **INTERIM WATERSHED PLAN**

## **PUBLIC LANDS**

### **Legend**

- Conservation Authority
- Ministry of Government Services
- Ontario Land Corporation
- Royal Botanical Gardens
- Relevant Municipally Owned Land
- Niagara Escarpment Planning Area
- Parkway Belt West Plan





## 4.5 RELATIONSHIP TO OTHER PUBLIC LANDOWNERS

### 4.5.1 Parkway Belt West Development Plan

#### A. Goals

In 1977, the Province of Ontario released the Parkway Belt West Development Plan, which has four major goals, as follows:

- i) Provide a landscape separator that would define the boundaries of urban areas,
- ii) Provide a linkage system between the urban areas and provide space for the movement of people, goods, energy and information,
- iii) Provide a land reserve for future linear facilities and unanticipated activities requiring sites of high accessibility and substantial land area,
- iv) Provide a system of open space and recreational facilities linked with each other, with nearby activities and other regional recreational areas.

#### B. Linkages

A major section of the Parkway Belt West Plan lies within the watershed of the Halton Authority. The Plan consists of defined linear belts of land area running in an east - west as well as a north - south direction. Each belt contains a different type of land feature and the general locations of each belt is as follows:

##### i) The Escarpment Linkage

This contains lands bounded by Cootes Paradise, the Niagara Escarpment, City of Burlington urban area and Tremaine Road, to the east.

##### ii) The Southern Linkage

This contains lands from Tremaine Road east, to the Authority's watershed boundary in Mississauga.

iii) Burlington/Oakville Mini Belt Linkage

This contains lands south of the Escarpment Linkage using the Bronte Creek Valley as an integral part of the lands within the linkage and lands between the Northern and Southern Linkages bounded by Highway 25 on the west and the future Dorval Drive to the east.

iv) Oakville/Mississauga Mini Belt Linkage

This contains lands from the Joshua's Creek outlet at Lake Ontario north to join with the Southern Linkage and the Northern Linkage; this belt primarily provides a separator for the urban areas of Oakville, Mississauga and Milton.

v) The Northern Linkage

This contains lands east of the Town of Milton running parallel to Highway 401 to Woodbridge.

C. Objectives

Several of the objectives outlined in the Parkway Belt West Development Plan are similar to the objectives of the resource management program of the Authority. The goal of providing a system of open space and recreational facilities on a regional scale is of particular interest to the Halton Authority. Through the implementation of the Parkway Belt West Development Plan, the following stated objectives are applicable to the programs of the Halton Authority:

- i) To provide for public open space through a program of property acquisition on the Niagara Escarpment, Bronte Creek, Grindstone Creek, Sixteen Mile Creek, East Sixteen Mile Creek, Fourteen Mile Creek, Joshua's Creek and its associated Lake Ontario shoreline.
- ii) To provide for continuity of open space between the Niagara Escarpment, Royal Botanical Gardens area, the Burlington/Oakville Mini Belt Linkage and the Southern Linkage.

- iii) To provide for recreational trails and associated facilities within the Southern Linkage and Burlington/Oakville Mini Belt Linkage to the Niagara Escarpment, along the Niagara Escarpment, the Grindstone Creek, Sixteen Mile Creek, East Sixteen Mile Creek and Bronte Creek.
- iv) To preserve the prominent natural features of the Niagara Escarpment, Cootes Paradise, Grindstone Creek Valley, Bronte Creek Valley, Sixteen Mile Creek Valley, East Sixteen Mile Creek Valley and Joshua's Creek Valley.
- v) Protect significant wooded areas, hedgerows and prominent trees within the Parkway Belt lands.

Each of the above mentioned objectives parallel similar interests of the Conservation Authority and an opportunity exists to co-ordinate and co-operate on a joint basis, the implementation and operation of the Parkway Belt West Development Plan through the Halton watershed.

In the Authority's watershed, the Plan recommended acquisition for the creation of public open space of approximately 3,743 hectares (9,243 ac). In each of the Linkages, the acquired public open space would consist of 1,850 hectares (4,569 ac) in the Escarpment Linkage, approximately 405 hectares (1,000 ac) in the Southern Linkage, approximately 81 hectares (200 ac) in the Northern Linkage, 1,190 hectares (2,940 ac) in the Burlington/Oakville Mini Belt Linkage and 216 hectares (534 ac) in the Oakville/Mississauga Mini Belt Linkage. To date, 1,846 hectares (4,560 ac) of this land has been acquired by various Government Bodies, including the Conservation Authority, Municipalities, Ontario Heritage Foundation, the Royal Botanical Gardens and Ontario Hydro. The Ministry of Government Services has acquired 869 hectares (2,146 ac) through the implementation of the Parkway Belt West Development Plan, for public open space purposes. There are still approximately 1,027 hectares (2,537 ac) of land recommended for public open space which is privately owned in the Halton watershed, the majority of which is located in the Escarpment Linkage area. The Halton Conservation Authority would support the Province in continuing to finalize the total recommended acquisition program for the completion of the public open space land assembly.

A major deficiency in the Plan is the disposition and management of the lands acquired by the Province of Ontario for the public open space uses. At the present time, no active management or development of the properties acquired by the Province has been carried out to enable the lands acquired

for public open space to be opened up to the general public. The Halton Region Conservation Authority can play an important role in this area of the Parkway Belt West Development Plan by managing and maintaining the properties. Certain specific locations within the plan are of interest to the Halton Authority for management and development purposes.

D. Recommendations:

THAT the Halton Region Conservation Authority and the Province of Ontario negotiate the long term management and use of the following acquired and recommended acquisition areas for public open space in the Parkway Belt West Development Plan in order to ensure that the overall goals and objectives as stated in the Parkway Belt West Development Plan for public open space lands are achieved in the Watershed:

i) Escarpment Linkage Area

Lands on the Niagara Escarpment from Highway No. 6 east to Kerns Road and the property acquired to date in the valley of the Grindstone Creek.  
(Maps No. 8.1 & 8.2)

ii) Southern Linkage

The valley lands and associated table lands on the Sixteen Mile Creek and East Sixteen Mile Creek. (Map No. 8.3)

iii) Burlington/Oakville Mini Belt Linkage

The valley lands of the Bronte Creek from Lake Ontario to the Q.E.W. and the Fourteen Mile Creek public open space lands north of the Q.E.W. to Upper Middle Road. (Maps No. 8.4 & 8.5)

#### iv) Oakville/Mississauga Mini Belt Linkage

The Joshua's Creek Valley lands and the Ontario Hydro property south of Lakeshore Road to Lake Ontario. (Map No. 8.6)

### 4.5.2 Ontario Land Corporation

#### A. Background






The Province of Ontario, through the Ontario Land Corporation has assembled approximately 1,482 hectares (3,660 ac) of land in the Town of Oakville and the Town of Milton over a number of years. The purpose of this land assembly was to provide a land bank for future housing and the creation of a satellite community. Approximately 558 hectares (1,380 ac) of land is located in one continuous block in Lots 25 to 30, Conc. I, N.D.S., in Oakville, while the balance of the Ontario Land Corporation holdings are situated in various lots in Concessions VI, VII and VIII, Town of Milton; Map No. 9.1. The Ontario Land Corporation has advised the Authority that certain of their current holdings will be disposed of and the Conservation Authority has been requested to indicate its interest in any of the lands. The 1958, Sixteen Mile Creek Conservation Report recommended establishment of the Glenorchy Conservation Area consisting of 303 hectares (750 ac.) , with the key acquisition of lands centering around the Sixteen Mile Creek in Concessions I and II, N.D.S. The Conservation Authority has acquired 28 hectares (70 ac) on the Sixteen Mile Creek in Lot 1, Conc. VI, Town of Milton, known as the Sixteen Valley Conservation Area, while the Ontario Land Corporation has assembled property adjacent to the Sixteen Mile Creek Conservation Area and the Ministry of Government Services has assembled land to the south, along the Sixteen Mile Creek Valley, through the Parkway Belt West Development Plan. The Ontario Land Corporation lands in Lots 25 to 30, Conc. I, N.D.S. abut onto Ministry of Government Services' property assembled in the Parkway Belt and by combining the Provincial lands and the Authority lands, a significant Conservation Area could be established having its focal point along the wooded valley system of the Sixteen Mile Creek and the East Branch of the Sixteen Mile Creek.

## B. Recommendation


THAT the Halton Region Conservation Authority recommend that negotiations take place for the establishment of a regional conservation area on the Sixteen Mile Creek and the East Branch of the Sixteen Mile Creek by combining the lands owned by the Ontario Land Corporation, Ministry of Government Services and the Halton Region Conservation Authority to be known as the Glenorchy Conservation Area. (Maps 9.1 & 9.2)

# Legend







## Public Use Area

-  Public Open Space and Buffer Area
-  Utility
-  Electric Power Facility
-  Road
-  Inter-urban Transit

## Complementary Use Area

- General Complementary Use Area
-  Special Complementary Use Area

## Base Information

-  Road
-  Railway
-  Township Lot Line
-  Watercourse , Marsh
-  Wooded Area
-  Steep Slope

# HALTON REGION CONSERVATION AUTHORITY INTERIM WATERSHED PLAN

8.0

NOTE : This legend is to accompany the following series of maps.



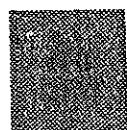


# HALTON REGION CONSERVATION AUTHORITY **INTERIM WATERSHED PLAN**

Escarpment Linkage

## **legend**

—...— land desired for  
 H.R.C.A. management within  
 the Parkway Belt West Plan

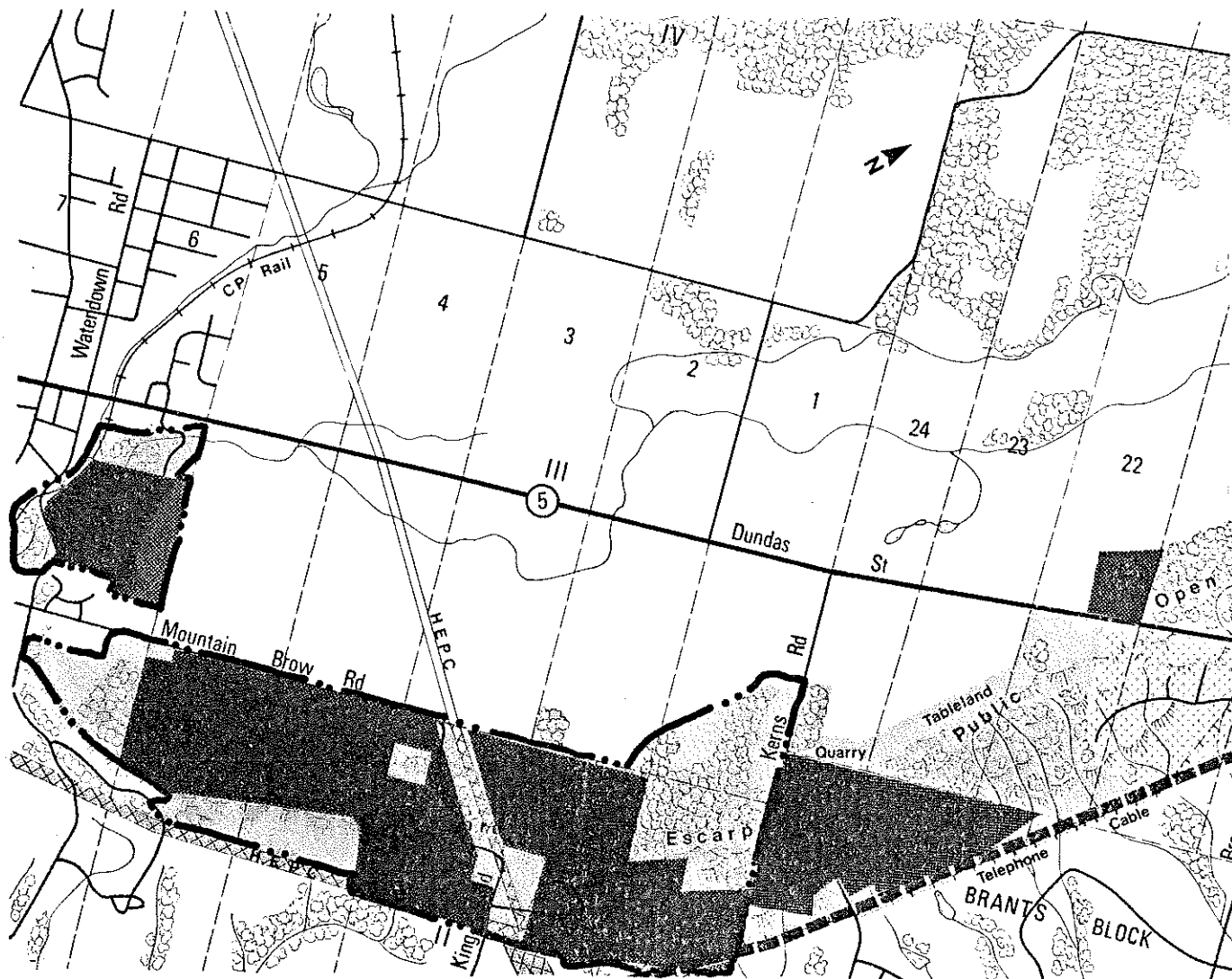


current public land holdings

0 100 500 1000 metres



**8.1**



HALTON REGION CONSERVATION AUTHORITY

# **INTERIM WATERSHED PLAN**

Escarpment Linkage

## **legend**

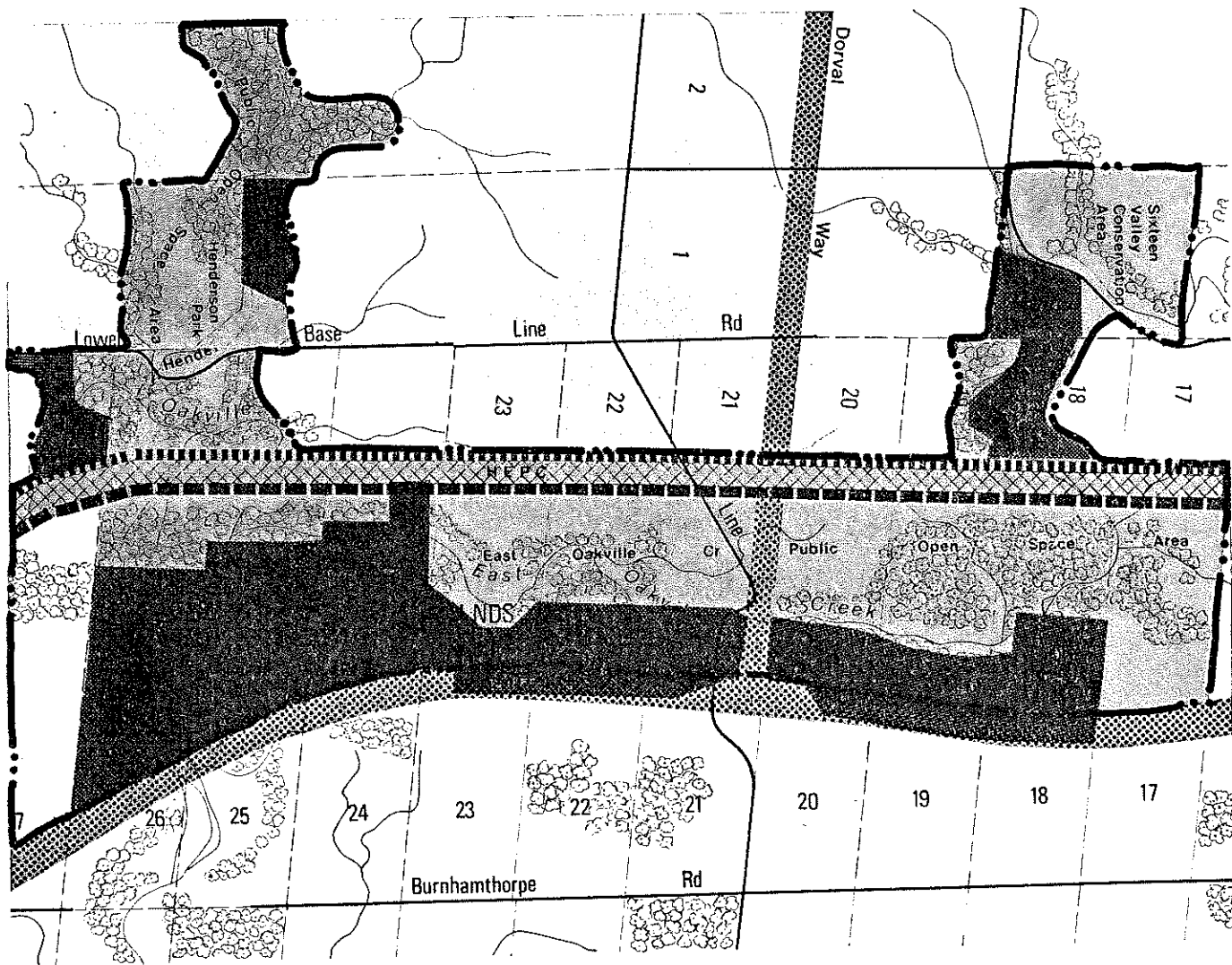
--- land desired for  
H.R.C.A. management within  
the Parkway Belt West Plan

■ current public land holdings

0 100 500 1000 metres



**8.2**



# HALTON REGION CONSERVATION AUTHORITY **INTERIM** **WATERSHED PLAN**

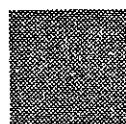
Southern Linkage

0 100 500 1000 metres



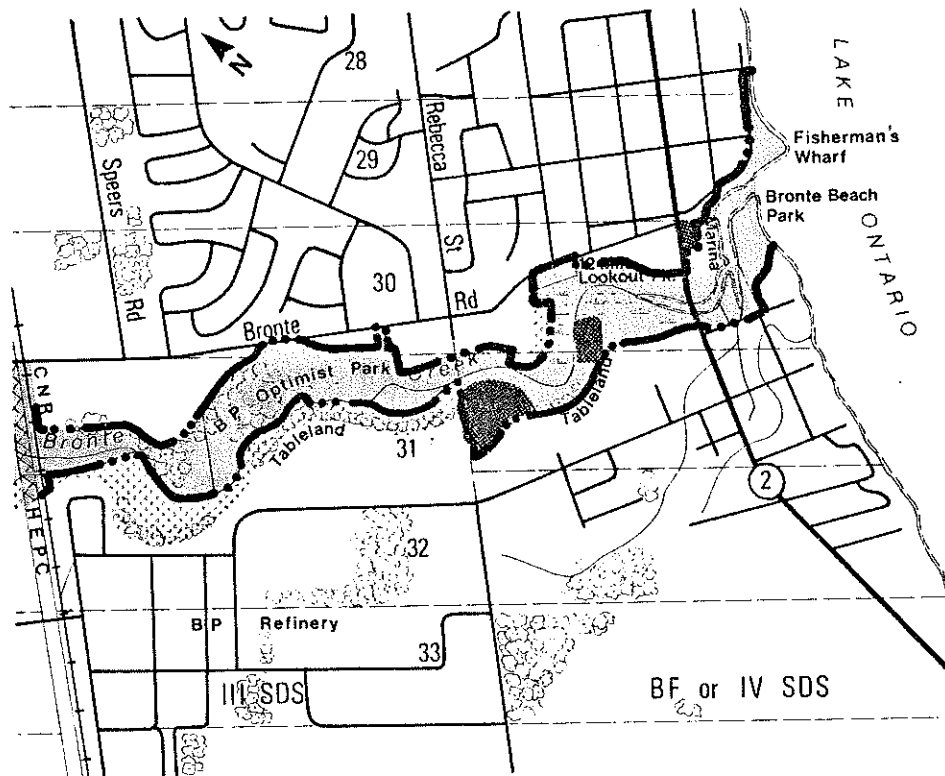
## **legend**

--- land desired for  
H.R.C.A. management within  
the Parkway Belt West Plan



current public land holdings

**8.3**



# HALTON REGION CONSERVATION AUTHORITY **INTERIM WATERSHED PLAN**

Oakville-Burlington  
 Mini-Belt Linkage

0 100 500 1000 metres



## **legend**

- · · — land desired for H.R.C.A. management within the Parkway Belt West Plan
- current public land holdings

8.4



# HALTON REGION CONSERVATION AUTHORITY **INTERIM** **WATERSHED PLAN**

Oakville-Burlington  
Mini-Belt Linkage

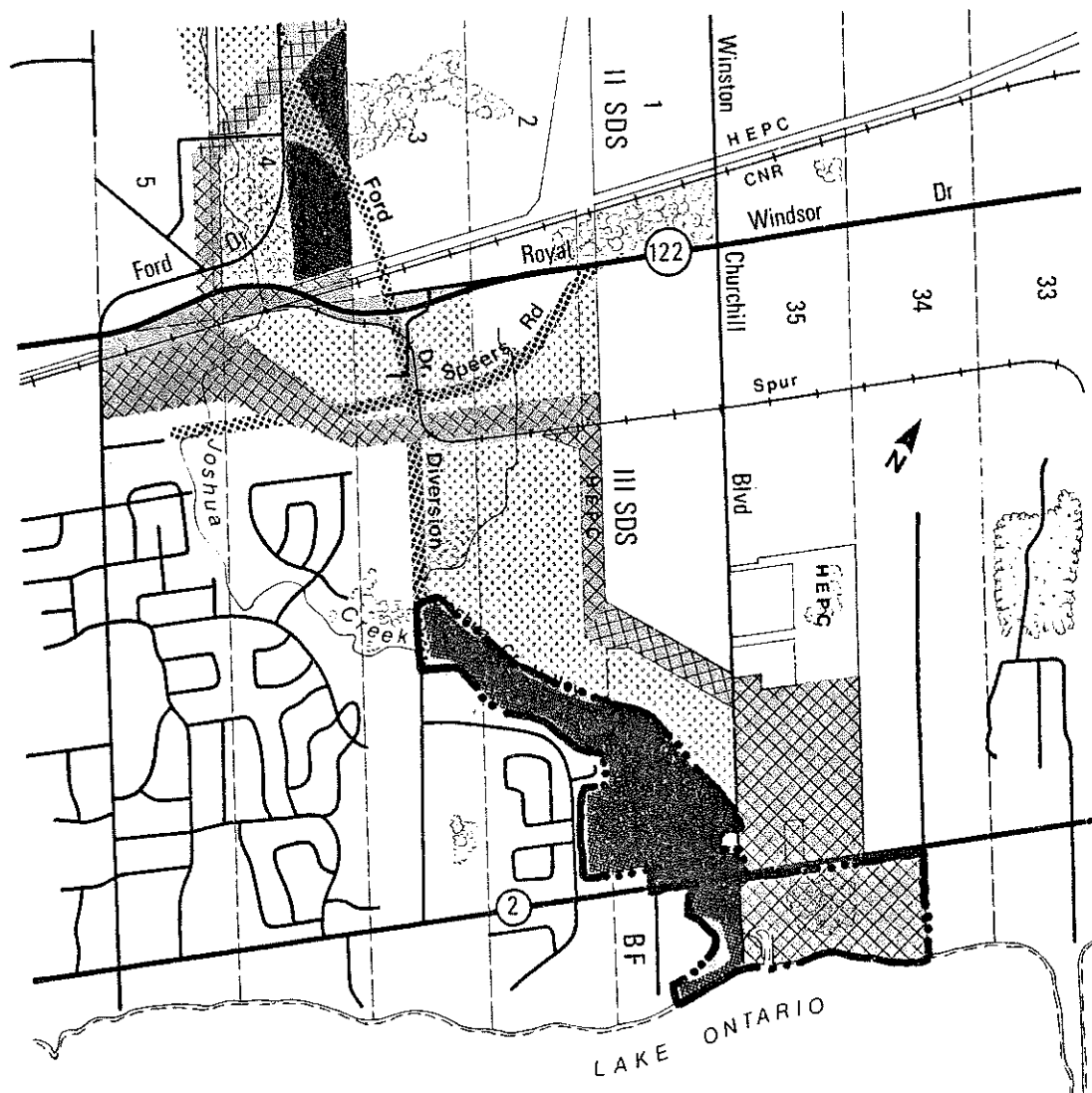
0 100 500 1000 metres



## **legend**

- · — · — land desired for H.R.C.A. management within the Parkway Belt West Plan
- current public land holdings

8.5



HALTON REGION CONSERVATION AUTHORITY

## INTERIM WATERSHED PLAN

Oakville - Mississauga  
Mini Belt Linkage

0 100 500 1000 metres



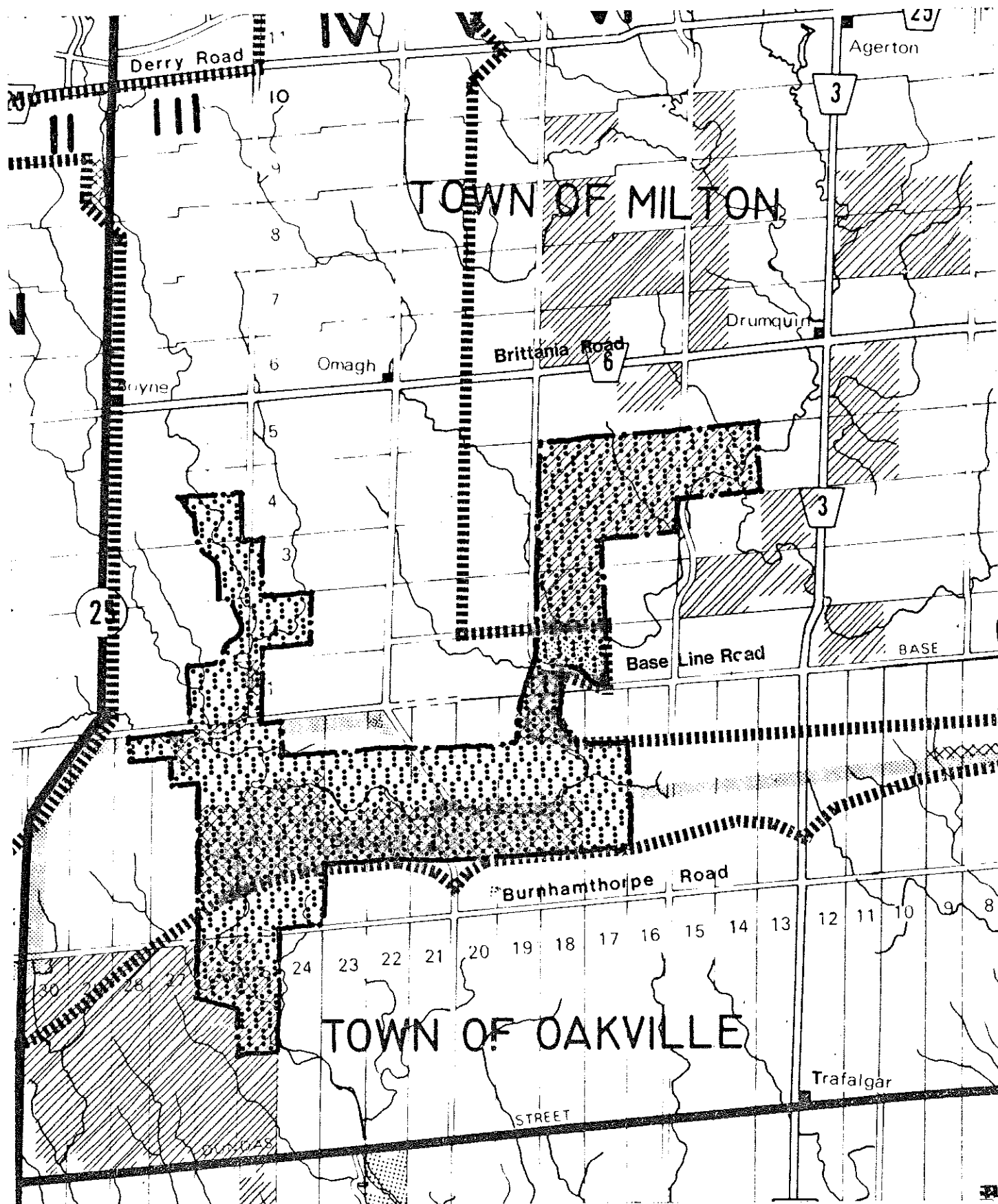
### legend

— · — · — land desired for  
H.R.C.A. management within  
the Parkway Belt West Plan



current public land holdings

8.6



HALTON REGION CONSERVATION AUTHORITY

# **INTERIM WATERSHED PLAN**

9.1

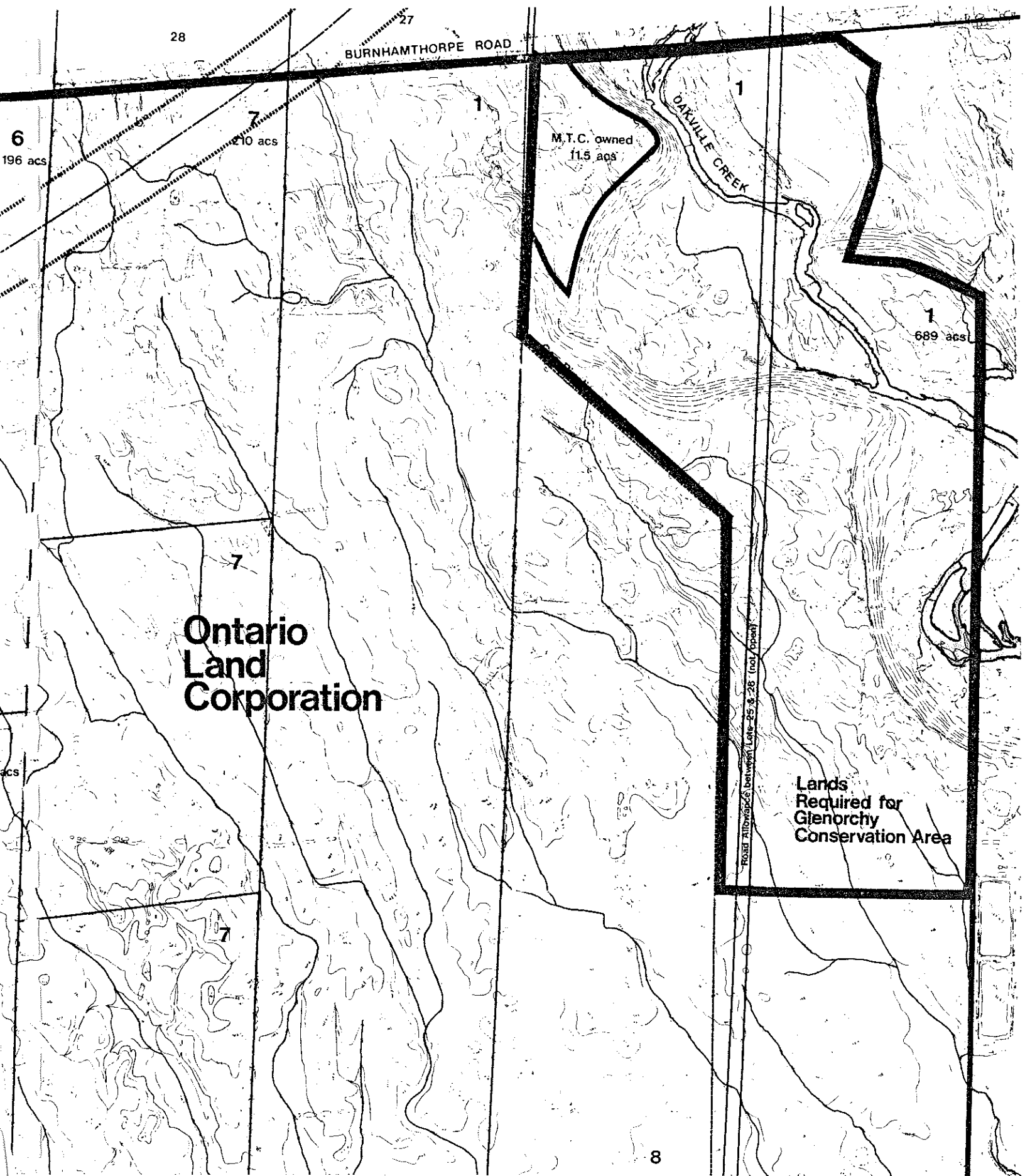
0 500 1000 2500 metres



73 (a)

 proposed Glenorchy  
Conservation Area



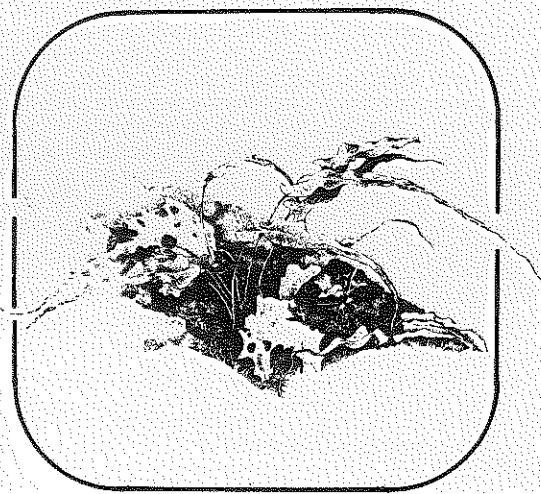


HALTON REGION CONSERVATION AUTHORITY  
**INTERIM  
WATERSHED PLAN**



# **Justification of Need**

Pressures on the Resources



## 5.0 JUSTIFICATION OF NEED - PRESSURES ON THE RESOURCES

### A. Background

The watershed of the Halton Region Conservation Authority lies within the 'Golden Horseshoe' of Southern Ontario with a population of 2.5 million people residing within 100 kilometers (60 miles) of the watershed. This population with its economic capabilities, ethnic backgrounds, perceptions, interests and age diversity places a demand on the natural resources of the watershed. These demands require that the Authority have the capability to respond to the demands and provide sound management of the natural resources.

The Halton Region Conservation Authority strongly supports the emphasis being placed on the individual watershed characteristics of each Authority in Ontario and how management occurs in each watershed.

The supply of natural resource base differs for each Authority in terms of:

- i) type of resource
- ii) availability of resource
- iii) access to the resource
- iv) sensitivity of the resource

Another element relating to watershed based resource management is the perception of the member municipalities regarding the role that the Authority plays in arranging or protecting their natural resources and the need to manage or protect these same resources. This will affect how the supply of the resource is managed in relation to the demand imposed.

### B. Pressures

The following points are seen as presenting the general situation regarding pressures on natural resource management in the Halton Region Conservation Authority watershed and can affect different programs in varying degrees.

- i) Population will be increasing. Different age categories will impact directly in relation to the percentage of total population.
- ii) Leisure time is a significant part of daily life and has increased over time.
- iii) Travel distance are being reduced due to energy costs.
- iv) There is an increased emphasis on personal fitness promoting all levels and types of outdoor activities.
- v) The majority of watershed residents are urban dwellers with minimal private open space at their disposal, promoting the need for more local public open space.
- vi) There is a growing emphasis on the need to return to the grassroots level of resource management to include items such as in-the-field extension programs and non-structural remedial works.
- vii) There is an increased level of public awareness regarding flood protection, source area protection, control of pollution, wildlife/biological and fisheries habitat protection, and a need for public open space to include a viewing element.

## 5.1 The Halton Region Conservation Authority Situation

### 5.1.1 Demographics

Since the Authority is a public agency responsible for resource management, the relationship of population, including age-breakdown, to the services provided should be realized. Some Authority programs or concerns are relatively unaffected by age-breakdown such as flood and erosion control, integrated land use planning, rural drainage, water quality, forest management and land acquisition.

The programs which will be affected will include conservation recreation, conservation education, information, heritage conservation and to a certain degree, fish and wildlife, and waterfront development.

The overall impact will come from the population numbers themselves. Assuming an increase, all services will be affected and the pressure on the resources will increase. Any program which relates directly to the resource will be pressured to upgrade or at least stabilize its level of programming.

Although populated areas lie in the downstream third of the watershed pressures will also occur on the less populated upstream area of the watershed particularly in terms of flood and erosion control, water quality and forest management. The areas to be protected will likely occur in the northern two-thirds of the watershed. Recreation and community relations services could be emphasized in the more populated areas of the watershed.

In terms of population pressures from outside the watershed, which must be taken to be significant also, the population will also be increasing and it is assumed that the age breakdown will be relatively the same as within the watershed. The input from outside communities will be seen in all programs since a certain quality of environment must be maintained regardless of the number of users or their origins. The upgrading of recreation and community relations services will be required due to the increase in potential users of these services and in the numbers of people travelling through the watershed.

### 5.1.2 Summary

#### A. Demographics - Age Breakdown Summary

- (i) 0 - 4 years of age. This is the smallest element of population, approximately 7%, but educational facilities are more accessible than in the past through day care and pre-kindergarten establishments.

- (ii) 5 - 19 years of age. Approximately 25% of population is attending school in the area. Conservation education and information are vital programs at this level.
- (iii) 20 - 65 years of age. This age group represents over 60% of the population. Demands will be to provide recreation for families, for middle-aged with no child element and semi-retired individuals. All extension programs can be applied to this large group.
- (iv) Over 65 - This group represents approximately the same proportion as pre-schoolers, approximately 7%, but is still significant. Senior citizen programs in terms of recreation could be implemented

#### B. Ethnic Element

This pertains to the 'New-Canadians' impact on education, heritage conservation, information and the provision of different recreational facilities. The following could be of interest:

- i) watershed features and history
- ii) Ontario conservation history
- iii) Canadian conservation history
- iv) agricultural techniques (new and old)

#### C. Economic Element

This pertains to the provision of recreational opportunities at various cost scales combining entrance passes with those of other facilities, special passes and access to lands with no user-fee.

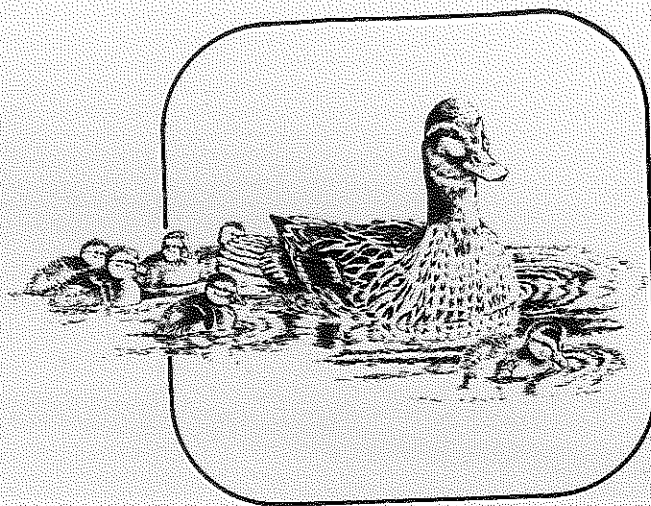
#### D. Perceptions Element

Perception pertaining to erosion protection, flood control, and need or public open space is very important. Information pertaining to Authority programs, regulations and role must be clearly explained via the

information and education programs to avoid misinformation, and misconception which do harm to the image of the Authority and to the implementation of its different program directions.

E. Multi-use Element

Many interests must be considered in the provision of a varied conservation recreation program, fisheries/wildlife, information, education program and forestry management program.



## **Total Natural Resource Management**

Interaction with other Ministries, Agencies and Watershed Municipalities

## 6.0 TOTAL NATURAL RESOURCE MANAGEMENT - INTERACTIONS WITH OTHER MINISTRIES, AGENCIES AND THE WATERSHED MUNICIPALITIES

Total natural resource management within the Halton Region Conservation Authority's watershed involves the responsibilities of various agencies, ministries and the watershed municipalities and the success of this management depends on the co-ordination and co-operation of all involved. For the purposes of the Interim Watershed Plan, the Conservation Authority has approached the aspect of total management with the need to identify various areas of jurisdiction, either complementary, overlapping or conflicting, and as a result of this information, to recommend the appropriate courses of action for its own programs. Contact was made with the ministries, agencies and municipalities as listed below and discussions have resulted in the following review.

6.1 Ministry of Natural Resources

6.2 Ministry of the Environment and Environment Canada

6.3 Ministry of Agriculture and Food

6.4 Royal Botanical Gardens

6.5 Niagara Escarpment Commission

6.6 Watershed Municipalities

Regional Municipality of Halton - Burlington  
- Milton  
- Oakville  
- Halton Hills

Regional Municipality of Hamilton/Wentworth

- Flamborough Township  
- Dundas

Regional Municipality of Peel - Mississauga

Township of Puslinch



## 6.1 Ministry of Natural Resources

One of the main areas of contact for the Conservation Authority is the Ministry of Natural Resources through the Water Management and Conservation Authorities Branch. However, for the purpose of Interim Watershed Plan, staff from Regional and District offices were invited, as members of the Watershed Planning Steering Committee, to provide input to the Plan. In addition, to meetings of the committee, separate meetings were held between the Authority and Ministry staff from these two offices.

The input from these two offices is as follows:

### A. Regional Office Input

Of lesser provincial significance are programs and projects within the Conservation and Recreation Land Management Program. From the Authority's perspective, the Ministry's priority preferences fail to recognize individual watershed characteristics and Authority priorities.

### B. District Office Input

Discussions were held with staff representing the Resource Management Program Areas of the District Office in which specific areas of complement, overlap and conflict were addressed as follows:

#### i) Fish and Wildlife

Generally the fish and wildlife programs of the District office and the Halton Region Conservation Authority are supplementary, specifically in areas of fish stocking, species inventories, nuisance trapping, emphasis on providing public access for fishing, establishment and protection of fish and wildlife habitat, and preparation of fisheries management plans. The Authority appreciates the Ministry's lead role in fish and wildlife management and has planned its own programs in light of its own watershed planning priorities.

There is joint acceptance of the need for more co-operation between the Authority and the District office regarding various studies and services as outlined in Recommendations in Section 6.1.2.

Efforts will therefore be made to plan and implement this co-operation:

- Co-ordination of work programs at the beginning of each year.
- Joint program to obtain a species count on Authority properties to assist in the overall District inventory.
- Joint program to inventory significant wildlife habitat which is seen to be of top priority in terms of wildlife management in the District.
- Preparation and circulation of a wildlife-viewing questionnaire to obtain a more accurate perspective on the public's priority of wildlife -viewing on Authority properties.
- Joint emphasis on providing public access for fishing along the Lake Ontario waterfront.
- Discussions on initiating a joint study of providing public access for fishing in the Halton Region Conservation Authority's watershed.
- Joint discussions on the viability of improving fish habitat and ultimately fishing opportunities on a portion of the Sixteen Mile Creek.
- Joint efforts to protect the fisheries resource in the Halton Region Conservation Authority's watershed through the plan review process with the watershed municipalities.
- Joint monitoring function regarding fisheries inventory.
- Discussion on preparation of a biological inventory of the watershed's fisheries resource as it may supplement previous inventory information.
- Discussions regarding the feasibility of deputizing Conservation Authority officers regarding the enforcement of the Games and Fish Act on Authority lands.

In addition to specific joint projects, further discussions may also begin regarding incorporation of various aspects of the District's fish and wildlife management program within the Authority's conservation and education program. The watershed municipalities are somewhat confused as to the role of the two bodies in fish and wildlife management, so that the Authority will be clarifying these roles through its information and education program.

## ii) Forest Management:

Through discussions with District staff it is evident that different criteria determine forest management for the Ministry and the Authority resulting in an apparent conflict in management techniques. This conflict is referred to as "apparent" since what may be reflected is a different or expanded approach or justification for forest management on behalf of the Conservation Authority.

The Authority recognizes the Ministry's role in forest management, however, through appreciation of its own program directions, views its forest management program as being complementary to its water management, conservation recreation and education, and fisheries/wildlife management programs. These programs focus firstly on the watershed perspective and secondly on a provincial perspective. The Authority views its approach to forest management as fulfilling a need to provide viable forest cover for some uses which are not priority uses of the Ministry, but are nonetheless necessary for fulfillment of a total Resource Management program. In any case, the District and Authority have agreed to initiate joint efforts in order to promote total forest management in the Halton Region Conservation Authority's watershed as outlined in Recommendation Section 6.1.2.

The Ministry was pleased with the Authority's intent to prepare forest management plans on its properties which would identify different levels of management for specific locations on Authority lands. Also in terms of private lands planting, the Ministry supports the Authority's intent to identify priority areas in need of planting to alleviate various resource management problems or to enhance other resource management programs.

The Conservation Authority has identified an area of duplication regarding forest management on the Authority, County and regional municipal lands in the watershed. The Authority and these municipalities have requested that management of existing agreement forest lands be transferred from the Ministry of Natural Resources to the Authority. In order to eliminate duplication, the Authority feels that one public agency should manage public lands for forest management in the watershed. The District Office of the Ministry of Natural Resources is receptive to the concept of transfer to the Authority and has placed an emphasis on the need for

qualified professional staff to manage the public forested lands under agreement.

The Authority will continue to work with the municipalities in regards to their tree-cutting bylaws as they pertain to forest management on a watershed or regional basis.

### iii) Mineral Aggregates

The Halton Region Conservation Authority has traditionally commented to the Ministry and the municipalities regarding the licencing and operation of pits and quarries in the watershed. The Authority comments are intended to provide an overview of the impact, if any, of existing and proposed aggregate extraction on the Authority's total resource management program. It is critical that joint review and discussions are held between the District office of the Ministry of Natural Resources and the Conservation Authority so that problems and areas of concern are understood and addressed by both parties.

The Authority also wishes to be consulted by both the Ministry and the municipalities regarding rehabilitation and any proposed end use of pits and quarries since such works can have an impact on the Authority's resource management program.

### iv) Plan Review

The Authority and District Office respond to the municipalities and to the Province on plan review matters within their own area of jurisdiction and mandate. Recently, the responsibility regarding comments pertaining to flood plain lands has been delegated to the Authority as they pertain to flood damage and loss of life.

In order that both bodies comment in a co-ordinated fashion, the Authority will initiate with the Ministry a process of review which will enable both the Authority and the Ministry to be aware of each other's concerns regarding land use planning matters.

B. Recommendations:

(i) Fish and Wildlife

- (a) That the Authority and the District office of the Ministry of Natural Resources co-ordinate work programs at the beginning of each year.
- (b) That a joint Authority and Ministry of Natural Resources program be initiated to obtain a species count on Authority properties.
- (c) That a joint Authority and Ministry of Natural Resources program be initiated to inventory significant wildlife habitat.
- (d) That the Authority investigate the feasibility of circulating a wildlife-viewing questionnaire to watershed residents to determine the priority of this use in terms of other public uses of Authority properties.
- (e) That the Authority investigate the feasibility of improving fish habitat (and ultimately fishing opportunities) on the Sixteen Mile Creek.
- (f) That the Authority discuss with the District office of the Ministry of Natural Resources how both agencies may jointly monitor a fish inventory in the Halton Region Conservation Authority.
- (g) That the Authority discuss with the District office of the Ministry of Natural Resources the feasibility of jointly conducting a biological inventory of the watershed's fisheries resource.
- (h) That the Authority request the Ministry of Natural Resources to consider deputizing the Authority's conservation officers for enforcement of the Game and Fish Act on Authority lands.

(ii) Forest Management

- (a) That the Authority and the District office of the Ministry of Natural Resources co-ordinate, where feasible, forest management programs at the planning and marking stages.
- (b) That the Authority and the District office of the Ministry of Natural Resources study possible improvements to their programs pertaining to planting on private lands.
- (c) That the Authority consider circulating its forest management plans for comment by the District office of the Ministry of Natural Resources.

(iii) Mineral Aggregates

- (a) That the Authority and the Ministry of Natural Resources and the Ministry of the Environment, jointly study the long term effects of quarrying on water supply, particularly in terms of the extraction in recharge areas.
- (b) That the Authority, the Ministry of Natural Resources, and the municipalities jointly evaluate abandoned pits and quarries in the watershed.

(iv) Plan Review

- (a) That the Authority initiate with the District Office of the Ministry of Natural Resources, a process of review in order that both are aware of each other's comments regarding municipal land use planning matters.

## 6.2 Ministry of the Environment

The Authority has made contact with the Central Region office and the West-Central District office of the Ministry of the Environment to solicit their input into the Watershed Plan.

The Halton Region Conservation Authority carries out a water quality sampling program which involves the collection of water samples from fourteen stations in the watershed. The Ministry of the Environment analyses the samples and provides the Authority with a copy of the analysis. The Ministry of the Environment uses the data primarily for their own programs, however from a Conservation Authority perspective, it would be desirable to make the data more applicable to an improved water quality program for the Authority's watershed.

The Ministry of the Environment advised that they intend to discontinue with the monitoring of the water quality on Indian Creek. This watercourse is of interest to the Conservation Authority, however, since the watershed contains a proposal for a regional sanitary landfill site.

The Ministry has agreed to provide monitoring equipment and training to Authority staff for projects of particular interest to the Authority. Laboratory facilities would have to be sought independently by the Authority.

Concerning the impact of pits and quarries on water supply, the Ministry would assist in providing well records and would jointly participate in this evaluation with the Authority and the Ministry of Natural Resources.

Regarding master drainage plans, the Ministry would review such plans from an urban perspective and give laboratory and technical assistance were possible.

There is an interaction between the Authority and the Ministry concerning the abatement of wastes from industrial, private and municipal sources. The Ministry can provide a service to the Authority for the testing of fill material for toxicity should such fill be considered for introduction to flood plains or source areas.

There are areas where the Authority and the Ministry are reviewing matters independent of each other, yet there are mutual concerns and benefits to be derived if joint and close co-operation in these reviews were achieved. These

areas consist of water impoundment permits, water-taking permits, pumping stations, emergency power installations and sanitary sewage by-pass systems and storm water management.

The Authority evaluates storm water management from the perspective of water quantity while the Ministry's concerns are related to water quality. The Ministry proposed that a closer working relationship be established with the Authority so that both aspects can be addressed in projects that are implementing storm water management controls.

From the District Office, strong encouragement came regarding interaction including co-ordinated responses and site visits, with the Authority regarding storm water management projects and policies, taking-of-water permits, assessments of drinking water supplies prior to development approvals and review of draft plans of subdivision, official plans and zoning bylaws and their associated amendments. It is felt that even if day-to-day contact is minimal, both bodies should be aware of each other's legislative controls and overall environmental concerns in the watershed.

#### 6.2.1 Recommendations

- (i) That the Authority continue the water quality sampling program in co-operation with the Ministry of the Environment.
- (ii) That the Authority approach the various offices of the Ministry of the Environment with jurisdiction in the Halton Region Conservation Authority to familiarize each other of legislative controls, responsibilities and concerns particularly in order to further the co-ordination and integration, where applicable, of each other's comments on municipal and provincial planning review matters in regards to the Authority's review of applications for fill, construction and alteration to waterways permits.



### 6.3 Environment Canada - Lands Directorate

The Lands Directorate of Environment Canada has been involved with various Conservation Authorities locating and mapping priority management areas for reducing non-point sediment-associated pollution. Mapping has been produced to assess both the potential annual average soil loss due to sheet and rill erosion, and the terrain capability to transport sediment to a stream. Such mapping ranks the probability of finding the high, moderate, or low soil loss sites and the high, moderate, or low field-to-stream delivery ratio ranking. Priority areas of concern can then be identified. This approach is seen to be cost-effective at a regional scale and could be applied to the Halton Region Conservation Authority watershed. The Authority intends to pursue further discussions with Environment Canada in this regard to identify whether or not a serious erosion situation exists in areas of the watershed. In addition, the Authority will be interested in reviewing a manual which is being prepared by the Lands Directorate pertaining to the application of its work done to date to Conservation Authorities as a whole.

#### 6.3.1 Recommendation

- (i) The Halton Region Conservation Authority assess its concern for erosion and sedimentation in its watershed and if further evaluation is to be carried out will contact the Lands Directorate - Environment Canada to define its level of assistance in this regard through preparation of mapping and guidelines.

#### 6.4 Ministry of Agriculture and Food

The Authority's contact with the Ministry of Agriculture and Food pertains to the assessment and control of soil erosion and sedimentation in the watershed.

Further contact with the Ministry of Agriculture and Food would involve discussions concerning soil erosion on agricultural lands and the impact of this on receiving streams and wetlands in terms of water quality and quantity.

In addition, if such erosion and sedimentation is seen to be of concern to the Authority, further discussions could centre on the Authority's role to provide technical assistance to farmers for control of erosion, particularly at present, in conjunction with the Ministry's Soil Conservation and Environmental Protection Assistance Program.

Simply by making each other aware of legislative controls, and complementary or conflicting programs and policies, the working relationships between the Authority and the Ministry will improve.

The Ministry will be providing the Authority with mapping regarding agricultural land uses, which will be used by the Authority to determine its level of program involvement with erosion on agricultural lands. The area municipalities have recently indicated that the Authority should become more involved in erosion on rural lands in terms of its impact on sediment load in the streams.

##### 6.4.1 Recommendation

- (i) That the Authority review the Agricultural Land Use mapping prepared by the Ministry of Agriculture and Food in order to determine the Authority's level of involvement in problems relating to soil erosion on agricultural/rural lands and in the impacts relating to water quality and quantity.

## 6.5 Royal Botanical Gardens

The Royal Botanical Gardens was approached for input into the Conservation Authority's Interim Watershed Plan as a scientific, educational and cultural institution involved in the study and interpretation of ecosystems primarily on their lands in the Grindstone Creek watershed. The Royal Botanical Gardens also is a prime provider of public lands used for such activities as outdoor recreation, educational/interpretative programs, horticultural shows and silviculture appreciation. The most obvious work of the Royal Botanical Gardens is reflected in their four main garden properties. The total holdings of the Royal Botanical Gardens in the Halton Region Conservation Authority's watershed number approximately 550 acres (223 hectares).

The Royal Botanical Gardens views the Authority as a complementing agency in terms of encouraging appreciation of conservation and the environment.

In terms of identifying a specific area of concern, the Royal Botanical Gardens requested that the Authority undertake a study regarding siltation of the Grindstone Creek as a further investigation of the 1977 Authority study. The Royal Botanical Gardens supports the recommendations of this report and would particularly encourage the Authority to establish contact with landowners in the area to arrange advice and assistance on specific agricultural practices, in the Grindstone Creek watershed. The Royal Botanical Gardens would be willing to share responsibility in monitoring the water quality and habitat improvements in the area of the Grindstone Creek confluence at Hamilton Harbour.

### 6.5.1 Recommendations

- (i) That the Authority maintain contact with the Royal Botanical Gardens to maintain the complementary relationship which now exists.

- (ii) That the Authority, in conjunction with the Royal Botanical Gardens, investigate the problem of soil erosion and sedimentation in the Grindstone Creek watershed and the resultant sedimentation problem in order to determine their own or joint involvement in bringing about solutions to the siltation problem in the Grindstone Creek watershed.
- (iii) That the Authority consider jointly-sponsored public recreation and education events with the Royal Botanical Gardens in order to promote the appreciation and understanding of natural resource management in the watershed.

## 6.6 Niagara Escarpment Commission

The Halton Region Conservation Authority has been interacting with the Niagara Escarpment Commission as a commenting agency in the development control process and reviewing the proposed Niagara Escarpment Plan and its recommendations regarding the establishment of an escarpment parks system, future land acquisitions and development of Authority owned lands in the escarpment. Since the Commission was involved in preparing its recommendations to the Province on the Hearing Officers Report on the Niagara Escarpment Proposed Plan, at the same time as the Authority was preparing the Interim Watershed Plan, no direct input was sought by the Authority for the Interim Plan. However, once the Niagara Escarpment Plan has been approved, if possible, the Authority will seek input from the Commission before the final Watershed Plan is published.

### 6.6.1 Recommendation

- (i) That the Authority review the Niagara Escarpment Commission's response to the Hearing Officers' Report on the Niagara Escarpment Proposed Plan and evaluate their recommendations in preparing the final Watershed Plan for the Halton Region Conservation Authority.

## 6.7 Watershed Municipalities

In terms of providing a component to total natural resource management in the watershed of the Halton Region Conservation Authority, the area and regional municipalities have adopted and are implementing policies pertaining to management and conservation of the natural resources within their own areas of jurisdiction. The implementation of such policies is carried out in conjunction with the Authority primarily through the planning processes under the Planning Act. Municipal comments are solicited, as well, in terms of the Authority's permit structure, budget forecasting, and various aspects of Authority program content.

For the purposes of the Interim Plan, the municipalities provided input via a questionnaire administered through a Watershed Planning Steering Committee. Specific questions were directed to each representative on that Committee in terms of each Authority program area. The results of this questionnaire have been incorporated into the strategies of each program under Section 7.0 of this Plan.

In summary, the comments expressed by the watershed municipalities are as follows:

### A. WATER AND RELATED LAND MANAGEMENT

#### i) Flood Control

- Four area municipalities identified nineteen sites which are subjected to annual flood damages.
- Authority's main role is seen as controlling fill, construction and waterway alterations in defined areas in conjunction with municipalities.
- Authority is recognized as lead agency in providing flood forecasting and warning and providing a co-ordinated function for municipal emergency measures during flood events.
- Five area municipalities identified seven areas for consideration of flood control projects by the Authority in the next two to five

years. (These have been included in Budget Forecast, Section 14.0).

ii) Storm Water Management

- Storm Water Management seen as a primary responsibility of area municipalities.
- Five area municipalities identified ten sites with major problems requiring storm water management controls.
- Four municipalities have storm water management controls in place while one municipality is formulating policies at the present time.
- No conflicts seen between municipal storm water management policies and water management policies of Authority but seen as complementary with the Authority playing a supportive role in storm water management.

iii) Rural Drainage

- Municipalities identified problems with rural drainage and identified six problem situations (ie. steep slopes, cultivated lands) and two municipalities identified ten specific problem locations.
- No conflicts were identified between rural drainage policies of municipalities and Authority approach pertaining specifically to rural drainage.
- Authority seen to assist in improving rural drainage through plan review process.
- Only one municipality has a rural drainage policy in place. Others are looking to Authority for support and controls.

- Drainage via municipal drains primarily not utilized in Halton Region Conservation Authority watershed (ie. 1 or 2 installed within recent memory).

## B. RESOURCE PLANNING

### i) Wetlands/Source Areas

- Seventeen specific areas identified for protection plus all hydrologically significant areas within one regional municipality were recommended for protection measures.
- Benefits of wetlands/source areas poorly understood.
- Suggested policy revisions to protect wetlands/source areas included Authority acquisition; there is a need to identify recharge/discharge areas and assess adequacy of Regulation 164, R.R.O. 1980 for protection of wetlands and source areas.
- Acquisition seen as lower priority than legislative controls.

### ii) Flood Plain/Wetland Regulations

- Authority controls are generally satisfactory. One municipality identified a need for more co-operation between itself and Authority regarding municipal maintenance of watercourses and possible delegation of the approval to approved certain structures in watercourses be given to municipalities.
- General acceptance of Authority continuing the administration of the regulation with liaison with the municipalities.
- Request for more application of Regulation 164, R.R.O. 1980 through floodline and/or fill line for five specific watercourses and generally for all smaller watercourses. One municipality suggests urban watercourses as priority for regulation.



- Preference for a mix of one zone, two zone and special policy areas being applied for flood plain designation.

### iii) Soil Erosion and Sedimentation

- Problem areas identified by two municipalities and were associated with rural runoff, development sites, and bridge and culvert construction.
- Responsibility for administration of controls not seen as a municipal responsibility but that of the Authority, landowner, Ontario Ministry of Agriculture and Food and other public agencies. Financial assistance should be considered on the basis of the public vs. private benefits.
- Three municipalities request inventory of soil erosion sites and assessment of possible remedial projects.
- Authority requested to increase emphasis on controlling erosion and sedimentation in watercourses, particularly in regards to erosion on agricultural/rural lands.

### iv) Fish and Wildlife

- General support for a program that would provide habitat plantings.
- Should be close co-operation between Authority and Ministry of Natural Resources.
- Restocking of fisheries should be continued.
- More emphasis should be given to public information and education.
- The respective roles of the Authority and the Ministry of Natural Resources are not well understood by the municipalities.

### C. FOREST MANAGEMENT

- Good municipal understanding of need for all benefits pertaining to forest management beyond that of providing for timber production. (ie. aesthetics, recreation, education, visual and audio barriers, heritage, control of erosion and hydrological benefits).
- One municipality that manages a municipal property for forestry purposes recommended that the Authority assume the forestry management work.
- Two Regional municipalities requested that the Ministry of Natural Resources transfer management of Agreement Forests lands to the Authority.
- The municipalities perceive the role of the Ministry of Natural Resources as one where the Ministry assists in managing forest lands, providing planting stock and regulating timber harvesting.
- Municipalities feel that the Ministry over-emphasizes timber harvesting.

### D. CONSERVATION RECREATION

- Municipalities perceive the Authority's role as providing for regional recreation areas involving interpretation programs and passive recreational opportunities.
- Some municipalities do not understand the role of the Authority in conservation recreation in relation to the overall mandate of the Authority.
- Strong encouragement for more Authority-provided opportunities regarding Parkway Belt West lands, Niagara Escarpment lands, Lake Ontario Waterfront, and Beach Strip.

- Recreation expansion for new and existing developments in terms of camping, trails, larger-scale parks, expansion of Mountsberg and linear open space.

## E. COMMUNITY RELATIONS

### i) Conservation Education

- Major areas identified providing conservation education - are Mountsberg and Crawford Lake.
- Authority should emphasize the hydrological system in the education program.
- Municipalities requested more promotion of education program via libraries and municipal publications.

### ii) Conservation Information

- Municipalities request more distribution of information to municipal staff.
- Municipalities accept use of joint municipal/Authority promotions, information publications and place for Authority to indirectly promote municipality.
- Authority requested to make use of local community newspapers, all municipal brochures (ie. via Parks and Recreation departments).
- See Watershed Plan as promoting information about the Authority.
- Authority minutes not being adequately distributed by municipal officials particularly to staff.
- The majority of information on the Authority program and policies is obtained through the municipal plan review process.

### iii) Heritage Conservation

- Authority's role seen as supportive of heritage groups.
- Municipalities recommend attention be paid to heritage conservation on Authority lands.
- Generally, municipal comments confirm level of Authority's involvement in heritage conservation.

### F. NEW DIRECTIONS FOR AUTHORITY

- Full support for Authority involvement in Parkway Belt and Niagara Escarpment lands and Lake Ontario Waterfront either for acquisition or for liaison between municipalities and other government agencies.



## Water and Related Land Management Program

7.0

## 7.0 WATER AND RELATED AND MANAGEMENT PROGRAM

### A. The Role of the Water and Related Land Management Program

The Role and Mandate of Conservation Authorities broadly defines the Role of the Halton Region Conservation Authority's Water and Related Land Management program.

"A primary responsibility of the Conservation Authority is to develop and implement a program of water and related land management to prevent loss of life and minimize property damage from flooding and erosion in the area over which it has jurisdiction consistent with social, economic and environmental considerations.

Encourage and participate in the co-operation of water management programs and, where specifically designated, co-ordinate the preparation of comprehensive water management plans in the areas over which it has jurisdiction."

### B. Demands on the Resource Base

The varying characteristics of the Halton Region Conservation Authority watershed require an innovative set of strategies to ensure the effective solutions to water management problems. These watershed characteristics define the demands placed upon the resource base within the Halton Region Conservation Authority. The demands provide a basis by which objectives of the Water and Related Land Management Program are formulated:

- (i) The Halton Region Conservation Authority watershed is subject to increasing urban development pressures. These pressures have a threefold impact on the local water resources.

- Increased demand on surface and groundwater quantities required for residential/industrial water supplies.

- Increased sewage, requiring treatment and disposal from urban centres inland of Lake Ontario. Sewage effluent dilution is a primary impetus for a low flow augmentative capability.

- Increased impervious areas resulting from increased building activities and road works resulting in modifications to the runoff characteristics of the watershed, increasing both erosion and flooding potential.



-Local intensive agricultural activities are important economic components of the Halton Region Conservation Authority's watershed. These activities require ever increasing quantities of water for irrigation and modify the surface water regime through the installation of agricultural field drains and other water control installations such as on-stream ponds, grassed waterways, etc. These controls have a potential impact on erosion damages, flood hazards and baseflows in the downstream area.

- (ii) The Halton Region Conservation Authority encompasses an important urbanized section of Lake Ontario shoreline. This shoreline is subject to severe wave action which presents erosion and flood hazards in many locations.
- (iii) A significant natural environment exists within the Halton Region Conservation Authority watershed. Many areas are regionally and/or provincially recognized as natural areas supporting a variety of flora and fauna. Proper water management is required to compensate for the adverse effects of developments such as quarrying on available base flows necessary to support these amenities.

### C. Goals

The following Goals define the intent of the Authority's Water and Related Land Management program;

- (i) To control flooding and erosion within all watercourse systems in the watershed in order to minimize loss of life and property damage.
- (ii) To manage the use of the watercourse systems in the watershed for the maximum protection of all natural attributes of these systems.



#### D. Objectives

The following are the objectives of the Authority's Water and Related Land Management Program:

- (i) To identify flooding, erosion and low flow problems requiring structural and non-structural solutions.
- (ii) To design, construct, operate and maintain those structural measures deemed necessary for the proper management of the water resources.
- (iii) To minimize flood and erosion and damages through the implementation of a warning and communication system to the member municipalities in accordance with the Ministry of Natural Resources' Contingency Planning Guidelines.
- (iv) To maximize the social, economic and environmental uses of the available water resources within the watershed.

The objectives of the Water and Related Land Management Program have been implemented through various components. These components have been designed to complement other Authority programs.

#### E. Components of the Water and Related Land Management Program

Specifically, the Halton Region Conservation Authority's Water and Related Land Management Program has six major components.

- 7.1. Flood and Erosion Control
  - 7.1.1. Flood Control Structures
  - 7.1.2. Flood Forecasting, Warning and Contingency Planning
  - 7.1.3. Fill and Construction and Alteration to Waterways Regulation
  - 7.1.4. Erosion and Sedimentation
  - 7.1.5. Storm Water Management
- 7.2. Forest Management
- 7.3. Integrated Land Use Planning
- 7.4. Rural Drainage
- 7.5. Water Quality
- 7.6. Land Acquisition

## 7.1 Flood and Erosion Control

### 7.1.1. Flood Control Structures

#### (i) Background

The Halton Region Conservation Authority has undertaken the following flood plain mapping studies:

- a) Bronte Creek Flood Plain Mapping Study (completed 1982)
- b) Sixteen Mile Creek Flood Plain Mapping Study (completion est. 1984)
- c) Joshua's Creek Flood Plain Mapping Study (completed 1964)
- d) Fourteen Mile Creek Study (completed 1964)
- e) Sheldon Creek Water Management Study (completed 1982)
- f) Flood Plain Mapping of the Hager and Rambo Creeks (completed 1981)
- g) Flood Plain Mapping of the Grindstone Creek (completed 1982)

These studies provide the Conservation Authority with the background information required to establish a comprehensive and effective Water and Related Land Management Program. The flood plain mapping produced in these reports provide the Conservation Authority with information relating to existing water related hazards and those areas sensitive to land use modifications which could in turn increase the hazard potential. With this information, the Authority has developed various components within its Water and Related Land Management Program to deal specifically with the problems at hand. In addition, the Conservation Authority continues to commission studies for the production of additional flood plain maps and watershed evaluations to further its objectives in the water management field.

Existing flood plain mapping on the watercourses within the Halton Region Conservation Authority's watershed provides indications of areas susceptible to hazard under periods of high flows. Generally, these hazards take two forms; flood damage and erosion hazards. To effectively deal with these problems, the Authority has established a flood and erosion control component to its Water and Related Land Management Program. This component specifically provides a means by which water related hazards can be studied and effective solutions proposed.

The Authority presently operates and maintains eleven flood control structures. The location of these structures are shown on Map #10. The Authority operates three main types of structures that are classified as follows:

- A. dams and reservoirs,
- B. diversion channels, and
- C. channelizations

These structural flood control works have been undertaken by the Authority to eliminate major flood hazards where structural remedial measures were justified. Studies which provided detailed technical information on the degree of severity of an individual flood problem were prepared on individual locations identified as flood susceptible in flood plain mapping studies. Where possible, Authority flood control structures have been designed to provide other ancilliary benefits related to the water resources of the area. These benefits include the provision of erosion protection, water related recreational opportunities, public open space, water quality management, base flow augmentation, and wildlife habitat.

#### A. Dams and Reservoirs

The Authority operates four reservoirs on major watercourses within the watershed. These are multi-purpose reservoirs and provide varying degrees of flood protection for downstream areas susceptible to flooding.

- (i) Scotch Block Dam and Reservoir - Middle Branch, Sixteen Mile Creek
- (ii) Kelso Dam and Reservoir - Sixteen Mile Creek
- (iii) Hilton Falls Dam and Reservoir - Sixteen Mile Creek
- (iv) Mountsberg Dam and Reservoir - Bronte Creek

#### B. Diversion Channels

The Authority has installed and maintains three major diversion channels to provide flood protection for urban areas.

- (i) Morrison-Wedgewood Diversion Channel - Town of Oakville
- (ii) Hager-Rambo Diversion Channel - City of Burlington
- (iii) Ontario Street Creek Diversion Channel - Town of Milton

#### C. Channelization Projects

The Authority has completed a number of major channelization projects to provide flood protection for various damage centres. These projects include:

- (i) the channelization of the Sixteen Mile Creek through the urban section of Milton - scheduled for completion 1985.
- (ii) the channelization of the Joshua's Creek in the Town of Oakville from north of Constance Drive to Devon Road.
- (iii) the channelization of the Middle Branch of the Sixteen Mile Creek in the Town of Halton Hills in Concessions V and VI.
- (iv) the West Rambo Creek Enclosure from Leighland Road to Churchill Avenue in the City of Burlington.
- (v) the West Hager Creek Enclosure from Hager-Rambo Diversion Channel to south of Plains Road in the City of Burlington.
- (vi) the channelization of the Fourteen Mile Creek from Rebecca Street to Speers Road, in the Town of Oakville

#### D. Strategy

The elimination of existing, defined flood hazards is a primary component of the Authority's Water and Related Land Management Program and are the result of the following sub-components:

- (i) the preparation of flood plain mapping and the identification of damage centres, and
- (ii) the evaluation of damage areas and the preparation of recommendations for remedial works.

The results of these studies form a basis upon which flood control structures are considered for implementation by the Halton Region Conservation Authority. However, the construction of flood control

structures for flood hazard reduction is only a portion of the Authority's flood protection program. Ongoing maintenance is required in order to ensure the long term integrity and effectiveness of those existing structures. The following flood protection projects have been identified as priority areas:

#### East Hager Creek Diversion Channel

The Hager Creek watershed consists of two tributary watercourses of 4.84 square kilometers on the West Branch and 3.38 square kilometers on the East branch. Each tributary discharges independently to the Hager-Rambo Diversion Channel, south of Fairview Street, in the city of Burlington. The West Branch originates in the Niagara Escarpment and falls through 150 meters in elevation from the Escarpment to the Hager-Rambo Diversion Channel over a distance of 4.4 kilometers; approximately 107 meters of the fall is accounted for in the upper 3 kilometers. The East Branch originates in the Canterbury Drive area of Burlington and flows to the Hager-Rambo Diversion Channel covering a distance of 3.7 kilometers falling through 100 meters in elevation. The watersheds of both tributaries are urbanized with Municipal services.

A major flood susceptible area exists on the East Branch of the Hager Creek between the Q.E.W. and the Hager-Rambo Diversion Channel. Annual floods occur resulting in flood damages estimated at \$120,000.00, with 50 residential homes and commercial facilities affected by the flood event. Investigations into alternatives to alleviate the flooding situation have been completed and those investigations have determined that the most effective long term solution to the flooding problem would be the construction of a diversion channel, commencing at a point south of the Q.E.W. on the East Hager Creek and diverting the flows to the West Branch of the Hager Creek.

The Ministry of Transportation & Communications propose to extend Highway 403 to the north-east from the present interconnection of the Q.E.W. and Highway 403. The proposed alignment for the Highway 403 extension will put the Highway across the watersheds of the Hager Creeks, Rambo Creek and Appleby Creek. In order to alleviate noise from the proposed Highway, the

Ministry will be constructing the Highway 20' to 25' below the existing ground level and consequently, the Highway will intercept the drainage basins north-west of the proposed Highway alignment. The Conservation Authority and M.T.C. have agreed that the Highway 403 will be designed to accommodate the diverted flows from the interception of the headwaters from the Appleby, Rambo and Hager Creeks Watersheds and the Highway 403 drainage system will discharge into the East Branch of the Hager Creek and will be accommodated in the proposed diversion of the East Hager Creek to the West Hager Creek.

It will be necessary to construct a retention pond in conjunction with the diversion channel in order to accommodate the Regional Storm flows and provide the necessary flood protection for downstream properties. The construction of the diversion channel and the retention pond is anticipated to be carried out in conjunction with the proposed construction schedule of Highway 403. The estimated cost of the required flood protection work is \$1,150,000.00.

#### Taplow - Glen Oaks Creeks Diversion (McCraney Creek)

The land between the Sixteen Mile Creek on the east and the Fourteen Mile Creek on the west, is drained by two watercourses known as the Glen Oaks Creek and the Taplow Creek. The Glen Oaks Creek joins with the Taplow Creek north of Lakeshore Road in Oakville. Both drainage basins originate in the vicinity of Highway No. 5 and because of the relatively flat topography and the soil conditions of the Halton Till Plain, rapid runoff from rainfall is a common occurrence. There are 90 homes located within the flood plains of the Glen Oaks and Taplow Creeks; the majority of those residences are located south of Speers Road.

The Conservation Authority published a report on the required flood control protection measures for the Town of Oakville in 1964; that Report recommended that a diversion channel be constructed north of the Hydro Electric Power Commission corridor so that the upstream watersheds of the Glen Oaks and Taplow Creeks would be intercepted and the flows diverted and discharged into the Fourteen Mile Creek. The Conservation Authority

proposes to implement the recommended flood protection works by constructing such a diversion and installing the necessary erosion protection works on the Glen Oaks Creek below the proposed diversion channel from Speers Road to the Glen Oaks Creek confluence with the Taplow Creek.

#### Fourteen Mile Creek Reservoir

The 1964 Flood Control Report for the Town of Oakville recommended the construction of a reservoir on the Fourteen Mile Creek, north of the Q.E.W. The Conservation Authority has carried out channelization of the Fourteen Mile Creek from Speers Road south to Rebecca Street, to provide flood protection for the urban area adjacent to the Fourteen Mile Creek.

With the proposed diversion of the Glen Oaks and Taplow creeks to the Fourteen Mile Creek, it will be necessary to construct a reservoir to regulate flood runoff in the upper reaches of the Fourteen Mile Creek watershed. The reservoir will control the discharge in order to accommodate the additional flow that will be discharged to the Fourteen Mile Creek downstream of the confluence of the Glen Oak and Taplow Diversion Channel to the Fourteen Mile Creek. The Conservation Authority proposes to proceed with the installation of the required retention reservoir on the Fourteen Mile Creek in conjunction with the diversion of the Glen Oaks and Taplow Creeks to the Fourteen Mile Creek. The estimated cost of the combined works is \$980,000.00.

#### Milton Channelization, Phase V

The Conservation Authority has implemented a flood protection channelization project through the urban area in the Town of Milton, in accordance with the recommendations contained in the 1972 Milton Flood Control Report. To date, the Conservation Authority has completed four phases of the channelization and one section of the required channelization still remains to be completed. The channelization would involve the Sixteen Mile Creek from Martin Street, upstream to the C.P.R. tracks and it

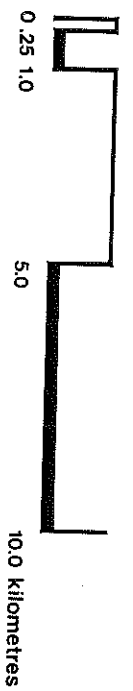


# HALTON REGION CONSERVATION AUTHORITY INTERIM WATERSHED PLAN

## FLOOD CONTROL STRUCTURES

### Legend

- Existing Reservoir and Dam
- Existing Water Control Structure
- Proposed Water Control Structure





(iv) Hidden Valley Flood Damage Assessment

The flood plain mapping on the Grindstone Creek indicates that the residential property located in Hidden Valley is susceptible to flooding. This study would analyze the extent of that flooding and determine whether or not structural flood protection measures are warranted for the area.

7.1.2 Flood Forecasting, Warning and Response Coordination

A. Background

The Halton Region Conservation Authority, in its efforts to minimize flood damage potential in the watershed has implemented a comprehensive program to forecast flooding events and provide an adequate warning to its municipalities.

The Conservation Authority's response to flood conditions consists of three major components:

- (i) Flood Forecasting
- (ii) Flood Warning
- (iii) Response to Flood Emergencies and Coordination

(i) Flood Forecasting

The Authority's existing flood forecasting system involves the collection of meteorologic data from precipitation gauging stations in adjacent watersheds and relating the information obtained to provincial forecast information provided by the Streamflow Forecast System through the Authority's data link. Information provided by the Streamflow Forecast System of the Ministry of Natural Resources includes precipitation data throughout the province, radar rainfall intensity information, and a variety of weather forecasts. This information may be related to precipitation data collected in other watersheds to obtain a prediction of a rainfall event. Presently this manually obtained meteorological

prediction is used by the Authority to estimate flow conditions in watercourses. The development of streamflow prediction models would greatly improve the forecasting capabilities of this Authority. In addition, it would improve the operation of the flood control structures by eliminating unnecessary draw down of reservoirs due to inaccurate flood predictions. (Map No. 11)

#### (ii) Flood Warning

Upon receipt of flood forecast information from the Ministry of Natural Resources, the information is processed and screened by the Conservation Authority. The manual screening process involves relating the forecasted event information to the characteristics of individual flood damage centres. This evaluation yields a list of areas potentially susceptible to flood damages should the event be realized. The Conservation Authority then informs the relevant municipalities of the potential magnitude of the flood situation and key locations where the municipalities may expect flooding. The Conservation Authority maintains a computing facility which assists in the assimilation of information to individual municipalities.

#### (iii) Emergency Response Coordination

The Authority is the lead agency responsible for the co-ordination of responses to flood emergencies. Through the process of flood contingency planning, the Authority co-ordinates municipal responses to flooding events thus ensuring an organized effort to minimize the damages. Although the Authority response to flood emergencies is primarily limited to the operation and maintenance of its flood control structures, it does provide the municipalities with specific technical expertise relating, for example, to the deployment of sandbags, and the supervision of ice jam removal.

### B. Strategy

The present flood forecasting, warning and coordination system of the Authority is limited by the quality, quantity and availability of input data prerequisite for the forecasting process. This information includes

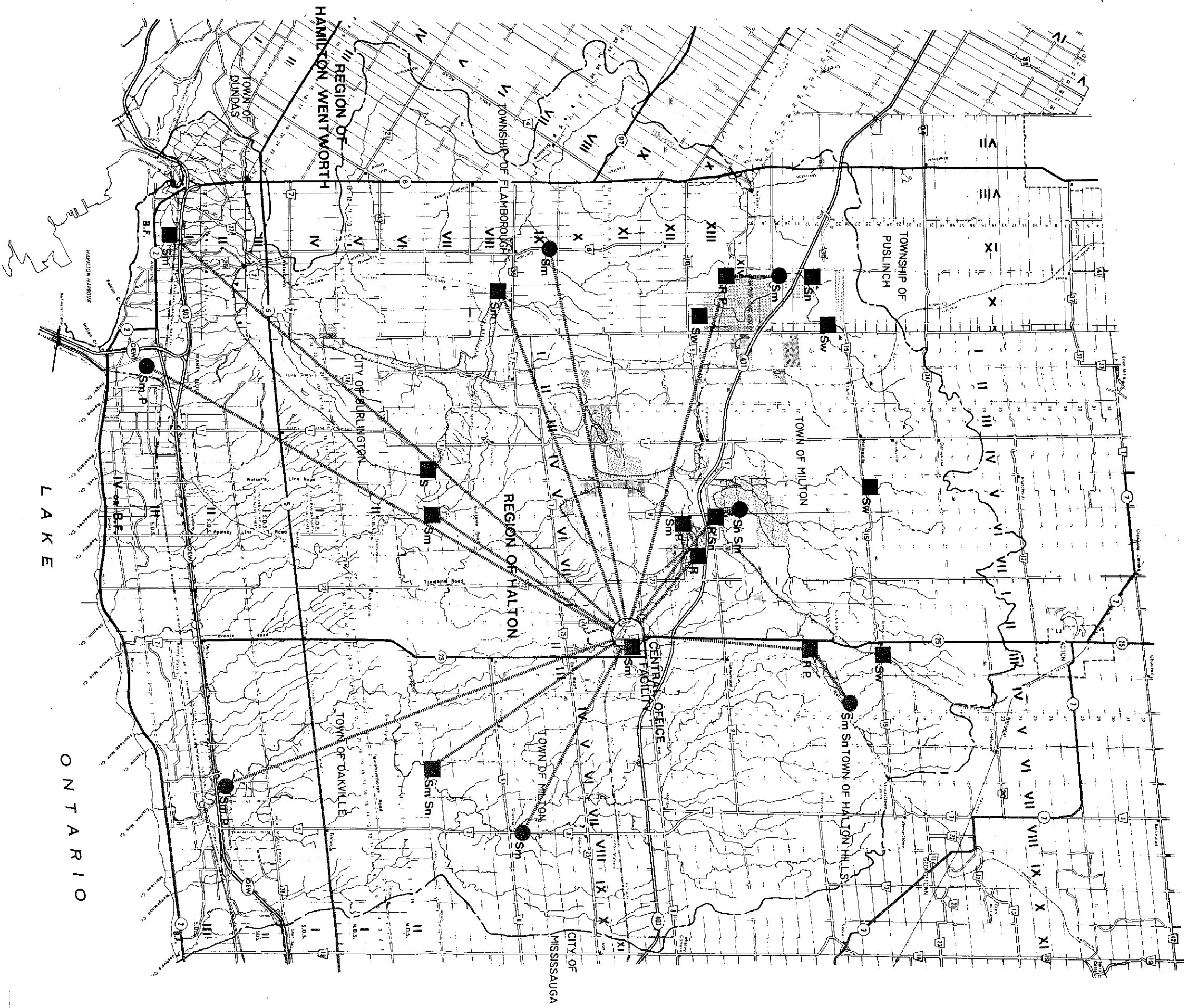
streamflow information, precipitation data, forecasted event information and reservoir storage availability. One of the primary strategies of the Conservation Authority relates to the further development of a more precise flood forecasting, warning and response system. The Halton Region Conservation Authority proposes to implement a flood forecasting and warning system for the watershed over a five-year period and the first phase of the system was installed in 1983. The proposed data acquisition and stream flow forecasting system will consist of the following three main parts:

- (i) a data acquisition system consisting of remotely located information recorders;
- (ii) a central computer facility to monitor remotely accessed information and provide the computing capabilities for forecasting stream flows;
- (iii) computer models for the individual watersheds within the Halton watershed in order to predict the effects of watershed modifications on stream conditions.

The data acquisition system will consist of the following:

- 4 - reservoir level monitors
- 4 - upstream reservoir inflow monitors
- 9 - stream flow monitors
- 4 - precipitation recording gauges
- 1 - central computing and data acquisition centre
- 5 - snow courses
- 4 - swamp level gauges
- 1 - portable data acquisition terminal

The flood warning and stream flow forecasting system will require the expansion of the existing micro-computer facilities owned by the Authority and the development of simulated hydrologic models for the individual watersheds.



HALTON REGION CONSERVATION AUTHORITY

# INTERIM WATERSHED PLAN

## DATA ACQUISITION SYSTEM



- ### Legend
- Existing Stations
  - Proposed Stations
  - Automatic Communications Link
  - Sm Streamflow
  - Sn Snow Course
  - Sw Swamp Level
  - P Precipitation
  - R Reservoir Level

### 7.1.3. Fill, Construction and Alteration to Watercourse Regulations

#### A. Background and Role

Since 1972, the Authority has administered Regulation 164, R.R.O. 1980, which controls -

- (i) the placing of fill
- (ii) construction of buildings and structures, and,
- (iii) the alteration of watercourses

This regulation applies to ponds, swamps, ravines, valleys, watercourses and areas susceptible to flooding during a Regional Storm. The Regional Storm is defined as the rainfall event and soil conditions existing during the Hurricane Hazel event that occurred on the Humber River watershed in Toronto in 1954. This storm is transposed to individual watersheds for defining the regulated flood plain. The regulation applies to the placing of fill, modifications to the watercourse, and construction in flood susceptible areas from the source area to Lake Ontario.

The administration of this regulation has been the Authority's prime tool in minimizing the potential for loss of life and property damage.

#### B. Policies for the Administration of Fill, Construction and Alteration to Watercourse Regulation

##### (i) Ontario Government Policy

The Province of Ontario in September 1982, issued a Flood Plain Criteria Statement to set minimum standards for flood plain management. In addition, the statement endorses that the Authority will administer the fill, construction, and alteration to watercourse regulation in accordance with the Conservation Authorities Act. This government policy set out minimum standards for flood plain management and three approaches to the administration of the Conservation Authorities' controls over construction in flood susceptible areas. In addition, it endorses the continuation of control over the placing of fill in defined areas as contained in the Conservation Authorities Act. The provincial Flood Plain Criteria can be

applied using the provincial policies, as quoted below:

Policy # 1

The regulatory flood for designation of flood plains in Ontario is defined as the Regional flood or the 100-year flood, whichever is greater.

This policy defines the level of flood protection which should be provided to the citizens of Ontario. The flood against which protection is to be provided and on the basis of which flood plains are to be delineated is referred to as the 'Regulatory Flood'.

The magnitude of the 'Regulatory Flood' in a particular area of the Province is largely dependent upon the susceptibility of that area to tropical storms, thunderstorms, snowmelt, rainfall or a combination of these weather-related events."

The Halton Authority is within Zone I in Ontario . This determines that the Hurricane Hazel Storm which must be used in calculating the Regulatory Flood.

Policy # 2

Conservation Authorities in Ontario, in co-operation with the watershed municipalities, have the option of selective application of the two-zone floodway-flood fringe concept;

The floodway is to be based on the minimum of the 100-year flood for those areas where the two-zone concept is adopted;

Development in the flood fringe is to be protected to the level of the regulatory flood by suitable flood damage reduction measures.

This policy recognizes that varying degrees of risk of damage exist across individual flood plains.

The two-zone concept is the concept whereby the flood plain is divided into two zones, namely: the floodway and the flood fringe. The floodway is the central portion closest to the watercourse where risk of flood damage is the highest. The policy requires that the floodway include at least those lands which would be flooded by the 100-year Flood, and that no structural

development be permitted within this area. The flood fringe is the area beyond the floodway, and includes the remaining lands susceptible to the Regulatory Flood. Development in the flood fringe would be permitted provided that suitable flood damage reduction measures are undertaken, to provide protection against the Regulatory Flood.

### Policy # 3

Where strict application of Policies 1 and/or 2 is not feasible, the concept of the special policy areas within flood plains is recognized and controlled development may be permitted, once such areas are designated and approved by the Conservation Authority and the Ministries of Natural Resources and Municipal Affairs and Housing. The Ministries of the Environment and Northern Affairs, when appropriate, are to be consulted about the special policy status for such areas.

It is acknowledged that the strict application of the basic policies 1 and 2 may not always be feasible. This policy makes provision for 'Special Policy' status to those areas where it is deemed necessary in the public interest, by the municipalities, conservation authorities and the Province, to assume a higher degree of flood risk than that which would normally be acceptable elsewhere in Ontario.

#### (i) Existing Areas of Development

These include cases where a large component of a community's commercial, retail, industrial or even residential development is located in the flood plain. Rehabilitation, redevelopment or replacement of structures in such areas are seen as necessary to continued community viability and major relocations are not considered feasible. Many of such areas may be located in the floodway or where floodproofing within the fringe area to the Regulatory Flood standards is not feasible.

#### (ii) Extensions to Developed Areas

These include areas of major infilling and new development adjacent to existing development (generally where a large percentage of the municipality is located in the flood plain, but due to topography, can only expect shallow flooding with low velocity of flow).

The designation of Special Policy Areas is intended primarily for dealing with existing exceptional situations.

Where Special Policy Areas have been designated and approved by the Province, the modified level of flood protection will be defined as:

- (a) a specified rate of flow, or
- (b) a flood which would produce defined flood levels at given locations,

and will be specified and provided by the Conservation Authority and the Ministry of Natural Resources to municipalities and interested agencies.

(ii) Halton Region Conservation Authority Policy for the Administration of Regulation 164, R.R.O. 1980

The Halton Region Conservation Authority policies used in administering the Regulation, fall into two general categories relating to watercourse characteristics and the eventual land use within the watershed.

The first category is major watercourses and includes the Grindstone, Bronte and Sixteen Mile Creeks. All of these watercourses flow across a number of municipal boundaries and have relatively large drainage areas.

The second category of watercourses are those which have smaller drainage areas, outletting independently from the aforementioned three major watercourses into Lake Ontario. These include the Falcon, Indian, Hager, Rambo, Roseland, Tuck, Shore Acres, Appleby, Sheldon, Fourteen Mile, McCraney, Morrison, Wedgewood, and Joshua's Creeks.

(a) Policies for Major Creeks (Grindstone, Bronte, Sixteen Mile Creeks)

- (i) The placing of fill and construction of buildings and structures in or on a pond, swamp, watercourse, or lands susceptible to flooding during a Regional Storm is prohibited under the One Zone Policy.



- (ii) The placing of fill which would effect the control of flooding, pollution or the conservation of land, on lands described in the schedules to the regulation, normally is prohibited.
- (iii) Proposals to alter watercourses will be evaluated on an individual basis having consideration for
  - maintenance of the natural topography of the watercourse system and stage storage discharge relationships for a range of rainfall conditions
  - maintenance of base flows and flows resulting from frequent storms
  - fish and wildlife requirements as set out by other provincial, federal or municipal acts, regulations or plans
  - maintenance of riparian rights
- (iv) In keeping with the overall Authority objective of maintaining the valleys in a natural state, the use of flood plains for parking lots will be discouraged. However, in cases where flood plains are used for parking lot purposes, then parking lots must be located outside of the 100-year floodway, and in addition, must meet other parking lot criteria established by the Authority and local municipalities which takes into account flow velocity and depth of flooding. Further, the construction of parking lots cannot involve the introduction of fill material.
- (v) It is recognized that certain utilities or services such as storm and sanitary sewers, natural gas or oil pipelines, hydro corridors, foot paths and transportation links will, from time to time, be required to cross or use the flood plain. Such uses should not impede flood flows or be located in such a manner as to cause adverse effects to the flood plain upstream or downstream.
  - The construction of pipe or service lines should maintain the predevelopment configuration of the flood plain and valley walls and minimize disturbance to existing vegetation. Pipe or service lines parallel to the flood plain should be constructed and protected so as to prevent scouring and possible failure at a later date. In addition, storm sewer outfalls should be designed to provide adequate protection to watercourse embankments.

- Where feasible, bridge or structural abutments should be located outside of the flood plain to minimize obstruction to water flow.
  - Where structures are necessary within the flood plain the structure should be designed so that overtopping or flanking can occur with a minimum of damage. Major bridges not designed to pass the Regional flow should have their approach ramp(s) designed as spillways. Smaller footbridges should be designed to withstand blockage and allow for spill.
  - All structures shall consider potential for ice jamming in their designs.
- (vi) On the flood fringe outside of a minimum 100-year storm floodway where the depth of flooding is less than one meter and velocities are less than one meter per second an application may be considered for approval by the Halton Region Conservation Authority to construct minor additions to existing buildings or relocate existing buildings or structures which are legally established year-round uses provided it can be shown that such works will not increase the risk to life or damage to existing flood plain properties and where such works are proposed to be floodproofed to Regional Storm flows, and where no alternate site exists for the proposed works outside of the Regional flood plain.

(vii) Carlisle - Two Zone Policy

In the settlement area of the Village of Carlisle, Township of Flamborough, where the depth of flooding on the flood fringe due to the Regional Storm is less than one meter outside of a defined valley, the Authority may consider an application for development of the flood fringe under the Two Zone Policy.

(viii) Milton Official Plan Amendment No. 7 - Two Zone Policies

In the urbanized Town of Milton, several small tributaries of the Sixteen Mile Creek, with poorly defined valleys are subject to the following policies as the lands are developed for industrial uses.

The floodway for tributaries of the Sixteen Mile Creek in the lands contained in the Official Plan Amendment No. 7 to the Official Plan for the Town of Milton is based on the 100-year floodway. Buildings on lands adjacent to the watercourse are to be protected to the Regional flood elevation.

#### (b) Policies for Urban Watercourses

The policies outlined for major watercourses apply to all watercourses within the Halton Region Conservation Authority's jurisdiction, however in certain situations, these are modified by the following policies in urban Burlington and Oakville:

##### (i) City of Burlington - Flexible Flood Plain Policies

Within the urban area of the City of Burlington, on the Falcon, Indian, Hager, Rambo, Roseland, Tuck, Shore Acres, Appleby, and Sheldon Creeks, the Authority continues to utilize the 50-year design storm as the limit for flood protection in Burlington for existing development and for plans of subdivision registered prior to 1980. However, the Authority will endeavour to increase flood protection to the 100-year return storm and Regional storm levels where possible.

##### (ii) Town of Oakville - Two Zone Policy

Within the urban area of the Town of Oakville on the Sheldon, Fourteen Mile, McCraney (Taplow), Morrison, Wedgewood and Joshua's Creeks, the following policy sets out where a two zone approach to flood plain development may be considered:

##### Town of Oakville - Flexible Flood Plain Policy

In cases where the depth of flooding on the flood fringe due to the Regional Storm is less than one meter outside of a defined valley, the Authority may consider an application for development of the flood fringe. Such development must be floodproofed to the Regional Storm floodwater levels.

### C. Current Program

The Halton Region Conservation Authority has several specific programs which fall within, or stem from, the administration of the fill, construction and alteration to watercourse regulations.

#### (i) Administration of Regulation 164, R.R.O. 1980

Under the Conservation Authorities Act the Authority has made and will continue to administer the regulation applicable in the area under its jurisdiction dealing with the placing of fill, construction in flood susceptible areas, and alterations to waterways in order to prevent the creation of additional flood prone development. The administration of the regulation will be in accordance with technical criteria and approved Authority policy devised to minimize future damage, loss of life, and to avoid the accumulative loss of storage which occurs through encroachment on flood plains or swamps.

#### (ii) Flood Plain Mapping/Flood Risk Analysis and Policy Development

In order to evaluate potential for loss of life and property damage, the Authority is completing flood plain mapping. Presently the flood plain of major portions of the Bronte, Fourteen Mile, Grindstone, Sixteen Mile and Sheldon Creeks are being mapped.

Flood risk analysis will be carried out after the completion of flood plain mapping. Alternative solutions to existing and potential problems are then developed with the local municipalities and may range from structure modifications to selective flood plain policy options.

Other more recent reports in the City of Burlington, utilizing only the 50-year return storm, require updating because standards contained in these reports are no longer acceptable to the Halton Region Conservation Authority and the Ministry of Natural Resources. (Map No. 12)



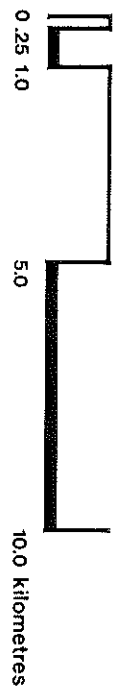
# HALTON REGION CONSERVATION AUTHORITY INTERIM WATERSHED PLAN

## FLOOD PLAIN MAPPING

### Legend

- EFCM Existing Fill Control Schedule
- EFPM Existing Flood Plain Mapping
- PFFPM Proposed Flood Plain Mapping

PROPOSED FILL CONTROL SCHEDULES			
major creeks			
Grindstone Cr.	1983		
Bionie Cr.	1984		
Sixteen Mile Cr.	1985		
urban creeks in Burlington and Oakville			
Falcon	1984		
Indian	1984		
Hager	1984		
Rambo	1984		
Roseland	1984		
Tuck	1984		
Shoreacres	1984		
Sheldon	1984		
Fourteen Mile	1984		
McClary	1984		
Morrison	1984		
Wedgewood	1984		
Joshua	1984		
lake Ontario shoreline	1986		



### (iii) Fill Line Scheduling

Under Regulation 164, R.R.O. 1980, the Conservation Authority may specifically define lands, by schedules, to control pollution or the conservation of land. These lands typically encompass headwater wetlands and swamps, ravines, valleys and flood plains. Regional and local Official Plans have recognized the fill schedules and flood plains as the appropriate limits for hazard land or open space designations.

Presently only limited sections of the Bronte, Grindstone, and Sixteen Mile Creeks have schedules defining fill restricted areas. The Halton Region Conservation Authority, to effectively protect the existing flow regime of its many watercourses has embarked on a program of fill line scheduling. First priorities for scheduling will be the Bronte, Grindstone, and Sixteen Mile Creeks, followed by the remaining watercourses. (Map No. 12)

### D. Strategy

- (i) The Conservation Authority will continue the administration of Regulation 164, R.R.O. 1980.
- (ii) The Conservation Authority will continue flood plain mapping/flood risk analysis and policy development by:
  - (a) completing present mapping of Bronte, Grindstone and Sixteen Mile Creeks under Federal/Provincial Flood Reduction Program
  - (b) developing with member municipalities appropriate policies for administration of Regulation 164, R.R.O. 1980, after analysis of flood risks on Bronte, Grindstone and Sixteen Mile Creeks
  - (c) updating of flood plain mapping and watercourse reports in urban watercourses in Burlington and Oakville.
- (iii) Fill Line Schedules
  - (a) continue scheduling headwater wetlands and swamps, ravines, valley walls and flood plains on the Grindstone, Bronte and Sixteen Mile Creeks, and Lake Ontario Waterfront.

Between 1984 and 1989, the Authority intends to carry out in conjunction with its member municipalities, the following:

- (a) Scheduling the remaining watercourses as required.

#### 7.1.4 Erosion and Sedimentation

##### A. Background

The Halton Region Conservation Authority has been actively involved in the control of both on and off stream erosion and sedimentation. The Authority has implemented the program by following three separate strategies, namely:

- (i) Installing structural works as a project of the Authority;
- (ii) Requiring the installation of protective measures and/or structural works as a condition of approval under the Planning Act;
- (iii) Administration of Regulation 164, R.R.O. 1980.

##### B. Authority Erosion and Sedimentation Control Projects

The Halton Region Conservation Authority has installed the following onstream erosion protection works:

- (a) Bank stabilization, Middle Branch Sixteen Mile Creek, Hornby
- (b) Bank stabilization and erosion protection, Middle Branch Sixteen Mile Creek, downstream of Scotch Block Dam
- (c) Bank stabilization and erosion protection, Roseland Creek, City of Burlington
- (d) Bank stabilization and erosion protection, Sixteen Mile Creek at Kerr Street, Town of Oakville
- (e) Channel reconstruction and erosion protection, tributary of Bronte Creek, Concessions VI and VII, City of Burlington

##### (i) Strategy

In addition to implementing specific onstream erosion control projects, the Conservation Authority considers erosion protection as a secondary benefit to the implementation of specific flood control projects. For instance, the design of the Sixteen Mile Creek Channel through the Town of Milton

provides a high degree of erosion protection in addition to its primary benefit of flood protection.

Throughout the implementation phases of any capital project, the Conservation Authority requires that suitable temporary sedimentation control measures become part of the design and contract specifications for individual projects and are site specifically employed by the contractor under the supervision of the Authority. Examples of acceptable temporary sedimentation control measures include, strawbale dykes, temporary sedimentation ponds and temporary diversion channels. These temporary siltation controls assure minimal environmental and social impacts during the construction of required erosion and flood protection works.

Erosion control projects to be implemented by the Authority are the erosion protection works on the Glen Oaks Creek and the Randall Street embankment on the Sixteen Mile Creek, both in the Town of Oakville. Details of each project are contained in Section 7.1.1.(D.).

### C. Urban Erosion and Siltation Control

As lands are urbanized, watercourses tend to be affected in three ways; base flows can be reduced; flood and erosion hazards increase in extent and frequency; and sediment loading of the watercourse may dramatically increase during periods of construction.

In order to control erosion and sedimentation and minimize hazards resulting from these effects, the Authority implements with its member municipalities, the following program of erosion and sediment control in urban areas.

#### (i) Goal

To reduce the hazards of erosion to life and property, and to minimize the costs of maintenance to bridges, culverts and harbours due to silt accumulation and to improve the quality of the watercourses within the watershed through selective controls on sediment sources.



## (ii) Objectives

- (a) To require where feasible, a minimum setback for buildings and structures adjacent to valley systems, a distance of ten meters so as not to aggravate or create erosion problems. Actual setbacks will be determined based on site specific criteria.
- (b) Onstream erosion protection will be incorporated in plans of subdivision or new developments approved under the Planning Act where required. The natural watercourse alignment will be maintained where feasible.
- (c) Surface drainage should be directed away from the face of the valley wall to municipal storm sewers where possible.
- (d) Storm sewer outfalls to watercourses must incorporate erosion control as a dominant factor. Outfalls on the main valleys of the Grindstone, Bronte and Sixteen Mile Creeks will normally be designed with a drop shaft and care shall be taken to ensure the continued stability of the valley bank.
- (e) All new development will require preparation and implementation of erosion and siltation control measures as a condition of approval to prevent the migration of sediment to receiving streams.
- (f) Encourage construction practices which protect against erosion and minimize the impacts to valley lands and significant natural areas.

## (iii) Current Programs

- (a) Implementation of erosion and sedimentation controls through development agreements and Regulation 164, R.R.O. 1980.

The Halton Region Conservation Authority works in conjunction with its member municipalities, the Ministry of Natural Resources and the Ministry of the Environment to ensure that erosion and sedimentation controls are

implemented on lands as they are developed. In this regard, erosion and sedimentation control plans are prepared by developers as subdivisions and other projects are designed in order to incorporate any necessary controls during construction. Permanent erosion control works, once constructed, are normally assumed and maintained by the municipality.

In cases where onstream erosion control works are carried out, a permit is also required under Regulation 164, R.R.O. 1980 from the Halton Region Conservation Authority.

#### (iv) Strategy

- (a) The Conservation Authority will continue to implement erosion and sedimentation controls through municipal development agreements and the administration of the Conservation Authority's fill, construction and alteration to watercourse regulation.

- (b) Onstream erosion studies -

As part of master drainage plan work, the location of existing significant onstream erosion sites will be documented and areas of potentially hazardous slopes identified. These studies will be carried out, where possible, in conjunction with flood plain and storm water management studies.

- (c) Development of an erosion and siltation control manual -

A review of known techniques and how they may be applied to the Authority's watershed.

Presently, the requirements for erosion control and the effectiveness of siltation control measures implemented on developing urban lands is poorly documented in the Halton Watershed.

A study to review techniques presently employed and the procedures that should be followed in designing and implementing siltation control works is needed. While such a study would be

specific to the Halton Watershed, its usefulness could be applied to many other areas of the province. At the present time, siltation control methods employed in Ontario appear to be haphazard and their cost effectiveness and the practicality of many techniques remain undetermined. With the total urbanization of fourteen separate creek systems within the Halton Region Conservation Authority's Watershed, the cost saving to the municipalities and province associated with siltation mitigation adequately justifies such a project.

#### 7.1.5 Storm Water Management

##### A. Background and Role

Storm water management involves planning, analysis and control of storm water runoff to achieve reductions in flooding, the control of erosion and the protection of groundwater recharge sources. In the past, the objective for handling storm drainage was to remove the surface water from urban areas as quickly as possible. Such practices have resulted in increased downstream flood susceptibility and erosion. Often these problems were corrected by diverting peak flows or developing reservoirs to compensate for increases in stream flows. The objective of modern storm water management is to control storm water near its source and to regulate its discharge to receiving streams so as to minimize or prevent adverse downstream impacts.

In the Halton Region Conservation Authority's watershed, patterns of urbanization and individual watercourse characteristics determine the role and objectives of storm water management. Projected future urbanization on the Bronte Creek, according to recently produced flood risk mapping, accounts for only 2% of the total watershed area. Less than 10% urbanization of the watersheds are anticipated for the Grindstone and Sixteen Mile Creeks. Increases in runoff due to urbanization are therefore relatively minor on these three major watersheds, however, there may be some localized impact resulting from urban uses on such matters as fish and wildlife and water quality resources.

Watersheds such as the Falcon, Indian, Hager, Rambo, Roseland, Tuck, Shore Acres, Appleby, Sheldon, Fourteen Mile, McCraney, Morrison, Wedgewood and Joshua's Creeks are anticipated to become predominantly urbanized. An alternative to structural flood and erosion control measures is to incorporate storm water management techniques as urbanization proceeds throughout the individual watersheds.

Presently, Oakville, Flamborough, and Burlington have adopted storm water management manuals and are implementing storm water management techniques. These manuals give direction for acceptable methods of runoff controls and setting requirements for master drainage plans to be developed on a watershed or community basis, as well as functional storm water management plans to be incorporated at the subdivision level. Utilized in concert with these manuals are numerous hydrology and hydraulic reports which identify existing and potential flooding and erosion problems.

In the case of Oakville and Burlington, many of the hydrologic and hydraulic reports have become outdated since these reports predated the adoption of the storm water management policies and manuals.

Updating of these reports is required to determine the appropriate design levels and protection techniques to guide future development and protect existing properties.

In the case of Milton and Flamborough, storm water management is required in certain locations to protect against localized impacts. Storm water management criteria and drainage plans have been developed on a subdivision or community basis.

#### B. Goal

In co-operation with member municipalities, the Halton Region Conservation Authority will promote storm water management practices which will ensure adequate flood and erosion protection, and will enhance the environmental, aesthetical and recreational potential of watercourses.

### C. Objectives

- (i) Encourage member municipalities to develop modern storm water management manuals and master drainage plans for urbanizing areas in co-operation with the Halton Region Conservation Authority.
- (ii) Encourage state of the art storm water management techniques which provide protection for flooding from stream flows (major systems) and local runoff (minor systems) and which provide for management of a range of storm frequencies up to and including the 1:100 year and where possible, the Regional storm.
- (iii) Utilize in conjunction with member municipalities, storm water management where possible as a means to remedy flooding and erosion problems occurring on existing development.

### D. Current Programs

#### (i) Master Drainage Plans

The Halton Region Conservation Authority and its member municipalities have undertaken flood plain mapping, and hydrologic and hydraulic reports on the Bronte, Sixteen Mile, Grindstone, Sheldon, Hager, Rambo, Fourteen Mile, and Shore Acres Creeks to: delineate sub-watersheds; define flood plains; establish specific flood control objectives; identify erosion or bank instability problems and possible solutions; and indicate constraints associated with water quantity and quality.

#### (ii) Implementation of Storm Water Management Works through Development Agreements and Regulation 164, R.R.O. 1980

The Halton Region Conservation Authority works in conjunction with its member municipalities to ensure that storm water management objectives established in hydrologic and hydraulic reports or special studies are implemented on lands as they are developed. In this regard, functional storm drainage plans are prepared by developers as subdivision and other major developments are designed in order to incorporate runoff controls as required.

The construction of storm water management facilities is ensured through development agreements with the local municipalities and any detention ponds or other works are assumed and maintained by the municipality. In cases where on-stream works are carried out such as dams, channels or storm water outfalls, a permit is also required under Regulation 164, R.R.O. 1980, from the Halton Region Conservation Authority.

#### E. Strategy

(i) The Conservation Authority will continue to carry out its current program of storm water management, as follows:

(a) The Authority will incorporate storm water management requirements in hydrologic and hydraulic reports for all watercourses in the watershed.

(b) The Authority will require incorporation of storm water management works in co-operation with its member municipalities through municipal development agreements and under fill, construction and alteration to watercourse regulations.

(ii) Storm Water Management Studies - 1984 to 1988 -

The Halton Region Conservation Authority proposes to carry out master drainage plans on the following watersheds in order to establish management guidelines to be followed as developed occurs in the watersheds in order to minimize the impact of urban expansion on the individual watercourses:

1. Joshua's Creek Master Drainage Plan
2. Appleby Creek Master Drainage Plan
3. Tuck Creek Master Drainage Plan

#### 7.1.6. Summary of Strategies for Flood and Erosion Control

In order that the Halton Region Conservation Authority may continue its active involvement in Water and Related Land Management, the Authority has proposed specific program improvements and new program areas to meet the

varying demands on its resource base. These improvements to the Water and Related Land Management Program are directly related to the standard planning approach to problem identification and solution. To this end, the Authority has developed a general set of strategies to be followed in the further development of the Water and Related Land Management Program.

- (i) To identify water management problems through the completion of general water related studies, such as flood plain mapping studies, water management studies, general hydrology studies, and other 'needs' studies.
- (ii) To assess the specific problems identified in the above. These assessments may take the form of flood damage evaluations and/or risk analyses, erosion hazard evaluation studies, etc.
- (iii) Once the problem has been assessed as to its magnitude and degree of severity, the problem shall be evaluated in terms of general solution techniques and these solution techniques may include structural, planning policies solutions or perhaps a 'do nothing' alternative. The alternatives will be ranked and prioritized. The most desirable alternative is then studied and implemented.

Flood plain mapping studies required as background to identify required works to be implemented under the existing Flood and Erosion Control of the Water and Related Land Management Program have been completed, or are in the process of being completed on the major watercourses within the Authority's area of jurisdiction. Master drainage studies provide more detailed methodologies for the establishment and/or improvement of component areas in the Water and Related Land Management Program for the smaller, highly developed watersheds. The Conservation Authority has completed several studies of this nature on the Appleby, Shore Acres, and Sheldon Creeks in cooperation with the appropriate member municipalities.

The identification of water resource related problems is the first and foremost strategy of the Conservation Authority and the Water and Related Land Management Program. The treatment of these problems is also of primary concern. Specific problems identified through the flood plain

mapping and water management study processes require evaluation to determine the extent and degree of severity of the problem and to provide alternatives for solving the resource related problem.

To further its objectives in Flood and Erosion Control, the Halton Region Conservation Authority proposes additional projects for implementation. Specifically, the Conservation Authority has prepared a capital forecast for the next five (5) years. A list of surveys, studies and projects to be implemented under the auspices of the Authority's Water and Related Land Management Program are provided in Figure 14.2.1.

The determination of timing for individual items to be carried out within the next five (5) year period, is a function of the project priority. Project priority, in turn, is a function of project justification. Mutually exclusive projects are justified on the basis of their net benefits weighted against the costs of the works.



## 7.2 Forest Management

### A. Statement of Role

Forest management programs are an integral part of the Conservation Authority's and the Ministry of Natural Resources total resource management goal. As a result, the Halton Region Conservation Authority has committed itself to a Forest Management program using State of the Art techniques. This Forest Management program confirms the statement of role and mandate for the Conservation Authority as part of its multi-purpose approach to Resource Management.

Watershed municipalities, through their recently completed official plans, have identified the need to increase the forest cover in the Halton Region Conservation Authority watershed and promote sound Forest Management on existing forested lands.

'It is the goal of the Halton Region Conservation Authority to practice sound Forest Management programs on Authority owned forested land, and to encourage the same on other publicly and privately owned lands, within priority areas of the watershed.'

### B. Background

The 1960 Sixteen Mile Creek Report and the 1958 Twelve Mile Creek Report recommended the purchase of 2,917 hectares (7,208 acres) and 3,927 hectares (9,704 acres), respectively, for the establishment of an Authority Forest. The Halton Region Conservation Authority to date has acquired approximately 2,023 hectares (5,000 acres) of land which is presently under a forest management plan (Map No. 13). The Authority has not entered into forest management agreements with the Ministry of Natural Resources, but rather has carried forest management improvements in Authority forests with their own resources.

The Conservation Authority's 2,023 hectares (5,000 acres) of forested lands, consist largely of upland escarpment hardwood species with a

scattering of wetland forest types. Forest management programs on Authority owned lands provide, for the most part, a multiple-use opportunity to residents of the Halton Region Conservation Authority watershed, as well as a periodic supply of wood fibre products to local markets, through a sustained yield management program.

The Conservation Authority annually harvests 139 - 279 meters (1,500 - 3,000 cubic feet) of medium quality hardwood sawlogs and 340 - 425 cubic meters (12,000 -15,000 cubic feet) of fuelwood in conjunction with the forest management plan, prepared in 1973 for Authority lands.

The forested wetlands are maintained as stream source area protection for the purpose of flood control, low flow augmentation, and the fish and wildlife resource. The watershed municipalities have identified the forests of the Halton watershed as an important part of their individual official plans and as such the Conservation Authority plays an important role in developing and implementing their policies in order to achieve their goal of increased forest cover and proper management of existing forests. For the most part, forested lands are under private ownership in the Halton Region Conservation Authority watershed. The Conservation Authority's mandate to encourage wise forest management on these properties is designed to: meet the Resource Management goals of the Halton Region Conservation Authority; contribute to the Ministry of Natural Resources fibre production targets; and assist the watershed municipalities with their forest management objectives.

### C. Components of the Forest Management Program

The Authority's Forest Management Program is comprised of the following three (3) main component areas:

- Forest Management on Conservation Authority lands.
- Forest Management on other public lands.
- Extension Forestry Services on private lands.

## Forest Management on Conservation Authority Lands

### (i) Goal

To provide a multiple-use opportunity to the residents of the Halton Region Conservation Authority watershed and contribute to the fibre and wildlife targets of the Ministry of Natural Resources, while managing the forest in order to ensure the protection of the environment and the best use of the resource, in conjunction with the Halton Region Conservation Authority's total resource management goals.

### (ii) Objectives

- (a) To prepare site specific forest management plans and operating plans for all designated forested lands owned by the Conservation Authority to ensure an efficient and organized forest management program.
- (b) To provide a source for periodic fibre production, through sound silvicultural practices for use by other Authority programs and for sale to local markets, in keeping with the Ministry of Natural Resources objectives.
- (c) To maintain, where possible, the species diversity in the woodlots, in order that the other natural environmental processes of the area are not disturbed or changed.
- (d) To provide through improved access, a network of road and trail systems for silvicultural and recreational opportunities.
- (e) To protect forested wetlands and source areas on Authority properties by managing these areas as protection forest.
- (f) To improve wildlife habitat in site specific areas of Authority forests for game species and non-game species, as well as protect known habitats of rare, significant or endangered species.

- (g) To reforest poor quality soil areas (Land Class 4,5,6,7) of Authority property where forestry is the best use of the land, as well as planting to improve forest cover on watercourse source areas on Authority lands.
- (h) To provide an educational opportunity to watershed residents and special interest groups to appreciate the role of forest management in relation to the total resource management program of the Authority.
- (i) To consider during management operations, the visual impact of these activities in order to maintain or improve the aesthetics of the Authority's forested lands.

(iii) Current Programs

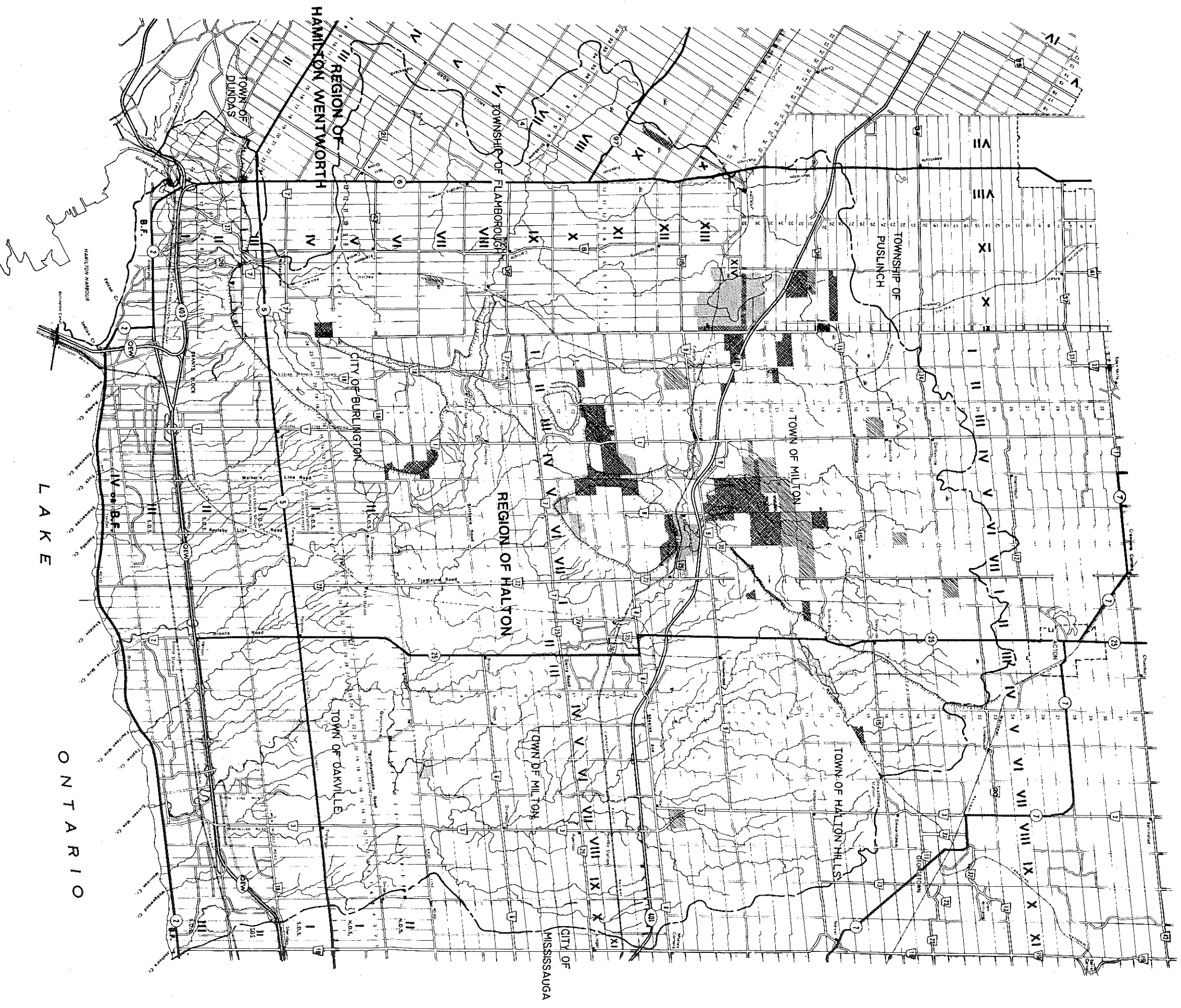
The Halton Region Conservation Authority has practiced forest management on Authority owned lands since 1956. The Authority has continued to buy land for forestry purposes since the Twelve Mile Creek (1958) and the Sixteen Mile Creek (1960) Conservation Authorities were formed, and at present owns over 2,023 hectares (5,000 acres) of forested land. In 1973, with the assistance of the Ministry of Natural Resources, a twenty year forest management plan was prepared, which included two 10 year operating plans for the Authority forested lands. The Authority's field operation has carried out extensive silvicultural works which have generated a regular supply of sawlogs for the Authority's sawmill for lumber production which is used in Authority construction projects, as well as a regular supply of fuelwood and posts, which are used in the Authority's conservation areas operation. Surplus sawlogs and fuelwood are sold to local markets in the watershed. These silvicultural practices have resulted in providing a more vigorous forest base that can withstand increased recreational use for which there is an ever increasing demand in the watershed.

The Halton Region Conservation Authority has planted annually 20,000 conifer trees provided by the Ministry of Natural Resources, on Authority owned lands since 1956. This planting complements existing forest cover and improves the cover on source areas.

The Conservation Authority has established a network of roads and trails in its various forestry lands which has resulted in improved access for management as well as providing improved recreational opportunities.



(iv) Strategy

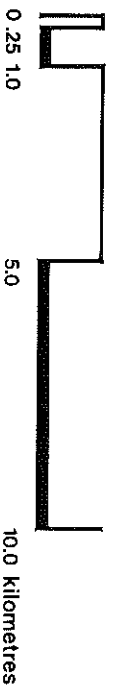
- (a) To review the past 10 year operating segment of the 20 year Forest Management plan in 1983-84 and prepare a new 10 year operating plan for the forestry program, using improved forest management techniques, including consideration for other compatible program policies of the Conservation Authority.
- (b) To develop the 1984 to 1994 operating plan in conjunction with the Ministry of Natural Resources Regional and District offices.
- (c) To continue reforestation of Authority land (annual seedling requirements 1984 to 1988, Figure 7.2.1.)



# HALTON REGION CONSERVATION AUTHORITY **INTERIM WATERSHED PLAN** FOREST MANAGEMENT LANDS

## **Legend**

-  H.R.C.A. Forestry Tracts
-  M.N.R. Agreement Forests



REFORESTATION SEEDLING REQUIREMENTS - 1984 TO 1988  
For Authority Owned Lands

Figure 7.2.1

Species	1984	1985	1986	1987	1988
White Pine	10,000	10,000	10,000	10,000	10,000
Red Pine	2,000	2,000		2,000	
Scotch Pine	1,000	1,000	1,000	1,000	1,000
White Spruce	10,000	10,000	10,000	10,000	10,000
Norway Spruce	2,000		2,000		2,000
White Cedar	5,000	5,000		5,000	
Carolina Poplar					
White Ash	1,000	1,000	1,000	1,000	1,000
Sugar Maple	2,000	2,000	2,000	2,000	2,000
Silver Maple	500		500		500
Red Oak					
Black Walnut	100		100		100

## Forest Management on Other Public Lands

### (i) Goals

To ensure that other publicly owned forested lands within the Halton Region Conservation Authority watershed are managed for their optimum potential using state-of-the-art Forest Management techniques, whether management of the forest is interim in nature, or for perpetuity.

### (ii) Background

The official plans of the watershed municipalities have identified the need for proper management of all forested lands. There is a substantial amount of land in the Halton watershed that is owned or regulated by various government bodies which contain an existing forest stand or have the potential to be reforested. Some of the publicly owned land has been acquired by the Province of Ontario in the Parkway Belt West Plan by Ontario Hydro for utility corridor transmission, by Ontario Land Corporation, for future urban development, by municipalities and the Ontario Heritage Foundation for forest management and multiple conservation use. These existing public lands can play an important role in the management of the watershed and therefore, it is important that any of these lands that have an existing forest cover, be managed to retain the forest, while the open lands that are not required for utility, transportation or urban development be reforested. Such a move would be quite practical and provide many benefits from the standpoint of watercourse/wetland protection, recreation and wood production.

### (a) Agreement Forests

The Province of Ontario, through the former Department of Lands and Forests, offered a program whereby county governments received assistance to acquire lands and by entering into agreements under the Forestry Act and the Trees Act, the provincial government established the forest and paid the annual management cost of the lands in the agreement. These agreements normally run for 25 to 50 years in length and at the end of the agreement period there are three options available to the public landowners, namely;



- Take over the forest management responsibility from the Province and pay back to the Province, the grants for land acquisition and the accumulated management costs.
- Relinquish to the Province, title to the lands in the agreement and the Province will pay to the public landowner, the difference between the purchase price and the grant which the Province provided at the time of purchase.
- Extend the initial agreement for another specified period of years.

In the Halton watershed, the agreement forest lands are owned by the Regional Municipality of Halton, 1,564 acres (633 hectares); Regional Municipality of Hamilton-Wentworth, 41 acres (16 hectares); and the County of Wellington, 100 acres (40 hectares).

The majority of the lands in the management agreements were purchase prior to the formation of the Conservation Authority. After 1956, the Authority concentrated its efforts on establishing an Authority forest and county governments did not increase their landholdings or expand the amount of lands in the agreements. The lands purchased by the Conservation Authority were not put into a similar management agreement with the Province but have been managed directly by the Authority.

The Regional Municipalities of Hamilton-Wentworth and Halton inherited the agreement forest lands from the former county governments in 1974. Both Regional governments have requested the Halton Authority to take over management responsibilities for the agreement forests particularly for those lands which are adjacent to existing landholdings of the Authority. The Halton Authority is prepared to accept the management responsibility for existing agreement forest lands in the Halton watershed subject to satisfactory negotiations regarding accumulated management costs assessed to the agreement lands to date. Such a move would eliminate duplication of a service and clarify and define each government's primary role and responsibility in a more cost effective manner.

IT IS RECOMMENDED THAT:

The Regional Municipalities of Hamilton-Wentworth and Halton, the County of Wellington, the Halton Region Conservation Authority and the Ministry of Natural Resources, examine the validity of continuing the present forest management agreements and where feasible, assign management responsibility for such lands to the Conservation Authority.

(b) Ontario Heritage Foundation Lands -

The Ontario Heritage Foundation accepts donations of property which have significant environmental or conservation resources to warrant protection and management. The Foundation, as property owner, relies upon other government bodies to manage the lands and this is carried out by way of a 25 year agreement between the Foundation and the particular management agency.

There are two separate parcels of land in the Halton watershed which are owned by the Heritage Foundation. The parcel of land located in Part of Lot 13, Concession II, and Part of Lot 13, Concession III, Town of Milton, consists of 160 acres of forested land and is managed by the Ministry of Natural Resources. The property abuts lands owned and managed by the Conservation Authority. Also, the Authority manages a parcel of land consisting of 8 acres on the Niagara Escarpment in Part of Lot 13, Concession II, City of Burlington, which is managed as protection forest and escarpment protection land.

Since the Conservation Authority manages lands throughout the watershed and has the capability to respond to the security and resource management requirements for such lands, it would be logical to identify one local lead agency for management responsibilities. The Authority is prepared to accept this management function and therefore,

**IT IS RECOMMENDED THAT:**

The Halton Region Conservation Authority negotiate for the management responsibility of such lands to be combined with Authority landholdings; management plans for present and any future donations of land parcels to the Ontario Heritage Foundation would be prepared and carried out in accordance with the management principles of the site specific plans.

**(c) Forest Management and Tree Planting on Municipal and Crown Lands**

Municipalities and ministries of the provincial government own several tracts of land throughout the watershed which have been acquired for a particular need. In the case of municipalities, lands are acquired and dedicated in the urban serviced areas for open space purposes and often sizeable wooded areas are located on such lands. In the case of lands acquired by the Province for the Parkway Belt West Plan, the Ontario Land Corporation, Ontario Hydro and to some extent, the Ministry of Transportation and Communications, these lands also contain sizeable woodlands. In the majority of cases, the woodlots are not being managed and there is no apparent incentive by the landowners to do so. In addition, particularly with the Parkway Belt West lands, an opportunity exists to reforest surplus vacant lands which would complement and benefit the intended use of these lands.

The government bodies who own such lands in the Halton watershed should be encouraged to manage such lands for forestry and conservation purposes. The Authority could play a major role in improving such management by providing a woodlot management and planting service to municipalities and ministries of the provincial government, for the purpose of reforesting surplus vacant land and managing established woodlots.

### (iii) Current Programs

Much of the public forested land owned by watershed municipalities is under management agreement with the Ministry of Natural Resources. Many other public lands in the watershed are owned by the Ministry of Government Services, Ontario Heritage Foundation, Ministry of Natural Resources, Royal Botanical Gardens and Ministry of Transportation and Communications and receive little, if any, active management. The Halton Region Conservation Authority provides technical input into the planning of these properties upon periodic request. The Authority is also instrumental in the preparation and implementation of municipal tree cutting bylaws in the watershed.

### (iv) Strategy

- (a) To implement and co-ordinate a program of forest management on publicly owned land in the watershed.
- (b) To negotiate the responsibility for forest management on other publicly owned lands suitable for forestry purposes by accepting the transfer of management responsibilities from the Ministry of Natural Resources to the Authority for existing agreement forests.
- (c) To encourage government bodies who own lands with existing forest cover, to manage such lands for forestry and conservation purposes on an interim and long term basis.
- (d) To establish a forest management service for publicly owned land where the Authority and owner mutually agree to implement forestry and conservation practices on the public lands.
- (e) To co-operate with municipal governments in the legislating and enforcement of Tree Cutting - Conservation By-laws throughout the watershed.
- (f) To undertake an inventory of public lands in the watershed to identify those lands in need of forestry and conservation management.

## Extension Forestry Services on Private Lands

### (i) Goal:

The goal of the Halton Region Conservation Authority's Extension Forestry Services on Private Lands Program requires a four part statement in order to include a variety of services.

(a) To supplement existing programs offered by the Ministry of Natural Resources, Ministry of Agriculture and Food, and Ministry of the Environment.

(b) To establish a satisfactory level of forest cover on designated areas of the watershed as part of the Authority's overall watershed management goals.

(c) To mitigate soil erosion of watercourse valleys on private lands by providing assistance to re-establish vegetative cover.

(d) To establish a pleasing aesthetic setting in the rural areas of the Halton watershed.

### (ii) Background

Settlement development in the Halton watershed commenced after 1792 when Augustis Jones surveyed the boundary of the lands purchased from the Mississaugas in Nelson and East Flamborough Townships. Over the next 40 years, the Townships in the watershed were surveyed and the surveyors' field notes indicated that the watershed was covered by a primeval forest with pine-oak stands, predominating on the light, easily worked soils and maple-beech stands predominating on the heavier, but richer soils.

Clearing of the land for settlement purposes gained momentum around 1820. The abundant supply of forest exceeded the settlers' requirements for construction materials and fuel and the lack of transportation routes and limited markets for forest products resulted in an attitude whereby the prime objective was to clear the land for agricultural use. The best lands were cleared first, while rough and swampy areas were avoided. Lands were also cleared along the roads and gradually cleared further back towards the

end of the farms without reference to the quality of the soil, except where swamps were encountered. To illustrate the extent of clearing in the watershed, the following chart reflects the percentage of the total lands per municipality, remaining under forest cover in 1851 versus 1951 and 1980:

<u>Municipality</u>	<u>1851</u>	<u>1951</u>	<u>1980</u>
Esquesing	56.8%	19.4%	24.6%
Nassagaweya	62%	23%	53.0%
Trafalgar	42%	6%	10.1%
East & West Flamborough	57%	11%	30.5%
Nelson	45%	11%	17.2%
Puslinch	55%	13%	32.4%

The Regional Municipality of Halton determined that in 1980, 20% of the Municipality was under forest cover and set as an objective, to increase that to 25% by the year 2001. On an acreage basis, this would require approximately 12,500 acres (5,062.5 hectares) of land to be reforested by the year 2001 to achieve the 25% forest cover target.

Harvesting for timber had its origins in the demand for pine and oak lumber for use in the British Navy. A sizeable market had been established for lumber products since around 1850 and there were 58 sawmill sites throughout the watershed. In 1980 there were only 3 recorded sawmills in the watershed, which produced 12,500,000 board feet of lumber. In 1850, Bronte recorded 1,835,000 board feet (4,282 cubic meters) of lumber, while Port Nelson (Burlington) recorded 4,794,409 board feet (11,187 cubic feet).

By 1890, the demand on the forests was primarily for fence posts, poles and railway ties. Ancillary products such as maple syrup production became common but by 1951, the production only reflected 21% of the recorded peak of 14,034 gallons in 1851, and in 1981 only 1,700 gallons were produced. Since 1950, there has been a further evolution regarding land use and tenure in the Halton watershed. Urban expansion for residential, industrial and institutional uses have occurred or will occur to the extent that the majority of lands south of Highway 5 will be occupied for these uses. Inland urban centres such as Milton and Waterdown project urban

growth, while rural estate residential uses continue to increase each year. The agricultural use, on the other hand, has continued to decline in land area and in the number of farms because of the economic pressure to concentrate the operation on the better quality soils to maximize yield, or through the sale of the land for other non-farm uses. The proximity of the Halton Region Conservation Authority watershed to metropolitan population centres such as Hamilton and Toronto has also resulted in competition for land to provide more transportation routes, new and expanded utility corridors and the establishment of pits and quarries for aggregate extraction.

The conversion of the land from an agricultural use to these other uses has resulted in a general decline for the stewardship of the land. In the vicinity of Burlington, Oakville, Milton and Waterdown, woodlots will disappear for urban uses. In these areas, the valley systems will have to sustain any substantial area of woodland. On the Escarpment, there are still sections where the nature of the land and its location make the retention of forest cover on large tracts quite practical, both for wood production and for the protection of the headwaters of the river systems.

The marginal farming areas of the watershed present a different problem. Agriculture production and farming will not be the primary use due to rural residential use, transportation and utility corridors, recreational use and industrial use. Large forests cannot be expected to be retained or re-established, however, woodlots and reforestation on the poorer parts of these holdings can be re-established. The program of the Authority, in general, can improve the aesthetic value as well as the economic value of these woodlots as well as minimize loss of soils through erosion and increased sediment loads in the watercourses.

## (ii) Objectives

- (a) To provide a reforestation assistance program to private landowners in the watershed on Class 1 to 7 soils as defined in the Ontario Forest Capability Maps and where there is a demonstrated need, on Class 1 to 7 soils as defined in the Ontario Soils Capability Maps for agriculture.

- (b) To provide a reforestation assistance program to private landowners in the watershed for the purpose of providing forest cover on headwater source areas, river valley systems, and valley lands exhibiting or having a potential for soil erosion.
- (c) To provide a windbreak and shelter belt planting assistance program to private landowners in the watershed where there is a demonstrated need to assist the landowner in the conservation of land by preventing soil loss from wind and water related erosion.

### (iii) Current Programs

#### (a) Private Lands Reforestation Program

The Authority provides the necessary men and equipment to plant seedlings on private lands at a nominal cost. The landowner is responsible for the purchase of the trees from the Ministry of natural Resources. Assistance is provided for a minimum order of 1,000 trees and is limited to a maximum of 20,000 trees planted for any one landowner in any one year.

#### (b) Conservation Tree Planting Program

The Authority supplies and plants the trees for a fee. Only trees 6 - 10 feet, such as Silver Maple, Carolinian Poplar, White Ash, and Sugar Maple are made available with the minimum number of trees planted for each landowner being 25 trees, and the maximum number being 100 trees.

### (iv) Strategy

- (a) The Authority will continue to provide Forestry Extension Services to private landowners in designated areas of the watershed.
- (b) To make reforestation planting assistance available to private landowners within the watershed on priority areas where proposed planting sites are 2 hectares or less in area.
- (c) The Ministry of Natural Resources will provide assistance to private landowners of proposed planting sites in excess of 2 hectares in areas where reforestation is for fibre production. The Authority may provide reforestation assistance to planting sites in excess of 2



hectares which do not qualify for Ministry assistance, but would contribute to achieving the goals and objectives of the Authority.

- (d) The Authority will continue to rely on the Ministry of Natural Resources for nursery stock to supply the trees under the Authority's Private Reforestation Assistance Program.
- (e) The Authority will operate and maintain a tree nursery on Authority property to supply the needs of private landowners for trees under the Conservation Tree Planting Assistance Program and Wildlife/Erosion Shrub Planting Assistance Program.
- (f) The Authority will in co-operation with provincial ministries and other agencies in co-ordinating the Forestry Extension Programs in the watershed.
- (g) The Authority will publicize the need and importance of forest management by way of tours, demonstrations, field trips and publications.
- (h) The Authority will provide technical advice on forest management to property owners in the watershed.

### 7.3 Integrated Land Use Planning

#### A. Background

The Conservation Authority by participating in the land use planning process can ensure that adequate provision and safeguards are provided for the protection of the natural resources in the watershed. Fill and Construction Regulations under the Conservation Authorities Act and the development control process under the Planning Act, the Parkway Belt Planning and Development Act, and the Niagara Escarpment Planning and Development Act, provide the regulatory mechanisms to ensure that new developments do not occur in areas susceptible to flooding and other water related hazards. The primary objective of fill and construction regulations is to identify the potential hazard and regulate future development. They are permissive in nature and approval is granted where these hazards are overcome by use of structural or non-structural measures. The objectives of official plans and zoning by-laws on the other hand are to ensure that appropriate safeguards are incorporated into the land use planning decisions of municipalities respecting development on these lands. Zoning by-laws are precise and non-discretionary and therefore do not possess sufficient flexibility to permit development to occur in areas designated as hazard lands without amending the by-law.

The Conservation Authority examines land use proposals to ensure that the stipulated level of protection from flooding, erosion, and/or environmental impacts is provided and there is no adverse impact on the objectives and programs of the Authority. The Conservation Authority has participated in the identification and protection of regionally significant areas of environmental importance and has encouraged municipalities to designate and protect such areas through the official plan. The Conservation Authority and the Ministry of Natural Resources also examine the impacts of development proposals on other programs including fish and wildlife, forestry, outdoor recreation, protection of valley lands, source areas, Niagara Escarpment lands, and the impact of aggregate extraction on the water resources of the watershed.

The designation and administration of the aggregate development is primarily a provincial responsibility under the Pits and Quarries Control Act. There are several areas in the Halton watershed where the objectives of aggregate extraction and protection are in conflict with the objectives and programs of municipalities and the Authority's program.

The Lake Ontario shoreline is a significant natural resource in the Halton watershed. In recognition of its importance, a waterfront development plan has been prepared by the municipalities and the Conservation Authority, and planning policies from the Waterfront Plan have been incorporated into official plans.

The population of the watershed is projected to increase to 357,000 people by the turn of the century. This growth and the geographical location of the watershed in Southern Ontario will place an ever increasing demand on the resources and care has to be taken through joint land use planning efforts to ensure that future development does not adversely impact on the watershed resources.

#### B. Statement of Role

The Conservation Authority will provide planning input and review on matters related to the administration of the fill and construction regulation, the protection of regionally significant areas of environmental importance, source areas, valley lands, fish and wildlife resources, forestry resources, and regional open space under the Planning Act, the Parkway Belt Planning and Development Act, and the Niagara Escarpment Planning and Development Act.

#### C. Current Program

The integrated land use planning program of the Halton Region Conservation Authority consists of the following six categories:

- (i) Water Management
- (ii) Regionally Significant Areas
- (iii) Mineral Aggregate Resources
- (iv) Niagara Escarpment Plan
- (v) Parkway Belt West Development Plan
- (vi) Waterfront Plan

(i) Water Management

The primary objective, achieved through flood plain management, is to prevent loss of life and minimize property damage from flooding, erosion and other water and related hazards and to mitigate against environmental impacts to the water resource base.

Through input and review of official plans, zoning by-laws, subdivisions, severances and site plans, the Authority attempts to,

- (a) define lands critical to water management;
- (b) establish compatible land uses in and adjacent to valley systems and watercourses;
- (c) carry out studies to accurately define flood plains, erosion sites, and other water related hazards;
- (d) establish criteria to mitigate the impacts of the development on watercourse systems.

Member municipalities are encouraged to prepare and adopt master drainage plans for urbanizing communities in order that storm water management techniques can be utilized to minimize urban impacts on the flood plains.

Both provincial and municipal plans are encouraged to recognize the watercourses and their associated valley lands as natural systems which are to be retained in their natural state as much as possible.

The Authority and the municipalities encourage the dedication of valley lands and flood plains through the Planning Act.

## (ii) Regionally Significant Areas

The natural setting of the Authority's watershed is comprised of approximately 23,360 hectares (57,699 ac) of forested lands making up 22% of the Authority's total watershed area. These natural areas encompass, generally, the Niagara Escarpment and its associated forests and wetlands and the headwaters and tributaries of the Bronte, Sixteen Mile and Grindstone creeks. Geographically, the Authority's watershed is at the northern extent of many southern species of flora and fauna and at the southern extent of many northern species. This location provides for an unusual diversity of flora and fauna as borne out by the designation of thirty-one (31) Environmentally Sensitive Areas in Official Plans totalling 9,253 hectares (22,855 ac) or 8.8% of the Authority's watershed. In addition, twelve (12) areas have been identified as natural areas of provincial significance. These areas are listed in Section 4.4 of the Plan and denoted on Map No. 5.

In conjunction with neighbouring Conservation Authorities, Counties and Regional Municipalities, the Halton Region Conservation Authority, between 1976 and 1978, completed studies of significant natural areas within the Authority's watershed. These studies led to the special designation of Environmentally Sensitive Areas in Official Plans as well as Natural Area designations within the Plan for the Niagara Escarpment. The Authority supports and endorses these designations and encourages their use in local Official Plans.

The Environmentally Sensitive Area Reports prepared as background to Official Plans, outline potential impacts in each area studied. Many of the Environmentally Sensitive Areas and headwater areas are under pressure to be utilized for quarries and residential development.

The Authority has contributed to the identification and protection of significant natural areas and fisheries and wildlife resources throughout the watershed, through a comprehensive program based on research, protection, management and enhancement of land and water resources. While the Ministry of Natural Resources has taken the lead role in the areas of fish and wildlife management for angling and hunting purposes, the

Authority, in response to local initiatives and provincial planning strategies has assumed a major role in the areas of research into significant flora and fauna and protection and management of significant natural areas. This role has been encouraged by the member municipalities since a number of important natural areas span municipal boundaries. In defining environmentally significant areas at a regional and watershed level, provincially significant earth and life science areas have normally been included. The Authority's involvement and support of this program has involved integrating both regional and provincial interests regarding the identification and protection of significant natural areas.

The Authority, through its Water and Related Land Management Program, continues to be active in acquiring biophysical data.

The Authority carries out biological inventories of plant communities and wildlife resources on its landholdings. These inventories provide background information and form an integral part in the determination of appropriate land management and forestry practices on Authority lands. In the master planning of Conservation Areas, the inventories provide direction on appropriate uses, management zones and facility placement; however, of greater importance, is the biological base data that the Authority obtains for its watershed and the corresponding significant natural areas. The Authority, in co-operation with the Regional Municipality of Halton, stores the accumulating information on computer file for reference and retrieval.

Inventories are also carried out on lands considered suitable for acquisition by the Authority, and from time to time, certain lands subject to major development proposals are inventoried in order to establish the Authority's priorities as part of its integrated land use planning.

A study initiated in 1981 will chart the extent of wetlands within the watersheds of the Sixteen Mile, Bronte and Grindstone Creeks. Upon its completion, significant wetlands will be scheduled under the fill control provisions of the Authority's Fill, Construction and Alteration to Watercourse Regulation. In addition, through using a standardized manual prepared by the Federal/Provincial Steering Committee on Wetlands, the

information provided by the Authority will form part of input to a provincial scale wetlands evaluation program.

The Authority's strategies in regard to regionally and provincially significant areas within its watershed are as follows:

- (a) To implement in co-operation with the Ministry of Natural Resources and Regional Municipalities of the watershed, a program to define, protect and enhance provincially and regionally significant areas.
- (b) To promote in co-operation with the Ministry of Natural Resources, recognition of provincially significant life and earth science areas by means of plaques and information /education publications.

(iii) Mineral Aggregate Resources

At the present time, the watershed has many sites of proven and potential mineral resources. These mineral resource sites are often in competition with other natural resources and land uses. Presently, the extraction of mineral and aggregate material is controlled through an overlapping system of acts, regulations, and jurisdictions.

The mineral aggregate base in the Halton Region Conservation Authority's watershed, represents a diverse resource which can generally be broken into two categories:

(a) Extractive Materials

- Sand and gravel deposits, normally found as glacial outwash at locations on the Niagara Escarpment where glacial re-entrant valleys exist. The Bronte Creek - Lowville Re-Entrant Valley, the Nassagaweya Canyon, and Milton Re-Entrant Valley are three of the most abundant locations. In addition, large areas of glacial moraine deposits are found in Flamborough and Puslinch in the headwaters of the Bronte Creek.

- Dolostone, limestone and sandstone, associated with the Niagara Escarpment and upland Escarpment locations.`
- Shale deposits, normally associated with the downslopes of the Niagara Escarpment and the valleys of the Grindstone and Bronte Creeks below the Niagara Escarpment closer to Lake Ontario.

(b) Significant Mineral Resource Features

Within the watershed are many significant mineral resource features. Commonly these are associated with the Niagara Escarpment, bedrock exposures along major valleys, and the shoreline of Lake Ontario.

It is important to note that the Halton Region Conservation Authority has in the past acquired many significant mineral resource features, namely,

- . Mount Nemo
- . Rattlesnake Point
- . Kelso Bluffs
- . Milton Escarpment
- . Hilton Falls
- . Crawford Lake

One of the primary reasons for acquisition was to preserve an important geologic feature and prevent it from being utilized for aggregate or shale production.

Presently within the watershed there are licences for dolostone and limestone quarries, licences for shale pits, and licences for sand and gravel pits.

The vast majority of these pits existed prior to the Pits and Quarries Control Act, 1971.

It has been noted by the Authority after a review of many of these licences that no environmental consideration was given to the area licenced, the



method of operation, or the end land use. For example, the present Canada Brick Pit in Burlington (originally Diamond Clay) on the Bronte Creek was issued a licence to quarry the valley wall of the main branch of the Bronte Creek. The Salco Sand Pit in Burlington was issued a licence which allowed two drainage courses to be intercepted and resulted in siltation of three to five acres of the valley bottom of the main branch of the Bronte Creek. Dufferin Quarries was issued a licence in Milton, to excavate in such a manner that a tributary feeding the Hilton Falls Reservoir and groundwater feeding a secondary tributary of the Sixteen Mile Creek would be captured within the quarry.

The removal of organic soil from headwater swamps and other very fertile soil sources is unrestricted in the Halton Region Conservation Authority's watershed, and is a threat which may pose serious water management problems if not controlled. The municipalities are given the power to control top soil removal under the Top Soil Preservation Act, 1977. For example, in the upstream area of the Grindstone Creek, over 250 acres (101 hectares) of land have been excavated in the Haysland Swamp in an area identified as environmentally sensitive.

The Conservation Authority has recognized pits, quarries, and top soil removal as land uses which have a major effect on the water and related land resource of the watershed. The following general objectives outline the areas of interest and involvement the Conservation Authority has with respect to the mineral resources of the watershed.

#### (c) Policies and Objectives

- (i) Encourage municipalities in official plans and zoning by-laws to direct the designation of Mineral Resource Extraction Areas away from Environmentally Sensitive Areas.
- (ii) Discourage the development of Pits and Quarries in wetlands, areas significant to groundwater recharge, lands susceptible to flooding, creek valleys and lands susceptible to erosion, in accordance with existing and future fill line mapping programs.

- (iii) To encourage the protection of significant scarp, upland and downslope features of the Niagara Escarpment.
- (iv) To encourage the phased rehabilitation of existing and proposed Pits and Quarries to a planned after use in a manner consistent with other policies of the Halton Region Conservation Authority and having consideration for the long-term environmental effects of any rehabilitation.
- (v) To encourage the preservation of significant geological features.
- (vi) Encourage municipalities to enact by-laws to control top soil and borrow material removal from source area swamps and on lands where soil removal would cause or aggravate soil erosion.
- (vii) Encourage the revision of existing Pit and Quarry licences, where provision of environmental protection measures is presently lacking.
- (viii) Encourage the rehabilitation of abandoned Pits and Quarries.
- (ix) Where appropriate, consider incorporating rehabilitated Pits and Quarries into abutting conservation holdings for a planned conservation after use.
- (x) Where necessary, continue to acquire or expropriate mineral resource areas important to the conservation of the watershed's water and related land resources.

#### Provincial Planning Initiatives

Two provincial plans of major proportions affect the watershed of the Halton Region Conservation Authority. They are the Parkway Belt West Plan and the Plan for the Niagara Escarpment. In each of these plans, areas of special land use policy and lands suitable for future public open space, concentrated on the Niagara Escarpment and the major valleys of the Grindstone, Bronte and Sixteen Mile Creeks have been designated.

The major initiatives of these plans and the Authority's interaction with these initiatives is summarized as follows:

(iv) Niagara Escarpment Plan

The Niagara Escarpment crosses through the centre of the Halton Region Conservation Authority's watershed on a north-south alignment. It is the most important single natural feature within the watershed. The Authority's water management, forestry, wildlife and conservation areas development are intrically involved with the Niagara Escarpment lands. The Plan for the Niagara Escarpment therefore has a profound and direct impact on many projects and programs of the Halton Region Conservation Authority.

Historically, the Halton Region Conservation Authority has recognized two critical resource management components associated with the Niagara Escarpment lands;

- (a) The management of Escarpment lands for water management, forestry, wildlife, and public open space; and,
- (b) The demand for a land base for aggregate extraction and the environmental impacts associated with pit and quarry operations.

The acquisition program of the Halton Region Conservation Authority in the 1960's and 1970's resulted in the purchasing of over 1,482 hectares (3,660 acres) of woodlands and prominent Escarpment bluffs, many of which were either owned by quarry operators or zoned in a quarry holding category. In 1966, the Hamilton Region and Halton Region Conservation Authorities submitted to the Select Committee on Conservation, a report entitled "Quarrying and the Niagara Escarpment". This report along with other more recent input was submitted to the Province and should have defined in part, resource management issues to be addressed in the development of the Plan for the Niagara Escarpment. While the details of the Authority's concern for quarrying within its watershed are set out in Section 4.4. of this plan, essentially it was the Authority's hope that the Plan for the Niagara Escarpment would address this vital issue. In fact, the Plan for the Niagara Escarpment did not attempt to come to terms with existing pits and

quarries or the requirements for future extraction. The Halton Region Conservation Authority, as a result, has recommended to the Niagara Escarpment Commission, that a study area be designated to deal with the Indusmin and Dufferin Quarries in Milton, on lands immediately adjacent to the Conservation Authority's Hilton Falls Conservation Area and the Region of Halton County Forest.

The second concern of the Halton Region Conservation Authority respecting the Plan for the Niagara Escarpment relates to the provision of public open space and the operation of conservation areas. Presently, the Plan for the Niagara Escarpment has designated lands recommended as suitable for future acquisition by the Halton Region Conservation Authority. It was recommended to the Niagara Escarpment Commission by the Conservation Authority that Escarpment acquisition be supported at a 75% grant rate by the province. In addition, the Conservation Authority recommended that the Crawford Lake Conservation Area be classified as a nodal facility for Escarpment interpretation and be available for additional funding to support the cost of constructing facilities and displays.

Finally, it should be noted that under the Plan for the Niagara Escarpment, all conservation area development requires master plan approval by the Niagara Escarpment Commission. Conservation property uses must also be confined to a set of defined park classifications established in the Escarpment Plan. While most property classifications reflect the Halton Region Conservation Authority's intended use of the properties, the requirement to obtain specific development approval has on several occasions met with refusal by the Niagara Escarpment Commission. Charting the course of future facility development on Escarpment lands has become to an extent, tenuous and difficult to predict because of this fact. For example, the siting of an operations facility at Mountsberg reflects to a large extent on the inability to site such a facility on Conservation Authority lands within the Niagara Escarpment planning area.

On a day-to-day basis, the Halton Region Conservation Authority provides input into planning applications subject to the Niagara Escarpment Planning and Development Act, and is supportive of planning requirements which prohibit or minimize the environmental impact of developments on Niagara Escarpment lands.

#### (v) Parkway Belt West Development Plan

This provincial planning initiative affects lands of the Niagara Escarpment in Dundas, Flamborough and Burlington, as well as significant sections of the Grindstone, Bronte, Sixteen Mile, Fourteen Mile, and Joshua's Creeks. The plan for the most part, defines the route of future transportation and utility corridors and sets out lands for future public open space. In the case of transportation and utility corridors, many significant major valley crossings have been proposed for the Bronte and Sixteen Mile Creeks. The Conservation Authority will have to pay particular attention to the alignment of future roads and their proximity to valley areas, in order to minimize the environmental impacts of these major crossings. Amendments to the Parkway Belt planning area or new developments within the planning area are reviewed by the Authority to determine possible impacts on the Authority's program. The Parkway Belt West Plan is presently undergoing its five-year review and the Authority is participating in this review, particularly as it relates to open space and the role which the Authority may play. Further information regarding the Parkway Belt West Development Plan is discussed in Section 4.5.1.

#### (vi) Lake Ontario Waterfront

As part of the Halton Region Conservation Authority's commitment to the Lake Ontario waterfront, the Authority participates under the Planning Act in land use planning along the waterfront.

The Authority and member municipalities have established the following policies for development of land on the waterfront in order to achieve the orderly development of this resource.

##### (a) Policy

When a waterfront property is subdivided, redeveloped or rezoned -

- (i) lands required for regional and/or local open space along the shoreline should be conveyed to the local municipality or conservation authority; normally a strip at least 50' wide has

been required where waterfront walkways are planned;

- (ii) buildings are encouraged to be set back from the 250' contour (design maximum water level), 100' where possible;
- (iii) shoreline erosion control works should be installed where necessary to provide for wave action up to the 260' elevation I.G.L.D. Use of groynes and revetment configurations is encouraged in order to dissipate wave action and encourage beach development where possible; erosion control works should normally follow the configuration of the existing shoreline, and their design having regard for abutting properties; the maintenance and enhancement of existing beach and bank vegetation is encouraged in erosion protection designs;
- (iv) the filling in of waterlots is normally discouraged.

#### D. Future Programs

##### Fill Line Schedules

The Halton Region Conservation Authority has been encouraged by the Regional Municipality of Halton in the Halton Waterfront Plan, Official Plan Amendment No. 1, to schedule the Lake Ontario shoreline to Regulation 164, R.R.O. 1980, in order to exercise control over erosion control projects on lots where existing development exists.

#### E. Strategy

The Conservation Authority will continue its existing program of land use review and provide direction with respect to achieving its objectives for water management, regionally significant areas, mineral aggregate resource extraction, the Plan for the Niagara Escarpment, the Parkway Belt West Plan, and Lake Ontario Ontario Waterfront Development.

## 7.4 Rural Drainage

### A. Background and Role

In the Authority's watershed, three watercourses drain the rural areas, these being the Grindstone, Bronte, and Sixteen Mile Creeks. The remaining smaller watercourses drain independently into Lake Ontario in Burlington and Oakville and will be almost entirely urbanized in the future and will not have a significant rural drainage component, and are not planned to form a significant part of the rural landscape.

On the Grindstone, Bronte and Sixteen Mile Creeks, urban development will occur primarily south of Highway 5, while limited individual settlement areas and communities will develop north of Highway 5. In total it is anticipated that less than 10% of these three major watercourses will be urbanized.

In the Authority's watershed, the rural area contains several major land users, and the Authority's involvement with rural drainage relates to these uses as follows:

#### (i) Agriculture

There are a variety of agricultural uses within the Authority's watershed. These range from crop lands and mixed farming to specialized fruit growing operations. Of great significance to the Authority are those agricultural operations which depend upon irrigation and water supplies including fruit and vegetable crops, nursery operations and livestock operations. Of equal importance and often interrelated are the requirements of certain agricultural users for land drainage. Under the Municipal Drainage Act, property owners can petition for the installation of municipal drains and field tile outlets or to carry out improvements to existing municipal drains to improve rural drainage. In the Halton watershed, very few municipal drains have been installed to date.

Improvements to watercourses for agricultural drainage have resulted from works carried out by individual landowners or the installation of a municipal drain prior to the formation of the Conservation Authority. The majority of these works are on the Grindstone Creek and the East Branch of the Sixteen Mile Creek. In many cases, particularly in Flamborough, the original municipal drainage works have not been maintained and previously marginally productive lands have reverted to their natural wetland conditions. Any specific rural drainage problems, since the Authority was established, have generally been addressed by requesting the Conservation Authority to undertake a channel improvement project to enable field tile outlets to operate.

Requirements for irrigation have increased throughout the Authority's watershed, most notably, these have related to the Grindstone and Sixteen Mile Creeks. In the past, the Authority constructed the Scotch Block Reservoir on the East Branch of the Sixteen Mile Creek, a prime function of which is to augment low flows for downstream agricultural users. Most irrigation requirements are met through the provision of onstream ponds, dugouts, or infiltration wells next to a watercourse, and from time to time, conflict over the control of onstream dams and water use have occurred throughout the watershed.

While the Halton Region Conservation Authority is aware of many specific drainage and irrigation requirements of the agricultural community and has responded with projects in several areas, The Authority has not carried out any studies to determine agricultural demands and requirements and the ability of the Grindstone, Bronte and Sixteen Mile Creeks to respond to these needs.

#### (ii) Pits, Quarries and Organic Soil Extraction

The impacts of pits and quarries is detailed in Section 4.4 of this Plan. In general, pits and quarries have not required large quantities of water for processing but have had a significant effect on stream siltation, and the draw-down and diversion of ground and surface water.



A major operation to extract organic soil in the headwaters of the Grindstone Creek has excavated over 250 acres in the past 20 years, however, no studies have been carried out documenting the effect on water quality and base flows. Also, the land (Haysland Swamp Wildlife Area) which is being excavated is considered an environmentally sensitive area in the Region of Hamilton-Wentworth's Official Plan.

#### (iii) Private Recreational Lands

Private open space facilities are major users of rural lands. In many cases, the lands utilized for these activities are forested and contain watercourses and wetlands. In the upstream reaches of the Bronte Creek, several private recreational developments have been established and have impacted on the headwater areas by filling in the swamps or modifying the watercourses. Further downstream, several small private dams are operated in conjunction with private parks, residential and cottage communities. The Bronte Creek because of its high water quality and trout fisheries resource has been an attraction to locating private recreation facilities.

While future impacts of any modifications to the Bronte Creek can be controlled through the fill and construction regulations, there are a number of existing modifications which have degraded water quality and the fisheries resource. Any program to improve and maintain water quality, wildlife, fisheries and forestry resources is in the interest of this user group.

#### (iv) Rural Residential, Estate and Hobby Farms

A substantial amount of rural land in the Halton watershed has been converted to rural estate residential and hobby farm uses. In the past, many residential lots were created on lands of poor agricultural capabilities which contain scenic forested, wetland, or valley features, and the lands are therefore fragmented among numerous owners. This has led to drainage problems between adjacent landowners and numerous alterations to the watercourses. While a fill, construction and alteration to watercourse regulation exists, the majority of applications and violations

come from this group of rural landowners. The major problem the Conservation Authority encounters is the placing of fill in swamps, ravines and watercourses. The scheduling of the upper reaches in the rural areas of the Grindstone, Bronte and Sixteen Mile Creeks to control the placing of fill is required to minimize problems with rural drainage. A public information program relating to the regulation is also needed to inform residents before problems are created.

The role of the Conservation Authority in rural drainage can be extremely varied and tends to interact through a less formal structure than urban drainage. The variety of land uses and property acreages dictate that the Authority interact directly with private landowners.

It is within this framework of differing land uses and varied drainage features, that the Conservation Authority has developed a strategy for rural drainage.

#### B. Goals and Objectives

The goals and objectives for rural drainage are incorporated in the goals and objectives of the Water and Related Land Management Program of the Authority (Section 7.0)

#### C. Current Programs

Currently the Conservation Authority deals with rural drainage under the following program sections:

- (i) Fill, Construction and Alteration to Watercourse Regulation;
- (ii) Water Quality Monitoring with Ministry of Environment;
- (iii) Integrated Land Use Planning.

Under existing programs, the Conservation Authority can control proposed changes to rural drainage and has input into land use decisions which could impact on rural land use.

A major program of flood plain mapping and scheduling of headwater swamps, watercourses and valleys to prevent filling within these areas is being carried out by the Halton Region Conservation Authority during 1983, 1984, and 1985.

#### D. Strategy

- (i) That the Authority continue current programs under administration of fill, construction and alteration to watercourse regulation, and carry out flood plain mapping and fill line mapping as they pertain to rural drainage.

#### E. New Projects

- (i) That the Conservation Authority assess rural erosion and sedimentation in conjunction with the Ministries of Agriculture and Food, Environment and Natural Resources, in order to determine those lands with the greatest susceptibility for erosion in the watershed.
- (ii) That the Conservation Authority co-operate with the Ministries of Natural Resources, Environment and Agriculture and Food on the evaluation of the demand for rural drainage, flood protection and irrigation requirements on the Grindstone, Bronte and Sixteen Mile Creeks.
- (iii) That the Conservation Authority establish a soil conservation program in the watershed in conjunction with the Ministries of Natural Resources, Agriculture and Food, and Environment.

In the interim, the Conservation Authority can encourage the use of soil conservation practices through the following guidelines:

1. Implement soil conservation practices as part of the management of Authority lands, where applicable, to include agricultural lands, forestry lands, valley lands and lands associated with reservoirs.

2. Incorporate soil conservation practices as conditions of leases on Authority lands used for agricultural purposes.
3. Encourage contact with the Ontario Ministry of Agriculture and Environment Canada regarding updating on the state-of-the-art soil conservation techniques, grant programs and ways in which the Authority may assist in the control of soil erosion and sedimentation through its own programs.
4. Encourage Authority contact with organizations concerned with soil conservation (ie. Soil and Crop Improvement Association, Soil Conservation Society of America), other Conservation Authorities and the educational institutions involved in erosion research, to assist the Authority in better understanding the application of soil conservation in its watershed.
5. Encourage completion of master drainage plans for the watershed to assess drainage, soil erosion and sedimentation problems and the solutions to recognize soil conservation practices as part of the solution.
6. Encourage the study of the use of demonstration areas to promote the use of soil conservation practices.
7. Encourage the Ministry of Natural Resources to identify its involvement through the Conservation Authorities to promote and to implement soil conservation practices on a watershed basis.

## 7.5 Water Quality

### A. Background

The maintenance and improvement of water quality is an important component of the Authority's Water and Related Land Management Program. Water quality concerns within the Authority's watershed are related to urbanization, particularly of the smaller watercourses, low flows and reduced assimilation capacity, increases in temperature, sedimentation from erosion and organic and inorganic loadings. Urbanization of the smaller watercourses and the lower reaches of the larger watercourses has resulted in impairment to water quality, particularly due to stormwater and industrial discharges. Low flows created by the demands placed on a watercourse can result in the inability to dilute pollutants being received by the watercourses. High water temperatures have been the result of the removal of cover from the watercourses and the increase of the surface area of the watercourse resulting from the construction of ponds or obstructions on the watercourse system. High water temperatures can result in loss of significant cold water species and accelerate aquatic plant growth. Sedimentation from erosion results in loss of aquatic habitat and reduced recreational potential of a watercourse. The Grindstone Creek has one of the highest sediment loadings of all watercourses discharging into the Western Lake Ontario basin. Organic and inorganic loadings from septic systems and farm operations result in high bacteria counts and unsafe quality standards and excessive macrophyte and algae growth.

Water quality problems, especially in the Bronte and Sixteen Mile Creeks are in many cases localized and due to site specific impacts. Both of these watercourses have tributaries which support cold water species. Certain tributaries and headwater areas of the Bronte Creek have been identified by the Ministry of Natural Resources as having a significant trout fishery.

The Grindstone Creek and Sixteen Mile Creek are both influenced by sewage treatment plans which discharge their effluent directly into the watercourses, however, the sewage treatment plant in Milton is considered to be one of the most sophisticated plants in North America and its construction has actually improved water quality in the Sixteen Mile Creek.

## B. Statement of Role

The Authority will, within the terms of its mandate, work in conjunction with the provincial ministries and member municipalities to maintain and improve water quality of the watercourses within the watershed.

## C. Current Programs

The Authority addresses water quality concerns and problems through a number of different programs.

### (i) Plan Input and Review

Through the planning process the Authority reviews and comments on proposals which may have an adverse impact on water quality. Application of the Authority's Fill and Construction Regulation provides a measure to ensure that development proposals will not impair water quality through the exercising of control over construction, placing of fill, and alterations to watercourses, ponds and swamps. Also, the Authority, in co-operation with the Ministry of Natural Resources, promotes the alteration of existing dams and ponds to improve fisheries and water quality under Provincial Fisheries Programs. The protection of headwater source areas is critical to the maintenance of good water quality and the Authority has attempted to secure the most important source areas, through its acquisition program, in conjunction with administration of Regulation 164, R.R.O. 1980.

### (ii) Extension Services Programs

The protection of source areas of watercourses and the application of soil conservation measures can minimize the sediment loading which can impair water quality. The Authority, through its reforestation program, directs its plantings to areas which are erosion prone and actively encourages the planting of stream banks to prevent erosion and provide shade for the watercourse.

(iii) Monitoring

The Authority, in conjunction with the Ministry of the Environment, conducts a monitoring program at key locations of the main watercourses within the watershed. Presently, fourteen stations are sampled which are located on the Bronte Creek, Sixteen Mile Creek, Grindstone Creek and Fourteen Mile Creek. The stations are sampled on a monthly basis by the Authority with the samples being analyzed at the Ministry of the Environment Laboratories in Toronto. The samples are analyzed essentially for bacteria, nutrients, metals, phenols, temperature, dissolved oxygen, B.O.D., total and suspended solids and turbidity.

The Authority also monitors its reservoirs, particularly to review their potential for supporting fisheries.

(iv) Low Flow Augmentation

The Conservation Authority presently owns and operates four (4) major storage reservoirs on branches of the Sixteen Mile and Bronte Creeks. These multi-purpose structures provide base flow augmentation during low flow periods, thus maintaining a relatively consistent water quality throughout the year. The need for low flow augmentation is increasing as both urbanization and agricultural land uses draw upon the water resources of the area for a variety of necessary applications. The Milton Sewage Treatment Plant discharges treated effluent to the Sixteen Mile Creek. The Authority provides a minimum daily flow from the Hilton Falls and Kelso Reservoirs to dilute the effluent, and to maintain an adequate water quality. Agricultural demands on surface water quantities for irrigation can decrease base flows required to support a variety of aquatic species present in the rural branches of the creek system. Reservoir augmentation of these base flows can provide adequate supplies of water throughout the year for agricultural irrigation while maintaining sufficient flows within the streams to support aquatic communities.

#### D. Strategy

- (i) The Authority will continue to monitor water quality with the Ministry of the Environment on a monthly basis for designated sampling stations throughout the watershed.
- (ii) The Authority will work with and encourage the Ministries of the Environment, Agriculture and Food, and Natural Resources, and member municipalities to resolve site specific water quality problems affecting surface streams.
- (iii) The Authority will, in co-operation with the Ministry of the Environment, compile the water quality sampling information in order to project trends in water quality.
- (iv) The Authority will continue to incorporate water quality concerns into current Water and Related Land Management programs.
- (v) The Authority will continue to operate water control structures for the maintenance of water quality where possible.



## 7.6 Land Acquisition

### A. Background

The Halton Region Conservation Authority has over the years, undertaken an extensive and extremely valuable land acquisition program. The main target areas were significant features along the Niagara Escarpment through Halton and certain headwater areas and flood plain lands that were linked to flood control. In addition, two community pond sites, some upland hardwood forestry tracts, several diversion channels and reservoir sites, and a waterfront property were acquired. The Niagara Escarpment tracts were concentrated in several key areas and have become of sufficient size to warrant a conservation area development scheme. The other properties particularly flood plain lands, are insufficient in extent to allow for any development.

Due to the provincial and municipal policy of severe government constraint, the land acquisition program of the Halton Region Conservation Authority has been severely curtailed over the past several years. In addition, the emphasis has been placed on regulation of private land rather than outright acquisition. These new developments require that the Conservation Authority consider a long term land acquisition scheme and appropriate policies for utilizing limited funds.

The land acquisition program must be consistent with the role and mandate of the Authority such that the acquisition of areas are related to water management with secondary benefits for forestry, wildlife and recreation. Any acquisition program should concentrate on those lands that will preserve the existing hydrologic function of the watercourses and reduce the future need for structural solutions to flooding problems or those lands that are required where the implementation of structural works is necessary.

## B. Statement of Role

The role of the Authority's land acquisition program is to acquire lands critical to water and conservation land management in order to ensure these lands continue to perform their natural functions and to conserve significant and sensitive land for the benefit of people within the watershed.

## C. Objectives

The Halton Region Conservation Authority will consider the acquisition of a property for one or several of the following reasons:

- (i) the property provides for the enlargement, consolidation or linking of an existing Conservation Authority holding.
- (ii) the property is part of a significant headwater control area.
- (iii) the property contains flood plain lands that are not sufficiently controlled by the Fill and Flood Plain Regulation.
- (iv) the property contains an erosion prone hazard area for which no reasonable alternative solution has been found.
- (v) the property contains forestry or wildlife values of provincial or regional significance.
- (vi) the property contains a regionally or provincially significant life or earth science feature.
- (vii) the property is recommended for acquisition under the Preferred Waterfront Plan.
- (viii) the property will provide significant opportunities for regional open space and recreation activities.

- (ix) the property is necessary for the implementation of structural works identified through the Water and Related Land Management Program.

#### D. Strategy

That the Conservation Authority will continue to consider for acquisition, lands which will further the conservation, restoration, development and management of the natural resources of the watershed which include Niagara Escarpment lands, flood plain and wetland/headwater lands, valley lands, designated Lake Ontario waterfront lands, and lands for the expansion of conservation area holdings.

The following descriptions provide examples of these types of lands:

##### (i) Expansion of Conservation Areas

The enlargement, consolidation or linking of existing landholdings will be considered as a priority in land acquisition. The properties acquired will afford a buffer to natural features, allow some flexibility for future development and provide completeness to the area. Land would only be acquired if it has significance with respect to the other priorities of the Conservation Authority.

##### (ii) Flood Plain, Wetland/Headwater and Valley Lands

A priority of the Conservation Authority would be to acquire certain properties that are critical to the long term maintenance of a high quality watershed. Of extreme importance in this regard, are headwater control areas that may be threatened in the long term with filling and development. These include headwater swamps, low wetland areas, wet forest tracts and other areas identified as providing discharge of groundwater. Those areas with additional significance for wildlife and uncommon plant associations would receive a higher priority within this category.

Since headwater areas are often owned by several landowners, the strategic location of the property to be acquired will be a consideration. If the Conservation Authority can control access to a headwater area and/or buffer the area from surrounding development or quarry operations, this would be a priority.

The extent of the existing short term threat to the area would be a consideration in determining which lands to be acquired in the near future.

Flood plain lands are regulated by the Fill and Flood Plain Regulation of the Conservation Authority and acquisition will often not be necessary to preserve the area. Some consideration would be given to acquisition if one of the following criteria were met:

- (a) development of the surrounding property will not result in conveyance of the flood plain lands to the municipality or some other appropriate body.
- (b) the property provides significant linkage to other holdings of the Conservation Authority.
- (c) the property is considered an environmentally sensitive area of such significance as to warrant outright acquisition.

(iii) Erosion Prone Hazard Lands

In most cases, steep slopes and bank erosion problems are to be solved by the private landowner or through a co-operative program with the Municipality and the Conservation Authority. Acquisition of erosion prone hazard areas may be considered after reviewing the extent of the problem and the advisability of alternate solutions.

(iv) Forestry and Wildlife Potential

The Conservation Authority may wish to acquire additional land to further its forestry program and to secure additional wildlife habitat for the long term objectives of its wildlife management program. The significance of wildlife habitat in these areas would be established through a preliminary study prior to their consideration for acquisition. The areas would be of regional or provincial significance for wildlife or forestry.

(v) Provincially and Regionally Significant Life and Earth Science Areas

The Conservation Authority has acquired many unique natural features within its watershed boundaries. These areas have regional or provincial significance for their physical, wildlife or botanical features. The criteria for establishment of environmentally sensitive areas may provide the necessary rationale for the acquisition of such areas. Their priority would be considered on an individual basis.

(vi) Lake Ontario Waterfront Lands

The Halton Waterfront Plan recommends the acquisition of several strategic properties on the Lake Ontario shoreline by the Conservation Authority. These properties would provide a regional network of open space and access areas to Lake Ontario.

(vii) Abandoned Pits and Quarries

The problem of abandoned pits and quarries within the Authority's watershed may become more acute in the future. If these areas are located in a strategic position relative to a natural features or existing conservation area, they may be considered for acquisition. In many cases, the Conservation Authority may only be interested if the costs are very low and rehabilitation

has been completed by the operator or is provided for by the Ministry of Natural Resources' levy on the product.

(viii) Regional Open Space and Recreation Requirements

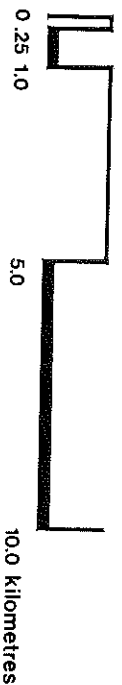
The provision of a regional open space system for the Halton watershed can be achieved through the combination of lands assembled for each of the above uses. The recreational use and development of the lands would be subject to the type of land, the natural resource features of the property and the demonstrated demand for a particular recreational facility.

The completion of the recommended open space acquisitions by the Province in the Parkway Belt West Plan, the implementation of the property acquisition program as outlined in the Plan for the Niagara Escarpment 1983, and the acquisition of recommended lands in the Halton Waterfront will provide an adequate land base to meet the public demands for regional open space in the foreseeable future.



HALTON REGION CONSERVATION AUTHORITY  
**INTERIM  
WATERSHED PLAN**

H.R.C.A. LANDS



**Legend**

**CONSERVATION AREAS**

1. Hilton Falls
2. Kelso
3. Rattlesnake Point
4. Crawford Lake
5. Mountsberg
6. Mount Nemo
7. Burns
8. Sixteen Valley
9. Esquesing
10. Campbellville
11. Carlisle

**FLOOD PLAIN LANDS**

24. Morriston
25. McCreae
26. Forester & Burt
27. Q.E.W.
28. Stewart
29. Sinclair
30. Gariside

**RESOURCE MANAGEMENT AREAS**

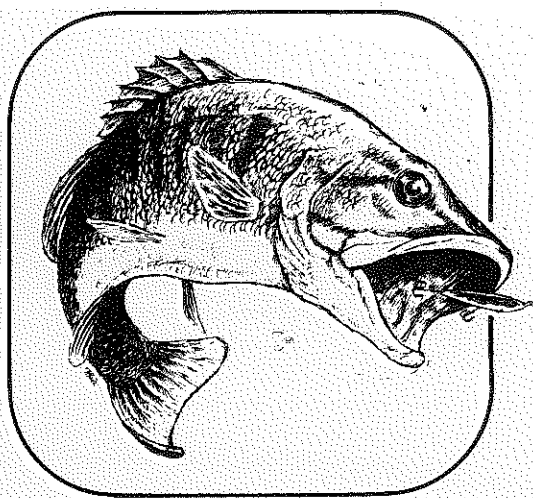
12. Shawanigan
13. Twiss
14. McKenzie-Davis
15. McCordan
16. McLean
17. Tilton
18. Escarpment
19. Crawford
20. Kwanis
21. Lake Medad
22. Bunker
23. Knight

**WATER CONTROL AREAS**

31. Morrison-Wedgewood Diversion
32. Hager-Rambo Diversion
33. Scotch Block
34. Milton Channel
35. Halton Hills Channel

**WATERSHED LANDS**

36. Cocksbutt Greenhouse
37. Burlington Beach Strip



## Conservation and Recreation Land Management Program



## 8.0 CONSERVATION AND RECREATION LAND MANAGEMENT PROGRAM

### 8.1 Conservation Recreation Program

#### A. Background and Role

The Conservation Recreation Program provides for the planning, development and management of the Conservation Areas and recreation facilities on Authority lands. These lands provide opportunities where the public can engage in outdoor activities requiring a natural setting and acquire an appreciation of the watershed's resources through recreation.

Authorities acquire lands for water management purposes and these lands often provide opportunities for outdoor recreation. Since its' inception, the Authority has endeavoured to provide outdoor recreation opportunities on Authority lands as a complementary use in resource management. The Conservation Authorities Act, R.R.O. 1980 provides the Authorities with specific powers to manage lands for recreational purposes. Section 21 (m) states:

"to use lands owned or controlled by the Authority for park or other recreational purposes, and to erect, or permit to be erected, buildings, booths and facilities for such purposes and to make charges for admission thereto and the use thereof;"

The philosophy of multi-purpose management is basic to the Authority's program and has enabled the Authority to make a positive contribution towards the achievement of the broad range of resource management objectives. Because of its large diverse land base, the Authority has many opportunities, even obligations, to provide a recreational program along with its other resource programs.

The Role and Mandate Statement of Ontario Conservation Authorities reinforces this responsibility in that it provides that:

"Conservation Authorities may manage lands acquired for the purpose of achieving their objectives to produce ancillary resources and recreation benefits compatible with the purpose for which the lands were acquired and consistent with the local and provincial demands and priorities."

Although outdoor recreation is recognized as an ancilliary component of the total watershed program, the Conservation Recreation Program contributes significantly to the watershed supply of outdoor recreation opportunities. The Authority manages approximately 6,215 acres (2,515 hectares) of land and of this total, 5,956 acres (2,410 hectares) are suitable for some form of recreational use. These lands attract up to one half million users per year. While providing many of these opportunities to watershed residents, there are a significant number of users that come from outside the watershed area. These figures indicate that the Authority is contributing to the overall provincial supply of outdoor recreation opportunities. The Authority, along with the Ministry of Natural Resources and the member municipalities all share responsibilities for the implementation of a total outdoor recreation program in the watershed.

The Ministry of Natural Resources' goal is to provide opportunities for outdoor recreation and resource development for the continuous social and economic benefit of the people of Ontario. Their role is to ensure that a wide variety of outdoor recreation opportunities are accessible on public lands and waters. In the Halton watershed, the land base through which the Ministry provides these benefits are the agreement forests and crown lands. There is one provincial park within the watershed, Bronte Creek. This park differs from other provincial parks in that it is primarily a day use park and attracts users on a regional basis. Bronte Creek Provincial Park, does however, provide a great number of recreational opportunities within the watershed. The agreement forests, while not providing for park based opportunities, do provide for activities such as hunting and trail use. The District Land Use Plan has identified shortages with respect to certain activities and identifies the activities which are of main concern to the Ministry of Natural Resources. These activities include swimming, picnicking, camping, hunting, fishing and trail activities. The Plan also identifies the Authority as a primary agency in providing recreational opportunities in order to meet the district and provincial targets for these activities.

The member municipalities have identified needs for recreation and open space in their official plans. The regional municipalities have identified the Conservation Authority as the lead agency to provide regional outdoor

recreation opportunities. The Region of Halton states in its official plan under its open space policy:

"recognize the role of the Conservation Authorities as well as the area municipalities in the provision of recreational opportunities."

The Hamilton-Wentworth Official Plan recognizes the role by stating the following objective:

"to encourage the area municipalities, Conservation Authorities, Province and the private sector to provide sufficient outdoor recreation open space within the Region to meet the needs of existing and future residents of the Region and visitors to the Region;

to request the Conservation Authorities to develop and make accessible Conservation Areas for recreational use where such use does not have adverse impact."

Aside from the regional municipalities, local municipalities have also recognized the role of the Authority with regards to recreation. Oakville and Milton Official Plans encourage the Authority to acquire lands for conservation and recreation purposes beyond that required for flood and erosion control purposes. The working relationship between the municipalities and the Authority has been one where local opportunities are provided for by the local municipalities and the Authority provides the regional-based opportunities. The municipalities view the Authority as a vehicle for providing both provincial and regional based opportunities and facilities. The municipalities benefit from the financial grants available to the Authority to establish regional open space areas and recreational opportunities. In addition, the Authority has transferred management responsibilities for some Authority lands to municipalities where the lands can be used as part of an urban public open space system.

#### B. Goal of the Conservation Recreation Program

The goal of the Conservation Recreation Program of the Authority is:

"To acquire, develop and manage lands capable of supporting public use for recreation."

The Authority will provide only compatible resource base recreation opportunities. All acquisition of lands for outdoor recreation properties will be supported by the Authority's interpretation of its role and justification of need for outdoor recreation, land and facilities in terms of supply and demand.

### C. Objectives of the Conservation Recreation Program

The Authority has recognized the need for a conservation recreation program and has outlined a goal of the program in relation to the role and mandate of the Authority. To achieve the goal of the conservation recreation program, the following objectives have been identified:

- (i) to designate tracts of land for outdoor recreation opportunities ensuring that the recreational activities undertaken are compatible with the other resource management objectives of the Authority;
- (ii) to establish a integrated public open space system throughout the watershed and thereby maximize the use of publicly owned lands and to provide facilities whereby the public can participate in the Authority's role in watershed management;
- (iii) to identify roles and responsibilities of all agencies engaged in the provision of open space in outdoor recreation opportunities within the watershed and to encourage the close co-operation of these agencies in providing a totally integrated outdoor recreation program;
- (iv) to ensure that all watershed residents are well served with a diverse range of recreation opportunities provided in a cost-effective manner including the provision of required facilities and services;
- (v) to assist, complement and fulfill the goals and objectives for recreation/open space as stated in the official plans of the member municipalities, the Parkway Belt West Development Plan and the Plan for the Niagara Escarpment;

- (vi) to make available certain Authority lands, through management agreements with member municipalities, for open space purposes ensuring the land base is utilized in a manner consistent with the Authority's management objectives;
- (vii) to undertake policy planning and management studies to augment, evaluate and update information relating to the demand for outdoor recreation on Authority lands;
- (viii) to plan, manage and develop recreation facilities on Authority lands in a manner which best suits the environmental limitations of those lands thereby providing an example of responsible land management and contributing towards the maintenance of a high quality environment in the watershed;
- (ix) to manage all designated recreation lands and facilities to ensure the continuance of a recreational resource for watershed residents and visitors;
- (x) to ensure outdoor recreational opportunities are well distributed throughout the watershed.

#### D. Review of Current Program

The Conservation Areas and other Authority-owned lands provide a broad range of outdoor recreation opportunities. The Authority has had an ongoing land acquisition program to fulfill its resource management mandate. The Authority also attempts to provide recreational opportunities on these lands in conjunction with its other resource management programs. The Conservation Areas of Ontario are an integral part of the Province's total recreation system. In the Halton watershed, Conservation Areas are critical in providing for recreational opportunities since there is a deficiency at the present time on a provincial scale.

The Authority provides access to its lands so the public can participate in outdoor activities requiring a natural setting and thus acquire an appreciation of the watershed's resources through recreation. In 1982,

over half a million visitors used Authority lands indicating the need to protect the significant natural features within the Conservation Areas as well as accommodate recreational demand. The Authority's significant resource is its 2,406 hectares (5,945 acres) of natural lands, most of which is strategically located on or near the Niagara Escarpment and very accessible from urban areas. To provide for recreation opportunities, the Authority has developed a number of well known Conservation Areas. Some Conservation Areas provide a wide range of opportunities supported by the development of facilities and services while other smaller properties offer little development other than public access. Currently, the Authority's recreation program is concentrated in six Conservation Areas, as follows:

- (i) Kelso Conservation Area
- (ii) Mountsberg Conservation Area
- (iii) Hilton Falls Conservation Area
- (iv) Crawford Lake Conservation Area
- (v) Rattlesnake Point Conservation Area
- (vi) Burns Nature Area

(i) Kelso Conservation Area

The Kelso Conservation Area was acquired to construct a reservoir on the west branch of the Sixteen Mile Creek for the purposes of flood protection and stream flow augmentation. Kelso has developed into the Authority's most active recreation area and for that matter, one of the most visited Conservation Areas in the Province. As a regional recreational centre, this Area is open all year round and attracts up to 300,000 visitors from all over Southern Ontario. Present facilities include a Ski Area, ski chalet, beach area, change houses, food concessions, group camping areas, boating facilities, picnicking areas and other facilities for winter activities. Over 200 acres of the Niagara Escarpment are within the boundaries of Kelso. A major problem for this Area is the overloading of the facilities on peak periods such as weekends during the summer and winter.

(ii) Mountsberg Conservation Area

The Mountsberg Conservation Area contains a 500 acre reservoir, which was constructed to provide flood protection and low flow stream augmentation on the Bronte Creek. It has also become a major staging area for waterfowl. This Area is also the centre for the Authority's conservation education program and an interpretive facility was built in 1973 which includes an auditorium, classrooms, washrooms, food concession, and natural science exhibits. Although the main emphasis is on providing conservation education programs, there are many opportunities for recreational activities such as picnicking, hiking snowshoeing and cross country skiing. Most of the Authority's wildlife programs are operated from Mountsberg and provide an opportunity for the application and interpretation of wildlife management. School programs make extensive use of the Area during the week while programs for the general public are provided on the weekends. Also located at Mountsberg are nature trails, observation towers, forestry plantations, tree nurseries, a maple syrup demonstration and the field operations headquarters for the Authority.

(iii) Hilton Falls Conservation Area

The Hilton Falls Conservation Area contains 514 hectares (1,270 acres) of land on the Niagara Escarpment. A 15 hectare (35 acre) reservoir was constructed by the Authority for the purpose of flood control and regulation of summer stream flow on the Sixteen Mile Creek. The reservoir does not lend itself to public use since the valley walls are very steep and water levels fluctuate significantly. Hilton Falls is a natural environment area and adjacent to the Authority holdings are 406 hectares (980 acres) of Agreement Forest lands owned by the Regional Municipality of Halton. The main recreation activities are hiking, cross country skiing and nature observation. The Authority has also implemented forestry and wildlife management projects on the property.

(iv) Crawford Lake Conservation Area

The Crawford Lake Conservation Area contains a unique geological feature, a meromictic lake, which is surrounded by many acres of mixed hardwood-conifer forest. This meromictic lake is a delicate ecological feature which rules out the possibility of intensive recreational use of the lake and its immediate surrounding area. Several other factors such as the existence of a prehistoric Indian Village and the Niagara Escarpment also contribute to create a unique natural area. Numerous visitors are attracted to Crawford Lake to enjoy the scenic beauty of and to hike the Bruce Trail. Apart from the hiking trails, present development includes a gatehouse, parking areas, perimeter fencing, interpretive signage and a boardwalk that encircles the lake. The land south of Steeles Avenue will remain in its natural state with only passive recreation pursuits being allowed. North of Steeles Avenue, the Authority will develop an interpretive centre which will provide programs emphasizing the reconstruction of a prehistoric Indian Village, the lake itself, the Niagara Escarpment and existing forest features.

(v) Rattlesnake Point Conservation Area

The Rattlesnake Point Conservation Area was acquired to preserve and protect this well known landmark on the Niagara Escarpment. In addition, the Conservation Area contains a large amount of forest land and headwater springs which feed the Limehouse Creek, a significant cold water stream. This property is an important link in the open space network assembled along the Escarpment by the Authority. This Area has been partially developed in order to provide the public with a pleasant recreation Area with facilities available for picnicking, group camping, hiking, rockclimbing and viewing lands below the Escarpment. A buffalo compound is located in the lower valley of the Area.

(vi) Burns Nature Area

Burns Nature Area is a passive recreation area containing a pond 3 hectares (7 acres) in area. Existing development includes a parking lot, picnic



areas, nature trails and a fishing boardwalk. This Area is used extensively during the trout fishing season since it is stocked by the Authority and is the location for an annual fishing derby.

#### E. Program Components

Map No. 14 shows the location of the Authority's lands suitable for recreation and Figure 8.1.1. indicates the major activities that the Authority provides on these lands. In addition to the activities listed on the chart, there are other recreational activities which occur on specific Authority lands. Kelso for example, has rockclimbing, windsurfing, snowmobiling, day camping and downhill skiing. Some of the other activities permitted on a limited basis on Authority lands include orienteering, hunting, nature interpretation and horseback riding.

There are three main components to the Conservation Recreation Program:

- (i) Conservation Area Planning
- (ii) Facility Development
- (iii) Program and Operations

These three components combine for a total program that provides for the management of outdoor recreation in Conservation Areas and other Authority-owned lands.

##### (i) Conservation Areas Planning

Conservation Areas Planning establishes the development and long term use of Authority lands. Master plans and site plans are prepared for the Authority's Conservation Areas and major Resource Management Areas. Inventory and Management Plans are prepared for the remaining Resource Management Areas while a Statement of Interim Management Policy is prepared for the Water Control Areas, Flood Plain Lands and Lands Suitable for Lease or Management. To date, the Authority has Master Plans approved by the Ministry of Natural Resources for the Crawford Lake Conservation Area and the Burns Nature Area. In 1982, Master Plans were submitted to the

Ministry for approval for Kelso, Hilton Falls and Mountsberg Conservation Areas. Master Plans for Mount Nemo, Rattlesnake Point and Esquesing Conservation Areas and a Management Plan for Campbellville Community Pond will be completed in 1983.

#### (ii) Facility Development

Facility development is another important component of the Conservation Recreation Program. Over the years, the Authority has completed various capital and interim property development on its lands. These projects have included basic facilities such as access roads, parking areas, and washrooms, to picnic areas, trails, development of recreation facilities and structures for water oriented activities, downhill and cross country skiing, and conservation interpretation centres.

To date, the Authority has undertaken Conservation Areas capital development in the amount of \$3,070,046. The capital development has been based on creating recreational and educational opportunities while meeting identified needs of the watershed. Past development has not only included facilities for recreational uses, but has provided works that protect the land resources from improper or over use by the general public. To carry out this development, the Authority has used various sources for funding, including grants from the Ministry of Natural Resources, levies from Member Municipalities, funds obtained from revenues generated in the operation of the Areas, and more recently, funds raised by the Halton Region Conservation Foundation for specific projects.

#### (iii) Program and Operations

This component of the Conservation Recreation Program includes staffing, programming, maintenance and operations of the Conservation Areas. The degree of programming and maintenance for each Area is dependent upon the present extent of facility development and overall use by the public. This component also must ensure the needs of the public and the Areas are met in providing outdoor recreation opportunities.

To fulfill the programming and maintenance in the main Conservation Areas, the Authority has assigned a full time staff complement. The Kelso and Mountsberg Conservation Areas require the additional hiring of a substantial number of casual staff to handle the summer and winter programs. The Kelso Area adds up to seventy staff while Mountsberg hires another twenty depending on the program. The Hilton Falls, Crawford Lake and Rattlesnake Point Conservation Areas have one permanent staff person who is assigned as superintendent. Again, certain job responsibilities such as gatehouse or interpretation in these Areas are covered by casual staff. For the balance of Authority lands, the responsibility for day to day operations and maintenance falls to the Operations Division.

#### F. Conservation Recreation Program Strategies

- (i) The following strategy forms the basis of conservation recreation management on Authority lands.

All lands identified as suitable for recreation use will be designated for management in one of the following classifications:

- (a) Conservation Areas
- (b) Resource Management Areas
- (c) Water Control Areas
- (d) Flood Plain Lands
- (e) Lands Suitable for Lease or Management

The overall management or development format for any land will be determined by its designation. The Conservation Areas would provide a broad range of conservation recreation opportunities supported by the development of facilities and services. The Resource Management Areas would also provide outdoor recreation opportunities on a limited basis since the properties are managed to protect or promote a resource feature. Water Control and Flood Plain Lands would provide open space activities depending on location and physical limitations. Public access to the Resource Management Areas, Water Control Areas, Flood Plain Lands and Lands Suitable for Lease or Management designations is the primary use of these

lands since the majority of such lands will remain undeveloped and provide access to open space for activities not requiring facilities. The leasing or management agreements with Municipalities, Provincial Government, and other agencies is another alternative the Authority encourages, particularly in urban areas where lands in urban areas for recreation or open space uses are compatible with the management objectives of the Authority and can complement a recreational use that the leasee is developing.

(ii) The following strategies have been developed in providing for recreational opportunities in lands owned by the Authority:

(a) All lands identified as suitable for conservation recreation use will be planned on the following basis:

#### MASTER PLANS

Carlisle Community Pond  
Sixteen Valley Conservation Area  
Crawford Lake Conservation Area  
Twiss Resource Management Area  
Shanahan Resource Management Area  
McCrodan Resource Management Area  
Bunker Resource Management Area  
McLean Resource Management Area

#### INVENTORY AND MANAGEMENT PLANS

Tirion Resource Management Area  
Lake Medad Resource Management Area  
Escarpment Resource Management Area  
Knight Resource Management Area  
Stewart  
Scotch Block

#### STATEMENT OF INTERIM MANAGEMENT POLICY

Morrison  
Forester & Burt  
Garside  
Cockshutt-Greenhouse  
Hager Rambo  
Plaikner  
Milton Flood  
Morrison-Wedgewood  
McCrae

Q.E.W.  
Sinclair  
Dr. Little  
Merton Highway

(b) Carrying capacity standards will be established and followed for all lands suitable for recreational use and development of facilities will be carried out to ensure compatability of the recreational use with the resource base.

(c) Biophysical inventories will be carried out to assist the formulation of management and operational plans, thus identifying lands most suitable or sensitive to recreational use.

(d) Comprehensive user surveys will be undertaken to augment data previously collected and provide information necessary to ascertain watershed requirements and ensure provision of relevant and attractive outdoor recreational opportunities.

(e) Visitors to Authority lands will be provided with the opportunity to observe resource management programs by means of a visitor services program where warranted.

(f) The Authority will co-operate with the member municipalities to ensure all local concerns are considered in the provision of recreational opportunities.

(g) The Authority will encourage Member Municipalities to develop recreational trail systems which would link with the Region open space system being developed by the Authority.

(h) The needs of special interest groups including the handicapped will be incorporated into facilities and services where feasible or suitable.

(i) The Authority will enter into agreements with concessionaires for services it feels will benefit users of Conservation Areas but cannot be provided by the Authority at that time for lack of funds or expertise.

#### G. Need for Conservation Recreation Within the Watershed

The population within the Halton watershed has been growing at an accelerated rate over the last twenty years. It is one of the few parts of the Province that is still anticipating substantial growth in the next twenty years. This increasing population has created a need, both in quality and quantity, for outdoor recreation opportunities. Demand has been heightened by increases in the mobility, disposable income, leisure time and general interest in fitness by the watershed residents. Certain economic factors over the last five years have created a situation where people want their recreation opportunities closer to home. Since some outdoor recreation opportunities cannot be found in urban areas, they travel to the facilities and lands that are represented by the Conservation Areas operated by the Authority.

The geographical location to major urban centres and features such as the Niagara Escarpment attract numerous visitors province-wide to the Halton watershed. These visitors take part in many recreational activities and enjoy the significant natural land base. Although all public lands are affected, the Conservation Areas see a majority of the use. This makes the Authority a key supplier of regional based recreation opportunities within the watershed. It is the intent of the Authority to work in co-operation with the Regional Municipalities and the Province to supply an adequate land base for regional - provincial outdoor recreation opportunities, and in doing so, avoid the duplication of services and permit the provision of these opportunities in the most cost effective manner.

In taking the lead role in developing and providing a conservation recreation program, the Authority does not wish to compete with other agencies or duplicate facilities. The Conservation Authority sees its role as a provider of outdoor recreation opportunities that are of regional and provincial significance.

The Authority would encourage that a joint evaluation be undertaken that includes all of the agencies involved in providing recreational opportunities so that guidelines could be established to determine what changes if any, may be appropriate to deliver recreation on a co-ordinated

and complementary system for the watershed. The Authority is recognized as the agency to implement and develop a system of parks in the watershed in the Niagara Escarpment Plan. The existing Conservation Areas owned by the Authority on the Escarpment would form the nucleus of the park system in the Halton watershed, however the Plan recommends further acquisition of property. Generally, the Authority supports the recommended acquisition proposal in the Niagara Escarpment Plan, however the mechanics of implementation warrant further study.

To adequately fulfill this role, the Authority will need to provide increased opportunities on Authority lands and acquire additional lands. Presently, not all Authority lands are distributed in a way which meets the needs of all watershed residents especially in Oakville, Burlington and Flamborough. The residents of these Municipalities require opportunities closer to home. Many acres of public land have already been acquired by the Ministry of Government Services and the Ontario Land Corporation. These lands could be used for improving and increasing the distribution of opportunities within the watershed if the lands acquired to date were developed to provide public open space. The major problem is that the province has not provided any vehicle through which the lands can be managed or developed for public use. The Authority would be receptive to negotiate the management of provincially acquired land, particularly in the Parkway Belt Plan for recreational use.

There are presently large deficits in a number of key activities related to outdoor recreation. For example, there is an inadequate supply for many water-related activities such as swimming, boating, wind surfing and fishing. These deficiencies have been identified in Municipal recreation master plans, Provincial studies (O.R.S.I.), Authority planning processes and by watershed residents. This is a result of an overwhelming demand for these opportunities and a relatively small number of existing facilities or locations with the appropriate natural features.

Deficiencies have also been identified in the existing supply for camping, winter recreation activities, and special interest activities such as rockclimbing, hang gliding and trail biking. The demand for these activities relate back to changing trends in the leisure patterns of people

in general. Deficits in the activities previously identified are documented in several recreation studies but the Authority uses an additional benchmark for determining them. The overcrowding and overuse of existing facilities is a key indicator of demand and deficit for a particular opportunity. While it would be very difficult to meet all peak demands, the Authority wishes to respond to the existing requirements of the watershed.

Camping is a good example. Studies by both the Ministry of Natural Resources and the City of Burlington have identified a clear need for both destination and in-transit type camping. In fact, it is possible only ten percent of the demand is being met. There are numerous spin-off effects from providing this activity as well as other activities including tourism and employment within the community. Even with this large demand, the present deficit remains because no public agency or private interest has become involved to the required degree.

Many of the benefits of the Conservation Recreation Program relate directly back to the provision of opportunities but it should be recognized that this program helps support the educational and resource management programs by making them economically viable or more available to the public.

The following provides a guideline for planning and capital development over the next five year period. There has been a concentration on the upgrading and consolidating of existing opportunities. It is necessary to ensure the existing opportunities are provided before developing completely new facilities and opportunities. In the phasing of the plans and projects, priority has been given to present demand and usage. The higher use Areas will be planned and developed in a higher priority over Areas with low use and impact.



SURVEYS AND STUDIES

1984 - 1988

Authority Planning

Total Cost

1984

Master Plans

Carlisle Community Pond  
Sixteen Valley Conservation Area  
Crawford Resource Management Area  
Twiss Resource Management Area  
Shanahan Resource Management Area  
McCrodan Resource Management Area  
Bunker Resource Management Area  
McLean Resource Management Area

\$ 18,000.

1985

Inventory and Management Plans

Tirion Resource Management Area  
Lake Medad Resource Management Area  
Escarpment Resource Management Area  
Stewart  
Scotch Block  
Knight Resource Management Area

\$ 18,000.

1986

Statement of Interim Management Policy

Morrison  
Forester & Burt  
Garside  
Cockshutt-Greenhouse  
Hager Rambo  
Plaikner  
Milton Flood  
Morrison-Wedgewood  
McCrae  
Q.E.W.  
Sinclair  
Dr. Little  
Merton Highway

\$ 20,000.

1987

Five - Year Review of Master Plans

Review of Crawford Lake Conservation Area Plan	
Review of Burns Nature Area Plan	
On-stream properties	\$ 15,000.

1988

Five - Year Review of Master Plans

Review of Hilton Falls Conservation Area Plan	
Review of Kelso Conservation Area Plan	
Review of Mountsberg Conservation Area Plan	\$ 16,000.
Total Five-Year Costs	<u>\$ 87,000.</u>

Conservation Areas Capital Development

1984

Kelso Conservation Area	\$227,000.
Mountsberg Conservation Area	60,000.
Hilton Falls Conservation Area	42,000.
Crawford Lake Conservation Area	30,000.
Burns Nature Area	<u>4,000.</u>
TOTAL	<u>\$363,000.</u>

1985

Kelso Conservation Area	\$247,000.
Mountsberg Conservation Area	112,000.
Hilton Falls Conservation Area	43,000.
Crawford Lake Conservation Area	20,000.
Burns Nature Area	<u>1,000.</u>
TOTAL	<u>\$423,000.</u>

1986

Kelso Conservation Area	\$200,000.
Mountsberg Conservation Area	68,000.
Hilton Falls Conservation Area	54,000.
Crawford Lake Conservation Area	80,000.
Burns Nature Area	3,000.
Rattlesnake Point Conservation Area	<u>20,000.</u>
<b>TOTAL</b>	<b><u>\$425,000.</u></b>

1987

Kelso Conservation Area	\$ 77,000.
Mountsberg Conservation Area	70,000.
Hilton Falls Conservation Area	15,000.
Crawford Lake Conservation Area	140,000.
Burns Nature Area	2,000.
Rattlesnake Point Conservation Area	75,000.
Mount Nemo Conservation Area	<u>25,000.</u>
<b>TOTAL</b>	<b><u>\$404,000.</u></b>

1988

Kelso Conservation Area	\$195,000.
Mountsberg Conservation Area	105,000.
Hilton Falls Conservation Area	30,000.
Rattlesnake Point Conservation Area	60,000.
Mount Nemo Conservation Area	20,000.
Campbellville Community Pond	5,000.
Esquesing Conservation Area	<u>5,000.</u>
<b>TOTAL</b>	<b><u>\$420,000.</u></b>

Figure 8.1.1

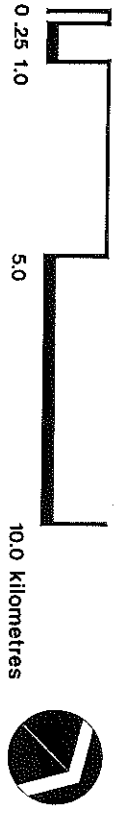
		ACREAGE	SWIMMING	BOATING	PICNICKING	GROUP CAMPING	FISHING	TRAILS	WINTER ACTIVITIES	FEE	PARKING	INTERPRETIVE CENTRE	DAM AND RESERVOIR	FOREST AREA	HISTORIC SITE	PUBLIC ACCESS	MASTER PLAN
<b>i. CONSERVATION AREAS</b>																	
1.	Burns	77	*	*		*	*	*	*	*	*	*	*	*	*	*	A
2.	Carlisle	29		*	*		*		*	*					*	N	
3.	Campbellville	3		*	*		*	*	*	*					*	N	
4.	Crawford Lake	380		*			*	*	*	*	*	*	*	*	*	A	
5.	Esquesing	37					*	*	*	*	*	*	*	*	*	N	
6.	Hilton Falls	1,270		*			*	*	*	*	*	*	*	*	*	D	
7.	Kelso	572	*	*	*	*	*	*	*	*	*	*	*	*	*	D	
8.	Mount Nemo	244		*			*	*	*	*	*	*	*	*	*	P	
9.	Mountsberg	1,374	*	*	*	*	*	*	*	*	*	*	*	*	*	D	
10.	Rattlesnake Point	540		*	*	*	*	*	*	*	*	*	*	*	*	P	
11.	Sixteen Valley	70				*	*		*	*			*	*	*	N	
<b>ii. RESOURCE MANAGEMENT AREAS</b>																	
12.	Bunker	37										*	*	*	*	N	
13.	Crawford	280					*					*	*	*	*	N	
14.	Escarpment	68					*					*	*	*	*	D	
15.	Kiwanis	102					*					*	*	*	*	N	
16.	Knight	48										*	*	*	*	N	
17.	Lake Medad	68										*	*	*	*	N	
18.	McCrodan	187					*					*	*	*	*	N	
19.	McLean	167					*					*	*	*	*	N	
20.	Shanahan	167					*					*	*	*	*	N	
21.	Tirion	49					*					*	*	*	*	N	
22.	Twiss	51					*					*	*	*	*	N	
<b>iii. WATER CONTROL AREA</b>																	
23.	Hager-Rambo	19							*			*					
24.	Plaikner	63										*				N	
25.	Milton Flood	15															
26.	Morrison Wedgewood	60					*									N	
27.	Scotch Block	108										*	*			N	
<b>iv. FLOOD PLAIN LANDS</b>																	
28.	Forester & Burt	12													*	N	
29.	Garside	.6															
30.	McCrae	.2															
31.	Morrison	2															
32.	Queen Elizabeth Way	10													*	N	
33.	Sinclair	.6															
34.	Stewart	53					*		*			*	*	*	*	N	
<b>v. LANDS SUITABLE FOR LEASE OR MANAGEMENT</b>																	
35.	Cockshutt-Greenhouse	1.5							*						*	N	
36.	Beach Strip	16													*	N	
37.	Dr. Little	8					*					*	*	*	*	N	
38.	Merton Highway	23													*	N	
39.	Van Norman Breckon	2.6												*	*	N	

### H.R.C.A. LANDS: RECREATION

MASTER PLAN LEGEND  
 A - approved  
 D - draft prepared  
 P - in progress  
 N - not yet started



HALTON REGION CONSERVATION AUTHORITY  
**INTERIM**  
**WATERSHED PLAN**  
**H.R.C.A. LANDS:**  
**RECREATION**



## 8.2 Fish and Wildlife Program

### A. Background

The watershed of the Halton Region Conservation Authority, due to its physiographic features and its geographic location within Southern Ontario, has a diversification of flora and fauna as good as or better than any other land area of similar size in Eastern Canada. The predominate physical feature of the watershed is the Niagara Escarpment, which cuts diagonally across the watershed from the north east to the southwest. Associated with the Niagara Escarpment are three major watercourse systems within the Authority's watershed, namely;

- i) Bronte Creek
- ii) Sixteen Mile Creek
- iii) Grindstone Creek

Below the escarpment, glacial deposits have resulted in clay loam tills called the Halton Till Plain which support the major agriculture operations of the watershed. Above the escarpment, soils are generally stony and thin over the shallow limestone plain of the Lockport Ambel formation and are characterized by many depressed wetland areas.

The geographic location of the watershed results in the area being distinguished by the presence of two of the eight major Canadian forest regions being represented; they are the Deciduous Forest Region and the Great Lakes-St. Lawrence Forest Region. The approximate dividing line separating the two forest regions is Highway #5. A result of these two forest regions is the presence of numerous species of flora and fauna which normally have more northern or southern affinities. The extent of this diversification is recognized by the Authority's Regional Municipalities through the number of Environmentally Sensitive Areas which have been identified in Official Plans within the Authority's watershed. Also, an endangered species, the West Virginia White Butterfly, can be found in areas along the escarpment with its core population located particularly within the Authority's Hilton Falls Conservation Area.

Although many watercourses in the watershed have been degraded by the different activities of man, there are still a number of high-quality aquatic communities within certain reaches of the major watercourse systems. Brook trout can still be found in certain tributaries of both the Bronte and Sixteen Mile Creeks. The Bronte Creek has been recognized in the Land Use Strategy for the Cambridge District as a priority program area for fisheries management. In addition, the Ministry's District office recognizes the mouths of the Bronte and Sixteen Mile Creeks and offshore in Lake Ontario as priority program areas for Chinook Salmon, Coho Salmon, Rainbow Trout, and more recently Brown Trout.

The Redside Dace, a threatened species, has also been found in certain sections of the Bronte Creek.

The loss and degradation of natural habitat is the greatest problem facing the fish and wildlife resources within the Authority's watershed.

Competing land uses have removed numerous natural areas particularly in those lands below the escarpment. The demands on the land base for uses such as urban, rural settlement, agriculture, utilities, transportation networks and mineral extraction have all contributed to the loss of natural habitat. The encroachment of man has also eliminated species that were once present in the watershed such as the Massasauga Rattlesnake, the Eastern Wild Turkey and the Wapiti (elk).

Growth patterns are such that urbanization, while not directly a significant threat on the Bronte, Sixteen Mile and Grindstone watershed, places its greatest demands on the Lake Ontario shoreline and numerous smaller watercourses. However, the indirect result of a large population base living within and adjacent to the watershed places a great demand on the fish and wildlife resources in the competition for available and undisturbed habitat.

Degraded water quality resulting from siltation and loss of natural stream cover has resulted in a reduction of spawning sites for 'cold water' species. Excessive siltation has been attributed to natural erosion, agricultural practices, road cuts and certain other rural land uses such as

sand and clay pits. The P.L.U.A.R.G. studies undertaken in the late 1970's identified the Grindstone Creek as having one of the highest silt loads per volume of any watercourse out-letting into the western basin of Lake Ontario.

Alterations and interference with natural watercourses have also attributed to significant loss of fish habitat. A study by the Ministry of Natural Resources on the Bronte Creek in 1980 identified approximately 105 dams, ponds and man-made obstructions existing on its main branch and major tributaries.

Agricultural demands have a significant effect on the natural resources of the watershed. While few municipal drains exist, present demands for irrigation are high, particularly on the Grindstone Creek and portions of the Sixteen Mile Creek and can result in lowering of base flows. Agricultural activities also contribute to degradation of water quality through soil erosion and excessive nutrient loading.

#### B. Role

With the acquisition of lands primarily related to the achievement of specific conservation and water related management objectives, the Authority has also developed auxiliary programs related to the management of fish and wildlife resources.

The original watershed reports carried out for the Sixteen Mile Creek in 1958, and the Twelve Mile (Bronte) Creek in 1960, established a fisheries and wildlife management role for the Halton Region Conservation Authority and defined strategies to be followed. Original projects centred on land acquisition, habitat improvements and provisions of fishing and wildlife hunting and viewing opportunities. The fisheries resource in Bronte Creek was considered significant in these initial reports as an industry and an economic stimulus.



Over the years, the Halton Region Conservation Authority has acquired many lands important to fisheries and wildlife management. A program of wildlife research, enhancement and interpretation is presently carried out. An active fish stocking and angling program on ponds and reservoirs managed by the Halton Region Conservation Authority has been developed.

The Authority has viewed its fish and wildlife programs as supplemental to those of the Ministry of Natural Resources. While the Ministry of Natural Resources has directed its programs and policies primarily for the benefit of game species, the Authority has been instrumental in inventorying and recording all flora and fauna within its watershed. The result has been the publication of two major biological inventories of the Authority's properties. The Authority has contributed to the permanent records of its watershed through the depositing of specimens at such institutions as the National Museum of Natural Science in Ottawa, the Royal Ontario Museum, the University of Toronto, the University of Guelph and the University of Waterloo. Prior to 1979, an examination of the records at the National Museum of Natural Science revealed a collection of only 13 specimens of fish from the Authority's watershed. During the 1979 inventory a total of 774 specimens of 28 species were collected and deposited with the National Museum.

The Authority has also contributed substantially to a list of significant species found within its watershed boundaries. The Authority has worked closely with the Regional Municipality of Halton in developing a computer program for the storage of flora and fauna data collected. The Authority has also been extensively involved in a major bird banding program since 1976. To date approximately 42,000 waterfowl and songbirds have been banded. The banding program of the Authority is recognized as one of the best ten sources for this activity in North America.

The Halton Region Conservation Authority has also developed programs related to game species and has been contributing and supplementing those major programs undertaken by the Ministry of Natural Resources.

The Cambridge District Land Use Strategy, in addition to identifying the priority areas where management efforts will be directed to the Bronte Creek and its tributaries to improve the cold water fisheries, has identified the Authority's Kelso and Mountsberg Reservoirs and Burn's Pond as having the potential to contribute to the achievements of the Ministry's targets for angling opportunities.

Pressure from the agricultural community has resulted in controlled deer hunts in major portions of the Conservation Authority's watershed for the past three years. The Authority has cooperated in making more public land available for the controlled hunt by opening selected properties.

The Authority has worked closely with the Cambridge District in the raising and release of various strains of pheasant into suitable habitat.

The Authority has also aided the Ministry of Natural Resources in providing wildlife assistance to private landowners in the form of nuisance animal control.

However, it is the Authority's approach to adopt a broad concept of wildlife management which includes the recognition of its habitat, the need to manage non-game species and in recognition of the interdependency of all wildlife species. The goals, objectives and strategies of the Authority have been developed over the years in an attempt to reflect the needs of fish and wildlife resources within the Authority's watershed and to identify the Authority's role in management of these resources. The Authority's role has been developed through needs as defined by the Authority; policies and strategies established by the Ministry of Natural Resources through their District Land Use Strategy, and the maintenance of wildlife and habitat as recognized in Regional Official Plans. The Authority also recognizes those guidelines established for wildlife policy by a committee of the Federal/Provincial Wildlife Conference and approved by the Wildlife Ministers' Conference.

A report prepared by the Ministry of Natural Resources - "Wildlife in the Niagara Escarpment Planning Area, 1977" established policies and recommendations reflected concerns in wildlife management. The report

recognizes that the welfare of wildlife depends on its habitat and that the management of habitat is the key to maintaining wildlife population. Man's presence has become more and more of a dominating factor and thus man must assume the responsibility for wise management. This is probably best reflected in the words of Aldo Leopold: "The first act of intelligent tinkering is to save all the pieces." (Leopold 1949).

### C. Goals

- i) To maintain the ecosystems upon which fish and wildlife and people depend.
- ii) To preserve the diversity of fish and wildlife species and habitats which exist within the watershed of the Halton Region Conservation Authority.
- iii) To promote the wise use of the fish and wildlife resource.

### D. Objectives

- i) To give the highest priority to the preservation and protection of rare or endangered species or ecosystems.
- ii) To develop a program in cooperation with the Ministry of Natural Resources and the Regional Municipalities to gather biological and resource data and to identify habitat and community types within the watershed.
- iii) To ensure that management plans developed for Authority properties are compatible with the fish and wildlife resources and maintain the diversity of habitats which currently exist.
- iv) To ensure that during plan input and review that the fish and wildlife resource and its habitat is identified and given consideration in the planning process.

- v) To explore methods of protecting fish and wildlife habitat such as acquisition, easements or agreements.
- vi) To provide opportunities for social and economic benefits from fish and wildlife recreation consistent with the maintenance of healthy, sustainable fish and wildlife populations.
- vii) To establish and implement with other agencies, wildlife management programs which enhance stream water quality, fish and wildlife resources on private lands within the watershed.
- viii) To encourage land and water management on private lands that enhance wildlife habitat.

#### E. Current Programs

##### (i) Fisheries

The Authority has recognized the need to maintain a high quality fishery within its Conservation Areas in order to provide angling opportunities. The Authority is recognized by the Ministry of Natural Resources as being a major contributor to its fisheries objectives. The Authority provides angling opportunities for cold-water species at its Kelso Reservoir, Burns and Campbellville Ponds. Rainbow trout are stocked at these locations on a put-and-take basis. The Authority purchases its fish from a private hatchery and stocks approximately 5,000 fish each year. Limitations to the program are related to costs associated with purchasing the fish. Although the Burns and Campbellville Ponds could not sustain a natural fish population, the Kelso Reservoir does have the potential and is presently maintaining a small population of Brown Trout.

The Mountsberg Reservoir was stocked with Largemouth Bass in 1973 and currently has a viable population of this warm water species. Angling opportunities could be increased at this reservoir, while limiting factors are related to water level fluctuations. The Scotch Block Reservoir has

developed on excellent Smallmouth Bass fishery. However, lack of Authority owned land around the reservoir and agreements with landowners restricting recreational use of the reservoir has prevented the Authority from developing this fishery for public use.

The Authority, through its biological inventories and in cooperation with the Ministry of Natural Resources, has been monitoring fish habitat. Portions of certain watercourses have been identified as capable of supporting cold-water species which are indicators of a high quality habitat capable of supporting a greater diversification of species.

#### (ii) Resource Inventories and Management on Authority Properties

On a continuing basis, biological inventories of flora and fauna are carried out on Authority landholdings. These inventories provide background information and form an integral part in the planning and implementation of resource management carried out on Authority lands. In the master planning of Conservation Areas, the biological information provides direction for appropriate uses, management and interpretation. The Crawford Lake Conservation Area deserves special attention because of the nature of the lake. The lake is meromictic, in that it undergoes partial or no turnover of its water column. Therefore sediments on the bottom of the lake do not decompose and this provides a time capsule for determining vegetation characteristics from the surrounding land since the formation of the lake. The lake, also due to its meromictic nature, exhibits unusual chemical and biological properties. The lake has been the source of considerable scientific interest and research, and is being managed primarily for this purpose.

The Authority has worked closely with the Regional Municipality of Halton in identifying significant habitats, and in cataloging the fish and wildlife resources of the Authority's watershed. Close to 20,000 records have been put on computer. Additional records are also collected when the Authority investigates properties suitable for acquisition and from the evaluation of wetlands within the Authority's watershed. The Authority has cooperated in making this information available to institutions and agencies interested in the natural resources of the Authority's watershed.

### (iii) Plan Input and Review

The Authority has developed a high level of expertise related to the fish and wildlife resources of its watershed. This has been the result of the Authority's involvement in the inventories of watershed natural resources, from identifying significant areas in cooperation with the Regional Municipalities and Ministry of Natural Resources and from its day to day association in dealing with environmental matters. As a result the Authority provides input to preserve and maintain wildlife habitat and works closely with the Ministry of Natural Resources to ensure that fisheries concerns are being dealt with during planning matters.

### (iv) Game and Fish Management

The Authority has provided assistance to the Ministry of Natural Resources in their program of fish and wildlife recreation and management. Although not permitting hunting on Authority-owned lands, the Authority has undertaken wildlife management projects to enhance game populations on its properties. This has been the case particularly during forestry operations. The exception to the "no hunting" policy is the Authority's participation in a controlled deer hunt which has been held during the last three years. The controlled hunt has a duration of three to four days and during this time period, the Authority has opened selected properties of prime deer habitat to hunters. Also, the Authority has developed programs to enhance waterfowl habitat and breeding.

The Authority cooperates with the Ministry of Natural Resources in dealing with violations under the Game and Fish Act, particularly on Authority property. However, the Ministry does have a limited number of conservation officers and problems have occurred related to the Ministry's ability to respond to violations in progress.

The Authority has been involved with the raising and release of pheasants and bob-white quail with the objective to increase the populations of these upland game birds to a level where they can adequately sustain themselves. To this point, there have been moderate increases in certain areas while

failures in others. The bob-white quail program has been terminated while release of Korean (ring-necked) pheasants has been continued and has met with some success in specific areas. The Authority is currently cooperating with the Ministry of Natural Resources in raising and releasing different strains of pheasant in selected locations. It is anticipated that this program will continue to be reviewed over the next five years.

#### (v) Wildlife Assistance

The Authority has been providing technical advice and offering assistance to landowners within its watershed in respect to problems related to fish and wildlife. For example, the Authority provides information for control of nuisance animals, and in many cases, loans traps to assist in the removal of problem species.

The Authority as a policy, discourages the taking of animals from their natural habitat. The Authority has developed a high level of expertise in the care and rehabilitation of raptors. Approximately 100 of these birds are received annually and facilities have been developed for their rehabilitation and release in cooperation with the University of Guelph.

The Authority also provides information to private landowners on improving their property for fish and wildlife although an extension services program involving, for instance, wildlife shrubs, has not been developed. The Authority also provides information on the management of small ponds or directs landowners to an appropriate agency dealing with specific problems related to ponds, their construction, use and maintenance.

#### (vi) Bird Banding Program

The Authority has been banding waterfowl and songbirds since 1976 at the Mountsberg Conservation Area. The program has had tremendous scientific and educational value as the Authority has banded over 42,000 birds and is considered among the top 10 organizations for banding birds in North America. The Authority records the birds that are banded on master lists

and submits these lists to the U.S. Fish and Wildlife Service at Laurel Maryland. All banding information is stored at the Patuxent Research Facility. The Authority receives information on the return of banded birds, such as where the birds over winter. The information derived from the banding program is also used in determining population estimates for many of the species.

#### F. Needs and Strategies

It is anticipated that future fish and wildlife programs will relate to the need for further biological data and knowledge of resources within the Authority's watershed; the need to identify problems and supply recommendations for management; the need to improve and maintain the ecosystem and the need for providing opportunities related to use of the resource base.

##### (i) Fisheries

The Authority has the potential of playing a major role in preserving and protecting fish habitat and providing for angling opportunities in order to meet Ministry of Natural Resources' target objectives.

- (a) The Authority will continue in cooperation with the Ministry of Natural Resources in monitoring fish species within its watershed.
- (b) The Authority will continue with its plan input and review of development in or adjacent to watercourses in co-ordination with the Ministry of Natural Resources to ensure that development will not adversely affect fish habitat.
- (c) The Authority will work and cooperate with the Ministry of Natural Resources to preserve and protect those priority areas for fisheries programs as identified in the Cambridge District Land Use Strategy. In particular are those headwaters supporting cold water species.



- (d) The Authority will ensure that its Water and Related Land Management Program is compatible with and is coordinated with fisheries management and protection of fisheries habitat.
- (e) The Authority will work with the Ministry of Natural Resources and member municipalities in providing fishing access points particularly to Lake Ontario and in those areas in the watershed identified for their fishing potential.
- (f) The Authority will continue with its 'put and take' fisheries at the Kelso Conservation Area, Burns Nature Area and the Campbellville Pond to provide for fishing opportunities within the watershed.
- (g) The Authority will review present and potential fisheries programs for all its Conservation Areas. In particular, it is the intent of the Authority to develop a fisheries management plan for the Mountsberg and Kelso Reservoirs. The Authority also proposes a study of the Sixteen Mile Creek upstream of the Kelso Reservoir to determine spawning potential and recommendations for stream rehabilitation. The Authority will also review the potential for fisheries programs at its Hilton Falls and Scotch Block Reservoirs.
- (h) The Authority will ensure that its management programs and practices on its properties enhance and protect fisheries habitat.
- (i) The Authority will work closely and seek the co-operation and support of the Ministry of Natural Resources in developing its overall fisheries management program.

(iii) Collection of Resource Data

The Authority has obtained a substantial amount of information through a biological data collection program, yet there is still considerable work to

be carried out especially in determining interrelationships of species to their habitat and deriving knowledge on regionally significant species.

- (a) The Authority intends to continue its inventory program in order to strengthen the knowledge of the resource base within the watershed.
- (b) Coordination will be maintained with the Region of Halton in storing data collected.
- (c) Improvements will be sought to the maintaining of biological records in regards to the computation of the data.
- (d) The Authority will continue with its bird banding program.

(iv) Plan Input and Review

- (a) The Authority will continue to provide input and review to planning matters to ensure that concerns are dealt with related to the preservation of fish and wildlife habitat.
- (b) The Authority will continue to work with the Ministry of Natural Resources to coordinate review, comments and strategy on planning matters which may effect fish and wildlife habitat.

(v) Management of Habitat

The biophysical inventories have revealed significant features, many of which have been found on Authority properties. Conscious decisions must be made regarding management of habitat and management for specific species. Further studies may reveal additional management requirements, however, present tasks facing the Authority concern the following:

- (a) Status and recommendations for management of the West Virginia White Butterfly in the Hilton Falls Complex

- (b) Status and recommendations for management of the Jeffersonium complex of salamanders found in the Hilton Falls Complex.
- (c) Status and recommendations for management of the Blue-winged and Golden-winged Warblers in the Hilton Falls Complex.
- (d) Status and recommendations for the management of waterfowl at the Mountsberg Conservation Area.
- (e) Guidelines for scientific studies of Crawford Lake.
- (f) Guidelines for conservation management and wildlife habitat management for agriculture land owned by the Authority.

(vi) Game and Fish Management

- (a) The Authority will co-ordinate its efforts with the Ministry of Natural Resources to enhance fish and wildlife habitat.
- (b) The Authority will continue to co-operate with the Ministry of Natural Resources in the management of fish and wildlife species.
- (c) The Authority will undertake a program with the Ministry of Natural Resources to obtain population estimates on Authority properties.
- (d) The Authority will undertake a program with the Ministry of Natural to inventory significant wildlife habitat.
- (e) The Authority will continue to co-operate with the Ministry of Natural Resources in the raising and release of pheasants.
- (f) The Authority will request the Ministry of Natural Resources to consider deputizing the Authority's conservation officers for enforcement of the Game and Fish Act on Authority lands.

(vii) Extension Services Program

The Authority currently offers a program of reforestation and farm tree replacement to private landowners, however, no program is presently available for wildlife shrub planting. Such a program can create habitat, particularly in fencerows on agriculture lands, and provide stream buffer and bank stabilization along watercourses. Stream erosion and sediment control on private lands is also another program which will be considered by the Authority to prevent soil loss and protect and maintain aquatic communities.

- (a) The Authority will investigate the needs and requirements for a wildlife shrub planting assistance program and erosion and sedimentation control program with the objective of ultimately establishing an extension service program for wildlife enhancement and erosion and sedimentation control.
- (b) The Authority will coordinate its efforts with the Ministry of Natural Resources, Ministry of Agriculture and Food, the Ministry of the Environment and Environment Canada to ensure that the most effective programs can be made available to the public.
- (c) The Authority will continue to provide technical advice and assistance to private landowners in dealing with problems related to fish and wildlife and to provide information in improving private property for wildlife habitat.
- (d) The Authority will continue with its program of providing advice and assistance to landowners regarding the taking of birds and animals from the wild and will continue with its raptor rehabilitation program.

(viii) Promotion of Fish and Wildlife Resources

It is estimated that over 7 billion dollars of economic activity is related to wildlife annually in Canada. This value relates to the use derived from

the resource and from the management of the resource. Creating awareness of wildlife is paramount to successfully maintain and preserve habitat.

- (a) The Authority will promote further awareness of fish and wildlife through its Community Relations Program
- (b) The Authority will coordinate and cooperate with the Ministry of Natural Resources to promote awareness of total fish and wildlife management.
- (c) The Authority will encourage the development of wildlife habitat in urban areas. There are many sites within the urban area that are capable through management practices, of supporting a wide variety of wildlife species and provide the opportunity for provision of habitat. Such sites are flood control channels, river valleys, municipal parks, industrial holdings and large residential lots. From the Proceedings of the Symposium - Wildlife in Urban Canada, University of Guelph, 1977 it was recommended that:

"A program be initiated by an appropriate agency to encourage and facilitate the inclusion of wildlife input into the plan and management activities of agencies involved with the development and administration of urban area."

- (d) The Ministry of Natural Resources in its Land Use Strategy has indicated that little information is available on wildlife viewing. Therefore, the Authority will in cooperation with the Ministry of Natural Resources, investigate the feasibility of circulating a wildlife viewing questionnaire to watershed residents to determine the priority of this use in terms of other public uses of Authority property.



## Community Relations Program

9.0

## 9.0 COMMUNITY RELATIONS PROGRAM

### A. Background

The basic principles of local involvement, municipal/provincial partnerships, and watershed jurisdiction have lead to the development of a very effective resource management program in the watershed of the Halton Region Conservation Authority. These are also the same principles that have lead to the development and need for a Community Relations Program. The complexity and extent of this unique partnership has made it absolutely essential to have an effective means of communication to ensure the development of a resource management program that meets the needs of the watershed community. In fact, one of the benefits of preparing this watershed plan is to provide the Halton Region Conservation Authority with another vehicle for improving public awareness of watershed management.

Developing an integrated information program between members of this partnership can produce effective results that can help fulfill the information objectives of each partner. This would ultimately lead to a better awareness, understanding and appreciation of natural resource management in the watershed of the Halton Region Conservation Authority.

Over the years, the Authority has developed a Community Relations Program to provide information to the general public and selected audiences by use of various media tools and techniques. Among the most important aspects of information is media relations. The Conservation Authority recognizes that newspapers, radio and television can play a major role in informing the general public about Authority programs and believes that two-way communications is an effective way to reach the information objectives of the Community Relations Program.

The Conservation Authority has also developed successful Conservation Education Programs that have created a better understanding of the fundamentals of resource management. The Conservation Education Program has been developed to complement other services provided by the Board of Education and the municipalities and does not duplicate their programs.

The Conservation Authority believes that a high quality conservation education program can be instrumental in reaching the education objectives of the Community Relations Program.

#### B. Statement of Role

The role of the Community Relations Program is to inform and educate watershed residents of the resource management program of the Halton Region Conservation Authority. The Community Relations Program also strives to promote an awareness and appreciation of the natural resources in the watershed and emphasizes the need for a wise resource management program.

The role and mandate of Conservation Authorities of Ontario outlined the need for a Community Relations Program by stating that:

"Conservation Authorities have a prime responsibility to ensure that their member municipalities are well informed about the Authorities' programs and are actively involved in the decision-making process. This clearly emphasizes the need for open and ongoing communication between the Conservation Authorities and their member municipalities and the residents of the watershed.

Effective liaison between the Conservation Authority and the Ministry of Natural Resources is essential if the programs of both agencies are to be implemented in a complementary and cost effective manner.

Given the interrelated nature of Conservation Authorities programs and the need for Conservation Authorities to relate to a number of other resource management institutions at all levels of government, a comprehensive information program is essential".

To accomplish this role, it is very important for the Halton Region Conservation Authority to provide a systematic means of communication to member municipalities, the provincial government, as well as the residents of the watershed. The Community Relations Program has been related to the various resource features of the watershed that are specific to the watershed of the Authority and at the same time contribute to province-wide conservation concepts that benefit the residents of Ontario. These characteristics as related to the Community Relations Program are outlined in the following points:



- (i) The watershed of the Halton Authority includes one of the largest and most significant sections of the Niagara Escarpment. The Conservation Authority has acquired many of these unique lands, thus ensuring the preservation and protection of this important natural resource in Southern Ontario. The acquisition of these lands have created increased demands from watershed residents for more educational and interpretation opportunities.
- (ii) The impact of increasing urbanization on the natural resources of the watershed along with the varied management requirements is important information that must be available to both urban and rural residents of the watershed. Many watershed residents and groups still remain unaware of the Authority's role regarding the fill and flood plain regulation and other water management programs. The techniques of resource management are ever-changing to reflect the environmental needs of the watershed. These changes must be understood by the residents of the watershed to gain the needed community support for the Conservation Authority's programs.
- (iii) The acquisition of escarpment, valley and conservation lands, has provided many needed educational opportunities that have helped fill the large gap between municipal and provincial services. The relatively small watershed along with an increasing local and even larger surrounding population has dramatically increased demand for natural open space as local residents and members of the educational community look closer to home for such areas.
- (iv) The development of improved facilities and programs in Conservation Areas is necessary to service the needs of the users as well as an important measure in maintaining the increasing costs for operations and maintenance. The marketing of these programs and facilities is a vital component necessary to maintain the economic viability of the community relations program.

- (v) The interest in utilization of conservation lands by the educational community is very high, due to the wide range of outdoor education experiences available at many conservation areas. This keen interest and heavy use is an excellent way that the Conservation Authority can create an awareness of the watershed's natural resources and the important need for wise management.

### C. Goals

The Halton Region Conservation Authority has recognized the need for a Community Relations Program and has outlined the role of the program to achieve the following goals:

- (i) To communicate to residents of the watershed, information about the role and mandate of the Conservation Authority and the corresponding Resource Management Program.
- (ii) To educate watershed residents on the fundamentals of Resource Management as related to the objectives of the Conservation Authority.
- (iii) To foster an awareness and appreciation of the natural resources within the watershed and the need for their conservation and management on a watershed basis.
- (iv) To encourage a positive attitude towards the Conservation Authority to achieve public support for its Resource Management Program.
- (v) To foster an awareness and appreciation of the heritage resources of the watershed particularly those resources located on property owned and operated by the Conservation Authority.

#### D. Current Programs

The Halton Region Conservation Authority has conducted a Community Relations Program for many years with current programs including activities in the areas of conservation information and conservation education.

The information program developed by the Conservation Authority has been directed to the community at large and has employed many different types of media to provide information on the role and mandate of the Conservation Authority.

The conservation education program developed by the Conservation Authority has been directed at the student populace of the watershed through its pre-planned education programs and at the general public through the presentation of interpretation programs. This program is carried out at the Mountsberg Wildlife Centre to promote an understanding and appreciation of the watershed's valuable natural resources. A resource interpretation facility was constructed at Mountsberg in 1973.

#### E. Components of the Community Relations Program

The Community Relations Program has been divided into three major components including Conservation Information, Conservation Education and Heritage Conservation.

## 9.1 Conservation Information

### A. Objectives

It is the objective of the Halton Region Conservation Authority,

- (i) To communicate to the residents of the watershed, the programs and policies of the Halton Region Conservation Authority, the important need for resource management, and the contributions and achievements of the Authority.
- (ii) To develop an information program that can be directed at watershed municipalities, the Province, school boards, and other agencies, that will encourage a better understanding of Conservation Authority programs and policies.
- (iii) To provide a forum for obtaining public input to projects and programs undertaken or proposed by the Conservation Authority.
- (iv) To develop a marketing strategy that can be applied to the education and recreation programs of the Halton Region Conservation Authority.

### B. Current Program

The information program developed by the Conservation Authority has been directed to the community at large and has employed many different methods to provide information on the role and mandate of the Conservation Authority. The following projects and media techniques are currently being carried out by the Conservation Authority:

- (i) The production of a quarterly newsletter called the Conservation Cornerstone that outlines the current activities of the Authority.

- (ii) The production of an annual report that outlines the role and mandate, organizational structure and current year's accomplishments of the Authority.
- (iii) The preparation of photo press releases on a variety of resource management topics as well as the educational and recreational programs of the Authority.
- (iv) The development and distribution of exhibits and displays on various resource management topics or programs by displays in malls, libraries, schools and special community events.
- (v) The use of a mobile information trailer designed to provide information to the urban residents of the watershed at a number of community oriented events.
- (vi) The preparation of a brochure on the Conservation Authority's Fill and Flood Plain Regulation.
- (vii) The production and distribution of a poster on the importance of Water Resources in the watershed.
- (viii) The preparation and distribution of brochures and flyers that describe the facilities, programs and natural resources of the conservation areas operated by the Authority.
- (ix) The planning and presentation of regular special events at conservation areas on a variety of resource management topics.
- (x) The production of audio/visual material for use in speaking engagements that have been directed at many target audiences in the watershed including service clubs, schools, church groups and special interest groups.
- (xi) The planning and delivery of tour programs for a number of community groups on various resource management or natural resource topics.

- (xii) Public meetings, surveys and questionnaires have been utilized by the Conservation Authority as a means of acquiring information on conservation area use and reaction to Conservation Authority programs.
- (xiii) The planning and presentation of seminars on a variety of resource management topics.

### C. Strategy

Strategies must be developed by the Halton Region Conservation Authority that are designed to meet the objectives of the Conservation Information Program. These strategies involve the use of a number of methods and techniques that should provide the direction and guidance for the development of the Community Relations Program and provide solutions for a number of information problems.

- (i) to provide information on the Authority's Water and Related Land Management Program including the projects and regulation adopted to carry out the role and mandate of the Halton Region Conservation Authority.

The most important role of the Conservation Authority is the wise management of the water resources in the watershed. To achieve this objective, it is essential that emphasis be placed on providing more information on Water Management Programs.

Many private citizens, developers, municipal and private professional staff, and elected representatives still remain unaware of the Authority's role in fill and flood plain regulations and other water management programs. Violations to the regulations coupled with a general lack of understanding of water management programs can ultimately lead to irreparable damage. The Municipalities within the watershed share the resource problems of the waterways and receive much benefit from the corresponding solutions. Water is the common element which links all the natural resources through the watershed and should represent an important aspect of the information program.

This strategy can be implemented with the following new information projects in addition to the continuation of current programs now being used to distribute information on Water Management Programs.

(a) Produce and distribute a comprehensive brochure on the Water Management Programs of the Halton Region Conservation Authority.

(b) Produce and distribute audio/visual materials on the Authority's Water Management Program including a film and several pre-taped slide programs.

(c) Produce and distribute pre-taped radio messages on the fundamentals of the Conservation Authority's Water Management Programs.

(d) Develop an exhibit on the Authority's Water and Related Land Management Program for distribution in malls, libraries, schools and municipal offices.

(e) Prepare and distribute fact sheets on specific Water Management themes that are directed at particular target audiences.

(f) Prepare and distribute information material on specific Water and Related Land Management Programs of the Conservation Authority such as the Flood Plain Mapping Project.

(g) Establish a co-operative system for the distribution of Conservation Authority information with the municipalities and other related agencies.

(ii) to provide information on the Conservation and Recreation Management Program carried out by the Conservation Authority and to encourage good land management practices on private property by informing watershed residents about the availability of advice and assistance from the Authority, and other government agencies related to soil erosion, forestry and fish and wildlife management.

Many residents remain unaware of the Conservation Authority's land management programs as well as the availability of expertise and information from a number of agencies for private lands. There is a real need to provide technical information to watershed residents who require

assistance as well as making landowners aware of the effects of poor land management practices. Since the watershed of the Authority includes many small watercourses that pass through residential developments, this information should be made available to both rural and urban residents, through the use of the following new projects:

- (a) Develop and distribute a comprehensive brochure on the conservation services available to the community including the Authority and the Ministries of Natural Resources, Agriculture and Food, and Environment.
  - (b) Prepare and distribute fact sheets on specific land management practices that can be directed at those individuals and target areas in need of specific natural resource information.
  - (c) Produce and distribute a pre-taped slide program on the fundamentals of wise land management including the programs and expertise available.
- (iii) Develop a comprehensive marketing strategy for the Conservation Education Program in conservation areas of the watershed as a means of offsetting operational costs.

In addition to the previously mentioned current programs, the following new projects will be needed to implement this strategy:

- (a) Develop new marketing techniques for programs in the Conservation areas using as many media techniques and tools as possible including radio and television, newspapers, magazines and related publications from other agencies.
- (b) Prepare and distribute an Authority-wide events brochure that will be published annually to outline the programs and special events in all Conservation Areas of the Halton Region Conservation Authority.
- (c) Develop advertising budgets for selected conservation areas that reflect the scope of the services, facilities and programs available.



## 9.2 Conservation Education

### A. Objectives

It is the objective of the Halton Region Conservation Authority:

- (i) To provide opportunities in conservation and outdoor education on lands owned by the Halton Region Conservation Authority.
- (ii) To establish content guidelines for a Conservation Education Program that relate to the goals and objectives of the Authority and reflect the requirements of the educational community.
- (iii) To promote Conservation Education as a learning process concerned with the relationship of natural features and processes of the earth with the interaction of human activity.
- (iv) To help develop a better understanding of the fundamentals of resource management as they relate to the natural resources of the watershed.
- (v) To co-operate with various educational groups or institutions to provide opportunities for conservation education in a way that is consistent with the goals and objectives of the Conservation Authority.

### B. Current Program

The Halton Region Conservation Authority has conducted a conservation education program at the Mountsberg Conservation Area since 1973. The program includes educational opportunities for students and the general public on a range of conservation and natural resource topics. Program activities have been designed to fulfill the policies of the Authority's Conservation Education program.

The following is a review of this program:

- (i) Weekend interpretation programs are carried out at the Mountsberg Wildlife Centre which highlight a number of natural resource themes. Films, slides, guided walks and demonstrations highlight the education theme together with the availability of a wide range of passive recreational activities including horse-drawn wagon rides, hiking, cross-country skiing and wildlife viewing.
- (ii) A series of environmental learning programs that are designed to promote an awareness and understanding of the natural world, are available to school and community groups. These student programs consist of full and partial day activities on a wide variety of conservation topics. Puppet presentations introduce programs developed for younger students, while study booklets, equipment and resource staff are provided for all outdoor sessions. Badges requirement programs for Scouts and Guides are available on weekends and Summer Resource Camps are offered to children during the summer.
- (iii) A number of evening events are carried out at the Mountsberg Wildlife Centre that are designed to promote an appreciation of the watershed's natural resources and encourage a better understanding of the fundamentals of resource management.

### C. Strategy

The following strategy forms the basis of the Conservation Education Program as well as complementary programs:

- (i) To continue developing programs at the Mountsberg Wildlife Centre which promote an appreciation and awareness of the natural resources in the watershed and the vital need for wise management. The following projects will improve the education facilities at the Mountsberg Wildlife Centre and assist with the delivery of high quality programs:

(a) Continuing to develop new techniques for the implementation of public and student conservation education programs.

(b) Continuing to improve conservation education facilities.

(c) Continuing to provide teacher resource kits which provide guidelines for field trips and reinforce the conservation concepts of the conservation education program.

(ii) The Crawford Lake Conservation Area has the potential of becoming one of the most unique conservation education centres in Ontario. Studies of the rare meromictic lake at the area have lead to the discovery of the most accurately dated prehistoric Indian Village in Canada and only the second that will be reconstructed on its original location. The unique heritage and natural resources of the area will provide the ingredients for an extensive public and student conservation education program. This will be one of the few imformation-education centres located on the Niagara Escarpment. Due to the Conservation Authority's plans for the Crawford Lake Conservation Area, the Niagara Escarpment Commission has selected this site as a prime nodal area for the distribution of information related to the Niagara Escarpment. The conservation education program will be developed around the natural and heritage resources available at the area. This conservation education strategy can be implemented with the following techniques.

(a) Construction of an interpretive centre at the Crawford Lake Conservation Area.

(b) Development of a comprehensive conservation education program that will include student experience and public interpretation programs on the heritage and natural resources of the Crawford Lake Conservation Area and the surrounding Niagara Escarpment lands.

(iii) Development of interpretation programs for all Authority lands that will help visitors to appreciate the natural resource of the watershed with a particular emphasis on how these lands are being used for total resource management by the following:

(a) The use of interpretive signs in conservation areas that portray significant natural features and resource management programs.

(b) The use of self-guiding brochures that outline the natural features and land management practices carried out on the Authority properties.

(c) The use of special events that highlight the significant features and resources management objectives of the area.

(d) The encouragement of the Halton Region Conservation Foundation to raise funds for the establishment of additional conservation education facilities.

(iv) Develop a comprehensive marketing strategy to encourage full participation in the conservation education and interpretation programs offered by the Conservation Authority through the following:

(a) The use of the newspaper media for feature stories, photo press releases and paid advertising.

(b) The use of the radio and television media to promote programs presented at the education centres.

(c) Developing good media relations to ensure a regular and accurate reflection of all available programs.

### 9.3 Heritage Conservation

The Halton Region Conservation Authority intends to limit its role in a Heritage Conservation Program to those properties that are owned by the Authority, and which have a conservation heritage feature. In this manner, the Conservation Authority would complement the overall Heritage Conservation Program established by the watershed municipalities and the Province of Ontario.

#### A. Heritage Conservation Objective

It is the objective of the Halton Region Conservation Authority,

To protect the heritage conservation resources located on lands owned or managed by the Halton Region Conservation Authority and to develop selected heritage conservation resources that are significant and contribute to a fuller understanding of the historical use of natural resources.

#### B. Review of Current Conservation Heritage Features

The Halton Region Conservation Authority has recognized a number of Heritage Resources on its land holdings and has taken interim measures to protect and enhance these features. The following is a review of current Heritage Conservation features or activities:

- (i) A significant archaeological site located at the Crawford Lake Conservation Area has been secured and protected by the Conservation Authority during the past ten years. Support from the Canada Council and the Ontario Heritage Foundation has allowed the Conservation Authority to conduct further research at the site that will allow for reconstruction of the pre-historic Indian Village. The project is being funded in co-operation with the Halton Region Conservation Foundation.

- (ii) The McCrae Chimney at the Mountsberg Conservation Area has been secured and protected as a means of preserving this remnant of man's early use of water to provide the necessary energy to power lumber and grist mills. The story has been incorporated into the history of the area for use in the Conservation Education Program conducted at the area.
- (iii) The Christie-Henderson Lime Kilns at the Kelso Conservation Area have been secured by the Authority to protect and preserve them.
- (iv) A maple syrup demonstration at the Mountsberg Conservation Area has been established to depict one of the first uses of the watershed's natural resources.

### C. Strategy

Strategies must be developed by the Conservation Authority that will recognize and protect those heritage resources located on Conservation Authority lands and include the development and enhancement of selected heritage resources that are significant. These resources will be developed on the basis of the significance of the need for preservation and the demand for those Heritage Resources that complement the Conservation Education Program of the Conservation Authority.

It is the strategy of the Halton Region Conservation Authority,

- (i) to continue to provide a maple syrup demonstration at the Mountsberg Conservation Area as an example of man's resourceful use of the environment through good forest management practices, and to demonstrate the history of maple syrup production.
- (ii) to develop the significant archaeological site located at the Crawford Lake Conservation Area and encourage continuation of research and further study to increase knowledge about this unique heritage resource.

The purpose of this project is to continue the archaeological investigation of the Crawford Lake site, a Middleport Village located 0.5 km northwest of Crawford Lake, on land owned by the Halton Region Conservation Authority.

- (iii) to reconstruct the prehistoric Iroquoian Indian Village at the Crawford Lake Conservation Area for its unique significance and potential for extensive conservation education programs.

As a result of the preliminary excavations of the Crawford Lake site, the Halton Region Conservation Authority has prepared a master plan for the development of the Crawford Lake Conservation Area. This plan includes the partial reconstruction of the Crawford Lake Indian Village and the construction of an interpretive centre near the site.

- (iv) to investigate the rehabilitation and the protection of the Christie-Henderson Lime Kilns located at the Kelso Conservation Area as a means of preserving this important part of the development of the aggregate industry in the watershed and the Niagara Escarpment.

Unlike most lime kilns in Ontario, Christie-Henderson Lime Kilns were not destroyed after they were abandoned.

The present condition and location of the Christie-Henderson Lime Kilns make them an ideal reminder of the little-known aspects concerning the history of a major industry in Ontario. The preservation of these kilns would be a very worthwhile contribution to the education of future generations.

- (v) To recognize and protect, where feasible selected archaeological or historic sites located on lands owned by the Conservation Authority. These sites represent the first phase of man's interaction and use of the watershed's natural resources which is an integral part of the history of Resource Management.

The Halton Region Conservation Authority has recognized the value of Heritage Resources on its lands and is willing to secure and protect corresponding historic and archaeological sites. If these sites are determined to be regionally or provincially significant, the Conservation Authority would develop a program that would enhance these selected Heritage Resources.

Several Heritage Resources have been identified by the Halton Region Conservation Authority as significant sites that contribute to the history of natural resources and resource management in the watershed. Man's early use of local waterways to gain a supply of power is evident at two mill sites, the McCrae Chimney at the Mountsberg Conservation Area and the mill site located at the Hilton Falls Conservation Area. The Mountsberg Conservation Area also includes several excellent examples of small kilns that were built to supply mortar for the construction of barns and other farm structures.

#### 9.4 Projected levels of funding for the Community Relations Program: 1983-1988

The total funding for the Community Relations Program comes from a number of categories from the Conservation Authority's budget, including Water and Related Land Management - Community Relations category, Conservation and Recreation Land Management - Information and Interpretation category, and the Operations and Maintenance budget where the program generates revenue.

The following chart outlines the projected levels of funding for the Community Relations Program from 1983 to 1988. The funding requirements are based on the 1983 approved budget levels and includes four additional staff during the next five years. The projected funding levels for the Crawford Lake category have been based on the development of a program that would commence in 1984 and provide a program that reflects the designation of Crawford Lake as a nodal area in the Niagara Escarpment Plan and the interpretation of resource programs for Crawford Lake.



PROJECTED LEVELS OF FUNDING FOR THE COMMUNITY RELATIONS PROGRAM 1983 to 1988

Figure 9.0

Budget Section	1983	1984	1985	1986	1987	1988
<u>Water and Related Land Management</u>	\$131,487.00 Staff (6) Current	\$165,876.00 Additional Education Officer (7)	\$200,828.00 Additional Coordinator (8)	\$237,877.00 Additional Instructor (9)	\$252,149.00 Staff (9)	\$267,277.00 Staff (9)
-Community Relations Category						
<u>Conservation and Recreation Land Management</u>	\$ 24,530.00 Staff (1) Current	\$ 29,436.00 Staff (1) Current	\$ 57,379.00 Staff (2) Current	\$ 63,116.00 Staff (2) Current	\$ 69,427.00 Staff (2) Current	\$ 76,369.00 Staff (2) Current
-Information and Interpretation Category			Information Officer			
<b>SUB-TOTALS</b>	<b>\$156,017.00</b>	<b>\$195,312.00</b>	<b>\$258,207.00</b>	<b>\$300,993.00</b>	<b>\$321,576.00</b>	<b>\$343,646.00</b>
<u>Operations and Maintenance Budget</u>						
A.Mountsberg Conserv. Education Category	\$181,459.00	\$192,346.00	\$203,886.00	\$216,119.00	\$229,086.00	\$242,831.00
B.Crawford Lake Cons. Education Category	-----	\$ 50,000.00	\$100,000.00	\$150,000.00	\$200,000.00	\$250,000.00
<b>TOTAL PROJECTED COMMUNITY RELATIONS FUNDING</b>	<b>\$337,476.00</b>	<b>\$437,658.00</b>	<b>\$562,093.00</b>	<b>\$667,112.00</b>	<b>\$750,662.00</b>	<b>\$826,477.00</b>



## Lake Ontario Waterfront Program

10.0

## 10.0 LAKE ONTARIO WATERFRONT PROGRAM

### A. Policy of the Halton Region Conservation Authority Respecting the Planning, Development and Management of the Lake Ontario Waterfront in the Region of Halton

The 1982-86 Waterfront Project is based on the approved Halton Waterfront Plan, Official Plan Amendment No. 1 to the Regional Official Plan, (December 24, 1981). All of the proposed works will be carried out within the context of current planning and land use controls which under the Planning Act are administered by the Municipalities in which the works are to be located. The administrative and planning procedures of the Conservation Authority recognize the vital role of municipal planning and land use control in achieving a handsome and accessible Waterfront. Therefore, the Authority will implement the Plan in concert with the appropriate agencies of the Government and the Municipalities.

The 1984-88 project undertaken by the Conservation Authority is concerned with works to further the conservation, restoration, development and management of the natural resources of the Lake Ontario Waterfront within the jurisdiction of the Halton Region Conservation Authority. Implicit in this task is the development of suitable public lands on the Waterfront (shoreline erosion protection for these lands), and the provision of recreational opportunities.

All the planning for the Regional Municipality of Halton and the Conservation Authority has recognized the Lake Ontario Shoreline as one of the major natural resources of the Region and the Province.

The Conservation Authority has a goal for this project and recognizes certain objectives and principles which provide the policy framework for the management of this important resource.

## B. Goal

The goal of the Conservation Authority Waterfront Project is to improve and protect the Halton Waterfront Area as a major resource that is part of the Provincially significant Lake Ontario Shoreline. This goal is consistent with the goals of the Government of Ontario as enunciated in the Design for Development: The Toronto Central Region, which sets as one of its goals, to "Preserve the unique attributes of the regional landscape". The Waterfront resource areas will further be linked with the Provincial Parkway Belt West public open space areas at the Grindstone, Bronte and Joshua's Creeks to provide for an integration of Provincial and Municipal recreational opportunities.

## C. Objectives

In achieving this goal, it will be the Conservation Authority's objective, as stated in the Halton Waterfront Plan:

- (i) To maintain the basic existing land use pattern along the waterfront by developing the waterfront in a manner compatible with existing land uses.
- (ii) To maximize public accessibility to the Halton Waterfront by increasing the amount of well distributed public open space.
- (iii) To identify Regional Waterfront parks that provide a variety of recreational opportunities along the Halton Waterfront.
- (iv) To prevent building on hazard lands and establish priorities for erosion protection on public land based on established criteria.
- (v) To preserve stream valleys as an important open space feature of the Waterfront.
- (vi) To establish policies for the control of waterfront development that implement the objectives of the Waterfront Plan.

- (vii) To encourage the appropriate government agencies to improve air and water quality, and fish and wildlife resources in the waterfront area.
- (viii) To recognize existing financial constraints in identifying priorities on the Halton Waterfront.
- (ix) To identify and protect historic, architectural, landscape and geological features of regional significance, and incorporate them into Waterfront Public Use Areas, where feasible.

#### D. Policies

The implementation of the 1984-88 Project recognizes principles and policies of procedure, planning and review established by the Province of Ontario, member municipalities and the Authority.

The major areas of concern for the Authority in this Waterfront Project are the conservation, restoration, development and provision for the management of the waterfront resources; the protection and management of important natural habitats; the design, development and provision for the management of recreational areas; the implementation of a shoreline management program; and to interpret to the municipalities and to the public, through the municipalities, the policies of this Project. The Halton Region Conservation Authority therefore adopts as its policies, those set out in the Halton Watershed Plan as follows:

- "a) That master plans be prepared by the Halton Region Conservation Authority in consultation with the municipalities and provincial ministries, and approved by the Conservation Authority, the Area Municipality, the Ministry of Natural Resources and the Region of Halton.
- b) That master plans provide adequate provisions, where appropriate, for traffic movements, parking, servicing, construction activity, boat storage, compatibility with surrounding land uses, vandalism problems, interpretive facilities, a variety of recreational uses, the effect on water intakes and storm outfalls, as well as other concerns and requirements.

- c) That shoreline erosion protection of public land be the first priority, and acquisition of waterfront property, as the land becomes available, be the second priority.
- d) That an Environmental Impact Analysis be prepared for landfilling projects, including their associated facilities, to be formally reviewed by the Ministry of the Environment and others, and where specified by Provincial Regulation, be considered for approval under the Environmental Assessment Act, as well as through the Ministry of Natural Resources Master Plan Review Process.
- e) That proposals by individuals or organizations to lease public waterfront property and develop commercial activities, compatible with the objectives of the Plan, be considered on merit.
- f) That the physical and biological features of Environmentally Sensitive Areas be protected.
- g) That local architectural conservation advisory committees be consulted regarding identification and protection of cultural and historical features.
- h) That the demand for various recreational activities on the Halton Waterfront be reviewed and the results incorporated into master plans."

#### E. Implementation

The Halton Region Conservation Authority adopts the following respecting the implementation of the project as stated in the Halton Waterfront Plan:

#### F. Participants

The implementation of the Halton Waterfront Plan will require, over an extended period of time, a diligent co-operative effort from the main participants; the Halton Region Conservation Authority, the City of Burlington, the Town of Oakville, the Regional Municipality of Halton and the Ministry of Natural Resources. To assist in maintaining the initiative achieved through approval of this Plan, the Halton Waterfront Working

Group, with representatives from each of the participating bodies, will continue to meet and co-ordinate implementation of the Waterfront Plan.

When it appears that the objectives of the Plan are being jeopardized by the reduction or the lack of funding from any of the participants in the Plan, the Halton Region Conservation Authority will pursue other sources of funding and/or re-negotiate some of the responsibilities which require extra funding of some of the participants. It would be intended that none of the participants would relinquish on a long term basis but would only do so during short term periods of financial constraints. In addition, the original commitment to the concept of the Waterfront Plan must be continually maintained by all participants in order to sustain the integrity and fulfillment of the Plan.

The role of the Halton Region Conservation Authority is to implement projects within Regional Waterfront Parks by carrying out the following:

1. Acquisition of land.
2. Master planning and engineering studies.
3. Environmental assessments and landfilling.
4. Shoreline protection works.
5. Basic park development.

These tasks will be accomplished after ongoing consultation with, and final approval from, each of the main participants.

The role of the Regional Municipality of Halton is to co-ordinate implementation according to established priorities, review and approve master plans, and provide part of the funding. The Regional Planning Staff and the Waterfront Working Group will periodically report to Regional Council, the other main participants and the public on the progress to date of implementing the Waterfront Plan.

The role of the Area Municipalities, Burlington and Oakville, is to review and approve master plans, and operate and maintain Regional Waterfront Parks with the assistance of a cost sharing arrangement. In order to obtain Provincial funding through the involvement of the Conservation Authority, municipally-owned park land, which is specifically required for further park development, will be transferred to the Conservation Authority

under an agreement involving a satisfactory lease-back arrangement. The Area Municipality will provide park facilities, in addition to the basic park development provided by the Conservation Authority, which may include, for example, washroom facilities, sports fields, recreational buildings, etc., according to the approved master plan.

The role of the Waterfront Plan will follow the priorities as established on the Priority Schedule below. Priority A parks will be planned, and development at least started, during the first five years following approval of the Waterfront Plan. Priority B parks will be planned and developed during the first ten years following approval, and in general, after progress has been made on Priority A parks. Priority C parks will be planned and developed as time and funding permits, but generally will be reserved for future consideration towards the end of the ten year period.

The parks in the Priority A category are considered to be a high priority due to their large size and significance as an open space area in a regional context. The two harbours in Oakville and the Burlington Beach are unique waterfront features in Halton. The Burloak Waterfront Park is also unique in the sense that this is the only area on the waterfront where an additional regional open space facility can be located. Acquisition of key properties in these parks is required now before development occurs. Erosion is a major problem in most Priority A parks and must be arrested at an early date to save existing property.

Priority B parks have significant potential to become major waterfront parks in the near future, but acquisition and erosion protection works are not as critical as they are in the "A" parks. The Priority C parks do not require acquisition or erosion protection in the near future and, therefore, in the interest of funding the most urgent needs first, these parks are identified now but implementation is delayed until higher priorities are considered.



## PRIORITY SCHEDULE

### Priority A

Burloak Waterfront Park  
Bronte Harbour  
Burlington Beach (Beachway Park)  
Oakville Harbour

### Priority B

Spencer Smith Park  
Shore Acres Creek Valley  
Joshua's Creek Park  
Coronoation Park  
LaSalle Park

### Priority C

Fourteen Mile Creek Valley  
Gairloch Gardens

It is intended that work will proceed in more than one park at a time, and that some refinement to the priorities will be necessary as planning and engineering studies are completed, or when particular parcels of waterfront property become available.

Within the priorities schedule, the first priority is shoreline erosion protection and the second priority is acquisition of waterfront property as the land becomes available.

Shoreline erosion protection will be provided on public land following engineering and environmental studies. A great deal of data from previous studies is already available to assess the necessity and form of shoreline protection works. In some instances, studies indicate that no additional protection is required because the existing shore, usually in this case a shingle or sand beach, is stable. The data to evaluate erosion protection requirements will come from the Halton-Wentworth Waterfront Study data files, the Canada Centre for Inland Waters, the Halton Region Conservation Authority, Fisheries and Oceans Canada and the Ontario Ministries of Natural Resources and Environment. The studies will consider the following factors taken from the Draft Canada/Ontario Great Lakes Shore Management Guide, 1980:

1. physiography
2. flood and erosion hazard areas
3. geomorphology
4. littoral zone limits
5. enviornmental data
6. wave characteristics (eg. fetch, littoral, drift, recession and deposition zones, and water levels).

Shoreline erosion protection on private land will only be considered under the terms and conditions of the Ontario Shoreline Property Assistance Act, 1973.

This Plan will require approval in principle from the Ministry of Natural Resources as well as "Section 24" approval under the Ontario Conservation Authorities Act, for individual projects.

#### G. Details of the Project

##### (i) Purpose

The purpose of this project is to permit the Halton Region Conservation Authority to exercise the powers afforded by the Conservation Authorities Act, R.R.O. 1980, Chapter 85, as amended, and to establish and undertake a program designed to conserve, restore, develop and manage the natural resources of the Waterfront within the area of its jurisdiction, in accordance with the Waterfront Project, over a five year period between 1982 and 1986 inclusive.

It is the intention of the Conservation Authority that this project, together with previous Waterfront acquisitions and works, shall form the first stage of the implementation of the Halton Waterfront Plan.

(ii) Location and Description

(a) Eastern Section

The eastern section contains six Regional Waterfront Park Areas.

Joshua's Creek Park

The Joshua's Creek Park area is located south of Lakeshore Road on the townline between the Town of Oakville and the City of Mississauga. The acquisition of a few additional waterfront strips of land to the west of Joshua's Creek will provide a complete promenade along the waterfront for a considerable distance.

Shoreline protection is required along the lakefront to protect the existing land near the mouth of Joshua's Creek. A public open space linear system can be provided upstream along the Joshua's Creek valley since most of this land is owned by the Town of Oakville now.

The surrounding land use is low density residential in Oakville, and industrial in Mississauga. Access is via Winston Churchill Boulevard (townline) and Lakeshore Road.

The adjacent land in Mississauga is also Parkway Belt and is designated Public Open Space for an Electric Power Facility. If the Credit Valley Conservation Authority's plan for a waterfront park on this site becomes a reality, then a co-operative plan will be devised for the two adjoining waterfront projects.

### Morrison Creek Gairloch Gardens

Gairloch Gardens is located west of Ennisclare Avenue and south of Lakeshore Road at the mouth of the Morrison Creek in east Oakville. The park is owned by the Town of Oakville. Some improvements to the park and buildings are recommended in the plan. In the future, shoreline protection works will be necessary. The surrounding land use is low density residential.

### Oakville Harbour, Water Works and Lakeside Parks

The Oakville Harbour is located at the mouth of the Sixteen Mile Creek in the Town of Oakville. All of the land south of Lakeshore Road along the Sixteen Mile Creek is publicly owned. The Oakville Club is outside the Waterfront Public Use Area.

Shoreline protection at the Erchless property and Lakeside Park is a priority in the Plan.

Oakville Harbour is surrounded by old residential neighbourhoods and is near the downtown area of Oakville. Several major municipal buildings are situated immediately upstream of the main harbour area.

The Oakville Harbour Development Authority Master Plan, which was completed in 1974, will act as a guide for the development of the harbour.

The Lakeside Park area will not be substantially widened. There are no plans intended for a walkway on table land adjacent to the Sixteen Mile Creek north of Rebecca Street.

This major park complex in the Plan is to be developed on a land base presently held by the Town of Oakville, Regional Municipality of Halton, the Halton Region Conservation Authority and the Federal Government.

This land base in many locations is susceptible to erosion and a priority in the project is the provision of approximately 700 metres of erosion protection on the Lake Ontario shoreline. In the past, this section of the Lake Ontario shoreline contained several large and significant beaches. Shoreline protection therefore will focus on re-establishing stable beach areas once again.

The existing harbour plan will be reviewed and updated in co-operation with local, Provincial and Federal bodies involved. A new master plan will be adopted which will give long term direction for the future, and establish the limits of works to be carried out under the Waterfront Project in this area. Priority in the project will be focused on shoreline protection, boat launching ramps and major facilities focused on resource enhancement and public utilization.

#### Fourteen Mile Creek Valley

Fourteen Mile Creek outfalls into Lake Ontario east of WOLFDALE COURT in west Oakville. The lands along the Fourteen Mile Creek south of Lakeshore Road are in private ownership. The Plan calls for the lands to be publicly acquired or conveyed as part of a subdivision agreement. Maintenance of the area in its natural state for passive use is proposed. The surrounding land use is low density residential.

The Fourteen Mile Creek upstream of the mouth has been extensively channelized north of Lakeshore Road. Part of the long term management program of the Halton Region Conservation Authority is the provision of flood protection through the possible provision of upstream reservoirs on the Fourteen Mile Creek watershed. The Waterfront Project complements the Conservation Authority's management of the Fourteen Mile Creek system. Its acquisition provides for the maintenance of the valley mouth south of Lakeshore Road in its natural state to convey flood flows and provide habitat for wildlife dependent upon this remnant Lake Ontario creek mouth. Public use of the property will be managed by, and integrated into, the Town of Oakville's Parks and open space system.

(b) Central Section

Coronation Park

Coronation Park is located on Lakeshore Road east of the Third Line in west Oakville. The 10 hectare park is owned by the Town of Oakville. Present activities and facilities include picnicking, softball, children's playground, snack bar, bank shelter, "Red House", boat ramp, and washroom. The park is already very popular and has potential to be further developed through an approved master plan. The surrounding land use is low density residential.

The land base and major facilities at Coronation Park is presently held by the Town of Oakville. The shoreline is approximately 700 metres in length and through a major portion has responded well to attempts to capture sand by placing groynes into the Lake. The project at this location will focus on beach enhancement and the provision of a safe inlet, calm water area, to permit a boat launching facility away from the Bronte and Sixteen Mile Creek small craft harbours in Oakville.

Bronte Creek and Harbour Park

The Waterfront Plan outlines the existing problems and some of the priorities for this project as follows:

The Bronte Harbour is located at the mouth of the Bronte (Twelve Mile) Creek in the Town of Oakville. Most of the land south of Lakeshore Road identified as Regional Waterfront Park is publicly held at the present time. Shoreline protection of Bronte Bluffs Park is a high priority due to the existing erosion problem. Some land acquisition is proposed north of Lakeshore Road by the Parkway Belt West Plan to allow public access to the upper Bronte Creek Valley.

The Oakville Harbour Development Authority has completed a master plan for development of the harbour and has implemented a majority of the proposals in the plan. This master plan will continue to act as a guide to development in the harbour.

The popularity of sport fishing in the harbour requires improvements to parking and access facilities.

The federal government owns the piers and is responsible for improvements to them.

The Bronte Creek mouth and adjacent shoreline provide over 1.7 kilometers of lakefront land in public ownership. Much of the strip of land east of the Bronte Creek was dedicated during subdivision development to the Town of Oakville and is protected from erosion. The project's emphasis along the Waterfront will be on providing erosion protection on public lands where it is presently non-existent or substandard, and the provision for beach building to enhance the natural and recreational potential of the shoreline.

The project's emphasis in the harbour is on the updating of the existing master plan in co-operation with local, Provincial and Federal bodies, and the provision of shoreline protection where it is presently lacking. In addition, the provision of boat launching ramps for day users and basic facilities to broaden the availability of the area to the public and fishermen will be provided. The Waterfront Project will be complemented at the Bronte Creek mouth by the implementation of the Parkway Belt West Plan eventually providing for an open space natural corridor between the Bronte Creek Provincial Park and the Bronte Harbour at Lake Ontario.

#### Burloak Park

This project is a major new initiative in the Waterfront Plan. It is centrally located between Oakville and Burlington, and the site contains

the potential for creating a new land base and protected water area by filling into Lake Ontario.

The Waterfront Plan describes the project as follows:

This Regional Waterfront Park is located south of the intersection of Burloak Drive and Lakeshore Road in both the Town of Oakville and the City of Burlington. The land between Lakeshore Road and Lake Ontario becomes very narrow in the vicinity of Burloak Drive. The proposed park extends east and west of Lakeview Park onto land that is partly developed for residential use. Many of the homes are very close to the Lake at the present time and require shoreline protection. The Shell House is located at the eastern extremity of the park outside the project boundary. Lakeshore Road and Burloak Drive provide good access to the area.

Lakeview Park, owned by the City of Burlington, is the only publicly accessible portion of the park at the present time. The City of Burlington owns two additional properties to the west of Lakeview Park and intends to eventually acquire all seven properties west of the townline.

The Acro property, which forms the western boundary of the park, is a critical portion of land to be acquired. The main feature of the park is an 8 hectare landfill extension which will greatly expand the existing land available for recreational use. Acquisition of approximately 5 hectares of private land is required to form a base for the park. A preliminary engineering and environmental assessment analysis will be necessary before the landfill phase of the development is started. The proposal could be developed in several phases depending on the availability of fill material.



The proposal is based on a study completed in 1977 by F.J. Reinders and Associates, for the City of Burlington entitled 'Engineering Study of Extension and Protection of Lakeview and Sioux Lookout Parks'.

The project involves the acquisition of eight properties in addition to City of Burlington landholdings, to create a 5 hectare land base. A proposed landfill extension into Lake Ontario will create an additional 8 hectares of parkland and protected water. The landfill extension will require an Environmental Assessment prior to Ministry of Natural Resources approval. It is being developed to provide badly needed additional protected water with facilities for boating and recreational uses as well as providing additional Waterfront Parkland within easy access of the large urban population of the Halton Region.

The Halton Region Conservation Authority under the Waterfront Project will provide the land base, shoreline protection, protected water area, and basic facilities, with the local municipalities and private enterprise providing the facilities such as docks, major buildings and accessories.

#### Shore Acres Creek

The area is located at the mouth of Shore Acres Creek, southeast of the intersection of Lakeshore Road and Shore Acres Road in Burlington. The entire valley of the Shore Acres Creek south of Lakeshore Road is in a natural state at present. The Plan calls for acquisition of the valley lands and development of the area for passive use. The area will remain in its natural state with some limited parking facilities and trail development. The surrounding land use is entirely low density residential.

The Shore Acres valley mouth at Lake Ontario is one of the few remaining entirely natural areas along the Halton Waterfront. It is intended to acquire 3.5 hectares at this location in order to retain it in its natural state. The watercourse upstream of Lakeshore Road has been encroached on

by past urban development and in several stretches has required erosion protection. This acquisition, therefore, serves the purpose of Conservation Authority water management programs as well as furthering the ends of the Halton Waterfront Plan and is for these reasons included in the project.

(c) Western Section

Spencer Smith Park

Spencer Smith Park is located at the foot of Brant Street on the shore of Lake Ontario. The existing park is extensively used for boat launching and passive recreation. A canoe club and Tourist Information Centre also exist in the park. Good access is provided from Brant Street and Lakeshore Road. The park is immediately adjacent to the downtown area of Burlington and a tremendous opportunity exists to enhance further the attractiveness of this area.

The major feature of the project is a landfill extension into Lake Ontario to provide additional open space and sheltered water for recreation. Preliminary engineering studies and an environmental assessment of the landfill proposal are required to further assess the proposal.

This project is proposed for actual development within the second phase of the Waterfront Plan. In the 1983-87 project, consideration in later years will be given to carrying out preliminary engineering, master planning and environmental assessment in preparation for the future landfill project scheduled for the 1987-91 phase.

### Burlington Beach

This project was initiated in 1976 and is described in the Waterfront Plan as follows:

Burlington Beach is located on a narrow strip of land between Burlington Bay and Lake Ontario. The beach is on the east side of the strip adjacent to the Queen Elizabeth Way and south of downtown Burlington.

The Beach is surrounded by a variety of land uses including the Burlington Canal, the Canada Centre for Inland Waters, the Queen Elizabeth Way, the Skyway Sewage Treatment Plant, Joseph Brant Hospital, and an old residential area.

All the land between the railway service and Lake Ontario is owned by the Halton Region Conservation Authority and the City of Burlington. Acquisition of the houses on the Beach has been proceeding since 1976 with funding from the Halton Region Conservation Authority and the Ministry of Natural Resources. It is anticipated that several years will be required to acquire all the houses in the waterfront area, and acquisition of Burlington Beach homes will occur as they become available.

Negotiations with the Canadian National Railway to remove the railway service is underway.

An overall master plan for the area is required to assist in an orderly development of the area for recreational use. During preparation of the master plan, the Hamilton Region Conservation Authority, the City of Hamilton, and the Regional Municipality of Hamilton-Wentworth will be consulted.

The Brant Inn property is in a critical location as it provides an important connection between Spencer Smith Park and Burlington Beach. Acquisition of this property is a priority in the Plan.

This project was initiated in 1976 as a twenty year land acquisition and development project on the basis of 50% of the total cost being funded by the Ministry of Natural Resources. The project was approved by the Ministry in 1976 on the basis of \$100,000 per year of Provincial funding being made available towards land acquisition. From 1976 to the present date, approximately \$778,850 has been expended by the City of Burlington through the Region of Halton, Ministry of Natural Resources and Halton Region Conservation Authority for land acquisition. The Beach Strip Project now forms part of the Halton Waterfront Project and will continue to be implemented on the basis of approximately \$200,000 a year in total acquisition being made.

#### LaSalle Park

LaSalle Park is located on Northshore Boulevard at Waterdown Road in Burlington. An engineering study of the shoreline protection requirements at LaSalle Park was completed in 1980. Park development in the future will be determined by the master plan.

A secondary priority of the Plan is the transfer of ownership of LaSalle Park from the City of Hamilton to the City of Burlington or the Halton Region Conservation Authority.

The park is owned by the City of Hamilton and managed by the City of Burlington under agreement with Hamilton. The surrounding land use is low to high density residential.

The Halton Region Conservation Authority in 1980 and 1981 carried out shoreline protection at LaSalle Park. This shoreline protection accounts for the major commitment to this park in the first phase of the Waterfront Plan. Remaining to be carried out during the 1982-86 Project is master planning for the long term future use of this area.

#### H. Costs

The expenditures required to implement this phase of the Waterfront Plan are based on the Municipal and Provincial funds considered feasible for allocation for waterfront development during the period 1982-86, recognizing the present policy of the Province of Ontario to pay 50% of the cost of approved Projects.

The estimated expenditures for this five year Project are based on the best information currently available for the works to be undertaken. The costs stated shall be understood to include land acquisition, creation and development of land, legal and survey, engineering and design services, site supervision, and demolition.

The allocation of costs by site will be adjusted as detailed designs and cost estimates become available.

## Schedule of Projects

### 1975-82 Preliminary Years

LaSalle Park Erosion Protection (Burlington)	\$ 350,000.00
Gregory Property Erosion Protection (Oakville)	150,000.00
Burlington Beach Land Acquisition (Burlington)	778,850.00
	<hr/>
	\$ 1,278,850.00

### 1984 Projects

#### Land Acquisition

Burloak Park	\$ 1,400,000.00
Burlington Beach Strip	200,000.00

#### Shoreline Protection

Oakville Harbour	
Erechless Property (Oakville)	\$ 150,000.00
Bronte Harbour	
Bronte Bluffs (Oakville)	\$ 300,000.00
LaSalle Park (Burlington)	15,730.00

#### Master Planning & Engineering

Burloak Park - pre-engineering and planning	\$ 25,000.00
Bronte Harbour - master plans	15,000.00
Oakville Harbour - master plans (+ remainder of Oakville's Waterfront)	15,000.00
Burlington Beach - pre-planning (+ remainder of Burlington)	15,000.00
Lakeside Park - shoreline protection engineering design	20,000.00
Tannery Park - shoreline protection engineering design	10,000.00
Gairloch Gardens - shoreline protection engineering design	12,000.00

### 1985 Projects

#### Land Acquisition

Burloak Park (Burlington)	\$ 800,000.00
Beach Strip (Burlington)	200,000.00

#### Shoreline Protection

##### Oakville Harbour

Lakeside Park (Oakville)	\$ 400,000.00
Tannery Cove (Oakville)	135,000.00

##### Bronte Harbour

Berta Property	\$ 386,000.00
Metro Marine	

#### Master Planning & Engineering

Burloak Park - master plan, detailed engineering and environmental assessment	\$ 70,000.00
Class environmental assessment for shoreline protection	9,000.00

### 1986 Projects

#### Land Acquisition

Beach Strip	\$ 200,000.00
Burloak Park	600,000.00

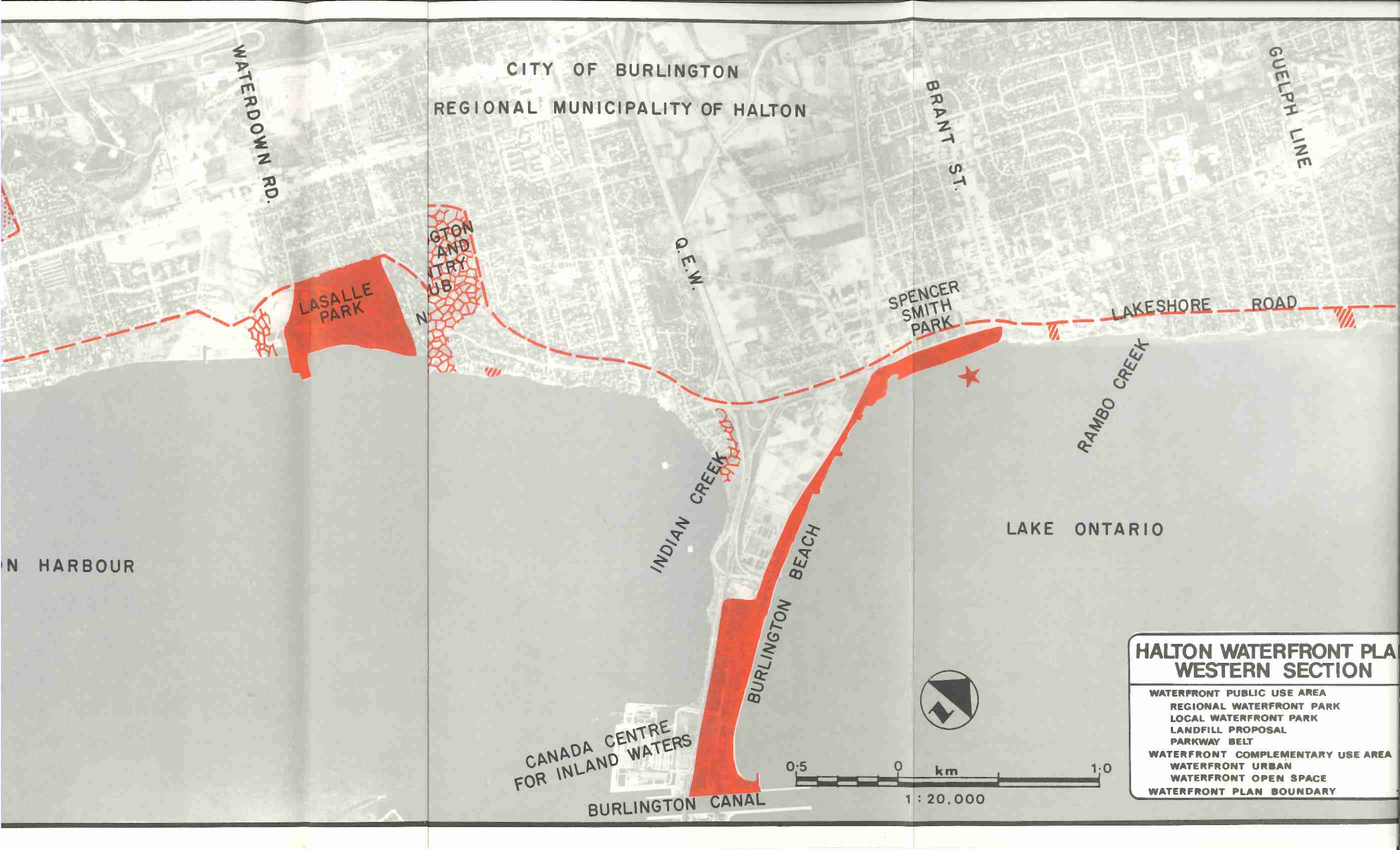
#### Shoreline Protection

Coronation Park Boat Launch Protection	\$ 100,000.00
Gairloch Gardens	300,000.00

Park Development	\$1,300,000.00
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Burloak Park - construction of landfill, shoreline  
protection, grading, etc.

Bronte & Oakville Harbours - facility construction  
- improvement of T.O.W.A.R.F.  
- surge protection  
(federal funding)



CITY OF BURLINGTON  
REGIONAL MUNICIPALITY OF HALTON

WATERDOWN RD.

BRANT ST.

GUELPH LINE

LASALLE PARK

INGTON AND  
TRY  
UB

D.E.W.

SPENCER  
SMITH  
PARK

LAKE SHORE ROAD

RAMBO CREEK

LAKE ONTARIO

N HARBOUR

INDIAN CREEK

BURLINGTON BEACH

CANADA CENTRE  
FOR INLAND WATERS

BURLINGTON CANAL



0.5 0 1.0 km

1 : 20,000

### HALTON WATERFRONT PLAN WESTERN SECTION

- WATERFRONT PUBLIC USE AREA
- REGIONAL WATERFRONT PARK
- LOCAL WATERFRONT PARK
- LANDFILL PROPOSAL
- PARKWAY BELT
- WATERFRONT COMPLEMENTARY USE AREA
- WATERFRONT URBAN
- WATERFRONT OPEN SPACE
- WATERFRONT PLAN BOUNDARY



NGTON  
OF HALTON

TOWN OF OAKVILLE  
REGIONAL MUNICIPALITY OF HALTON

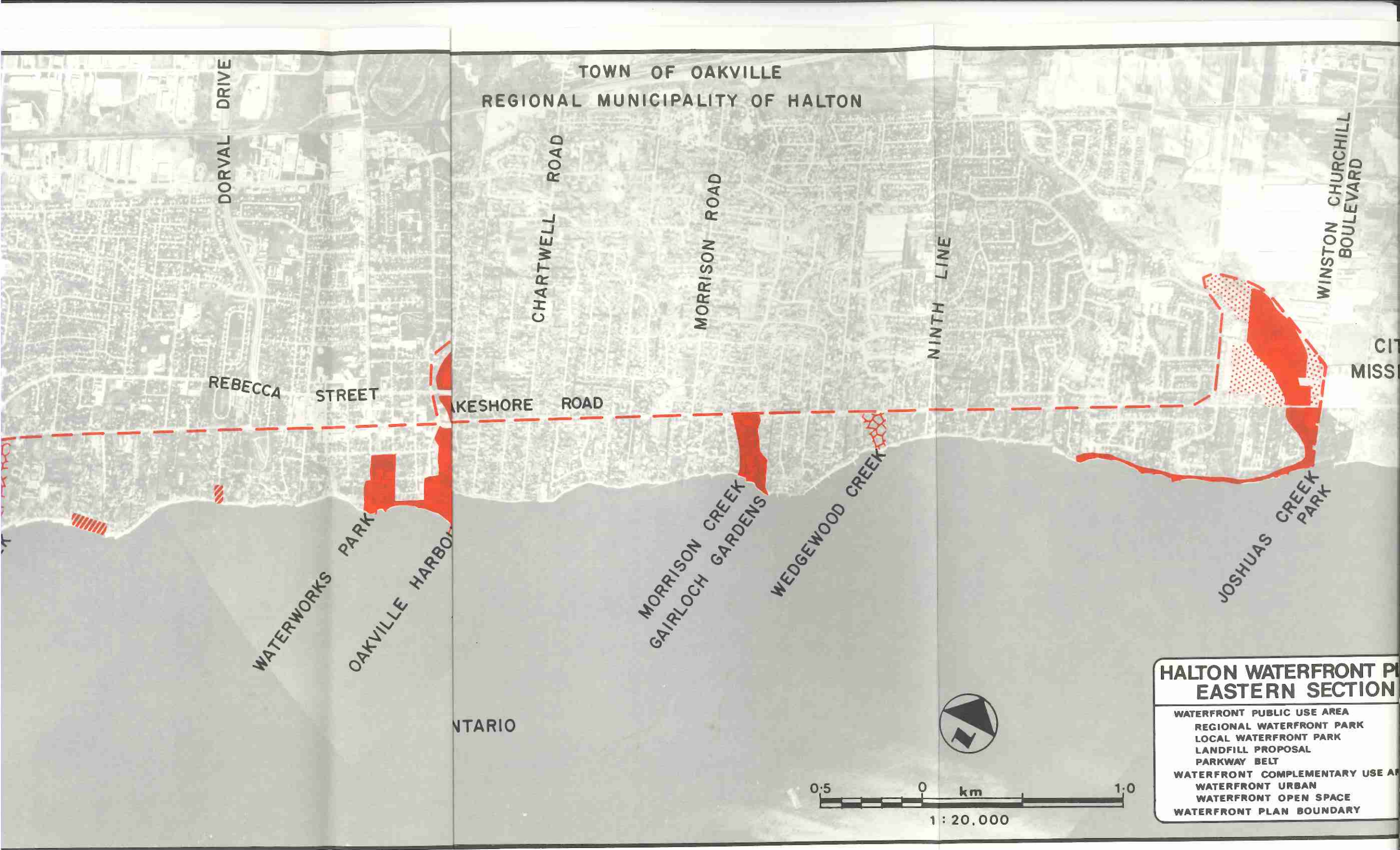


HALTON WATERFRONT P  
CENTRAL SECTION

- WATERFRONT PUBLIC USE AREA
- REGIONAL WATERFRONT PARK
- LOCAL WATERFRONT PARK
- LANDFILL PROPOSAL
- PARKWAY BELT
- WATERFRONT COMPLEMENTARY USE A
- WATERFRONT URBAN
- WATERFRONT OPEN SPACE
- WATERFRONT PLAN BOUNDARY



TOWN OF OAKVILLE  
REGIONAL MUNICIPALITY OF HALTON



HALTON WATERFRONT PLAN  
EASTERN SECTION

- WATERFRONT PUBLIC USE AREA
- REGIONAL WATERFRONT PARK
- LOCAL WATERFRONT PARK
- LANDFILL PROPOSAL
- PARKWAY BELT
- WATERFRONT COMPLEMENTARY USE AREA
- WATERFRONT URBAN
- WATERFRONT OPEN SPACE
- WATERFRONT PLAN BOUNDARY

1986 Projects..cont'd

Gairloch Garden - building expansion (Ministry of  
Culture & Recreation funding)

1987 - 1988 Projects

Land Acquisition

Burloak Park  
Beach Strip \$ 200,000.00  
Creek Mouths - Fourteen Mile Creek (if available) 100,000.00  
- Shore Acres (if available)

Parks Development (per year) \$ 1,600,000.00

Burloak Park - finish construction of major facilities  
and arrange leasing and management  
agreements

Bronte & Oakville Harbours - finish construction of  
major facilities

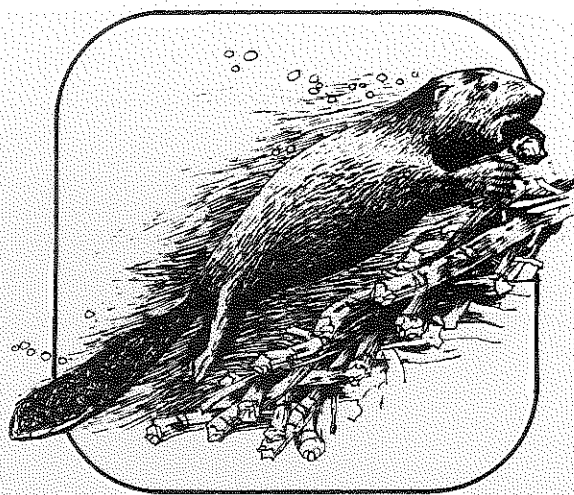
Burlington Beach Strip - initiate development of  
services and facilities

LaSalle Park - facility construction

Master Planning & Engineering (per year) \$ 50,000.00

Spencer Smith Park - master plan, engineering  
and environmental assessment

Five-Year Project Total \$10,177,300.00



## Operations and Maintenance Program

## 11.0 OPERATIONS AND MAINTENANCE PROGRAM

### A. Background

The Resource Management Program of the Halton Region Conservation Authority has been in operation since 1956. A number of projects have been completed and a variety of services are provided by the Authority to manage the resource issues identified to date. As a policy, the Halton Region Conservation Authority has provided a servicing and delivery capability to construct and maintain those projects completed and to provide services to the residents of the watershed that will assist the Authority in achieving its resource management mandate.

A trained staff complement, equipment and supplies are necessary to implement and maintain the various conservation programs, projects and services offered by the Authority. The responsibility for providing this function lies with the Field Operations Division of the Authority. The following summarizes the support function and responsibility of the Operations Division for the various Authority programs:

- i) Water Management
  - Maintenance of flood control, erosion control and water management projects.
  - Responding to flood events and flood emergencies.
- ii) Forestry, Fish and Wildlife Management
  - Planting service for private property owners.
  - Propagation of trees and shrubs in an Authority nursery for Conservation Extension Services Program.
  - Management of approximately 2,024 hectares (5,000 acres) of Authority Forest Land.
  - Responding to fire emergencies on Authority property.
  - Operation of Authority sawmill.
- iii) Conservation and Recreation
  - Operation and maintenance of nine Conservation Areas.
  - Operation and maintenance of Glen Eden Ski Area.
  - Interim property management in non-developed Authority holdings.

- Construction and maintenance of buildings, structures and service facilities in Conservation Areas.
- Providing a security service for Authority property and enforcement of Conservation Area Regulations.

iv) Community Relations

- Provisions of support staff, equipment and facilities for special events and public programs on Authority property and other promotional and educational events.

The Field Operations Division is based at the Mountsberg Conservation Area. The manpower, equipment and materials are dispatched on a daily basis from this location to the various properties and projects throughout the watershed. The present facilities are converted farm buildings renovated to provide a motor and equipment fleet maintenance garage, a metal fabrication shop, construction and sign shop, materials and supply storage and storage area for fire, flood and property maintenance equipment. An office building consisting of 864 square feet was constructed in 1971 for office space for administration purposes and houses a radio base for field communications throughout the watershed.

B. Role

The role of the Operations and Maintenance Program is to provide the Authority with the capability of responding to and providing for the various conservation projects that are required to effectively implement a comprehensive resource management program for the Halton Watershed. The present facilities are inadequate to fulfill the operational and servicing requirements of the Authority. Section 14.2.3. details the future plans of the Authority for the Field Operations Program.

C. Goal

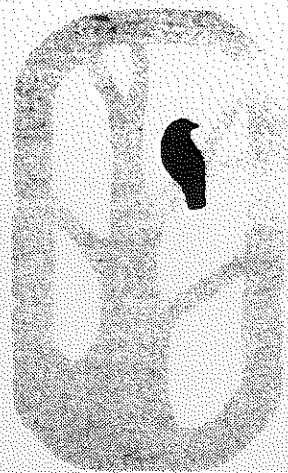
The goal of the Operations and Maintenance Program is to provide a central operations facility capable of operating and maintaining the Authority's properties and projects, servicing conservation assistance programs, responding to fire and flood emergencies in a cost effective manner.



#### D. Strategy and Objectives

In order to achieve the maximum benefit in the most cost effective manner, the Authority will provide and maintain.

- i) A vehicle and equipment fleet capable of servicing the needs of the resource management program of the Authority.
- ii) Certain minimum equipment, materials and supplies in order to respond to non-emergency fire and flood events.
- iii) A radio communications system for the daily operation and maintenance of Authority property, projects and flood warning.
- iv) A tree nursery to supply the needs of the Private Lands Conservation Assistance Program.
- v) A sawmill to provide a supply of building materials from the Authority's forestry tracts to be used for projects of the Authority.
- vi) A service to minimize vandalism to Authority property.
- vii) Such manpower requirements as are necessary from time to time, to operate and maintain Authority properties, construct such projects as the Authority deems necessary and deliver such services as are required to implement the resource management program of the Authority.



## Halton Region Conservation Foundation

12.0



## 12.0 THE HALTON CONSERVATION AUTHORITY FOUNDATION

In 1975, the Halton Region Conservation Foundation was established for the purpose of raising funds to assist the Conservation Authority to implement specific conservation projects in the watershed.

The Foundation is administered by a fifteen Member, Board of Directors, who are appointed to the Foundation by the Conservation Authority for a three year term.

The Foundation solicits donations of money and property from the public at large, corporations and other foundations; donors are eligible for tax exemption under the Income Tax Act.

The money received by the Foundation is then turned over to the Conservation Authority to assist in the completion of designated projects for which the Authority has insufficient sources of funding through its annual budget allocations to carry forward and implement.

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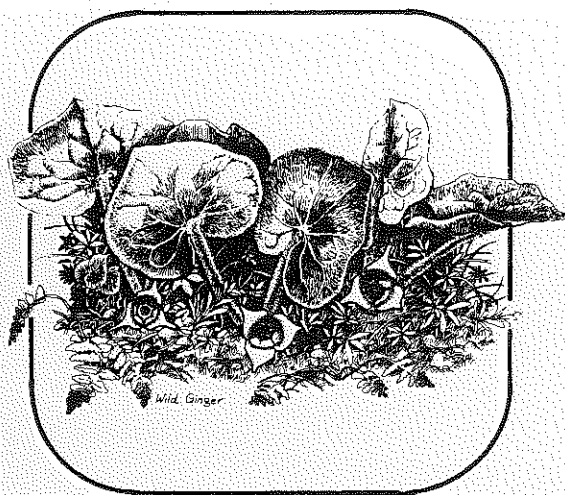
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## Statement of Priorities for the Halton Region Conservation Authority

13.0



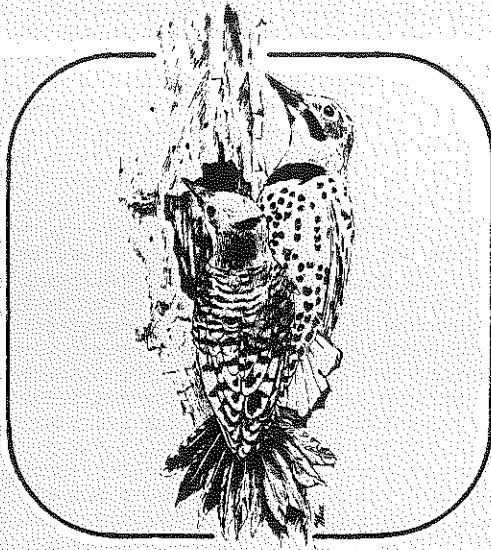
### 13.0 STATEMENT OF PRIORITIES FOR THE HALTON REGION CONSERVATION AUTHORITY

In terms of priorities, the Authority will continue to establish and implement a resource management plan for the Halton watershed which promotes and recognizes a multi-purpose philosophy to resource management. The programs and projects contained in the Watershed Plan reflect an interrelationship between water management, land use planning, conservation land management and the provision of public open space on a regional scale.

The Halton Authority will continue to emphasize its responsibility in watershed management as a top priority by addressing problem areas with selected projects which provide protection of life and property. Flood plain management, through Authority regulations and municipal plan input, will continue to be an integral component of the total Water Management Program.

It is anticipated that increased emphasis will be placed on the Conservation Recreation Program of the Authority, particularly through the implementation of the Halton Waterfront Plan, the expansion and acquisition of land on the Niagara Escarpment, the Parkway Belt and through selected flood plain acquisitions for the establishment of an adequate regional open space system for the watershed. Increased participation by the public in the Authority programs will be achieved through expansion of outdoor education opportunities on designated Authority owned properties and through public information through the Community Relations Program.

In addition, the Authority intends to establish suitable administration and field operation facilities in order to operate, maintain and continue with the required resource management program for the Authority watershed.



## Budget Forecast 1983-1989

14.0

## 14.0 BUDGET FORECAST - 1983 - 1988

### 14.1 Program Support Costs

#### 14.1.1 Administration and Program Support Costs

##### Administration Costs

Administration costs are classified to represent those costs generally accepted to execute and manage the affairs of the Authority. The Authority is a Government Body and as such, it has an executive function represented by the appointed membership and a management function consisting of staff hired for this purpose.

Historically, the Conservation Authorities have encountered difficulties in funding for administration purposes due to an overall lack of appreciation and understanding of the full extent of items covered within the administration categories of the Authorities' annual budgets. Municipalities and the Provincial Government have traditionally established maximum percentage increases for administrative funding from year to year which has not always reflected actual costs of managing the Authority's affairs. At the present time, the Provincial grant for administration funding is under executive control by Management Board and whatever shortfalls result from Provincial underfunding result in the transfer of that shortage to the Municipal levy. This trend distorts the standard 50/50 cost sharing between Municipal levy - Provincial grant on actual administrative costs. Management Board has historically dealt with administration grants separately from the capital grant funding to the Conservation Authorities and has stipulated that the approved administration grant levels cannot be increased through reallocation from capital categories. Therefore, the flexibility that the Authority membership has at its disposal is severely restricted in attempting to reflect ceilings imposed on the Provincial funds and yet accommodate those administrative costs that are ongoing and not always within the ability of any Conservation Authority to control.

An individual Conservation Authority's administration cost is directly related to a number of factors, such as;

- (i) Area and population of Watershed - each Municipality is entitled to appoint members to the Authority based upon the population of each Municipality. As population increases, so does the membership.
- (ii) Number of meetings and frequency of meetings of Authority Members.
- (iii) Rate of Per Diem and Honourarium paid to Authority Members.
- (iv) Scope and state of maturity of the Resource Management Program in the Authority. This matter will determine the overall staff complement required to administer the daily operation of the Authority, the office space, supplies and equipment requirements and the employee benefit plan costs.
- (v) The degree of delegated responsibility to the individual Conservation Authority by the Ministry of Natural Resources.

#### Trends in Administration Costs

A review of the administration costs of the Halton Authority for the years 1979 to 1983, inclusive, is illustrated on the following Table. The annual expenditures for each of the six categories in the annual administration cost provide the following conclusions:

- (i) There is no uniform or constant percentage increase from year to year and within each of the six categories.
- (ii) The Administration costs in total are on the increase.
- (iii) Individual components within some of the six categories have experienced cost increases that exceeded the increase in Provincial funding for administration costs. This is particularly evident in those costs which are established by Government Agencies other than the Conservation Authority, yet the Conservation Authority has to accommodate such increases within the Executive control ceiling for the Provincial funds.

Item	1979	1983	% Increase	Average Annual Increase
Administration Costs	\$498,263.	\$750,400.	50%	10%
M.N.R. Grant for Administration Costs	\$241,325.	\$373,200.	55%	5.5%
Unemployment Insurance Workman's Compensation Canada Pension O.H.I.P.	\$ 63,400.	\$110,500.	74%	14.8%
Committee of Chairmen Postage Telephone	\$ 14,000.	\$ 31,700.	126%	25.2%
Office Rent	\$ 25,100.	\$ 52,750.	110%	22%
All Other Administration Costs	\$395,763.	\$555,450.	40%	8%

#### Administration Costs, 1984-1988

The majority of items currently classified as Administration costs of the Authority are anticipated to continue to increase over the 1984-1988 period. There are three items, however, that will require more than the normal inflationary increases due to changes initiated by the Authority or future requirements of the Authority to administer the program of the Authority. These items are as follows:

##### (i) Short Term Disability and Sickness Plan

The Authority provided an income protection plan for regular employees of the Authority from 1963 to April 1, 1983, that provided;

- a sick leave credit of 1-1/2 days for each unbroken month of service
- pay of 100% of salary when absent from work due to an illness up to the limit of the earned credits
- employees who had unused credits at year end had those credits carried forward
- maximum length of sick leave coverage was 26 weeks

Note: Refer to pgs. 267-273 for graphs denoting Administration Budget Comparisons for 1979 to 1983.



- upon termination (resignation, retirement or dismissal) and provided the employee has three years of continuous employment, the employee receives a payout equal to one-half of the number of days standing to the employees credit, but not in excess of what the employee would receive in six months salary at the time of termination of employment

This plan was terminated on April 1, 1983 and a new plan was put into effect that provides income protection for the employee up to 15 weeks, however, there is no vesting of credits and no payout provisions when an employee terminates.

The new Short Term Disability and Sickness Plan is self-insured by the Authority therefore employees receiving sick pay will be paid from the annual Administration Budget.

The Authority decided upon termination of the previous plan that there would be no buyout of the accumulated credits in 1983 and that the unused sick leave credits would be recognized and remain on the individual employee's record. The Authority would continue the payout provision of the old plan should an employee terminate employment with the Authority after April 1, 1983. In 1984, the employees will have the option of retaining the unused credits or receiving the eligible payout over the next three years on the following basis:

- all payments of \$3,000.00 or more, paid in three equal payments of \$1,000.00 minimum, in 1984, 1985 and 1986
- all payments in excess of \$2,000.00, but less than \$3,000.00, in two equal payments, in 1984 and 1985
- payments in excess of \$1,000.00 but less than \$2,000.00, paid by \$1,000.00 in 1984 and the balance in 1985
- all payments of \$1,000.00 or less paid in 1984

Since the cost for the payout has not been funded by the Province and the Authority in 1983, additional funding from both sources will be required in 1984, 1985 and 1986 to finalize the buyout of the former plan. The estimated costs in 1983 dollars are as follows:

Year	# of Employees	Cost	M.N.R. Grant	Authority Levy
1984	42	\$73,000.00	\$36,500.00	\$36,500.00
1985	40	\$67,000.00	\$33,500.00	\$33,500.00
1986	27	\$58,000.00	\$29,000.00	\$29,000.00

(i) Supplementary Pension Plan

The Authority has provided a Supplementary Pension Plan for regular employees of the Authority who have completed a six month probation period of employment. This plan was instituted in 1971, however, participation in the plan is voluntary by the employees and enrollment is not mandatory or a condition of employment with the Authority.

The Authority contributes an amount equal to 5% of the employee's annual earnings, less contributions made to the Canada Pension Plan on behalf of each participating employee and the employee contributes an equal amount to match the Authority's contribution.

In 1983, thirty-two of the eligible sixty-six employees are enrolled in the Supplementary Pension Plan and the Authority's contribution on behalf of these employees totals \$32,100.00. If the thirty-four non-participating, but eligible employees were to join the plan in 1983, the Authority's contribution on their behalf would be an additional \$23,500.00. Therefore, the Supplementary Pension Plan contributions by the Authority are projected to double in the next five years as the number of participants enrolling in the plan increases. The level of funding required should be based on the 1983 potential cost of \$55,600.00.

Administration Office Accommodation

The most basic requirement for an effective resource management program is the provision of a central administration facility. The Authority must be accessible to the public, must be capable of responding to resource management issues and must be capable of delivering a service to the watershed.

The Halton Authority has conducted the operation of the Authority from various rented accommodations in the Town of Milton since 1956. In 1983, the Authority rents 5,104 square feet of office space which accommodates twenty-four employees and serves as the central location for contact with the public and other government bodies.

The servicing component of the program operates from the Mountsberg Conservation Area where an office facility of 864 square feet provides accommodation for an additional seven employees. In both locations, there are serious deficiencies with the present accommodations, the most pressing one being inadequate space.

The lease on the present rental accommodation will expire on March 31, 1984 and since there is no possibility of occupying additional floor area at the present location, the Authority is considering vacating the premises at that time, and is investigating alternative accommodation.

Comparison of the present rented facility and possible alternate accommodation is summarized below:

<u>Item</u>	<u>Present Office</u>	<u>Possible Alternate Accommodation</u>
Area required	5,104 sq. ft.	9,500 sq. ft.
Area required for Staff accommodation	2,834 sq. ft.	5,800 sq. ft.
Number of Staff accommodated	22	30
Area required for meeting rooms	322 sq. ft.	1,400 sq. ft.
Area required for storage, mailroom, washrooms, library	1,948 sq. ft.	2,300 sq. ft.
Annual Rent	\$37,000.00 \$7.25/sq. ft.	\$68,875.00 \$7.25/sq. ft. estimate
Taxes	\$ 3,900.00/yr.	\$ 7,000.00/yr. estimate
Utilities	\$ 2,300.00/yr.	\$ 7,500.00/yr. estimate
Janitorial Cost	\$ 4,400.00/yr.	\$ 6,000.00/yr. estimate
Total Rental and Operating Cost:	\$47,600.00/yr. \$9.32/sq.ft./yr.	\$89,000.00/yr. estimate \$9.41/sq.ft./yr. estimate

Subject to available funding from the appropriate funding bodies, the Conservation Authority's preferred five - year administration is stated in Figure 14.1.1.

FUNDING LEVELS FOR ADMINISTRATION  
Figure 14.1.1

Category	1983	1984	1985	1986	1987	1988
Wages	\$318,000.	\$350,000.	\$385,000.	\$423,500.	\$465,850.	\$512,450.
Benefits	237,000.	296,000. 73,000.	337,000. 67,000.	384,000. 58,000.	437,000.	500,000.
Travel & Expenses	35,200.	37,000.	39,000.	41,000.	43,000.	45,000.
Office Equipment - Purchases & Rental	44,300.	48,000.	52,000.	56,000.	60,000.	64,000.
Office Materials & Supplies	18,100.	21,000.	24,000.	27,000.	30,000.	33,000.
Rent & Utilities	71,650.	95,000.	97,000.	99,000.	101,000.	102,000.
General Expenses	25,650.	30,000.	34,000.	38,000.	42,000.	46,000.
<b>TOTALS:</b>	<b>\$750,400.</b>	<b>\$950,000.</b>	<b>\$1,035,000.</b>	<b>\$1,126,500.</b>	<b>\$1,178,850.</b>	<b>\$1,303,450.</b>
M.N.R. Grant	\$375,200.	\$475,000.	\$517,500.	\$563,250.	\$589,425.	\$651,725.
Authority Levy	\$375,200.	\$475,000.	\$517,500.	\$563,250.	\$589,425.	\$651,725.

# ADMINISTRATION BUDGET COMPARISONS Budget Years 1979 to 1983

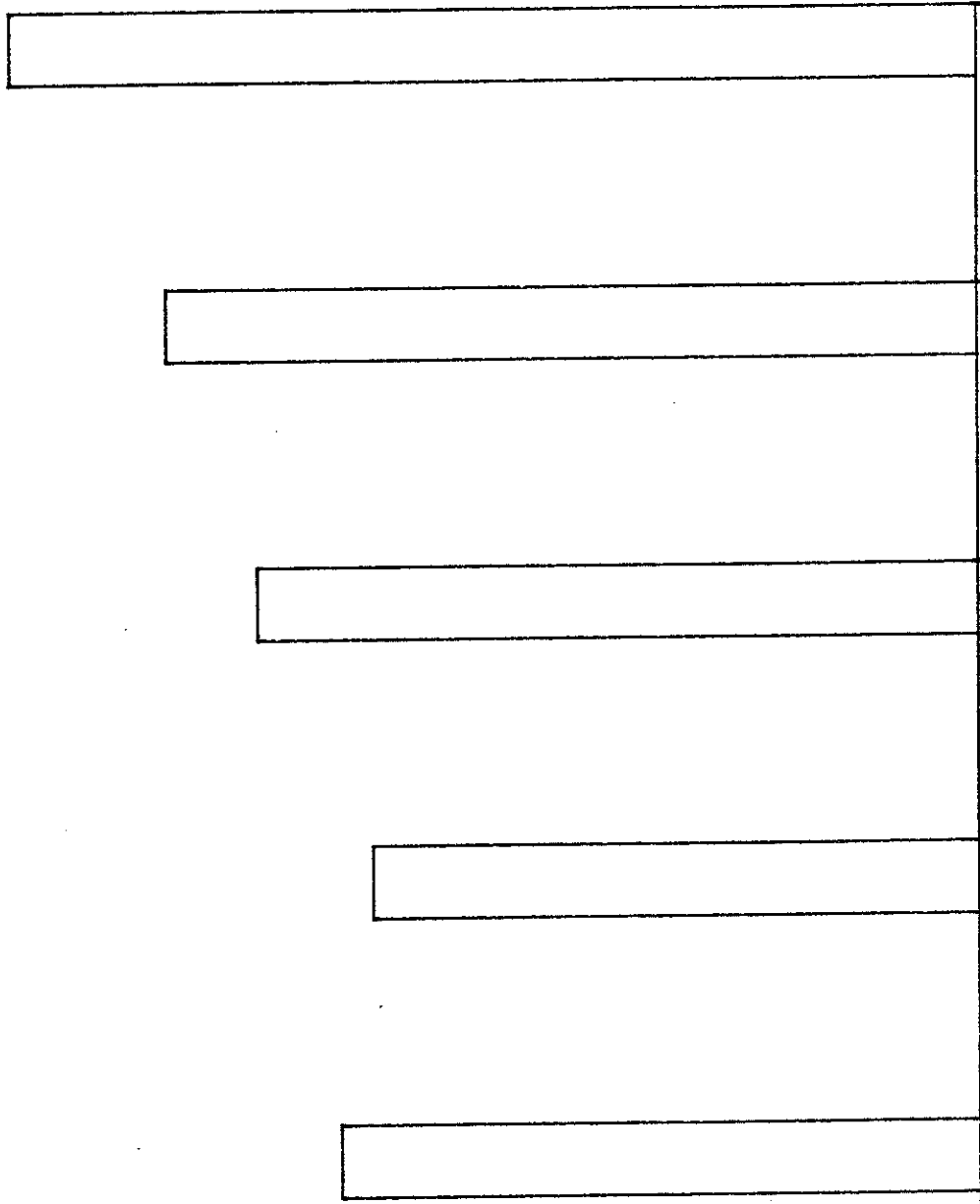
TOTAL ANNUAL EXPENDITURES

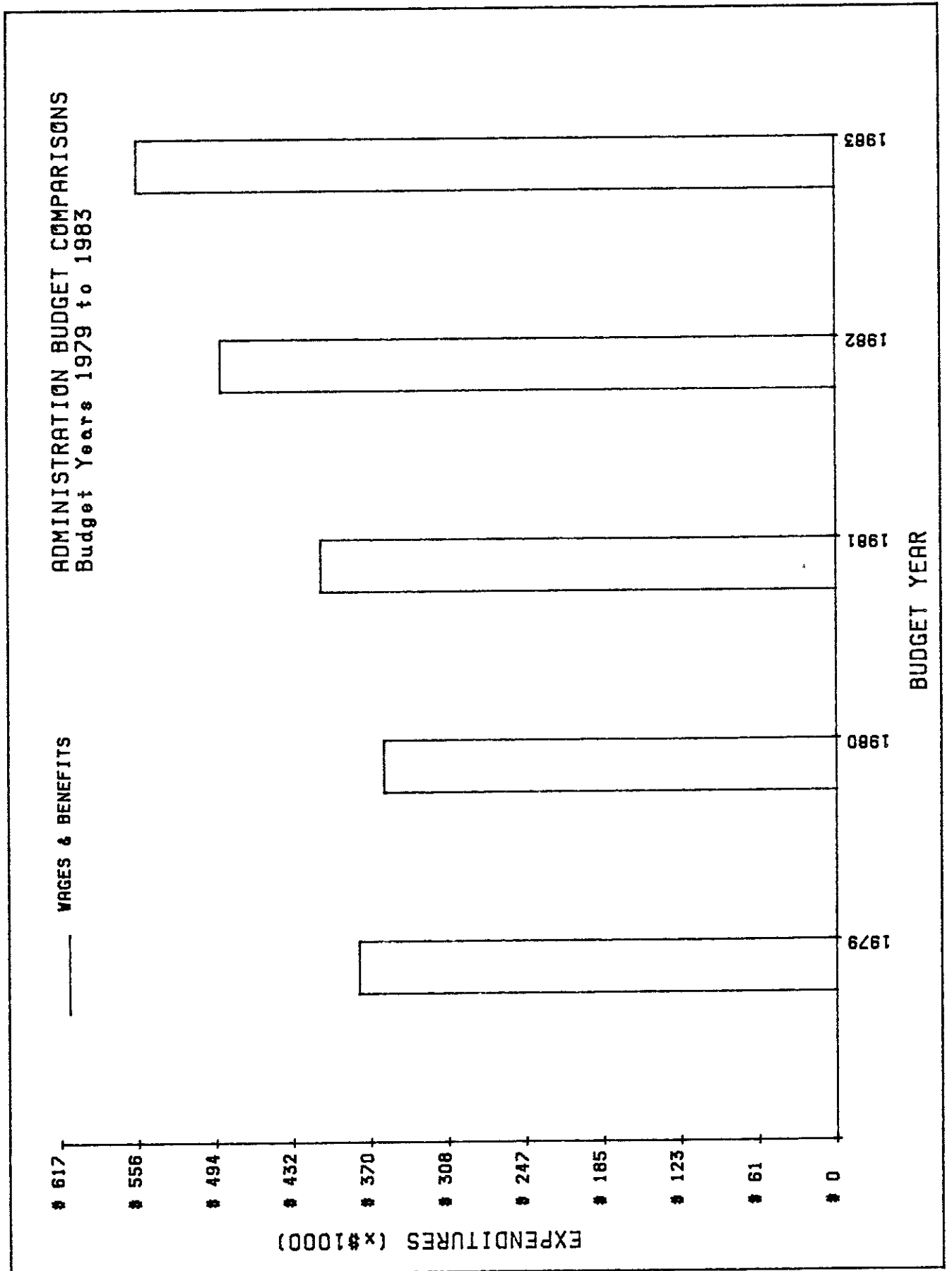
EXPENDITURES (\*\$1000)

\$ 833  
\$ 750  
\$ 666  
\$ 583  
\$ 500  
\$ 416  
\$ 333  
\$ 250  
\$ 166  
\$ 83  
\$ 0

BUDGET YEAR

1983  
1982  
1981  
1980  
1979





# ADMINISTRATION BUDGET COMPARISONS Budget Years 1979 to 1983

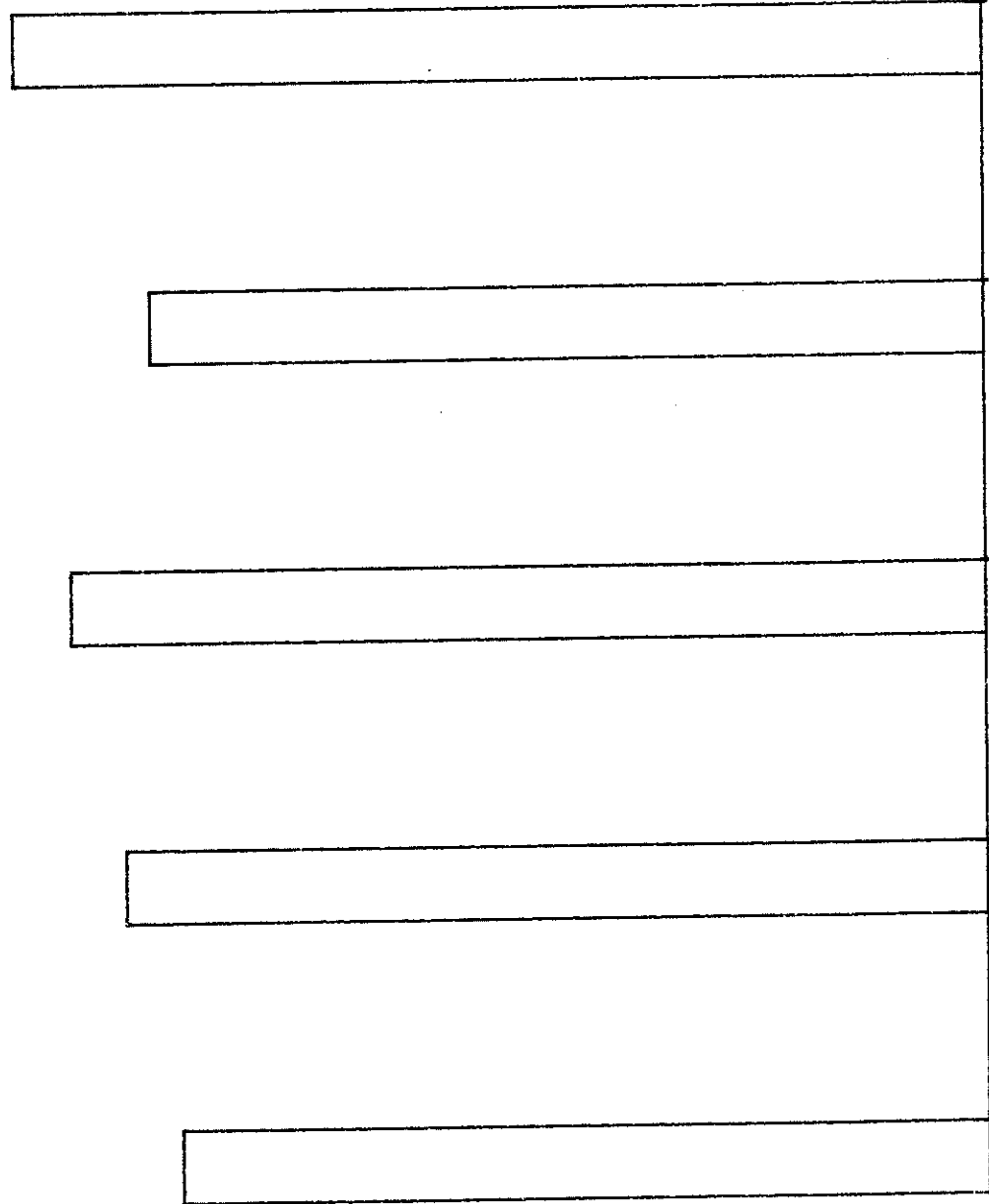
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EXPENDITURES (x\$1000)

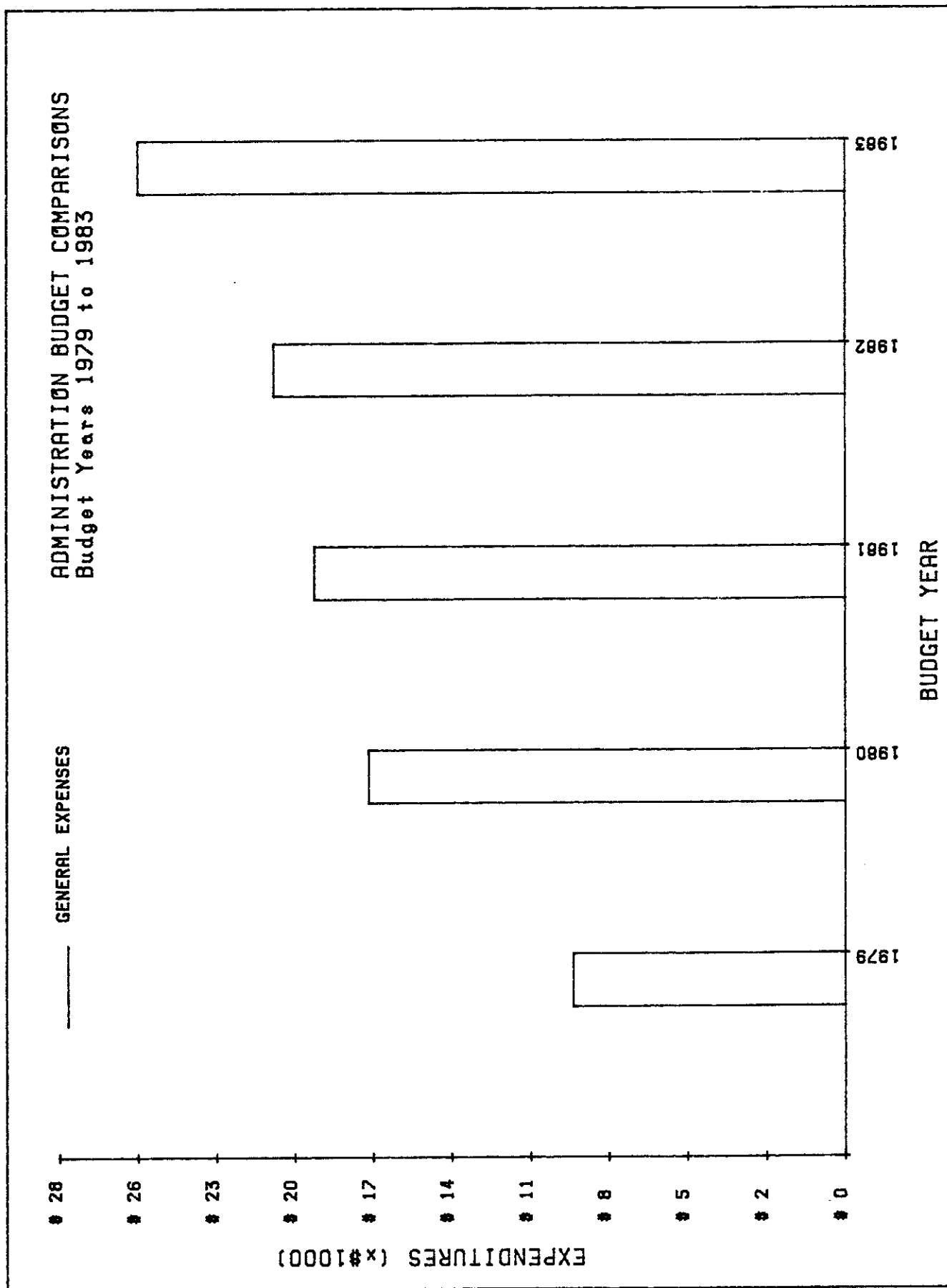
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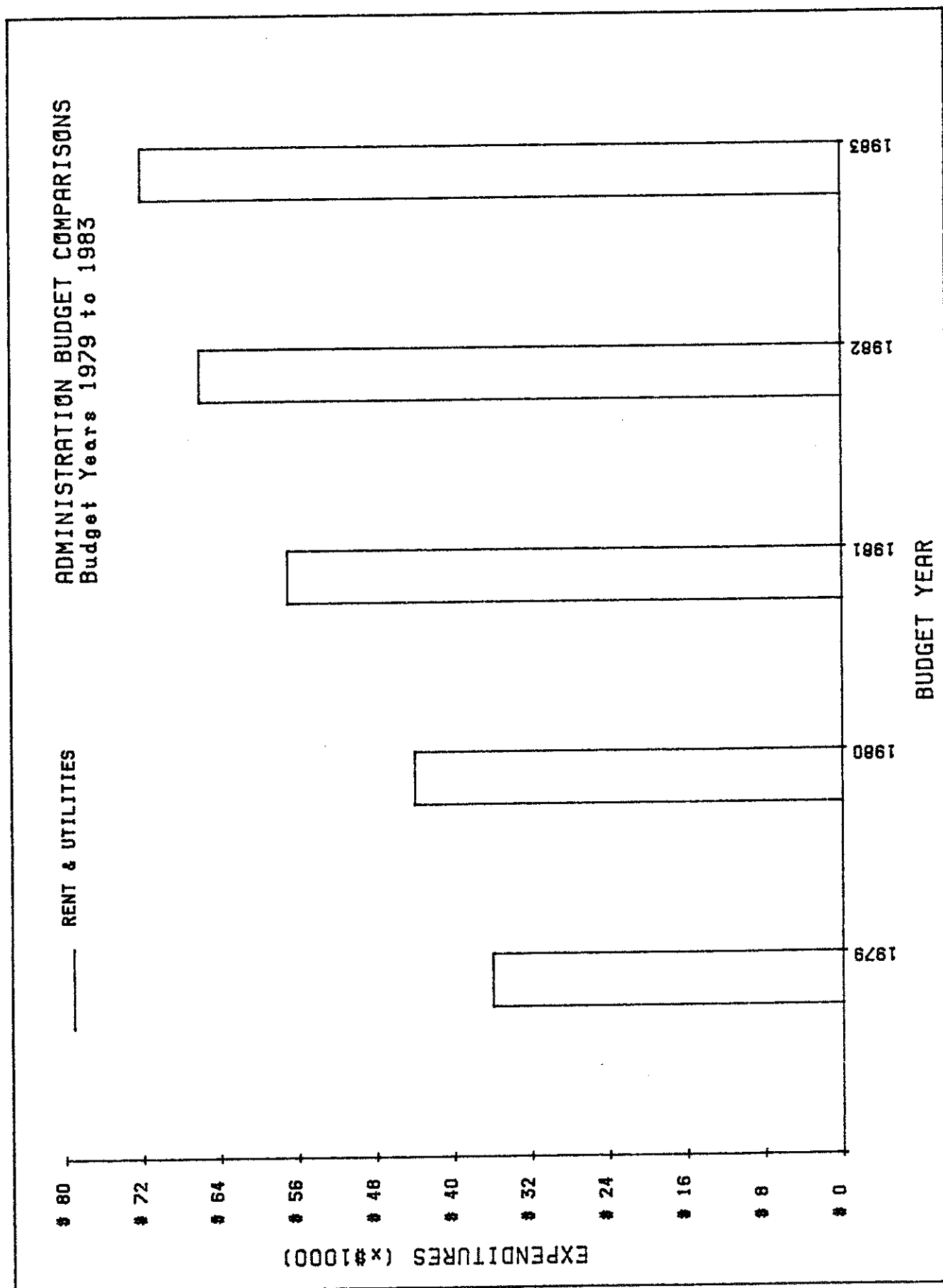
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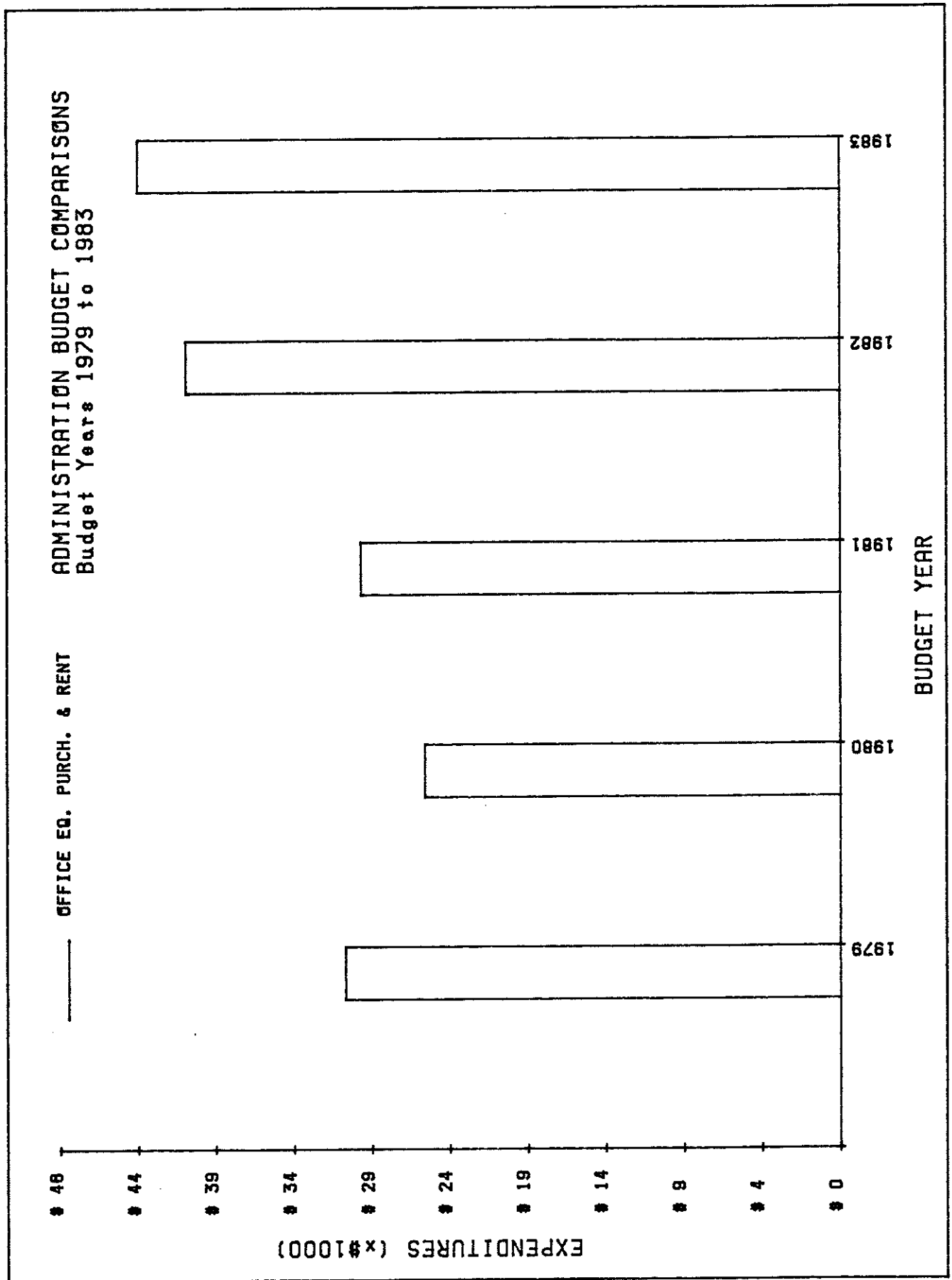
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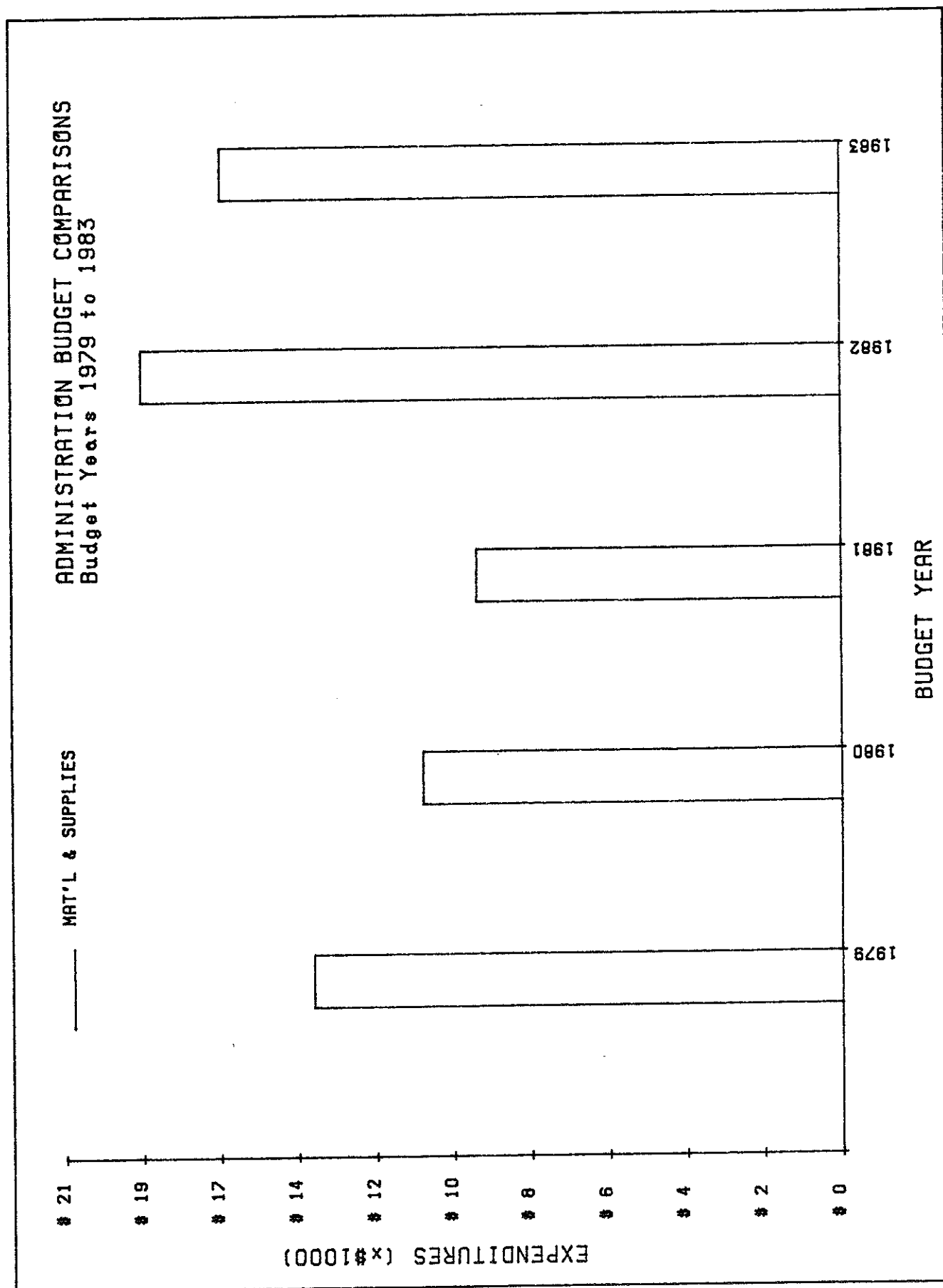












#### 14.1.2 Water and Related Land Management Program Support Costs

##### A. Background:

Water and Related Land Management Support costs represent individual program management and administrative costs that are incurred to achieve the goal of an adequate water management objective of the Authority. Each program addresses a particular component of the watershed management regime and different approaches and programs are required to address all of the variables encountered when dealing with surface waters.

The Water Management Program of the Halton Authority combines structural and non-structural components as management tools to achieve its objective. Structural components completed to date consist of four flood control reservoirs, two diversion channels and six channelization projects carried out on various streams for flood protection and erosion control. The non-structural components consist of administering flood plain regulations, pre-development land use planning input, storm water management controls, forest management programs on Authority and private lands and operation of a flood warning system.

The Water Management Program is supported by a public relations and education component that disseminates information and demonstrates to the public, the importance and significance of water management.

##### B. Variables Impacting on Program Support Costs

The funding requirements can vary from year to year, depending upon;

- (i) Classification and definition of Program Support Expenditures as determined by Ministry of Natural Resources.

Since 1976, the Ministry of Natural Resources has expanded the support expenditure categories from eight to its current level of eleven.

- (ii) Staff complement of the Authority required to administer the Water Management Program.
- (iii) The number, age and type of water management structures built by the Authority; each structure constructed requires funds for daily operation and annual maintenance.
- (iv) Frequency and cost of replacement of defective components of each water control structure built.
- (v) The impact of urbanization and land use planning changes as it relates to Authority Regulation passed under Section 28 of the Conservation Authorities Act, the Planning Act, the Niagara Escarpment Planning and Control Area and the Parkway Belt Planning Act.
- (vi) Changes in Provincial legislation that impact on administration costs of the program; eg. sales tax and market value assessment impacts on annual property taxes.
- (vii) Demand for and need of expanding private land assistance programs for reforestation, streambank erosion and water management programs to private property owners in the watershed.
- (viii) Frequency and degree of response required for flood emergency measures.
- (ix) Annual forest management program required to manage Authority owned forestry tracts.

Subject to the available funding from the appropriate bodies, the Conservation Authority's preferred five - year Water and Related Land Management Support Budget is summarized below and detailed in Figure 14.1.2.

Funding Requirements

1983 - 1988

Year	Total	M.N.R. Grant	Authority Levy
1983	\$ 579,700.	\$ 318,835.	\$ 260,865.
1984	649,500.	357,225.	292,275.
1985	704,000.	387,200.	316,800.
1986	798,000.	438,900.	359,100.
1987	877,000.	482,350.	394,650.
1988	964,000.	530,200.	433,800.

WATER AND RELATED LAND MANAGEMENT PROGRAM SUPPORT COSTS  
Figure 14.1.2

Category	1983	1984	1985	1986	1987	1988
Regular Staff Complement	16	16	17	18	18	18
			(Water Res. Technician)	(Info. Public Rel.)		
Program Administration Wages and Expenses	\$340,000.	\$375,000.	\$432,000.	\$475,000.	\$522,000.	\$574,000.
Operation and Maintenance of Water Control Structures	80,700.	90,000.	104,000.	130,000.	152,000.	170,000.
Major Maintenance of Water Control Structures	10,000.	25,000.	30,000.	35,000.	40,000.	45,000.
Conservation Services	7,500.	7,500.	8,000.	8,000.	8,000.	10,000.
Community Relations	21,000.	21,000.	25,000.	25,000.	30,000.	30,000.
Utility Services						
Property Taxes	50,200.	55,000.	60,000.	65,000.	70,000.	75,000.
Insurance						
General Expenses	23,500.	30,000.	35,000.	40,000.	45,000.	50,000.
Urban and Rural Drainage	0	0	0	0	0	0



WATER AND RELATED LAND MANAGEMENT PROGRAM SUPPORT COSTS  
Figure 14.1.2

Page 2 of 2

Category	1983	1984	1985	1986	1987	1988
Forest Management	46,800.	50,000.	50,000.	50,000.	50,000.	60,000.
Soil Erosion and Sedimentation Studies	0	0	20,000.	20,000.	0	0
Total Expenditure	579,700.	653,500.	764,000.	848,000.	917,000.	1,014,000.

### 14.1.3 Conservation and Recreation Land Management Program Support Costs

#### A. Background:

Conservation and Recreation Land Management support costs represent individual program management and administrative costs that are incurred to provide opportunities for the general public to experience, observe and participate in the conservation of land management objectives of the Authority.

Individual programs consist of providing public usage of Authority landholdings for a variety of outdoor activities, a conservation education program related to the natural resources of the watershed, information and interpretation programs designed to encourage improvement to land use practices and assistance to landowners that encourages improved habitat for fish and wildlife resources.

#### B. Variables Impacting on Program Support Costs

The funding requirements can vary from year to year depending upon;

- (i) Staff complement required to administer the Conservation and Recreation Land Management Program.
- (ii) Changes in Provincial legislation that impact on the administration costs of the program, such as market value assessment and property taxes.
- (iii) Demand by the public to use Authority lands for educational, recreational and conservation purposes.
- (iv) Demand and need to provide assistance programs to private property owners for wildlife habitat improvement programs.

Subject to the available funding from the appropriate funding bodies, the Conservation Authority's preferred five - year Conservation and Recreation Land Management Support Budget is summarized below and detailed in Figure 14.1.3.

Funding Requirements, 1983 - 1988

Year	Total	M.N.R. Grant	Authority Levy
1983	\$230,400.	\$115,200.	\$115,200.
1984	257,100.	128,550.	128,550.
1985	352,100.	176,050.	176,050.
1986	390,800.	195,400.	195,400.
1987	431,500.	215,750.	215,750.
1988	475,500.	237,750.	237,750.

CONSERVATION AND RECREATION LAND MANAGEMENT PROGRAM SUPPORT COSTS

Figure 14.1.3.

Category	1983	1984	1985	1986	1987	1988
Regular Staff Complement	7	7	10	10	10	10
Wages & Expenses	\$164,200.	\$180,600.	\$258,600.	\$283,600.	\$311,600.	\$342,600.
Conservation Services	11,000.	13,500.	14,000.	15,200.	15,900.	16,900.
Information & Interpretation	3,000.	4,000.	10,000.	12,000.	14,000.	16,000.
Utilities, Property Taxes Insurance	31,000.	35,000.	40,000.	45,000.	50,000.	55,000.
General	21,200.	24,000.	30,000.	35,000.	40,000.	45,000.
Total	\$230,400.	\$257,100.	\$352,100.	\$390,800.	\$431,500.	\$475,500.

## 14.2 Capital Projects

### 14.2.1 Water and Related Land Management Program Capital Projects

Subject to available funding from the appropriate funding bodies, the Conservation Authority's preferred five - year Water and Related Land Management Capital Budget is summarized below and detailed in Figure 14.2.1.

#### Funding Requirements

1984 - 1988

#### Water and Related Land Management Capital Budget

Year	Surveys & Studies	Capital Projects	Totals
1984	\$245,000.	\$2,169,000.	\$2,414,000.
1985	\$195,000.	\$1,410,000.	\$1,600,000.
1986	\$160,000.	\$ 745,000.	\$ 905,000.
1987	\$120,000.	\$ 615,000.	\$ 735,000.
1988	\$ 75,000.	\$ 30,000.	\$ 105,000.
Five - Year Forecast Total			\$5,764,000.

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Surveys and Studies - 1984

Page 1 of 13

Description of Work	Duration	Estimated Cost	Justification
1. 16-Mile Creek Flood Plain Mapping	April, 1983 to April, 1984	Total Project Cost = \$165,000.00 1983 Expenditures = \$ 65,000.00 1984 Expenditures = \$100,000.00	The Production of Flood Plain Mapping is a necessary prerequisite to the Authority's Water and Related Land Management Program. The maps provide an indication of those areas requiring new program strategies or modifications to existing program areas.
2. 14-Mile & McCraney Cr. Flood Protection Design Study	April, 1984 to June, 1984	\$40,000.00 for Design of complete protection works and supervision of McCraney Creek Protection	Average annual Damages = \$100,000.00 Number of Homes Protected = 142 Potential Loss of Life (y/n) = N Benefit/Cost Ratio = 1.00 This study will be commissioned to provide the design of the required flood protection works on the McCraney & 14-Mile Creeks. The McCraney Cr. protection is Scheduled for implementation in 1984.
3. East Rambo Cr. Flood Protection - Prelim. Design Study	April, 1984 to July, 1984	\$15,000.00 for preliminary design	Average Annual Damages = \$20,000.00 Number of Homes Protected = 5 Potential Loss of Life (y/n) = N Benefit/Cost Ratio = 1.07 This study will assess alternative flood protection measures on the East Rambo Cr. between Plains Rd. & Glenwood School Dr. in the City of Burlington.
4. Flood Forecast Model Development	April, 1984 to November, 1984	\$20,000.00 for Bronte Creek Model	The Development of a Flood Forecast Model is a primary component of the Authority's Flood Forecasting and Warning System.

# 5-Year Capital Forecast Annual Program Capital Expenditures

Figure 14.2.1

Surveys and Studies - 1984

Page 2 of 13

Description of Work	Duration	Estimated Cost	Justification
5. East Hager Diversion Final Design	April, 1984 to June, 1984	\$60,000.00 Final Design and Supervision	<p>Average Annual Damages = \$120,000.00</p> <p>Number of Homes Protected = 50</p> <p>Potential Loss of Life (y/n) = Y</p> <p>Benefit/Cost Ratio = 1.30</p> <p>The construction of the East Hager diversion is scheduled in 1984. This study will provide details on the recommended Flood protection alternative.</p>
6. Bronte Creek Fill Control Schedules	Jan., 1984 to December, 1984	\$10,000.00 Internal Costs	<p>Presently, only the Valley through Urban Oakville is scheduled for fill control. To prevent filling in the headwater swamps, valleys and watercourses, the extension of the Authority's fill line scheduling program is proposed. These schedules will provide control over flooding, erosion, water quality and protect significant fisheries resources.</p>

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Surveys and Studies - 1985

Page 3 of 13

Description of Work	Duration	Estimated Cost	Justification
1. Joshua's Creek Master Drainage Plan	April, 1985 to December, 1985	Total Project Cost = \$45,000.00	The Production Of Master Drainage Plans for watercourses within the area of the Authority's jurisdiction is necessary to optimize the management guidelines followed in the development of individual watersheds
2. Cedar Springs Flood Damage Assessment	April, 1985 to November, 1985	\$30,000.00 for Engineering	<p>Average annual Damages = \$10,000.00</p> <p>Number of Homes Protected = 10</p> <p>Potential Loss of Life (Y/n) = Y</p> <p>Benefit/Cost Ratio = 0.45</p> <p>This Study involves an analysis of flooding conditions in the Cedar Springs community to determine whether or not flood protection is warranted.</p>
3. Flood Forecast Model Development	April, 1985 to November, 1985	\$20,000.00 for 16-Mile Creek Model	The Development of a Flood Forecast Model is a primary component of the Authority's Flood Forecasting and Warning System.
4. 14-Mile Cr. Flood Protection Constr. Supervision	May, 1985 to September, 1985	\$15,000.00 for Contract Admin.	This involves administering a contract to complete flood protection on the 14-Mile Creek.
5. East Rambo Cr. Flood Protection - Final Design & Supervision	May, 1985 to August, 1985	\$25,000.00 for Final Design and Contract Administration	The final design of Flood Protection works on the East Rambo Cr. and the letting and administering of a construction contract.
6. Watershed Onstream Erosion Study	Jan, 1985 to December 1985	Total estimated Costs = \$20,000.00	Particularly in light of Municipal comments requesting more emphasis be paid to rural erosion, this study will pertain to on-stream erosion on various watercourses in the watershed on a priority basis.



5-Year Capital Forecast Annual Program Capital Expenditures

Figure 14.2.1  
Surveys and Studies - 1985

Page 4 of 13

Description of Work	Duration	Estimated Cost	Justification
6. 16-Mile Creek Fill Control Schedule	Jan, 1985 to December, 1985	Total Project Cost = \$10,000.00	Presently, only the valley of the 16-mile Cr through Urban Oakville and Milton are scheduled to control filling. No controls preventing the infilling of headwater swamps or major rural valleys or watercourses exist. These schedules will provide control over flooding, erosion and water quality.
7. 14-Mile Creek Fill Control Schedules	Jan, 1985 to December, 1985	Total Project Costs \$5,000.00	Presently none of the 14-Mile Creek is scheduled to the fill control regulations. These schedules will provide control over valleys and watercourses in an urban area. In addition, the schedules will include rural headwater environmentally sensitive valleys.
8. Joshua's Creek Fill Control Schedules	Jan, 1985 to December, 1985	Total Project Cost \$5,000.00	In conjunction with the Joshua's Creek master drainage plans, scheduling of the creek valley and headwater is required. Presently none of the Joshua's Creek is scheduled to control filling. The Joshua's Creek flows through Urban Oakville
9. Soil Erosion Study	Jan, 1985 to December, 1985	Total Project Costs \$20,000.00	This project is required to complete the watershed Plan of the Conservation Authority. It will determine the extent of erosion and sedimentation affecting the Grindstone, Bronte and 16 Mile Creeks. Once completed, it will determine the role of the Conservation Authority in erosion and soil conservation projects

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Surveys and Studies - 1986

Page 5 of 13

Description of Work	Duration	Estimated Cost	Justification
1. Appleby Creek Master Drainage Plan	April, 1986 to December, 1986	\$45,000.00 for Engineering	Benefits accrued through the development of this Master Drainage Plan includes an increased ability for Authority planning staff to assess the effects of individual development proposals on the surface water regime in the Appleby Cr. watershed.
2. West Hager Creek Detention Facility Preliminary Design	April, 1986 to June, 1986	\$25,000.00 for Preliminary Engineering	Benefits are primarily accrued through a decrease in downstream flood susceptibility
3. Randall Street Emb. Erosion Protection Preliminary Design	April, 1986 to August, 1986	\$30,000.00 for Preliminary Engineering	Toe erosion of the valley of the 16-Mile Cr adjacent to Randall St. in Oakville, threatens to undermine a primary thoroughfare and also threatens the main telephone trunk between Toronto and Hamilton. Toe erosion protection would eliminate these potential damages.
4. Lowville Flood Damage Assessment and Ice Jam study	February, 1986 to July, 1986	\$25,000.00 for Engineering	Annual flooding occurs in Lowville primarily as a result of ice jamming. The damages are significant. This study will examine the causes of ice jams in this area, and will detail the extent of damages
5. Appleby Creek Fill Control Schedules	Jan, 1986 to December, 1986	Total Project Costs \$5,000.00	In conjunction with the Appleby Creek Master Drainage Plan, scheduling of the Creek Valley is required. Presently the Appleby Creek is not scheduled to the fill control regulations. This Creek is in Urban Burlington.

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Surveys and Studies - 1986

Page 6 of 13

Description of Work	Duration	Estimated Cost	Justification
6. Lake Ontario Shoreline Fill Control Schedules	Jan, 1986 to December, 1986	Total Project Costs \$10,000.00	The Region of Halton Official Plan encourages the H.R.C.A. to schedule the shoreline to fill control schedules. Presently no control exists over the manner in which erosion-prone sites are protected on private properties.
7. Watershed Sedimentation Sources Study	Jan, 1986 to December, 1986	Total Project Costs \$20,000.00	In conjunction with the need to place more emphasis on soil erosion and sedimentation in the watershed, sedimentation sources should be identified on the major creek systems in order to determine their impacts on quality and quantity aspects of water management.

5-Year Capital Forecast Annual Program Capital Expenditures

Figure 14.2.1  
Surveys and Studies - 1987

Page 7 of 13

Description of Work	Duration	Estimated Cost	Justification
1. West Hager Creek Detention Facility Final Design	April, 1987 to September, 1987	\$30,000.00 for Final Design & Contract Administration	Benefits are primarily accrued through a decrease in downstream flood susceptibility
2. Randall Street Emb. Erosion Protection Final Design	April, 1987 to August, 1987	\$40,000.00 for Final Design & Contract Administration	Toe erosion of the valley of the 16-Mile Cr adjacent to Randall St. in Oakville, threatens to undermine a primary thoroughfare and also threatens the main telephone trunk between Toronto and Hamilton. Toe erosion protection would eliminate these potential damages.
3. Tuck Creek Master Drainage Plan Update	April, 1987 to August, 1987	\$25,000.00 for Engineering	An updated version of the Tuck Creek Master drainage study would incorporate 1/100 yr and regional storm-generated flow conditions in the analysis of flood and erosion potential.
4. Hidden Valley Flood Damage Assessment	April, 1987 to October, 1987	\$20,000.00 for Engineering	This study would analyse the extent of flooding through the Hidden Valley community and would provide recommendations for flood protection, if required.
5. Tuck Creek Fill Control Schedules	Jan, 1987 to December, 1987	Total Project Costs \$5,000.00	In conjunction with the Tuck Creek Master Drainage Plan, scheduling of the Creek valley is require. Presently the Tuck Creek is not scheduled to the fill control regulations. This creek system is in Urban Burlington.

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Surveys and Studies - 1988

Page 8 of 13

Description of Work	Duration	Estimated Cost	Justification
1. Shore Acres Master Drainage Plan Update	April, 1988 to August, 1988	\$30,000.00 for Engineering	An updated version of the Shore Acres Cr. drainage study would incorporate 1/100 yr and regional storm-generated flow conditions in the analysis of flood and erosion potential.
2. Fill Control Schedules for - Falcon Cr. - Indian Cr. - Hager Cr. - Rambo Cr. - Roseland Cr. - Sheldon Cr.	Jan, 1988 to December, 1988	Total Project Costs \$30,000.00	This project will complete the scheduling of the remaining urban watercourses in Burlington. It will provide protection from filling to valleys and floodplains in Urban Burlington and several creeks flowing off the Niagara Escarpment in the Parkway Belt West planning area.
3. Fill Control Schedules for - Morrison Cr. - Wedgewood Cr.	Jan, 1988 to December, 1988	Total Project Costs \$10,000.00	This project will complete the scheduling of the remaining urban watercourses in Oakville. It will provide protection from filling to valleys and floodplains in Urban Oakville.
4. Shore Acres Creek Fill Control Schedules	Jan, 1988 to December, 1988	Total Project Costs \$5,000.00	In conjunction with the Shore Acres Creek Drainage Plan, scheduling of the Creek valley is required. Presently the Tuck Creek is not scheduled to the fill control regulations. This watercourse is in Urban Burlington.

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Capital Projects - 1984

Description of Work	Duration	Estimated Cost	Justification
1. Ontario Street Creek Diversion	June, 1984	\$9,000.00 for 5% Holdback Release	N/A
2. East Hager Creek Diversion Channel	May, 1984 to October, 1984	\$1,150,000.00 for Contract and Land Assembly	<p>Average Annual Damages = \$120,000.00</p> <p>Number of Homes Protected = 50</p> <p>Potential Loss of Life (y/n) = Y</p> <p>Benefit/Cost Ratio = 1.30</p> <p>Enables construction of drainage facilities for the proposed Hwy. 403 extension.</p>
3. McCraney Creek Flood Protection	May, 1984 to September, 1984	\$980,000.00 for Contract and Land Assembly	<p>Average Annual Damages = \$75,000.00</p> <p>Number of Homes Protected = 90</p> <p>Potential Loss of Life (y/n) = N</p> <p>Benefit/Cost Ratio = 1.00</p> <p>Provides erosion protection and aesthetic benefits.</p>
4. Flood Warning and Data Acquisition System	1983 to 1987 (five years)	\$30,000 representing the second of five phases	<p>Average Annual Damages = \$220,000.00</p> <p>Number of Homes Protected = N/A</p> <p>Potential Loss of Life (y/n) = Y</p> <p>Benefit/Cost Ratio = 14.54</p> <p>Reduces flood damages throughout the watershed by providing advance warning of floods</p>

5-Year Capital Forecast Annual Program Capital Expenditures  
Figure 14.2.1  
Capital Projects - 1985

Description of Work	Duration	Estimated Cost	Justification
1. East Hager Creek Diversion	October, 1985	\$60,000.00 for 5% Holdback Release	N/A
2. Milton Channelization Phase five (5)	May, 1985 to October, 1985	\$985,000.00 for Contract and Land Assembly	Average Annual Damages = \$110,000.00 Number of Homes Protected = 30 Potential Loss of Life (y/n) = Y Benefit/Cost Ratio = 1.13 Provides erosion protection and aesthetic benefits
3. 14-Mile Creek Flood Protection	May, 1985 to September, 1985	\$150,000.00 for Contract and Land Assembly \$50,000.00 Release of Holdback	Average Annual Damages = \$25,000.00 Number of Homes Protected = 55 Potential Loss of Life (y/n) = N Benefit/Cost Ratio = 1.00 Provides erosion protection and aesthetic benefits
4. East Rambo Creek Flood Protection	May, 1985 to September, 1985	\$185,000.00 for Contract and Land Assembly	Average Annual Damages = \$20,000.00 Number of Homes Protected = 10 Potential Loss of Life (y/n) = N Benefit/Cost Ratio = 1.07 Provides erosion protection and aesthetic benefits.
5. Flood Warning and Data Acquisition System	1983 to 1987 (five years)	\$30,000 representing the third of five phases	Average Annual Damages = \$220,000.00 Number of Homes Protected = N/A Potential Loss of Life (y/n) = Y Benefit/Cost Ratio = 14.54 Reduces flood damages throughout the watershed by providing advance warning of floods

5-Year Capital Forecast Annual Program Capital Expenditures

Page 11 of 13

Figure 14.2.1  
Capital Projects - 1986

Description of Work	Duration	Estimated Cost	Justification
1. 14-Mile Creek Flood Protection	September, 1986	\$10,000.00 for 5% Holdback Release	N/A
2. Milton Channelization Phase five (5)	October, 1986	\$45,000.00 for 5% Holdback Release	N/A
3. East Rambo Creek Flood Protection	September, 1986	\$10,000.00 for 5% Holdback Release	N/A
4. Randall Street Embank. Erosion Protection	May, 1986 to September, 1986	\$650,000.00 for Contract and Land Assembly	<p>Total Predicted Damages = \$680,000.00                      Number of Homes Protected = N/A                      Potential Loss of Life (y/n) = Y                      Benefit/Cost Ratio = 1.04                      Provides protection of a primary road and the main telephone trunk line between Toronto and Hamilton.</p>
5. Flood Warning and Data Acquisition System	1983 to 1987 (five years)	\$30,000 representing the fourth of five phases	<p>Average Annual Damages = \$220,000.00                      Number of Homes Protected = N/A                      Potential Loss of Life (y/n) = Y                      Benefit/Cost Ratio = 14.54                      Reduces flood damages throughout the watershed by providing advance warning of floods</p>



5-Year Capital Forecast Annual Program Capital Expenditures

Page 12 of 13

Figure 14.2.1  
Capital Projects - 1987

Description of Work	Duration	Estimated Cost	Justification
1. Randall Street Embank. Erosion Protection	September, 1987	\$35,000.00 for 5% Holdback Release	N/A
2. West Hager Detention Facility	June, 1987 to September, 1987	\$550,000.00 for Contract and Land Assembly	<p>Average Annual Damages = \$56,000.00                      Number of Homes Protected = N/A                      Potential Loss of Life (y/n) = N                      Benefit/Cost Ratio = 1.00                      Permits Hwy. 403 extension to be                      constructed below grade.</p>
3. Flood Warning and Data Acquisition System	1983 to 1987 (five years)	\$30,000 representing the final of five phases	<p>Average Annual Damages = \$220,000.00                      Number of Homes Protected = N/A                      Potential Loss of Life (y/n) = Y                      Benefit/Cost Ratio = 14.54                      Reduces flood damages throughout the water                      shed by providing advance warning of floods</p>

5-Year Capital Forecast Annual Program Capital Expenditures

Page 13 of 13

Figure 14.2.1  
Capital Projects - 1988

Description of Work	Duration	Estimated Cost	Justification
1. West Hager Detention Facility	September, 1988	\$30,000.00 for 5% Holdback Release	N/A

#### 14.2.2 Conservation Recreation Program Capital Projects

Subject to the available funding from the appropriate funding bodies, the Conservation Authority's preferred five - year Conservation and Recreation Land Management Capital Budget is summarized below and detailed in Figures 14.2.2., and 14.2.3.

##### Funding Requirements

1984 - 1988

##### Conservation Recreation Program Capital Budget

Year	Surveys & Studies	Capital Projects	Total
1984	\$ 18,000.	\$363,000.	\$381,000.
1985	\$ 30,000.	\$423,000.	\$453,000.
1986	\$ 32,000.	\$425,000.	\$457,000.
1987	\$ 30,000.	\$404,000.	\$434,000.
1988	\$ 16,000.	\$435,000.	\$451,000.
Five - Year Forecast Total			\$2,176,000.

Figure 14.2.2.

Conservation Areas Capital Development

1984

Kelso Conservation Area	\$227,000.
Mountsberg Conservation Area	60,000.
Hilton Falls Conservation Area	42,000.
Crawford Lake Conservation Area	30,000.
Burns Nature Area	<u>4,000.</u>
TOTAL	\$363,000.

1985

Kelso Conservation Area	\$247,000.
Mountsberg Conservation Area	112,000.
Hilton Falls Conservation Area	43,000.
Crawford Lake Conservation Area	20,000.
Burns Nature Area	<u>1,000.</u>
TOTAL	\$423,000.

1986

Kelso Conservation Area	\$200,000.
Mountsberg Conservation Area	68,000.
Hilton Falls Conservation Area	54,000.
Crawford Lake Conservation Area	80,000.
Burns Nature Area	3,000.
Rattlesnake Point Conservation Area	<u>20,000.</u>
TOTAL	\$425,000.

1987

Kelso Conservation Area	\$ 77,000.
Mountsberg Conservation Area	70,000.
Hilton Falls Conservation Area	15,000.
Crawford Lake Conservation Area	140,000.
Burns Nature Area	2,000.
Rattlesnake Point Conservation Area	75,000.
Mount Nemo Conservation Area	<u>25,000.</u>
TOTAL	\$404,000.

cont'd...

Figure 14.2.2....cont'd.

	<u>1988</u>
Kelso Conservation Area	\$195,000.
Mountsberg Conservation Area	105,000.
Hilton Falls Conservation Area	30,000.
Rattlesnake Point Conservation Area	60,000.
Mount Nemo Conservation Area	20,000.
Campbellville Community Pond	5,000.
Esquesing Conservation Area	<u>5,000.</u>
TOTAL	\$420,000.

Figure 14.2.3. (Page 1 of 3)

SURVEYS AND STUDIES  
1984 - 1988

Authority Planning

		Total Costs Per Year
<u>1984</u>	Carlisle Community Pond Sixteen Valley Conservation Area Crawford Resource Management Area Twiss Resource Management Area Shanahan Resource Management Area McCrodan Resource Management Area Bunker Resource Management Area McLean Resource Management Area	\$ 18,000.
<u>1985</u>	Tirion Resource Management Area Lake Medad Resource Management Area Escarpment Resource Management Area Knight Resource Management Area Stewart Scotch Block	\$ 18,000.
<u>1986</u>	Morrison Forester & Burt Garside Cockshutt-Greenhouse Hager Rambo Plaikner Milton Flood Morrison-Wedgewood Scotch Block McCrae Q.E.W. Sinclair Dr. Little Merton Highway	\$ 20,000.
<u>1987</u>	Review of Crawford Lake Conservation Area Plan Review of Burns Nature Area Plan On-stream properties	\$ 15,000.
<u>1988</u>	Review of Hilton Falls Conservation Area Plan Review of Kelso Conservation Area Plan Review of Mountsberg Conservation Area Plan	\$ 16,000.
	Total Five-Year Costs	\$ 87,000.

Conservation Recreation Program - Studies Costs 1983 to 1988  
Figure 14.2.3.  
Fish and Wildlife Program

Description of Work	Duration	Estimated Cost	Justification
1. Kelso Reservoir Fisheries Study	May, 1985 to December, 1985	Total Project Costs \$12,000.00	Determination of Fisheries productivity and potential in the Kelso Reservoir and upstream feeder creeks with recommendations for management guidelines.
2. Mountsberg Reservoir Fisheries Study	June, 1986 to December, 1986	Total Project Costs \$12,000.00	Determination of fisheries productivity and potential in the Mountsberg Reservoir with recommendations for management guidelines.
3. Habitat Management Study	Jan, 1987 to December, 1987	Total Project Costs \$15,000.00	A study of the water and land productivity and potential at the Mountsberg Conservation Area with recommendations for habitat improvements. Also, to study the various habitats in the Hilton Falls Conservation Area related to the Jeffersonium Complex of Salamanders; Blue and Golden-Winged Warblers; and the West Virginia White Butterfly with recommendations for management and habitat improvements
TOTAL STUDY COSTS OVER 5-YEAR PERIOD		-	\$39,000.00

CONSERVATION AND RECREATION LAND MANAGEMENT  
Figure 14.2.3.  
 Fish and Wildlife Program

Description of Work	Duration	Estimated Cost	Justification
Mountsberg Habitat Improvements	Jan, 1988 to December 1988	Total Annual Cost \$15,000.00	Works to be undertaken related to habitat improvements as per recommendations of studies to be undertaken in prior years.
TOTAL CAPITAL COSTS OVER 5-YEAR PERIOD		- \$15,000.00	



### 14.2.3 Operations and Maintenance Program Capital Projects

#### A. Central Workshop Facility

##### (i) Background

The Halton Region Conservation Authority, over some twenty-five years, has carried out a diversified program in resource management. Approximately 6,500 acres of land have been acquired on which the Authority has constructed four flood control reservoirs, nine flood protection channels, developed and manages nine Conservation Areas and manages approximately 1,300 acres of Authority Forest tracts, while the extension service program has provided an extensive Reforestation Program on private property throughout the watershed.

The various programs in Water and Land Management involved Capital projects and in order to construct, manage and maintain the properties and associated works, the Authority required a facility from which equipment, manpower and supplies could be dispatched in an effective and efficient manner. In 1960, the Authority acquired property for the Mountsberg Reservoir which included several farm buildings. Over subsequent years, some of these buildings were renovated to provide an interim central operations facility that enabled the Authority to provide a carpentry shop, an equipment and vehicle maintenance shop, a paint and sign shop and storage area for materials and supplies.

##### (ii) Existing Facilities and Servicing Requirements

The Authority has an operations Staff complement of 30 regular employees assigned to operate and maintain Authority landholdings and projects. The regular staff and seasonal employees, utilize the Mountsberg Workshop as their daily work base from which the operations staff are assigned to various locations throughout the watershed.

The Authority has decided to provide one central operation facility to service all of the properties and programs of the Authority, rather than constructing a multitude of buildings at several locations throughout the

watershed. Daily servicing requirements for Water Management, Conservation and Recreation Land management, and extension services will rely on this complex for operating and maintenance supplies, equipment and manpower.

The function and existing facilities at the Mountsberg Workshop consist of the following:

(a) Motor Pool and Equipment Maintenance

Servicing facility consists of a renovated wood frame building with 1,718 square feet of space. The building contains two equipment repair bays, parts storage area and Supervisor's office.

(b) Carpentry and Signs Facility

The construction of signs, picnic tables and other ancillary items for installation on Authority lands are provided in the ground floor of the barn renovated for this purpose. The available working area consists of 3,790 square feet.

The paint shop is located in a separate building which has been renovated to provide 875 square feet for this purpose.

(c) Equipment, Materials and Supplies Storage

Equipment is stored in one open-front pole structure, providing 1,940 square feet of space, while small equipment, attachments and some supplies are stored in another building that provides 1,778 square feet of space. The upper floor of the barn provides an additional 3,000 square feet of storage for lumber and supplies.

(d) Office Accommodation

The Authority constructed a one-storey block building in 1971, consisting of 704 square feet, to provide office accommodation for Supervisory and Clerical Staff. The building also houses the radio dispatch base station for the Authority's field communications system.

(iii) Deficiencies of Present Facilities

The field operations function and responsibility has encountered a substantial growth since 1958. The present facilities are simply inadequate and outdated to cope with the demands and requirements to efficiently service the Authority program and provide working conditions for Authority employees. Specific deficiencies consist of;

- (a) The structural condition of the buildings housing the mechanical shop, paint shop and carpentry shop are such that it is uneconomical to repair and renovate for these functions.
- (b) All buildings in the present complex consist of renovated farm buildings which make it impractical and uneconomical to add additions to provide adequate working space.
- (c) Present buildings fail to conform to present fire, health and safety regulations, particularly the mechanical shop and paint shop.
- (d) The Authority employs both male and female Staff, however, there are no separate washroom facilities and no space available for employee lockers, no first aid facilities and no lunchroom or meeting area.
- (e) The Authority owns approximately 200 pieces of equipment, including 50 motorized vehicles with only 2 service bays available. Neither service bay has a hoist facility. Welding and metal fabrication share the same working area, which limits the efficiency of maintaining the motor pool and poses health and safety problems.
- (f) There is inadequate storage space available for materials and supplies. As well, the Authority's properties are utilized today year-round making it necessary to maintain the properties year-round. Renovated farm buildings are inefficient and costly to heat during winter months and during inclement weather, insufficient indoor space is available for indoor work.

- (g) The present field office building provides inadequate work area for the Staff complement required for the Authority field operation. The Authority rents a mobile construction trailer to provide office space for Supervisors.
- (h) Fuel dispensing facility is inadequate and outdated for present requirements.

(iv) Alternatives

The Authority has investigated the following options to provide a suitable central operations facility:

- (a) Construction of a new building on Authority property.
- (b) Renting or purchasing an existing vacant building capable of housing the Authority field operations requirements.
- (c) Sharing building space with a Municipal Works Department.
- (d) Contracting any or all operational activities.

Analysis of the alternatives indicate that the most cost effective solution would be the construction of a new building at the Mountsberg location that would house the mechanical, welding, carpentry, paint and stock functions and release some of the existing buildings to be used as equipment and material storage and facility assembly work areas. This would enable the Authority to phase the construction of the new facility, yet not disrupt the Authority's ability to continue to meet its ongoing maintenance and service obligations.

(v) Proposal

The Authority proposes to construct a new operations service building at Mountsberg. The building would be a pre-engineering steel frame structure with an ultimate floor space of 13,570 square feet. The allocation of interior space breaks down as follows:

Vehicle and Equipment Maintenance	4,000 square feet
Wash Bay	600 square feet
Welding and Metal Fabrication	504 square feet
Carpentry	3,700 square feet
Paint and Signs	432 square feet
Washrooms	196 square feet
Locker Room	250 square feet
Lunchroom, Meeting Room	432 square feet
Utility Room	1,104 square feet
Stock Room	960 square feet
Offices and Storage	1,392 square feet

(vi) Funding Requirements, 1984 - 1986

1984	\$ 125,000.00
1985	\$ 460,000.00
1986	\$ 350,000.00

#### 14.2.4 Land Acquisition

The Halton Region Conservation Authority may require funds from time to time within the period 1984 to 1988 for land acquisition included within such areas as the Niagara Escarpment Planning Area, flood plains and wetland/headwaters, valley lands, expansion of conservation area holdings, and Lake Ontario Waterfront lands. Details regarding expenditures for such acquisition will be submitted on a site specific basis as properties and funds become available. Specific proposals and policies pertaining to land acquisition are included in Sections 4.5, 7.6 and 10.0 of this Plan.