ENVIRONMENTAL STUDY REPORT
FOR A
WATER MASTER PLAN
FOR THE
CORPORATION OF THE TOWN OF HAWKESBURY

April, 1990

Prepared for:

THE TOWN OF HAWKESBURY

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- TABLE OF CONTENTS -

PAGE

SUMMARY

1.0 INTRODUCTION 1

2.0 STATEMENT OF NEED FOR THE PROJECT 2

2.1 Town of Hawkesbury 2
2.2 Adjacent Municipalities 3
2.3 Ministry of Municipal Affairs (MMA) Report on County Government in Ontario 3
2.4 The Proposed E.S.R. 4
2.5 Previous Studies 5

3.0 DESCRIPTION OF PROJECT AREA 6

3.1 Areas Serviced by the Water Works 6
3.2 Geology and Climate 6
3.3 Biological Environment 7
3.4 Land Use 8
3.5 Socioeconomic Conditions 8
3.6 Official Plan Requirements 8

4.0 EXISTING WATER WORKS 11

4.1 Description 11
4.2 System Deficiencies 14
4.3 Summary 16

5.0 POPULATION AND WATER DEMAND CONSIDERATIONS 17

5.1 Population and Growth Trends 17
5.2 Water Demand 18

- TABLE OF CONTENTS - (continued)

		PAGE
6.0	ALTERNATIVE SOLUTIONS TO WATER NEEDS	21
6.1	Introduction	21
6.2	Do Nothing	21
6.3	Reduce Water Demands	21
6.4	Limit Community Growth; Improve Existing System	23
6.5	Expand or Upgrade the Existing System	24
6.6	Municipal Well Supply System	24
6.7	New Water Supply and Distribution System	25
6.8	Expand Service Area	27
6.9	Universal Water Metering	27
6.10	Conclusions	35
7.0	WATER SUPPLY AND TREATMENT ALTERNATIVES	37
7.1	Water Intake	37
7.2	Raw Water Pumping Station and Feeder Line	38
7.3	Upgrading Existing Plant	39
7.4	Conclusion	39
8.0	WATER STORAGE ALTERNATIVES	39
8.1	Introduction	39
8.2	Existing Requirement and Water Storage	40
8.3	Forecasted Water Storage Requirements	40
8.4	Financial Considerations	41
9.0	WATER DISTRIBUTION SYSTEM	41
9.1	Flow Tests	41
9.2	Analysis of Results	42
9.3	Increased Demand - Proposed Improvements	42
9.4	Area Needs	43

- TABLE OF CONTENTS -
(continued)

PAGE

10.0 PRELIMINARY COST ESTIMATES, PRIORITIES, COST IMPACT OF PREFERRED ALTERNATIVE SOLUTION 44

10.1 Summary of Preferred Alternative 44
10.2 Prioritization of Work 46
10.3 Preliminary Cost Estimates 48
10.4 Potential Financial Assistance 49
10.5 Projected Annual Cash Flow Requirements 54
10.6 Summary 55

11.0 INVOLVEMENT OF REVIEW AGENCIES AND PUBLIC 55

11.1 Purpose of Involvement 55
11.2 Class EA Process and Identification of Project Activity Level 55
11.3 Contact Points 56
11.4 Procedure Followed 57

12.0 ENVIRONMENTAL CONSIDERATIONS 58

12.1 Water Intake 58
12.2 Water Treatment Plant 59
12.3 Watermains 59
12.4 Storage Facility at Treatment Plant 60
12.5 Effect on Human Environment 60

13.0 PRELIMINARY DESIGN REPORT - PREFERRED SYSTEM 61

13.1 Description of System - An Overview 61
13.2 Design Criteria 61
13.3 Chemical Feed Systems 63
13.4 High Lift Pumps 63
13.5 Automatic Controls 64
13.6 Standby Power 64

- TABLE OF CONTENTS -
(continued)

PAGE

13.0 PRELIMINARY DESIGN REPORT - PREFERRED SYSTEM (cont'd)

13.7 Building Envelope 64
13.8 Sludge and Backwash Handling System 64
13.9 Expected Finished Water Characteristics 64

14.0 TIMING OF UNDERTAKING 65

15.0 ESR ON PUBLIC RECORD 65

Drawings

10499-1	Existing Water Supply, Storage and Distribution System
10499-2	Proposed Water Distribution System Improvements
10499-3	Water Treatment Plant Existing Facility and Proposed Improvements
10499-4	Approved Land Uses as per Official Plan
10499-5	Staging of Approved Land Uses
10499-SKI	Limits of Lower Ottawa Region

Tables

1. Town of Hawkesbury Year 2008 Design Population Projection
2. Staged Projected Water Demands
3. Prioritization of Work
4. Preliminary Cost Estimates of Preferred Alternative
5. Possible Subsidy with Lower Ottawa Area Water Clients
6. Annual Cash Flow Projections (Town proceeding singly)

Appendices

A. Avis - Evaluation environnementale
Plan directeur et améliorations proposées
pour l'aquedue - Le Carillon - Septembre 1, 1989

B. Notice - Environmental Assessment, Water Master Plan and Proposed Improvements - The Review - September 6, 1989

C. List of agencies and potentially affected public advised individually of project

D. Typical letter of transmittal of Preliminary Findings Documents to Potentially affected public

E. Preliminary Findings Document Water Master Plan for Town of Hawkesbury

F. News article on project - Le Carillon - September 6, 1989

G. Agency comments on Preliminary Findings Document

H. Comments received after draft ESR on Public Record - Action Taken

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EXECUTIVE SUMMARY

1. For the past few years, the Town's water consumption has been at or near the water treatment plant's rated capacity. Council ordered the preparation of a water master plan report in order to assess present conditions and prepare a construction schedule suitable to its financial capacity.

2. In the interval, a group of municipalities around Hawkesbury formed the Lower Ottawa Valley Area Water Works and petitioned the M.O.E. to investigate the feasibility of creating an area water works. The present study includes consideration of the needs of the Lower Ottawa Valley Area Water Works in the Town's master plan.

3. A number of difficulties were observed in the present system:

   .1 The low lift pumping station (formerly C.I.P. pumphouse) is deteriorating and repairs to the building envelope are required.

   .2 The raw water line delivering water to the treatment plant is aged and fragile and is precariously located under 30-35 ft (10 m)of a wet/dry sludge lagoon constructed by C.I.P. A break in the line, as has happened once, could result in a 4-7 day complete shutdown of the water plant.

   .3 The water plant

      (i) is operating at full capacity for the last few summers, making it difficult to consistently meet the quality required under

the Provincial Drinking Water objectives. Any breakdown would result in the inability to provide acceptable quality or sufficient water to the Town system.

(ii) exterior filter wall is dangerously deteriorated. A collapse of this wall could result in a 3-4 month shutdown of production of treated water; only chlorinated raw water could be provided during that period.

(iii) high lift pump system does not have an adequate firm capacity (firm capacity is the remaining capacity when largest unit becomes unserviceable). The present pump arrangement has a firm capacity of 3.2 MIGD (14,500 m^3/d) when hydro power is available and is nil when power fails.

.4 The total water storage meets the present-day provincial storage guideline requirements but approximately 800,000 IG (3,640 m^3) of this storage is not available at the minimum residual pressure requirements.

.5 Leakage losses from the water distribution system are abnormally high.

.6 The water distribution system is inadequate to provide sufficient water at minimum residual pressures for the present conditions.

4. The 20 year population forecast for the Town is in the order of 12,000 persons (obtained by extending the O.P. population forecast to year 2008). Considerable potential exists in the growth in the industrial and commercial development areas because of the availability of serviced land and the proximity of the Montreal and Ottawa metropolitan areas.

5. A number of alternative solutions were considered, from a do-nothing to a totally new system. The system which will aid the Town to meet its Official Plan objectives most economically is that described in Clause 10.1 (page 44).

6. In order to bring the recommended works more within the Town's financial capabilities, the following actions can be undertaken:

.1 The water treatment plant be expanded in stages, i.e. Stage 1 to 6 MIGD (27,300 m^3/d), Stage 2 to 8 MIGD (36,400 m^3/d) and ultimately to 9 MIGD (40,900 m^3/d).

.2 Setting priorities relative to the urgency of certain works. The following order from highest to lowest importance is recommended:

(i) Filter wall repairs.

(ii) Water leakage survey and repairs.

(iii) Raw water line replacement.

(iv) Construct 16" (400 mm) dia. watermain on Hamilton and Laflèche Streets slated for new storm sewers and road reconstruction in 1990.

(v) Improve firm capacity of high lift pumps to 6 MIGD (27,300 m^3/d).

(vi) Ensure 16" (400 mm) dia. watermain spine is constructed in proposed Siversky subdivision slated for 1990.

(vii) Design and construct water treatment plant expansion to Stage 1, i.e. 6 MIGD (27,300 m^3/d).

(viii) Construct improvements to storage facilities at remote standpipe.

(ix) Construct new low lift pumping station building.

(x) Construct general improvements to distribution system.

(xi) Expand storage volumes.

7. Preliminary cost estimates indicate the following cash flow projections for the next years, if work proceeds in stages as noted previously:

			No Grants	With Grants
(i))	Year 1990	-	$1,400,000	$1,200,000
(ii)	Year 1991	-	$1,400,000	$1,200,000
(iii)	Year 1992	-	$ 800,000	$ 700,000
(iv)	Year 1993	-	$ 675,000	$ 575,000
(v)	Year 1994	-	$ 300,000	$ 250,000
(vi)	Year 1995	-	$1,300,000	$1,100,000
(vii)	Year 1996	-	$1,000,000	$ 850,000
(viii)	Year 1997	-	$3,600,000	$3,060,000
(ix)	Year 1998	-	$ 300,000	$ 250,000
(x)	Year 1999	-	$ 800,000	$ 680,000
(xi)	Year 2000	-	$ 640,000	$ 545,000

Alternatively, if the Town participates in an area scheme, it is estimated that an annual debenture payment of $800,000 will be incurred for a 20 year period.

8. All funding sources should be vigourously pursued in order to reduce the financial load on the Town.

9. If the Town embarks on this project on its own, the undertaking will be a Schedule 'B' acitivity in the Class EA process, i.e. some screening and public involvement is mandatory. If an area scheme is pursued, a Schedule 'C' level of activity will incur and greater public involvement will be required.

This report has been prepared on the assumption that the Town will initially proceed alone.

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1.0 INTRODUCTION

The Town of Hawkesbury is a community of approximately 10,000 persons located on Highway 17, some 100 km east of Ottawa. It has a sufficiently broad base of commercial and industrial users such that the economic impact of the closing of the Canadian International Paper Limited (C.I.P.) paper mill in 1982 was minimized because of the existence of these other industries and commerces.

For the past few years, the water consumption in the Town has been at or near the present capacity of the municipal water treatment plant. Council therefore decided that a water master plan was required in order to (a) effectively provide water to its citizens for its present and future needs, and (b) construct the necessary work in a financial responsible manner and on a schedule which will avoid a halt on a slowdown of the Town's growth because of an inadequate water supply and distribution system.

The Council of the Town of Hawkesbury retained J.L. Richards & Associates Limited to prepare such a water master plan and to equally consider the environmental impacts that could be caused by such an undertaking.

Accordingly, this Environmental Study Report (E.S.R.) has been prepared to document the above requirements. A Preliminary Findings Report summarizing the problems and defining options available to the Town to resolve the problems of the water supply, storage and distribution systems was first prepared. The present report is being submitted to Council in draft form for comment by the various review agencies and the public. The final report will describe the comments received and the final conclusions of the study.

2.0 STATEMENT OF NEED FOR THE PROJECT

2.1 Town of Hawkesbury

The Town of Hawkesbury via its Official Plan has projected a steady growth over the next 20 year period. However, its existing water treatment plant which is rated at 4.0 MIGD (18,200 m^3/d) has been operating at or near capacity for the last few years; an expansion of the plant is necessary in order to supply potable water to the growing population and industries. The raw water intake pipe and pumping station, constructed by the C.I.P. for its mill operation, were turned over to the Town when the C.I.P. plant shut down. The raw water line linking the pumping station to the treatment plant was constructed by the Town in 1952 mainly on C.I.P. lands. This line is now some 30-35 ft (10 m) below ground surface in some locations because of subsequent use the C.I.P. made of its lands. The pipe is known to be fragile and the present conditions place the Town water supply at grave risk in the event of a break in the line. The reliability must therefore be improved. Another component, the water distribution system, has been in place for a number of years; its ability to provide sufficient water at recognized minimum desirable pressures is inadequate. Water leakage is also a serious problem. An assessment of the system at this time is considered most prudent. Finally, the total water storage available to meet peak hourly demands and fire and other emergency flows consists of a ground storage tank at the plant constructed around 1950's and an elevated tank constructed in 1972. It should also be evaluated in light of present day Provincial guidelines for sizing components of a water supply and distribution system.

It is therefore appropriate and timely that a full assessment of the existing water supply and distribution system be carried out in light of present day Provincial guidelines for sizing such an infrastructure, taking into account present and future requirements.

2.2 Adjacent Municipalities

Certain neighbouring municipalities are reportedly experiencing water supply problems: The Town of Vankleek Hill (south of Hawkesbury) has a water supply shortage; the supply for the Village of l'Orignal (west of Hawkesbury) is of a quality lower than Provincial standards; others are growing but have no municipal water supply. In light of this fact, the Town of Hawkesbury invited in 1988 the Town of Vankleek Hill, the Village of l'Orignal and the Township of West Hawkesbury to a round table discussion regarding the formation of an area water supply scheme which would be based on using the Town's existing water treatment plant and part of its trunk mains for producing and conveying water to the area municipalities. The other parties did not express interest at that time since each municipality was pursuing its own solution to its problem.

The Town of Hawkesbury's invitation was, however, merely premature. In June, 1989, a number of adjacent municipalities requested that the M.O.E. initiate a study of a regional water system for the area. This study will begin shortly.

2.3 Ministry of Municipal Affairs (MMA) Report on County Government in Ontario.

The M.M.A. issued a report in January 1989 which studies the organization of county government as it presently exists in Ontario and which made certain recommendations regarding possible changes and improvements to the system. Amongst these were the following:

i) R4. (It is recommended that) Local municipalities within Counties be organized to be viable, self-reliant, administrative units .... (and) .... should

a) encompass complete service areas, including space for expansion;

c) have a sufficient population base to support efficient, cost-effective services.

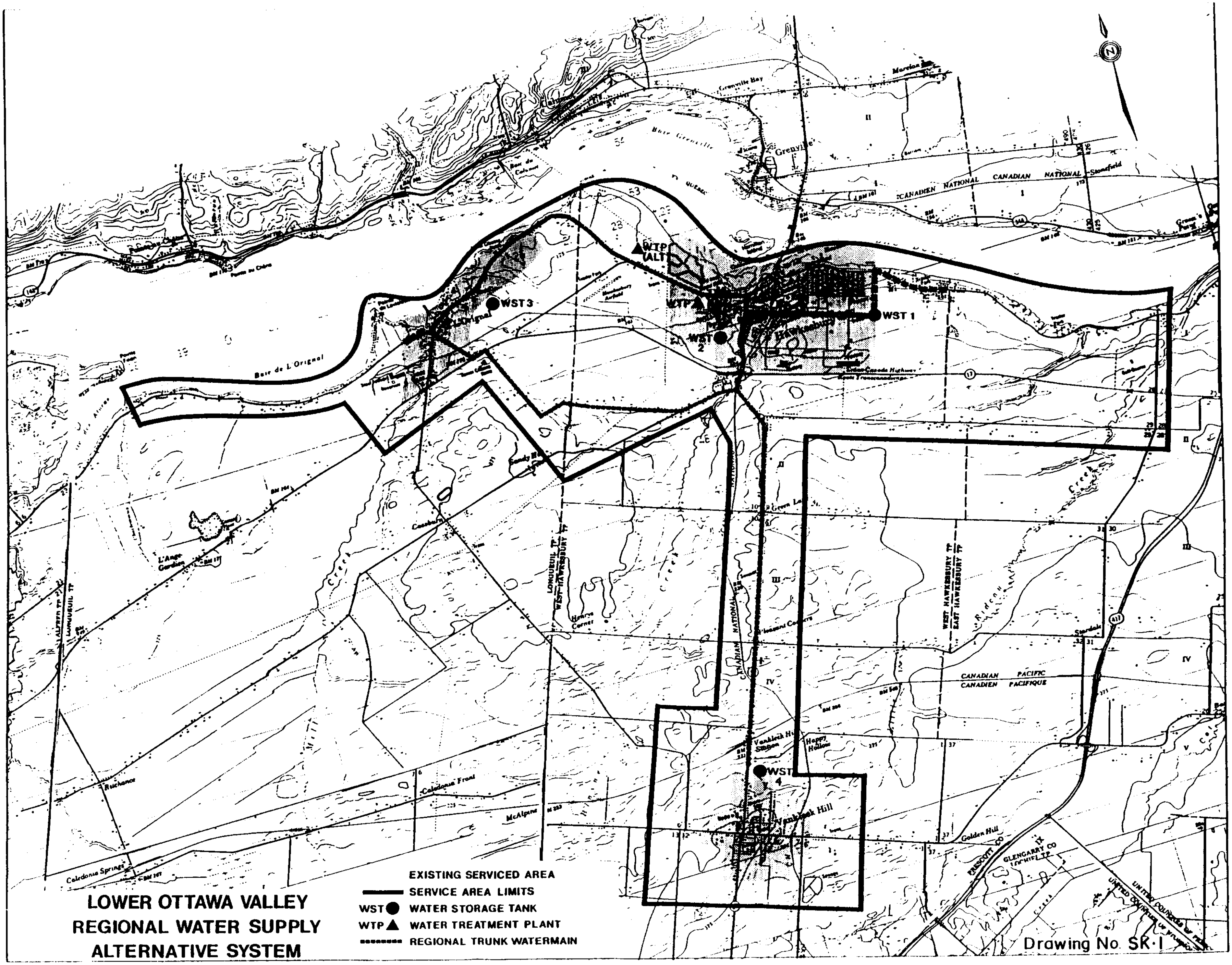
ii) R18. (It is recommended that) In addition to Weed Control, Counties be given responsibility for the following, but with local municipalities given authority to participate in the delivery of such services .... (as) .... sewer and water.

iii) R22 .... adopt a County Official Plan .... address(ing) the following areas: .... water and sewer services (main trunks).

2.4 The Proposed E.S.R.

In light of the adjacent municipalities' disinterest in the Town of Hawkesbury's invitation to consider an area water scheme, the terms of reference of the present E.S.R. were reduced to investigate only the needs of the Town of Hawkesbury.

However, in spite of this original disinterest, a request has since been addressed to the Minister of the Environment. It was therefore considered prudent to at least assess the impact of the adjacent municipalities' water supply needs on the Town's system in the event that this possibility becomes a reality.


LOWER OTTAWA VALLEY
REGIONAL WATER SUPPLY
ALTERNATIVE SYSTEM
EXISTING SERVICED AREA
SERVICE AREA LIMITS
WST WATER STORAGE TANK
WTP WATER TREATMENT PLANT
REGIONAL TRUNK WATERMAIN
Drawing No. SK·1
WST 1
WST 2
WST 3
WST 4
WTP
WTP (ALT)
Hawkesbury
L'Orignal
Vankleek Hill
Grenville
Baie de L'Orignal
Baie Grenville
Grenville Bay
CANADIAN NATIONAL
CANADIAN PACIFIC
CANADIEN PACIFIQUE
WEST HAWKESBURY TP
EAST HAWKESBURY TP
LONGUEUIL TP
WEST HAWKESBURY TP
PRESCOTT CO
GLENGARRY CO
LOCHIEL TP
Golden Hill
Caledonia Springs
McAlpine
Caledonia Front
L'Ange Gardien
Happy Hollow
Stardale

2.5 Previous Studies

A number of reports and documents were reviewed in the preparation of the E.S.R. and some of the data was utilized to substantiate the formation of certain basic criteria and/or investigate particular aspects of the system under study. The documents are as follows:

- Fire Underwriters Survey Recommendations dated June and July 1984.

- Town of Hawkesbury water consumption reports for 1986, 1987 and 1988.

- Town of Hawkesbury industrial water consumption report for 1987.

- Lower Ottawa Valley Regional Water System - Conceptual Brief - McNeely Engineering - June 1989.

- M.O.E. Guidelines for Design of Water Distribution Systems and Water Storage Facilities.

- The Official Plan of the Hawkesbury Planning Area - October 1986.

- Municipal Engineers Association's Class Environmental Assessment Document for Municipal Sewage and Water Projects.

- Ghislain E. Séguin & Associates Limited - Town of Hawkesbury Water Network Analysis.

- Town of Hawkesbury Sonic Water Leakage Detection Survey - 1985.

- Town of Hawkesbury C.I.P. Lands Planning Study

- Town of Hawkesbury 1987 Environmental Services Operating Budget

- Town of Hawkesbury Interim Report on Replacement of High Lift Pumps - J.L. Richards & Associates Limited, 1989.

3.0 DESCRIPTION OF PROJECT AREA

3.1 Areas Serviced by the Water Works

The area under consideration is those lands within the limits of the Town of Hawkesbury designated to be developed in accordance with the approved Official Plan. These boundaries and uses are shown on Drawing 10499-4.

The water needs for the Lower Ottawa Valley region were taken into consideration as service points affecting the existing distribution system. The limits of the Lower Ottawa Valley region are shown on Drawing 10499-SKI

3.2 Geology and Climate

.1 Hawkesbury is located on the Lower Ottawa Valley lowlands. With the construction of the Carillon hydro electric dam, subsequent impoundment flooded much of the flat shore lands in the eastern part of the Town. Geodetic water elevations reportedly now average at 130 ft (54.6 m). The land rises gently from the river to approximately 210 ft (88.2 m) around Tessier Street with the highest elevation of 240 ft (100.8 m) found east of Cartier Blvd.

.2 The Town rests on an underlying limestone bedrock with an overburden varying from 1 ft (300 mm) in depth in the northeastern part of the Town to 10 ft (3 m) in the vicinity of the Higginson Street railway yards. Most of the industrial area has an overburden of approximately 9 ft (3 m) in the vicinity of Hawkesbury Creek, the overburden is very deep and consists of Gainsville silt loam on St. Rosalie clay. Soil types are basically loams and sandy loams and uplands and rubicon fine sands.

.3 The climate has extreme variations in the cold and snowbound winters and hot humid summers. Average annual temperature is in the order of 6°C and annual precipitation in the order of 800 mm (2.62 ft.).

3.3 Biological Environment

The following impacts are expected on the biological environment by the propsed works. The river will not be disturbed if the existing intake is retained except for the additional draw from the river flow. Preliminary discussions with the Ministry of Natural Resources indicate that there are no special flora, fauna, fish species, fish or bird sanctuaries in the Town's project area. The Ministry has been requested to comment on the possible effect of additional water being drawn from the intake on the fish or other aspects of the river but little effect is expected because the extra quantity to be taken is insignificant compared to the available stream flow.

3.4 Land Use

The bulk of the housing stock in the Town is essentially single family dwellings. Recent residential developments are either high quality single family housing or publicly assisted housing with a scattering of apartment buildings. The Town has established over recent years a broad base of industrial uses which has helped it to pull through the difficult adjustment period after the C.I.P. closed its mill operation. Commercial establishments and recreational facilities serve the needs of the population. The overall land use is clearly shown on Drawings 10499-4 and -5.

3.5 Socio-Economic Conditions

Hawkesbury is located on the Ottawa River approximately 100 km east of Ottawa and a similar distance west of Montreal. The bridge to the province of Québec provides the only crossing of the river between Ottawa and Montréal. This proximity to Québec has fostered a large proportion of French speaking citizens. The Town has a diversified industrial employment base.

3.6 Official Plan Requirements

3.6.1 Town of Hawkesbury

The Town's Official Plan (O.P.) was updated in October 1986 for the purpose, amongst others, of "guid(ing) the location, type and sequence of all new development so that it may be provided with efficient public services based on reasonable and sound standards". The document also directs that "before any development takes place, ... suitable arrangements (are to be or can be) made for water supply .... supplied with municipal services (including) piped water supply .... bearing in mind the financial position of the community". The major land uses were defined in

Schedule 'A' of the Plan. Staging of land development was noted in Schedule 'B' of the Plan. Subsequent to the preparation of the Official Plan, the Town authorized its Planning Consultant in 1987 to carry out a land-use planning assessment of the lands where the C.I.P. pulp mill operations were formerly conducted, this in light of Council's determined wish to prohibit similar obnoxious industrial uses from again occurring on the site in the future. The resultant modification to the Official Plan was to designate the C.I.P. lands for a mixture of residential, commercial and recreational uses. The updated land uses and staging of land development are therefore reproduced in Drawings 10499-4 and -5, respectively.

3.6.2 Town of Vankleek Hill

The Town's 1984 consolidation of its Official Plan states amongst its objectives the intention ".... to provide the convenience and benefit of services for all at the minimum expense to the municipality". Its projected population by year 1991 is 1960, reflecting an annual growth rate of approximately 1%. Also, ".... all new urban development will be encouraged to take place where municipal sewer and water services are, or will be located...." and ".... if the municipality cannot reasonably finance the cost .... of services .... the land developer .... to provide these services at no cost ....".

3.6.3 Village of l'Orignal

The Village Official Plan was approved on April 18, 1985. The 1991 population projection was calculated at 2240 persons. It was observed that a considerable portion of the major growth in the general area is associated directly with the Town of Hawkesbury and serves to some extent as a dormitory centre particularly to the Town of Hawkesbury.

The Plan also states: "When both sewer and water services are available .... opening .... new streets and .... extension of old streets will not be permitted until piped water and sanitary sewer services are available .... not intended to restrict .... estate residential on .... rural access" and "where sewer and water are available and if the municipality cannot reasonably finance the cost of extending the services .... land developer .... (to) provide services at no cost to the municipality".

3.6.4 Township of West Hawkesbury

The Township Official Plan was adopted in 1984 and amended in March 1985. It projects a population of 3,090 by year 1991. The Township is rural in character and it was observed that the major growth in the Township in recent years has taken place around the urban centres, with a considerable portion of this growth associated directly with the Town of Hawkesbury. The Plan also states: (the intention) "to provide the convenience and benefit of services for all at the minimum expense to the municipality" .... and .... "to encourage future rural residential uses and supporting services to locate in the hamlet areas .... ".... and ...." .... that generally all new urban development will be encouraged to take place where municipal sewer and water services are, or will be located, on where the extension of these services at minimum cost except in the areas designated as estate residential and hamlets" .... and .... "New industries shall be encouraged to locate .... where .... piped sewer and water services or the possibility of such services exist".

3.6.5 Township of East Hawkesbury

This Official Plan was adopted in 1980 and is presently under review for updating. The present document stipulates that "it is not the intention of the municipality to embark on a program of providing municipal water supply .... for new developments .... All new development .... shall proceed .... private water supply .... on lots .... in accordance with the requirements of the M.O.E.".

3.6.6 Township of Longueuil

This Official Plan was approved June 14, 1985. Its 1991 projected population is 1410 persons. The servicing policy states that "when both sewer and water services are available .... opening up of new streets and the extension of old streets .... will not be permitted until piped water and sanitary sewer services are available. This policy is not intended to probihit infilling .... (or to) restrict residential development in the estate residential areas or in the hamlet areas, or within .... rural areas subject to .... relevant policies ....". Also, ".... if the municipality cannot reasonably finance the cost of extending the services for new development, the land developer can .... provide these services at no cost to the municipality".

4.0 EXISTING WATER WORKS

4.1 Description

4.1.1 The layout and details of the existing water supply and distribution system for the Town of Hawkesbury are shown on Drawing 10499-1 annexed herein.

4.1.2 The raw water intake pipe and pumping station were constructed by the C.I.P. to provide its mill with operating water. The structures were constructed circa 1917 by Riordon Pulp and Paper Co. Ltd, the predecessor to C.I.P. In the mid 1950's, a new water intake pipe was constructed to replace the original line. Construction consisted of a 66" (16.50 mm) dia. wood stave pipe encased in concrete with a 22 ft (9.24 m) square timber and rock crib intake structure at the end. The crib and intake pipe appear to be in good condition; the pumping station is in various states of repair. When the Town of Hawkesbury constructed a water treatment plant in the early 1950's to supply potable water to its citizens, an agreement was reached with C.I.P. to draw water from the above noted intake pipe since the plant is immediately south and adjacent to the C.I.P. lands.

4.1.3 A raw water line delivering the untreated water to the treatment plant was therefore constructed by the Town. It consisted of a 16" (400 mm) dia. line located mostly on C.I.P. property. The pulp and paper company subsequently used its lands as it saw fit. As a result, large dry and wet process waste detention lagoons were constructed over the Town's raw water line. The upshot is that the water line is now covered over with some 30-35 ft (10 m) of lagoon berm or waste sludge in some locations and the reliability of service is precarious in the event of a break in the line. Such a break occurred some years ago and four days were required to locate and repair the pipe break.

4.1.4 The water treatment plant was constructed in 1953. Its rated capacity at the time was 2.2 MIGD (10,000 m^3/d). Its major components consisted of an Infilco Accelator (clarifier) and three filter basins, two of which were completed at start up time. Operation was effected manually and 24-hour staffing was necessary.

In 1969, the third filter unit was equipped with filtering media by Degrémont Ltd. Later, in 1977, settling tubes were installed in the clarifier to increase the plant capacity to a nominal 4.0 MIGD (18,200 m^3/d) and quality deteriorates rapidly when the plant approaches that demand. Finally, in 1978, the plant operation was semi-automated; also the chemical feeding systems were streamlined and modernized. Generally speaking, the building is in reasonable condition except for the rear exterior filter wall where deterioration of the concrete and steel reinforcing materials has progressed sufficiently so that immediate attention is necessary. The plant layout is denoted in Drawing 10499-3.

4.1.5 Water storage to meet peak hourly, fire and/or emergency demands is provided for in two locations:

i) an in-ground 500,000 IG (2273 m^3) reservoir at the treatment plant, constructed in 1953 simultaneously with the plant, and

ii) an elevated standpipe structure holding a total of 1,200,000 IG (5450 m^3), of which 350,000 IG (1590 m^3) are useable, i.e. provide water at suitable minimum residual pressures of 20 psi (138 kPa) or 40 psi (275 kPa) in the system under fire or domestic flow conditions, respectively. The latter structure was built in 1972 and is a covered steel plate cylinder resting on a reinforced concrete foundation. The total available storage (7,723 m^3) could meet present day storage requirements providing pressure booster pumps were installed at the base of the standpipe to use the lower portion of the storage and increase pressure to a minimum acceptable standard. The storage volumes are, however, inadequate to meet requirements for future growth projections.

4.2 System Deficiencies

The engineering evaluation of the structures consisted of a visual inspection of all visible structural elements to detect any signs of distress. A design review of the structures was not undertaken at the time to ascertain compliance with the Ontario Building Code design load standard since this was beyond the terms of reference. The various components of the systems have the following shortcomings:

4.2.1 Low Lift Pumping Station

(i) The exterior foundation walls have undergone a significant amount of freeze/thaw damage and spalling of the outer layer of the concrete surface has occurred. There are, however, no signs of settlement of the foundations.

(ii) The exterior brick masonry has suffered from environment attack, characterized by spalling bricks, disintegrated sections of parapet walls, deterioration mortar joints and cracking in corners. Diagonal cracking at windows is also visible, presumably occasioned by differential cracking and expansion between roof slab and exterior walls.

(iii) The roof leaks in many sections of the building, as evidenced by large stains on the underside of the roof/ceiling.

(iv) Several metal handrails above the sump pit are loose.

4.2.2 The raw water line between Pumping Station and Treatment Plant.

(i) This line is buried, in certain areas, under some 30-35 ft (10 m) of fill placed by the C.I.P. when it

constructed large dry and wet process waste detention lagoons for its own operational needs. In 1978, a break occurred in the Town's raw water line and it required four days to effect the repairs. During the downtime, water was fed to the Town's treatment plant via the C.I.P. raw water line which was fortunately cross-connected to the municipal pipeline. This parallel line is no longer in existence. Also, the municipal pipe is aged and known to be fragile. With the C.I.P. facilities demolished, reliability of service no longer exists and the Town is in danger of a complete shutdown for 4-7 days in the event of another raw watermain break.

4.2.3 Water Treatment Plant

(i) The plant is presently operating at its rated capacity of 4.0 MIGD every summer, leaving no room for population growth.

(ii) When demand exceeds 3.75 MIGD (17,050 m^3) water quality begins to deteriorate.

(iii) The existing high lift pumps do not meet the firm capacity pumping requirements for present demands. The firm capacity of a pumping system is defined as the available pumping capacity when the largest unit is out of service resulting from scheduled maintenance of major components; unscheduled breakdown of such components as pumps, motors, engines; power failures. At present any of the above conditions reduces the output of potable water to the distribution system.

(iv) Severe deterioration of the concrete and the reinforcing in the rear extension filter wall has been observed. There exists an imminent danger of the collapse of this wall with a potential complete

shutdown of the plant's water production for an extended period of time (2-4 months). During that condition, chlorinated raw water only could be provided on an emergency basis.

4.2.4 Water Distribution System

The existing distribution system is not able to provide sufficient water at minimum residual pressure requirements for the present conditions. At future consumption projections, many portions are inadequately sized with the result that too much water is drawn from the storage, depleting it to a point that the plant is unable to replenish the storage in sufficient time to be able to handle the next day's maximum day demands.

4.2.5. Storage

At present the usable water storage is approximately 700,000 IG (1550 m^3) vs 1,670,000 IG (7600 m^3) required by the Provincial guidelines. However, the total available volume of the water storage is 1,700,000 IG (7,725 m^3) but the means to boost the pressures to the minimum required by the guidelines to use the remainder are not in place.

4.2.6 Leakage of Water Distribution System

The water consumption records were reviewed. Solid information is available regarding the industrial and commercial water consumption demands. By deduction, it was noted that the daily domestic per capita demands were high compared to Provincial guidelines and statistical information from other municipalities, and it is estimated that as much as 820,000 IGD (3,725 m/day) is being lost.

4.3 Summary

4.3.1 Many components of the existing water supply and distribution system are aging and corrective work is

necessary to restore the system to good operating conditions. The low lift pumping station requires repairs to the building envelope; the raw water line feeding water to the plant should be reconstructed at conventional bury depth; the water treatment plant is operating at slightly beyond its true capacity, the firm pumping capacity of the high lift pumps needs to be restored, the rear filter wall is severely deteriorated and places the plant in a hazardous shutdown position; booster pumps are required to provide adequate storage volumes at guideline pressure requirements.

5.0 POPULATION AND WATER DEMAND CONSIDERATIONS

5.1 Population and Growth Trends

5.1.1 Town of Hawkesbury

For the past few years, the Town population has been hovering around 10,000 persons. In 1986, the Town instructed its planners to update its Official Plan. Subsequently, in 1987, a land-use planning assessment of the C.I.P. lands was also carried out. These two documents forecasted a growth to year 1997 of 10,821 persons, an annual growth rate of 1% per year. The same rate of growth was extended to the year 2008 and yielded a forecasted population of 12,072. The population projection pattern can be seen in Table 1.

5.1.2 Neighbouring Municipalities

In assessing the potential needs of the Lower Ottawa Valley area water works, the area water works brief projects the following growth rates for the serviced populations in the municipalities involved;

Municipality	Year 1988	Year 2008	Annual Growth Rate
Town of Vankleek Hill	1,745	2,350	1.5%
Village of l'Orignal	1,970	2,654	1.5%
Township of East Hawkesbury	387	521	1.5%
Township of West Hawkesbury	1,705	2,297	1.5%
Township of Longueuil	912	1,228	1.5%
Total	6,719	9,050	

5.1.3 Summary of Design Populations

Town of Hawkesbury	12,072
Neighbouring Municipalities	11,900*
Total	21,122

* L.O.V. Area study brief recommends a total design population of 11,900 instead of 9,050 to allow for commercial, industrial and other uses.

5.2 Water Demand

5.2.1 Town of Hawkesbury

.1 Existing Demand

Over the past 3 years, the Town's maximum day water production has gradually increased from 3.1 MIGD (14,100 m^3/d) to 4.0 MIGD (18,200 m^3/d) which is equivalent to the rated capacity of the water treatment plant. A review of past records appears to indicate industrial water demands to be in the order of 1.2 MIGD (5,450 m^3/d). Based on this information and province-wide data on residential consumption rates, the present maximum day demand is broken down as follows:

Residential 9,600 Persons @100 IGCD (450 L/c/d) and Peaking Factor of 1.9	= 1.83 MIGD	(8320 m^3/d)
Industrial and Commercial	= 1.20 MIGD	(5450 m^3/d)
Losses and Miscellaneous Uses	= 0.82 MIGD	(3730 m^3/d)
Total	3.85 MIGD	(17500 m^3/d)

.2 Industrial Demand

A review of existing industrial and commercial demand would indicate that consumption is approximately 13000 IGD (59 m^3/d) per hectare of industrial land and 6200 IGD (28 m^3/d) per commercial hectare. The industrial demand is representative of heavy industrial users according to Provincial guideline figures. If this trend continues and the Town's remaining 197 hectares of designated industrial use would also require 13,000 IGD/ha (5.9 m^3/d), the ultimate industrial consumption is forecasted to be in the order of 3.8 MIGD (17,300 m^3/d).

.3 Peaking Factor

The maximum daily water demand of a plant is influenced by the peaking factor that occurs in the consumption demands. The greater the population supplied by a plant, the lower the peaking factor becomes since demands average out somewhat more. The Provincial guidelines recommend the following peaking factors for increasing populations:

Population	Peaking Factor
3,000 - 10,000	2.0
10,001 - 25,000	1.9
25,001 - 50,000	1.8

These factors will be utilized in arriving at the water consumption forecast in this report.

.4 Staged Demand

In view of the fact that immediate sizing for ultimate water consumption puts a financial strain on a municipality, it is considered prudent to construct the

improvements in stages while providing for the ultimate construction to occur. The following summary reflects this proposed staging consideration. Furthermore, the scenario evaluates both the demand for the Town of Hawkesbury only as well as the joint Lower Ottawa Valley area water works scheme.

TABLE 2

Maximum Daily Demand in MIGD

Description	Existing Demand	Town Only		Town and LOV	
		Initial	Ultimate	Initial	Ultimate
Domestic - Town 9,600 pop. @100 IGCD x P.F. 2.0	1.92	-	-	-	-
Town 12,072 pop. @100 IGCD x P.F. 1.9	-	2.29	2.29	2.29	2.29
LOV 11,9000 pop. @100 IGCD X P.F. 1.9	-	-	-	2.26	2.26
Industrial - Existing	1.20	1.20	2.50	1.20	2.50
Future	-	1.30	1.30	1.30	1.30
Losses, Misc. Uses	0.82	0.82	0.82	0.82	0.82
Total	3.94	5.61	6.91	7.87	9.17
Prop. W.T.P. Rating	4.0	6.0	7.0	8.0	9.2
(m^3/d)	(18,200)	(27,300)	(31,800)	(36,400)	(40,100)

.5 Summary

For economic reasons, it is proposed that the forecasted demands be satisfied in the following stages;

(i) Expand supply from 4.0 to 6.0 MIGD (18,200 to 27,300 m^3/d)

(ii) Expand supply from 6.0 to 8.0 MIGD (27,300 to 36,400 m^3/d)

(iii) Expand supply from 8.0 to 9.0 MIGD (36,400 to 40,100 m^3/d)

6.0 ALTERNATIVE SOLUTIONS TO WATER NEEDS

6.1 Introduction

There are a number of alternatives available to a municipality for solving existing and future water demands. The following solutions will be discussed:

(i) Do Nothing
(ii) Reduce Water Demands
(iii) Limit Community Growth but Improve the Existing System
(iv) Expand or Upgrade the Existing System
(v) Provide a New Water System and source
(vi) Expand Service Area

6.2 Do Nothing

This alternative maintains the status quo. Such a solution will result in further deterioration of the precarious state of the low lift pumping station building, the fragile raw water line, the water treatment plant building and the inadequate high lift pump system. The water distribution system will continue to provide inadequate fire protection. The consequence of the do-nothing alternative will be that the existing systems will become even more fragile and inadequate and leave the reliability of the Town's water supply in a more serious precarious condition. This situation would ultimately result in a health hazard. Furthermore, this option will stunt the Town's growth. The welfare of the municipality is therefore at stake and this alternative is not recommended.

6.3 Reduce Water Demands

This solution requires that investigations be carried out to search and locate sources of wasteful consumption of water such as unrestricted lawn watering practices, uncontrolled flowing water

taps, leaking watermains, leaking abandoned water services or other abusive uses.

It was previously noted that a review of existing demands lead to the conclusion that 820,000 IGD (3,725 m^3/d) of water is estimated of being lost. From previous experience in similar situation, it is expected that approximately 500,000 IGD$\pm$ or 2,275 m^3/d could be eliminated if a vigourous search and correct program is carried out. The result of such a program could delay the expansion of the water treatment plant and would result in lower water production costs per usable IG, both positive benefits to the Town.

As mentioned above, searching for and repairing watermain leaks is expensive. Obviously this cost must bear some relationship to the cost of continued leakage. The cost of repairing a leak, including excavation, backfill, asphalt reinstatment and materials, is estimated at $600 to $1,000, or $800 average. To this cost must be added the cost of at least one "dry" hole since many electronically generated leak reports prove to be false.

In order to calculate the cost of water lost because of leakage in the distribution system, it appears reasonable to disregard the fixed costs such as debt servicing, labour for operation, heating, etc. since these costs are incurred almost regardless of the volume of water treated. Consequently, using only production related costs such as electric power, chemicals, etc., lost water can be estimated to cost $\$0.025/m^3$. On this basis the annual cost of the present leakage of 3725 m^3/d (820,000 IGD) is $34,000.

Given the relatively high cost of a leakage survey and the uncertain results of such a survey, general experience has shown that no surveys should be conducted unless overall consumption indicates an unexplained total leakage exceeding 2,000 m^3/d (450,000 IGD). Once this value is reached, repair costs can be recovered in approximately three years as illustrated below. The comparison assumes that a water leak survey costs about $40,000

$40,000 and that 20-40 excavations are required to restore the present leakage to an acceptable level.

Costs		Savings
Leak detection survey	$40,000	Leakage reduction of 2275 m^3/d
30 excavations @ $800	$24,000	(500,000 IGD)
Cost of typical leak		@ $.025/$m^3$ = $20,000 per year or
repair program:	$64,000	$60,000 in three years.

The above approach illustrates that repair cost can be economically justified. Furthermore, early action towards leak detection and repairs is also essential to maintain sufficient treatment plan capacity. An added factor that should not be forgotten is the fact that water distribution leaks maintain a high ground water table. Much of the water leakage may end up as extraneous flow in the sanitary sewer system. Assuming that 2,275 m^3/d (500,000 IGD) of water leakage eliminated reduces sewage flow by an almost equal amount and that sewage treatment costs are in the order of half the cost of water production in terms of power and chemicals, one could establish savings of $10,000 per year in the cost of sewage treatment.

This alternative does not provide a long term solution as there will still remain insufficient capacity to permit the Town's projected growth. However, it is recommended as a solution to be pursued in the short term as definite long term financial benefits can result for the Town. This method alone is therefore not a viable solution.

6.4 Limit Community Growth; Improve Existing System

This option is similar to the "Do Nothing" alternative, except that maintenance of the existing system to ensure reliability will be carried out. No major works allowing for growth would be constructed. In effect, the following items would be carried out:

(i) Bring low lift station to a state of good repair

(ii) Replace raw water feeder line from river to treatment plant

(iii) Repair treatment plant building

(iv) Provide Town with a firm capacity of its high lift pump system

(v) Restore the flow capacity of the Main Street watermain by pigging (cleaning).

(vi) Construct a booster pump system at the remote water storage (standpipe) to provide Town with an increased water storage volume meeting present day Provincial guidelines.

(vii) Carry out a search and correct program to reduce leakage losses. Such a program would rehabilitate the Town's system to a state of good repair and would allow some latitude (estimated at 500,000 IGD or 2,275 m^3/d) for short term population growth (increase of 1,500), combined with limited commercial and/or industrial growth (200,000 IGD or 900 m^3/d). The option will not provide for long term growth as anticipated by the Official Plan but should be pursued as an interim by the Town under the present policies.

6.5 Expand or Upgrade the Existing System

This option consists in improving the existing system to a state of good repair and to further upgrade it to allow for growth according to the Official Plan projections. This alternative provides a long term solution to the Town's present problems and growth needs.

6.6 Municipal Well Supply System

This alternative consists in constructing one or more drilled wells in order to supplement the supply provided by the existing water treatment plant.

Drilled wells, properly located, usually yield water of a better bacteriological quality but such water may not be as acceptable from the point of view of chemical content. Furthermore, well water mixed with surface water would likely lead to a variation in chemical content with resulting complaints.

In terms of quantity, the ability of a series of wells to continuously produce a sufficient quantity of water is difficult to assess. The maximum yield from a given well can sometimes decrease dramatically over time due to a large number of variables, including the interaction of other wells drawing water from the same aquifer. Some wells require complete rehabilitation at intervals. Furthermore, no comprehensive ground water surveys for this area seem to be available. Before prediction could be made with confidence, a complete evaluation including a program of test drilling would be required. Such a study could well range over $100,000.

Finally, a municipal well supply system would only improve the source capacity requirements. Improvements to the distribution system and the storage deficiencies would still have to be carried out.

In light of the uncertainty of the availability of a sufficient municipal well supply source, the probable remote location(s) of the well(s) and the ease of improving the existing water treatment plant which has a more than sufficient supply source in the Ottawa River, this option is not considered to be in the best financial interests of the Town of Hawkesbury.

6.7 New Water Supply and Distribution System

This alternative consists in abandoning the existing components and starting anew with another municipal system.

A number of considerations arise from the possibility of a new plant at the river's edge vs upgrading the existing plant.

A new 6.0 MIGD (27,300 m^3/d) plant at the river's edge ($7,500,000) on the site of the C.I.P. pumphouse would free the existing plant site for commercial use and the sale of the lands could possibly effect a revenue ($150,000) to the Town, thereby reducing the overall cost of the new plant. Surrounding properties may object to a zoning change and the use of the land and its effect on neighbouring homes may result in greater loss of tranquility, cleanliness, etc. The visual impact of a treatment plant along the river will be greater than a smaller pump facility but it is expected that the building would blend with the eventual development of the C.I.P. lands. The owner of these lands may, however, raise objections of detrimental influence on his development.

An upgrading and expansion of the existing plant to 6 MIGD (27,300 m^3/d) building ($1,700,000) may result in loss of view but there would be no tangible increase in activity noise during operation. Temporary construction inconvenience would be greater on neighbouring properties than at the river's edge. The existing plant site has sufficient vacant land to allow long term expansion beyond the period envisaged in this report.

The most severe impact factor for this component is economic and upgrading the existing plant reduces this impact to it minimum.

This possibility is considered undesirable. The existing system, although requiring corrective work, is essentially in good condition. Scrapping of these components would be wasting a working system and would result in a major disruption and impact on the environment as well as financial chaos to the Town. There is no justification whatsoever to abandon these in favour of new construction.

Finally, the Ottawa River is an excellent and more-than-sufficient source of water.

6.8 Expand Service Area

This option comprises in expanding or upgrading the existing system to meet both the Town's needs and clients outside the Town's municipal boundaries, in this instance, the municipalities in the Lower Ottawa Valley area, i.e., Town of Vankleek Hill, Townships of East Hawkesbury, Longueuil and West Hawkesbury, and the Village of l'Orignal. All of these municipalities are reportedly lacking in a dependable central water supply, which limits their growth. Expanding the Service Area could possibly provide the Town of Hawkesbury with a broader financial base for meeting the cost of improving and operating the key commonly benefitting components of the existing system. Furthermore, it would provide the neighbouring municipalities with a reliable and almost limitless source of potable water.

6.9 Universal Water Metering

6.9.1 General Objectives

Water meters perform two basic functions when all water users are individually metered. These functions are:

- Supplying a source of revenue proportional to the quantity of water used, thereby constituting an equitable system.

- Reducing water wastage (reduce water demand).

There is a growing philosophy that system users must pay the true cost of maintaining and rehabilitating the system. In Hawkesbury where water and sewage system costs are recovered through water billings and where these costs are likely to increase significantly in the near future, the metering of all water supplies is the only equitable and fair method because:

- The cost of using will be related to individual consumption and not to arbitrary "flat rates" per home, per person, per swimming pool, etc. It encourages users to repair leaking fixtures and to prevent wastage.

- With "universal metering" the customer pays only for the water used and the average "per capita" consumption figure provides a yardstick to measure the residential demand as compared with commercial and industrial demands. This enables more realistic rate scales for all categories.

- No consumer is being charged for water wasted by his neighbour.

- It provides low or fixed income families with an opportunity to economize, which is denied to them under flat rate systems.

With treated and filtered water as a result of the water filtration plant, water is a manufactured product and should no longer be regarded as a nearly free commodity available in unlimited quantities. In this respect, treated water becomes comparable to such other metered resources as electricity, fuel oil and gas, where for obvious reasons, flat rate systems have never existed.

With regard to wastage prevention, customers cannot be expected to conserve a product that they do not pay for in proportion to the amount used. It is unrealistic to expect or require users to spend money to keep fixtures in repair if there is no charge for the amount of water wasted by leaky plumbing. Quantities of water used for gardening and lawn maintenance are completely unchecked and may be far in excess of actual need.

The introduction of water meters will cut down on wastage as demonstrated by an overall reduction in annual consumption of between 10 and 30% in other municipalities. It is unfortunately not possible to forecast this reduction with any degree of accuracy, but a comparison may be made with the nearby City of Ottawa, where the results achieved by universal metering may be considered as being fairly typical. The City experienced a decrease in per capita consumption from 0.56 m^3/d in 1948 to 0.48 m^3/d in 1954 (125 to 105 IGCD) when most of the users had their meters installed. Completion of the metering program in conjunction with leak detection surveys resulted in a further drop to 0.40 m^3/d (88 IGCD) in 1961.

A study in Vancouver in 1986 found that indoor use of water was affected to a minor degree by repairs of faucets, etc. The greatest benefit was in the reduction of outdoor use because over-watering of lawns, etc. was sharply reduced.

Universal metering will also permit more accurate calculation of losses in the water distribution system which, at the present time can only be estimated.

6.9.2 Types of Meters

Domestic premises and other small users of water are served by displacement type meters. In these meters the flow is measured by counting the number of times water fills a chamber of known volume.

There are two types:

- Nutating disc; and
- Oscillating piston.

Both these types of meters provide sensitive measurement of low flow rates and meet the current "American Water Works

Association (AWWA) Standard for Cold Water meters - Displacement Type".

For industrial and commercial customers where water demands are high, meters larger than those installed for residential service are required. These meters may employ the same principle as the residential meters or be a combination of positive displacement and turbine measuring chambers, in order to achieve low flow capability and accuracy at low and high flows. These meters are referred to as compound meters. In cases where a high flow rate is required continuously, measurement is most economically accomplished by using a turbine-type meter only.

6.9.3 Reading Systems

At present, there are three basic meter reading systems available on the market. These are:

- Standard register mounted on the meter;
- Remote register mounted in an area away from the meter, usually on the building exterior;
- Remote encoder register, that provides the same service as the remote register and also allows for reading by means of a tape recorder for subsequent automatic billing.

The standard register as mounted on the meter requires direct access to the meter location, mostly basements and cellars but sometimes meter pits, in order to be read.

The remote register, connected to the meter by means of a two conductor wire, transmits electric pulses generated by a ceramic magnet in the meter. The totallizer mounted on the building exterior has the following advantages:

- eliminates lockouts and callbacks from customers away from home;

- increases the number of meters that can be read per day;

- opens up the possibility of joint reading with other utility meters (electricity, gas) by grouping the totallizers together on the building exterior.

The remote encoder receptacle is installed in the same manner as the remote register, but does not allow for direct reading. It consists only of a weatherproof receptacle into which a portable interrogator gun is plugged to give automatic recording of the customer's account number and meter reading. The interrogator is subsequently unloaded into a microcomputer which performs the subtraction from the previous meter reading, selects and multiplies the quantity of water by the proper rate and prepares the complete bill. This Automatic Reading and Billing system offers such advantages as:

- billing summary, listing all accounts and amounts paid and/or receivable;

- customer address register, arranged alphabetically, by account number, by meter number or by street;

- action reports by programming the computer to report meters due for testing due to age, or list customers where large consumption increases suggest leakage.

The computerized central reading system uses existing telephone wires to read a meter interface unit (water, electric power or gas). Data is read by computer at predetermined intervals and processed as for the Automatic Reading and Billing system described above.

6.9.4 Meter Maintenance

To ensure that the process of metering is carrying out its prime functions, that is providing an equitable billing process, and to prevent wastage, a systematic meter maintenance programme is essential. This requires that meters be periodically calibrated and checked for excessive wear. The intervals required between these test intervals as recommended by the AWWA vary from 10 years for residential meters to 2 years for 100 mm diameter meters.

6.9.5 Costs

Capital Cost and Initial Installation

In determining the costs of metering, it has been assumed that at present there are approximately 3,600 residences to be supplied with meters, and that most institutional, commercial and industrial establishments are already metered.

The following estimate for the supply only of residential meters compares the capital costs for the various meter reading systems:

3,600 Residential and Commercial meters, supply only	$180,000
Parts inventory	3,000
Meter test bench	5,000
TOTAL COST FOR DIRECT READING METERS	$188,000
Additional extra cost for remote reading registers	105,000
TOTAL COST FOR REMOTE READING METERS	$313,000
Additional extra cost for encoder registers	2,000
Interrogator reading guns (2)	2,000
TOTAL COST FOR ENCODER REGISTER METERS (Automatic Reading and Billing System)	$317,000

On the basis of contracts awarded in other cities for the installation of 1,000 or more meters complete with remote registers, it is estimated that the cost for installation will run between $45 to $75 per customer, depending upon the existing plumbing and the eventual location of the meter. It is considered that the total installation cost will be approximately $216,000.

Maintenance Costs

As previously mentioned, the installation of meters requires that a systematic maintenance program be set up. The cost of this program will be minimal within the first 5 to 10 years of meter life, because new residential meters do not begin to show much wear before the 10 year period has expired. After that period, allowance should be made for $5.00 per year for maintenance per residential meter and $10.00 for larger meters, for a total of $20,000 per year.

Cost of Meter Reading

The annual cost of reading water meters 4 times per year based on a cost sharing arrangement with Hydro, and based on Automatic Reading and Billing technology, is $16,000. This does not take into account the savings accomplished by the Town from discontinuing reading the present commercial and industrial metres.

Cost Savings Effected by Universal Metering

As concluded earlier, the annual reduction in water consumption after the introduction of complete metering is expected to be between 15 to 35%, and for the purpose of a preliminary assessment has been assumed to be 20%. The

principal quantities affected by this reduced consumption are power and chemicals, earlier estimated at $\$0.025/m^3$. The estimated reduced water consumption would thus correspond to 1800 m^3/d (0.4 MIGD), a $16,400 annual cost saving in terms of power and chemicals.

The second benefit is the additional capacity of the water treatment plant which would equal the reduction in peak flow. The rated capacity of any plant is, of course, determined by the peak demand exerted, and this maximum demand usually occurs during an extended hot and dry weather period. Under those circumstances, metering will affect water consumption to a lesser degree than during normal conditions, and a reduction in peak flow of 10 to 20% is considered realistic. The direct economic benefit to having surplus capacity available at the plant, is the ability to defer the expansion of the water treatment plant.

Summary of Costs

Capital cost for purchase of 3,600 meters suitable for automatic reading and billing	$317,000
Intallation	216,000
TOTAL INITIAL COST	$533,000
Annual debenture cost for capital outlay (12% interest, 10 year term)	91,000
Annual maintenance after 10 years	$ 19,500
Annual cost of 4 meter readings shared with PUC	16,000
Possible annual cost savings from 20% reduced consumption	16,400(-)
Annual cost saving by Town Works Dept. of discontinuing reading industrial and commercial meters	700(-)
TOTAL ESTIMATED ANNUAL COST - 1st 10 years	$109,400
- thereafter	$ 18,400

The initial capital and installation costs are not eligible for Provincial subsidy and must be entirely funded by the Town. If shared by 3,600 premises, typical costs per year would be $30.30 per home for the first 10 years, ($5.00 per home thereafter) in addition to the cost of water, presently averaging $130-150 per year per residence.

6.9.6 Conclusions

In conclusion, it is evident from the information presented that the cost of initiating universal metering cannot be justified solely on the basis of economics. However, in the eyes of many people, the combination of all benefits, and particularly the evident fairness of charging customers on the basis of the amount of water used, will justify universal metering as a policy.

Consideration could be given to provide homeowners with an opportunity to reduce their water bill by the installation of a water meter at the request of the homeowner. However, a revised water rate structure would be required.

6.10 Conclusions

In light of the Town's stated long term development policies, the following observations and conclusions are reached:

.1 **Do Nothing.** This option stunts future Town growth. It could even cause a regression because of the further deterioration of the existing systems and the potential health hazard that could result.

.2 **Reduce Water Demands.** This alternative solution could result in permitting limited population (1,500 increase) and commercial and industrial growth by eliminating 500,000 IGD or 2,257 m^3/d of leakage losses. Further deterioration of the precarious condition of the existing systems would still occur

and the potential health hazard could still result. The Town's long term development plans will have to be drastically cut back.

.3 **Limit Community Growth - Improve Existing System.** This option is similar to the "Do Nothing" alternative; future Town growth will still be stunted. However, the existing system will be brought back to a state of good repair and the resulting potential health hazard should be eliminated.

.4 **Expand/Upgrade the Existing System.** This option improved the existing system to a state of good repair and upgrades it to permit growth in accordance with the Town's long term development policies.

.5 **Municipal Well Supply System - Improved Distribution/Storage System.** This solution could possibly permit growth according to the Town's long term plans. However, the well supply system is considered more uncertain than a surface water supply. Furthermore, a detailed groundwater study would be required to confirm the availability of a sufficient quantity of water to allow the growth to occur. Finally, the cost of such a solution is considered to be greater than the "Expand/Upgrade Existing System" option. Hence, the latter is preferred over the "Municipal Well Supply System".

.6 **New Water Supply and Distribution System.** This alternative permits growth in accordance with the Town's long term development plans. The cost of this solution is, however, considered to be much greater than the "Expand/Upggrade Existing System" option and the latter option is therefore preferred.

.7 **Expand Service Area.** This option also provided a system permitting growth in accordance with the Town's long term plans. It also provides a water supply to neighbouring municipalities who are also reportedly lacking in a dependable

central water supply which could permit growth in a manner set forth in their individual long term development plans. Furthermore, an expanded service area and customer base could possibly be in the Town's best financial interest.

.8 **Conclusion.** In order to meet its stated long term policies, the Town should pursue the alternative of expanding and upgrading the existing system (6.5). Furthermore, it may wish to consider campaigning the neighbouring municipalities to purchase water from the Town because of the mutual benefits arising out of this scheme.

As a minimum fall back position, the existing system should be improved to a state of good repair (6.4) to ensure reliability of supply to the citizens of Hawkesbury.

In any event, the matter of reducing existing demands by a search and locate wasteful occurrences program (6.3), should be immediately initiated as the short term benefits to the Town are a lower cost per consumed gallon of water and, more importantly, the equivalent of an expansion of the water treatment plant of 500,000 IGD (2,275 m^3/d).

The preferred alternative is as described in Section 6.5 and the various components of the alternative will be discussed in greater details in section 7, 8, 9 and 10 following herein.

7.0 DISCUSSION OF ALTERNATIVE SOLUTIONS TO EXISTING WATER SUPPLY AND TREATMENT SYSTEM - PREFERRED SOLUTION

7.1 Water Intake

The existing intake pipe was constructed by C.I.P. in the 1950's to supply water for its mill activities. The C.I.P. plant was rated at 32 MIGD (145,600 m^3/d). The size of the existing intake is therefore larger than necessary for the Town's projected needs,

including those of the Lower Ottawa Valley Area Water Scheme. Underwater investigations and local experience from working knowledge did not reveal any visible defect in the intake structure on pipe. A closed circuit television camera should be inserted inside the pipe at the time of design work at the low lift pumping station to verify for any problems that may require correction at that time. A 20 year lifespan can, therefore, reasonably be expected.

7.2 Raw Water Pumping Station and Feeder Line

A number of options could be followed regarding this component:

(i) retain and upgrade existing building for Heritage reasons ($1,000,000) and construct new raw water feeder line ($500,000).

(ii) demolish existing station and reconstruct a smaller pumping station complete with new pumps on existing foundation ($300,000) and construct new raw water feeder line ($500,000).

(iii) extend intake pipe to the water treatment plant ($1,500,000) and construct lift station ($500,000) at plant for treating water.

The least economic impact is (ii). The raw water station is barely visible from Main Street and will not be at all visible when the owner of the former C.I.P. lands develops the site. At that time, a new modern structure will blend better in the proposed development than an older restored building. Furthermore, no interest has been expressed at this time to retain the C.I.P. pump house as a heritage building.

New raw water pumps, sized to suit the Town's long term needs and the head conditions arising from a new raw water feeder main to the water treatment plant, will be required in the new facility.

The preferred option is therefore demolition of the existing station superstructure and construction of a new smaller facility on existing foundations combined with construction of a new raw water feeder line.

7.3 Upgrading Existing Plant

The pros and cons between the construction of a new plant vs upgrade of the existing plant were discussed at length in Section 6.7. It was concluded that expansion of the existing plant was preferrable. It is estimated that the initial expansion of the plant to 6 MIGD or 27,300 m^3/d will cost cost approximately $1,700,000.

7.4 Conclusion

In light of the above noted considerations, the preferred water supply and treatment solution is the demolition of the existing C.I.P. pumphouse superstructure, construction of a new smaller facility over existing foundations, construction of a new raw water feeder line and upgrading of the existing plant on Main Street. Pursuit of any of the other options would result in greater financial and other environmental impacts on the community.

8.0 WATER STORAGE ALTERNATIVES

8.1 Introduction

Water treatment plants are normally sized to provide output at the projected maximum day rate of demand. Peak hourly flow rates or fire flow rates will be higher than the maximum day flow rate. The difference is provided from storage within the system. Provincial guidelines recommend the volume of storage in a system to be:

Volume of storage = (fire flow rate x duration) + (equalization storage of 25% of design maximum day consumption) + (emergency storage of 25% of total fire plus equalization requirements)

Both fire flow rate and duration and maximum day consumption are dependent on population.

8.2 Existing Requirements and Water Storage

According to the Provincial guidelines for sizing water storage tanks, the Town of Hawkesbury with its present population of 9,800 persons should have a total usable storage of 1,670,000 IG (7,590 m^3/d). This allows for a fire fighting flow of 2,500 IGM (190 L/s) for a 3 hour duration, plus a peak domestic demand equal to 25% of its maximum day demand, plus a 25% safety factor storage for equalization demands. At present, the Town has a 500,000 IG (2,275 m^3/d) ground storage at the water treatment plant plus a 1,200,000 IG (5,450 m^3/d) total storage of which only 350,000 IG (1,590 m^3/d) can provide water at residual pressures greater or equal to that recommended by the Provincial guidelines. The total standpipe storage can be made usable at a reasonable cost by installing a water booster pump at the base of the tank that will automatically start at low pressure and deliver stored water to the distribution system at the required pressure. When this is carried out, the Town can be said to have sufficient storage to meet the Provincial guidelines under present conditions.

8.3 Forecasted Water Storage Requirements

To meet its ultimate demands, the Town will need a total overall storage of 3,125,000 IG (14,200 m^3), according to Provincial guidelines. This represents an additional 1,425,000 IG (6,475 m^3) of storage which can be obtained by several ways:

(i) a remote elevated storage or standpipe with booster pump.
(ii) increased ground storage at the plant.
(iii) combination of both.

8.4 Financial Considerations

Preliminary cost estimates for the construction of the future storage tank, excluding engineering fees, indicate a minor cost difference:

Standpipe with booster pumping	$1,500,000
Ground Storage	$1,400,000

Both alternatives are economically similar. However, the impact on the neighbouring environment will be substantial at the remote location of a standpipe having an approximate height of 120 ft. (36.6 m) whereas a ground storage at the plant (where land is available) will be minimal. Finally, a major advantage of the ground storage alternative is the possibility of constructing this structure in phases; this reduces the immediate financial cost on the Town and permits it to construct the storage in a manner that will be more financially bearable.

In light of the above, the ground storage alternative is recommended.

9.0 WATER DISTRIBUTION SYSTEM

9.1 Flow Tests

A number of flow tests were conducted in strategic locations within the distribution system in order to evaluate and determine the friction factors ('C' value) of trunk lines. Based on these findings and on age comparisons of pipes of similar age, other 'C' values were assumed for the remainder of the distribution system. These values were then used in determining flow distribution and friction losses through the system under various combinations of maximum day and fire flow, using the WATER computer software network analysis program.

9.2 Analysis of Results

The results of the flow tests showed that for the most part, the values of the friction factors in the pipes were reasonably good given the ages of the pipes. The exception is the watermain on Main Street which appears to have a substantial amount of tuberculation and/or interior rusting, which severely restricts flow distribution through that area. Similarly, the pipe on McGill Street suffers from high pressure losses from the flow through water. Under prolonged fire flow conditions, the remote storage could be severely depleted because of the uneven flow distribution coming from the network because of the above noted deficiencies and low 'C' values.

It has also been found that the existing two supply lines between the water treatment plant and the Town core are inadequate to transmit more than 3.5 MIGD or 15,900 m^3/d.

Drawing 10499-1 shows the existing distribution system along in the 'C' values attributed to each pipe.

9.3 Increased Demand - Proposed Improvements

Increased demand to meet projected growth further aggravates the uneven flow distribution effects noted above. To again increase the demand for the Lower Ottawa Valley area scheme additionally compounds the gravity of the matter. Certain improvements are necessary in order to ensure that the ultimate growth will have sufficient water available everywhere at adequate residual pressures without severe depletion of the Town's available water storage. The recommended improvements are indicated on Drawing 10499-2 and generally consist of the following:

(i) new 20" (500 mm) dia. watermain on Main Street from Treatment Plant to McGill Street

(ii) new 16" 400 mm) dia. watermain on McGill Street from Main Street to Spence Street

(iii) new 16" (400 mm) dia. watermain on Spence Street from McGill to Tupper Avenue

(iv) new 16" (400 mm) dia. watermain on Hamilton/Laflèche/Cécile Street from Main Street to Siversky Subdivision

(v) new 16" (400 mm) dia. watermain through Siversky Subdivision to Spence Street from Cécile Street

(vi) improve friction factor of 'C' watermain on Main by pigging (cleaning) from McGill Street to 300 ft. (90 mm) west of Laurier

(vii) new 8" (200 mm) dia. watermain on Edmond from Stevens Street to Spence Street

(viii) new 8" (200 mm) dia. watermain on Ghislain Street from Gérard Street to Edward Street

(ix) new 16" (400 mm) dia. watermain on Tupper Street from Spence Street to 1500 ft. (460 m) South of Spence Street

9.4 Area Needs

An expansion of the service area essentially has a greater impact on the following parts of the existing distribution system as an increased demand by the Town: Main Street, McGill Street and Spence Street. The demands of the area needs would also accelerate the required improvements more rapidly than if the Town's growth proceeded by itself. The only area municipality that would not impact on the Town's distribution system is the Village of l'Orignal, located west of the Town.

10.0 PRELIMINARY COST ESTIMATES, PRIORITIES, COST IMPACT OF PREFERRED ALTERNATIVE SOLUTION

10.1 Summary of Preferred Alternative

In light of the previous discussion, the preferred alternative solution for the Town of Hawkesbury consists of the following:

.1 retain the existing raw water intake pipe and structure

.2 demolish the existing C.I.P. pumphouse superstructure

.3 construct a new smaller raw water pumping facility over the existing foundation

.4 construct a new 30" (750 mm) dia. raw water feeder line from the pump house to the water treatment in the right-of-way route allocated by the owner of the former C.I.P. lands

.5 upgrade the existing water treatment plant from an existing 4.0 MIGD (18,200 m^3/d) to 6.0 MIGD (27,300 m^3/d) capacity as a first phase.

.6 restore existing treatment plant building to a state of good repair

.7 improve high lift pump system, ensuring that the system has a firm pumping capacity of 6.0 MIGD (27,300 m^3/d) under normal conditions and 4.0 MIGD (18,200 m^3/d) under emergency conditions.

.8 expand water storage to 3,125,000 MIG (14,200 m^3) as follows:

(i) construct booster pump system at base of existing remote standpipe storage to bring usable storage to an initial level of 1,200,000 IG (5,450 m^3).

(ii) construct ground storage cells of 500,000 IG (2,275 m^3) each as required by the Town's growth

.9 Improve water distribution system by

(i) constructing new 20" (500 mm) dia. watermain on main Street from the treatment plant to McGill Street

(ii) improving the friction factor in the 12" (300 mm) and 10" (250 mm) dia. watermains for Main Street from McGill Street to approximately 300 ft. (90 mm) west of Laurier Street by cleaning with a styrofoam plug (pig)

(iii) constructing a new 12" (300 mm) dia. watermain on Main Street from approximately 300 ft. (90 mm) west of Laurier to Cameron Street

(iv) constructing a new 20" (500 mm) dia. watermain on McGill Street from Main Street to Spence Street

(v) constructing a new 16" (400 mm) dia. watermain on Spence Street from McGill Street to Tupper Street, twinning the existing 12" (300 mm) dia. pipe. Beyond the twinning, construct a 16" (400 mm) dia. watermain

(vi) constructing a new 16" (400 mm) dia. watermain on Hamilton, Laflèche and Cécile Street from Main to the proposed Siversky Subdivision

(vii) constructing a new 16" (400 mm) dia. watermain through the proposed Siversky Subdivision from Cécile Street to Spence Street

(viii) connecting the watermain on Ghislain and Edmond Street together and to Spence Street with new 8" (200 mm) dia. watermain

(ix) constructing a new 8" (200 mm) dia. watermain on Prospect and Thorne Street from Main Street to Hawkesbury District High School

(x) construct new 12" (300 mm) dia. watermain on Aberdeen Street from Cameron to Tupper Streets, or from existing 6" (150 mm) dia. with a new 10" (250 mm) dia. pipe.

.10 Conduct an extensive leakage survey and leak detection program to reduce leakage losses (estimated to be 800,000 IGD± or 3,640 m^3/d).

10.2 Prioritization of Work

Certain works are urgently required in order to restore the dependability of the system; other works are necessary for growth to occur. After a review of the outstanding deficiencies and discussions with Town staff, the following schedule of work is recommended:

TABLE 3

	Item	Construction Year	Reason
.1	Repair treatment plant filter walls	1990	Failure will result in 3-4 months interruption of treated water supply
.2	Leakage Survey	1990	Could reduce leakage losses by 0.5 MIGD (2,275 m^3/d)
.3	New raw water line	1990	Failure can result in 7-10 days downtime
.4	Construct 16" (400 mm) dia. watermain on Hamilton/ Laflèche/Cécile	1990	Road reconstruction project
.5	Improve high lift pump system firm capacity	1991	Dependability
.6	Construct 16" (400 mm) dia. watermain in Siversky Subdivision	1990	Imminent development
.7	Expand treatment plant to 6.0 MIGD (27,300 m^3/d)	1991-2	Permit future growth, service clients
.8	Booster pump to improve storage at standpipe	1991	Provide required storage for present uses
.9	New raw water pumping facility	1993	To allow for growth
.10	Other watermain	1993 (thereafter)	To reduce pressure losses and allow for growth
.11	Expansion of storage volumes	1995 (thereafter)	To allow for growth

10.3 Preliminary Cost Estimates - Town Proceeding Alone

The following outlines the preliminary (level C) estimates of capital costs, including engineering and contingencies. Cost estimates are based on 1989 prices escalated at 8% per year to 1990 dollars. Prices should be increased by 8% per year for each year thereafter if construction proceeds later.

TABLE 4

.1	Repair existing water treatment plant building	$ 150,000
.2	Leakage survey and correction program	$ 100,000 (allowance)
.3	New 30" (750 mm) dia. raw water line	$ 500,000
.4	New 16" (400 mm) dia. watermain on Laflèche, Hamilton and Cécile	$ 410,000
.5	Improve firm capacity of high lift pump system	$ 430,000
.6	Pay oversizing of watermain in Siversky Subdivision	$ 65,000
.7	Expand water treatment plant capacity to 6 MIGD (27,300 m^3/d) plus construct backwash and sludge waste disposal facility	$1,625,000
.8	Improve storage at standpipe	$ 275,000
.9	New raw water pumping station	$ 500,000
.10	Other watermain improvements	$2,600,000
.11	First expansion to ground water storage (500,000 IG or 2,275 m^3)	$ 500,000
		$7,155,000
	(rounded)	$7,200,000
Future works		
.12	Expand Treatment Plant to 9.0 MIGD (40,900 m^3/d)	$4,000,000
.13	Expand Storage Volume to 3,125,000 IG (14,200 m^3) (3 additional cells of 500,000 IG (2,275 m^3) each)	$1,440,000

10.4 Potential Financial Assistance

.1 Available M.O.E. Subsidies

The Ministry of the Environment provides financial assistance to municipalities under two programs:
(a) applications for Direct Grant and
(b) applications for Lifeline projects.

The first is primarily to assist municipalities in establishing systems where a lack thereof has caused or is causing health and/or environmental problems or in rehabilitating existing systems; the provincial subsidy level can vary from 15% for larger municipalities to as much as 85% for smaller communities. The second program assists municipalities with the cost of rehabilitating systems already in place; its level of subsidy is 33 1/3% across the board with increases to 50% under extreme conditions.

In both cases, municipalities must apply and be found eligible by the M.O.E's priority evaluation committee to qualify under the rules set out in each program. Once found eligible for subsidy, the project is then given a rating relative to other projects accepted by the M.O.E. This rating determines the level of priority the project has in the provincial allocation of funds.

.2 Town of Hawkesbury

Discussions with M.O.E. Officials have indicated that the Direct Grant program would be the applicable subsidy vehicle for the works proposed in this report. In late 1988, the Town applied for subsidy for the construction of the raw water line and the water treatment plant Phase I expansion. These items of work have been found eligible by the M.O.E. at levels of 15% and 16.9%, respectively. It has been confirmed that there are no funds available for this project in the Province's 1990 fiscal year (April 1/90-March 31/91).

Other items of work should be submitted to the Ministry by means of an application, to determine eligibility, level of subsidy possible and availability of funds. The application must be made before the October 1 deadline preceeding the fiscal year in which funds are requested, e.g. October 1, 1990 for work in 1991. Works constructed prior to receiving approval of funds are not eligible for financial assistance.

It is expected that the maximum subsidy level that may be provided to the Town is 15%. However, if it can be shown that health or environmental problems exist, the grant can increase to 33% of the cost attributed to meeting current requirements.

If the above grant level (15%) is obtained, a subsidy of $1,050,000 would be received. The Town's share would therefore be $5,950,000.

.3 Lower Ottawa Valley Area Water Works

Neighbouring municipalities to the Town of Hawkesbury are expected to qualify for a larger percentage subsidy level because of their smaller populations. Those components of work which are common to all municipalities will likely be cost shared in a weighted manner which would take into consideration

(a) proportioning due to population and
(b) individual available subsidy level.

For example, a water treatment plant, which is designed on the basis of a maximum day demand, is based on the population of the total area served. The cost of the treatment plant, therefore, would be allocated on the basis of the projected population served in each municipality at the time the project begins operating. The individual level of subsidy for a given municipality would then be applied to its share of allocated cost.

The above noted cost sharing allocation has been successfully agreed to in previous projects and found to be fair and equitable by the Ministry. Preliminary discussions in the M.O.E. Officials indicate that a similar arrangement could find favour in the present undertaking in the event that neighbouring municipalities were provided with water by the Town of Hawkesbury.

Upon a review of the components of the preferred alternative, the following items are considered as possibly eligible for the cost sharing arrangement:

.1	New raw water pumping facility	$ 500,000
.2	New raw water line	$ 500,000
.3	Water treatment plant expansion to 9 MIGD (40,900 m^3/d)	$5,625,000
.4	Improved high lift pump system	$ 430,000
.5	New watermains on Main, McGill and Spence Streets	$1,956,000
.6	Improve flow conditions on Main Street (pigging)	$ 25,000
Total	(rounded)	$9,000,000

Based on data available in the Lower Ottawa Valley Area Water Works conceptual report and utilizing the M.O.E. criteria on determining subsidy level, it is expected that the following levels of financial assistance might be available:

- Town of Vankleek Hill	79 %
- Village of l'Orignal	77.24%
- Township of East Hawkesbury	85 %
- Township of West Hawkesbury	79.36%
- Township of Longueuil	85 %

.4 Possible Subsidy with Lower Ottawa Valley participation and impact on Town Share

Based on the above noted premises, the following subsidy scenario could be submitted to the Ministry for approval in principle.

TABLE 5

Work Component and Cost	Hawkesbury			Vankleek Hill			L'Orignal			E. Hawkesbury			W. Hawkesbury			Longueuil		
	Pop'n Factor	Subsidy level	Subsidy $	Pop'n Factor	Subsidy level	Subsidy $	Pop'n Factor	Subsidy level	Subsidy $	Pop'n Factor	Subsidy level	Subsidy $	Pop'n Factor	Subsidy level	Subsidy $	Pop'n Factor	Subsidy level	Subsidy $
Pu Sta. $500,000	9903/16622 (59.6%)	15%	44,700	1745/16622 (10.5%)	79%	41,475	1970/16622 (11.8%)	77.24%	45,600	387/16622 (2.3%)	85%	9,800	1705/16622 (10.3%)	79.36%	40,900	912/16622 (5.5%)	85%	23,400
Raw Water Line $500,000	9903/16622 (59.6%)	15%	44,700	1745/16622 (10.5%)	79%	41,475	1970/16622 (11.8%)	77.24%	45,572	387/16622 (2.3%)	85%	9,775	1705/16622 (10.3%)	79.36%	40,810	912/16622 (5.5%)	85%	23,375
Water Plant $5,625,000	9903/16622 (59.6%)	15%	502,875	1745/16622 (10.5%)	79%	466,594	1970/16622 (11.8%)	77.24%	512,681	387/16622 (2.3%)	85%	109,969	1705/16622 (10.3%)	79.36%	459,792	912/16622 (5.5%)	85%	262,969
HL Pu System $430,000	9903/16622 (59.6%)	15%	38,442	1745/16622 (10.5%)	79%	35,668	1970/16622 (11.8%)	77.24%	39,192	387/16622 (2.3%)	85%	8,407	1705/16622 (10,3%)	79.36%	35,149	912/16622 (5.5%)	85%	20,103
W.M. Main Street $463,600	9903/13740 (72.1%)	15%	50,138	1745/13740 (12.7%)	79%	46,513	N/A	—	—	387/13740 (2.8%)	85%	11,034	1705/13740 (12.4%)	79.36%	45,621	N/A	—	—
W.M. McGill $482,000	9903/14652 (67.6%)	15%	48,900	1745/14652 (11.9%)	79%	45,300	N/A	—	—	387/14652 (2.6%)	85%	10,650	1705/14652 (11.7%)	79.36%	44,750	912/14652 (6.2%)	85%	25,400
W.M. Spence $1,060,000	9903/12035 (82.3%)	15%	130,857	1745/12035 (14.5%)	79%	121,423	N/A	—	—	387/12035 (3.2%)	85%	28,832	N/A	—	—	N/A	—	—
W.M. Pigging $25,000	9903/10290 (96.2%)	15%	3,607	N/A	—	—	N/A	—	—	387/10290 (3.8%)	85%	807	N/A	—	—	N/A	—	—
$9,050,000 Subsidy	864,219			798,448			643,045			189,274			667,082			355,247		
Municipal Total Share	$4,913,305																	

Total Subsidy = $3,517,315

[redacted] (weighted subsidy level)

Total Value $9,050,000

The previous table reflects only those components which would be commonly shared with the Lower Ottawa Area Valley clients. The following additional items of work would be required by the Town to carry out the preferred alternative in its entirety:

.1	Repair filter walls	$ 150,000
.2	Standpipe storage improvements	$ 275,000
.3	Leakage survey and correction program	$ 100,000
.4	Watermain on Laflèche, Hamilton, Cécile	$ 410,000
.5	Watermain oversizing in Siversky Subdivision	$ 65,000
.6	Other watermain improvements	$ 694,400
.7	First cell expansion, ground water storage	$ 500,000
	Total Additional Works	$2,194,400

With regards to the Town of Hawkesbury's financial involvement in an area scheme, its overall share, including the above works would be as follows:

-	Share under area scheme		$4,913,305
-	Share for remaining works		
	- Cost of Works	$2,194,400	
	- Assume 15% subsidy	$ 329,200	
	- Town share		$1,865,200
	- Total Town share		$6,778,505
		(rounded)	$6,800,000

Assuming a 20 year debenture at 10% annual interest rate for the Town's share, an annual payment of $800,000 is to be expected for the next 20 years in order to amortize the town's share of $6,800,000.

10.5 Projected Annual Cash Flow Requirements (Town Proceeding Alone)

Based on the above noted preferred alternative, and assuming the previously recommended schedule of prioritization of work, and neglecting any possible subsidy assistance, the following annual cash flow requirements have been prepared for the following ten year period:

TABLE 6

ANNUAL CASH FLOW IN 1000$(1990)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Filter Wall Repair	150										
Leakage Survey Repair	100										
Raw Water Line	500										
Hamilton Laflèche Cécile	410										
H.L. Pu Firm Cap.	50	380									
Siversky S/D over sizing	65										
6 MIGD Plant Exp'n	150	750	725								
Standpipe Storage		275									
Raw Water Pu Sta			75	375							
Other W. M.s				300	300	300	300	400	400	400	250
Cell #1 Storage						500					
Sub Total	1425	1405	800	675	300	800	300	400	400	400	250
9 MIGD Plant Exp'n							700	3300			
Cell #2 Storage						500					
Cell #3 Storage										500	
Cell #4 Storage											440
Total	1425	1405	800	675	300	1300	1000	3700	400	900	690
Potential Subsidy (15%)	214	211	120	101	45	195	150	515	60	135	104
Possible Municipal Share (proceeding alone)	1211	1194	680	574	255	1105	850	3185	340	765	586

10.6 Summary

In summary, the Town of Hawkesbury's actual cost, if proceeding alone, is expected to be $5,900,000 initially (plus approximately $3,500,000 to $4,500,000 later if and when additional plant and storage expansion is necessary) versus $6,800,000 if proceeding jointly with an area scheme.

It is expected that the Town of Hawkesbury's cash flow requirement for an area water scheme for the next 20 year period will be in the order of $800,000 annually, assuming a 20 year debenture at an interest rate of 10% per year. The Town will wish to review this cash flow projection with the one shown in Table 6 for an undertaking in which it proceeds alone.

11.0 INVOLVEMENT OF REVIEW AGENCIES AND PUBLIC

11.1 Purpose of Involvement

.1 Opportunities for the public and the review agencies allow for a better exchange of ideas between the proponent of the project and those parties which may be potentially affected by the undertaking. An open channel of communication and exchange avoids subsequent controversy and facilitates the decision-making process. Concerns of those possibly affected can be identifieid for early consideration and the subsequent solution to the undertaking can easily be modified.

11.2 Class EA Process and Identification of Project Activity Level

.1 A Class EA is a planning procedure developed to ensure that the potential social, economic and natural environmental effects are considered in planning certain projects. Under the Class EA, the proponent of a proposed project does not have to apply for formal approval under the Environmental Assessment Act provided it is planned in accordance with procedure approved by the Environmental Assessment Board.

.2 Certain projects are approved; these are listed in Schedule A in the Municipal Engineers Association's document entitled "Class Environmental Assessment for Municipal Sewage and Water Projects". Other projects are approved subject to a screening process; those types of activities are found in Schedule 'B' of this same document. Certain other types of projects fall in Schedule 'C' of the document; their complexity requires the proponent to follow the entire class environmental assessment process.

.3 The preferred solution has been identified as falling under a Schedule 'B' activity, requiring a screening process to be followed. The proponent must then contact specific agencies and potentially affected members of the public.

.4 After the project has been drawn to the attention of the appropriate agencies and potentially affected members of the public, any of the above parties may, within 30 calendar days of being notified of the intent of the project request that the Minister of the environment "bump up" to a full individual environmental assessment the project on justified reasons that it will have significant negative environmental effects.

11.3 Contact Points

.1 Certain mandatory contact points are considered necessary to ensure effective and timely input by all concerned. For Schedule 'B' activities, these would occur when

(a) alternatives to the undertaking are being considered and,
(b) alternative methods of carrying out the undertaking are discussed.

The process for this undertaking is as follows:

(a) early presentation of preliminary findings, and
(b) at the time of submission of the Environmental Study Report.

11.4 Procedure Followed

.1 Public Notice

The Town of Hawkesbury elected to contact the general public by publishing a notice of intent of the undertaking in the local newspapers. A copy of the notices are provided in Appendices A and B herein. Furthermore, the owners of properties potentially affected by the project (Appendix C) were directly contacted by mail and were provided with a copy of the Preliminary Findings. The letter of transmittal is found in Appendix D. The Preliminary Findings document which was available for public viewing is in Appendix E.

.2 Information Provided to the Public and Input Provided by the Public

The public notices advised all interested parties of the Town's intention to proceed in the planning, design and construction of certain improvements to the water system, namely: repair existing or construct new low lift pumping station, new raw water line, improve existing distribution system, expand treatment plant and storage. A copy of the document outlining the Preliminary Findings (Appendix E) was available for review. A preliminary assessment of the available alternative solutions was indicated and a cost estimate for these works was also provided. A few oral questions on the nature of the project were received. One local newspaper interviewed the Consultant and published an article on the project (Appendix F). There were no objections, oral or written, received against the project.

.3 Information Provided to Agencies and Input Provided

The list of agencies contacted is provided in Appendix C. Included were those area municipalities in the Lower Ottawa Area Valley interested in obtaining a secure source of water

supply. A copy of the letter of transmittal is found in Appendix D. Those agency comments received are summarized in Appendix G. There were no objections to the project. The Ministry of Culture and Communications' comment regarding the heritage aspect of the old C.I.P. Pump House was discussed with the Town. The building was never designated as having a heritage status; furthermore, considerations to that effect were never voiced by the public. The matter will not be pursued at this time.

.4 Report Modification Resulting from Public/Agency Input

All comments (Appendix H) will be acted upon and addressed in the subsequent draft of the E.S.R., where applicable. None of the comments affected the initial choice of the preferred alternative.

.5 Second Contact Point

A public notice has been published in the local newspaper advising all parties concerned of the fact that the E.S.R. is now on Public Record for review by all concerned. Furthermore, a copy of this document has been forwarded to all agencies for final review and input of comments. Finally, all potentially affected public has been additionally advised by letter of the above points. Any and all comments received will be addressed in the E.S.R. and found in Appendix H.

12.0 ENVIRONMENTAL CONSIDERATIONS

12.1 Water Intake

The existing intake in the Ottawa River will be retained. It is expected that any repair, if required, can be effected from within the existing pipe. The intake has been in place for almost 40 years. Therefore, there will be no negative effect to fish or water fowl.

The total amount of water (existing and forecasted uses) that will be taken from the Ottawa River (0.5 m^3/sec) is insignificant in relation to the low flow rate of the river (2 - 3000 m^3/sec).

12.2 Water Treatment Plant

The expansion of the treatment plant will be constructed on lands presently owned and used for the existing treatment plant. Additional lands need not be acquired nor is it necessary to use other municipally owned lands immediately adjacent to the plant. The plant expansion should not impact significantly on any of the surrounding residential and commercial users; furthermore, this component of the project will be architecturally blended into the surroundings.

Proper disposal of clarifier sludge and filter backwash water will have to be accommodated in the detailed design of the plant. Present legislation does not allow this material to be discharged back to the new water source. Sludge and backwash water will be directed to a settling tank on the site. The clear supernatant may be returned to the Ottawa River or to the intake well. Water plant sludge is a fairly inert substance and is not objectionable. It is proposed that the settled sludge be discharged into the Town's sanitary sewer for ultimate treatment at the municipal sewage treatment plant.

12.3 Watermains

The proposed route of the raw water line is along a predetermined street pattern established by the owner of the former C.I.P. lands. There will be minimum disruption to the environment and the land owner's plans of development resulting from the watermain installation. Other proposed watermain construction is within existing rights-of-way or approved places of subdivision.

Disruption to the environment will again be minimal. Standard clauses will, however, be included in the contract documents for this project requiring the Contractor to take measures not to pollute the surrounding environment and to reinstate lands to equal or better conditions.

12.4 Storage Facility at Treatment Plant

The proposed ground storage tank at the plant will be buried and will not project above the natural terrain at an elevation greater than the existing storage. The effect of the storage will be no different that what is presently experienced by the surrounding owners and the effect will be negligeable. Clauses will be included in the contract documents requiring the Contractor to take precautionary measures not to pollute the surrounding environment.

12.5 Effect on Human Environment

The preferred system will meet the Official Plan objectives of providing adequate piped water service to the Town of Hawkesbury and the Lower Ottawa Valley Area client centres, if necessary. This will be a great improvement to the welfare of all benefitting residents. The installation of new, larger mains within the Town of Hawkesbury will provide better water pressure, a more efficient fire protection and will allow the anticipated growth for the Town and the Lower Ottawa Valley area to occur in an orderly manner.

Noise and traffic disruptions will obviously occur during installation of the watermains and the plant but the effects will be minimized by proper control clauses in the contract documents and good site supervision.

13.0 PRELIMINARY DESIGN REPORT - PREFERRED SYSTEM

13.1 Description of System - An Overview

The preferred system is described in Section 10.1 of this report. It comprises a new raw water pumping station and forcemain, an expanded treatment plant and storage facilities and improvements to existing watermains.

13.2 Design Criteria

As developed earlier in the Environmental Study Report (E.S.R.), the following design criteria will be used in the detailed design of the water supply system:

Area served:	Town of Hawkesbury possibly Town of Vankleek Hill, Village of l'Orignal and parts of Townships of East Hawkesbury, West Hawkesbury and Longueuil. (To be decided by Council)	
Design basis:	20 year projected population	
Design population:	Town of Hawkesbury	12,072
	Town of Vankleek Hill	2,350
	Village of l'Orignal	2,654
	Township of East Hawkesbury	521
	Township of West Hawkesbury	2,297
	Township of Longueuil	1,228
Average consumption:	450 Litres per capita per day	
Treatment plant sizing:	Phase 1 - 6 MIGD (27,300 m^3/d)	
	Phase 2 - 8 MIGD (36,400 m^3/d)	
	Phase 3 - 9 MIGD (40,900 m^3/d)	

Design fire flow requirements: (Town of Hawkesbury)	3,000 IGM (227 L/s)
Maximum distribution and working pressure:	100 psi (700 kPa)
Minimum distribution and working pressure:	20 psi (272 kPa) (fire) 40 psi (550 kPa) (other)
Minimum depth of cover:	as per Appendix E, M.O.E. Guidelines (approximately 2.1 m)
Minimum horizontal separation to sewers:	8 ft (2.5 m)
Pipe'C' factors:	6" (150 mm) dia. : 100 8" (200 mm) dia. : 110 10" (250 mm) dia. : 110 12" (300 mm) dia. : 120
Plant design:	to M.O.E. Guidelines for Design of Water Treatment Plants
Coagulation/ Sedimentation:	Flocculation time :15 minutes, min. Surface rise rates:3.0 m/hr(8.8 IGM/sq.ft) Inlet velocities :0.6 m/sec Clarifier upflow rate :3.0 m/hr(8.8 IGM/sq.ft)
Filtration:	Rate :11.5 m/hr(34 IGM/sq.ft)

The raw water pumping station and forcemain will be designed to handle the ultimate total maximum day demand for the areas serviced, i.e. 9.0 MIGD (40,900 m^3/d). Phase I of the water treatment facility will be designed for 6.0 MIGD (27,300 m^3/d), with provision to expand to 9.0 MIGD (40,900 m^3/d). High lift pumps will be sized for a range of demands up to the maximum day demand rate.

The Town's **distribution system** will be upgraded so that design fire flow rates can be delivered to any site

(a) from either the remote elevated or the plant ground storage during a maximum day demand situation, and
(b) also to the outlying service area, if applicable.

13.3 Chemical Feed Systems

Existing chemical feed systems are in place. Chlorination is provided by one ton gas cylinders. The existing equipment will require some upgrading to meet the expanded plant demand.

The formation of THM precursors is of some concern in the Ottawa River. Trihalomethanes (THM) are found in drinking water as a direct result of chlorination and are of concern because some forms are considered a risk to human health when present at levels exceeding the maximum allowable concentration of 0.350 mg/L. M.O.E. drinking water objectives state that THM levels are not to exceed 0.350 mg/l. Levels in the Hawkesbury plant finished water are reportedly in the 0.0 to 0.1 range. It is therefore intended to maintain the present method of treatment at final design, unless more recent observations indicate a worsening situation is occurring.

13.4 High Lift Pumps

High lift pumps are proposed to be of the horizontal centrifugal type. They will be located in the lower portion of the water treatment plant where the existing pumps are situated, and will draw directly from the clearwells.

The present room provides space for the Phase 1 upgrading, i.e. for four high lift pumps, with provision for a fifth pump in the location now taken up by the standby generator. The proposed system will be designed to provide a firm pumping capacity of 6.0 MIGD (27000 m^3/d) under normal operating conditions and 4.0 MIGD (18,200 m^3/d) under emergency conditions. All existing suction and discharge piping and valving will be replaced where new pumps are installed. The proposed pumps are as follows:

Pump #1 - 2.0 MIGD (9100 m^3/d) - new electric/diesel - 125 HP
Pump #2 - 2.0 MIGD (9100 m^3/d) - new electric/diesel - 125 HP
Pump #3 - 2.2 MIGD (10000 m^3/d) - existing electric - 125 HP
Pump #4 - 2.0 MIGD (9100 m^3/d) - existing diesel, overhauled

The proposed system will allow more than one engine being available during emergencies, at a cost which is economical.

13.5 Automatic Controls

The treatment plant and pumping system is presently automated and alarmed. The expansion will be controlled by the present system.

13.6 Standby Power

The existing generator will be retained to serve the entire plant except the high lift pumps. This, with the dual electric/diesel driven high lift pumps will ensure that the stated firm pumping capacity of the plant is maintained at all times.

13.7 Building Envelope

The plant's existing rear filter wall, will be upgraded so that the entire treatment process will be housed in a suitable building.

13.8 Sludge and Backwash Handling System

Waste products from the treatment process (clarifier sludge and filter backwash) will be directed to a settling tank outside of the plant building. In this tank, solids will settle out and supernatant will be drawn off and returned to the river or the water intake. Settled sludge will be pumped to the municipal sanitary sewage system for treatment at the polution control centre.

13.9 Expected Finished Water Characteristics

Based on present experience, here and at other plants along the Ottawa River, it is expected that the above treatment will yield the following finished water characteristics that will meet or exceed the Provincial Drinking Water Objectives:

Parameter	Finished Water Concentration
Hardness	43 mg/L
Alkalinity	32 mg/L
pH	7 mg/L
Alum	0.13 mg/L
Turbidity	0.21
Colour	3

No problem has been encountered with the THM's do date and given the same proposed treatment method, the same low levels are expected for the future.

14.0 TIMING OF UNDERTAKING

A proposed prioritization and time schedule has been suggested in Section 10.2 of this Report. Each item in the schedule is of critical importance as delay in one item will push back all remaining aspects of the project.

15.0 ESR ON PUBLIC RECORD

1. On December 19, 1990, the Town of Hawkesbury placed the ESR document on Public Record and advised the general public by a notice in the local newspapers, "Le Carillon" and "The Review": also the immediately affected public and mandatory contacts were advised by a letter dated December 2, 1990.

2. Furthermore, an "Open House" public information meeting ws held in the Town Council Chamber on January 29, 1991. At that time, displays summarized the findings and conclusions of the ESR and the report itself was also on display.

3. As a result of the notices and the Open House, only two queries were received:

(i) MNR in a letter dated January 16, 1991, reiterated the need to apply for a work permit when construction proceeds as well as a concern for a potential nuisance factor in Zebra Mussells. These items will be addressed during final design. The MNR letter is found in Appendix 'H'.

(ii) Mr. Tessier, Taxpayer, expressed concern that the inclusion of the Lower Ottawa Valley Area Water Works Consumption demands to the Hawkesbury system would reduce the Town's remaining capacity and hence stunt the Town's growth. It was confirmed that the Lower Ottawa Valley needs would be in addition to the Town's 20-year needs and will not restrain Hawkesbury's growth.

(iii) Mrs. Pelletier, Taxpayer, asked if the future development on Hamilton Island and the new Cité Collégiale were included in the study. Although the plans do not reflect these items, the matter was addressed in a letter dated May 4, 1990. A copy of this letter is found in Appendix 'H'.

(iv) Town of Vankleek Hill representatives which were present at the Open House, expressed interest in obtaining water from the Hawkesbury system. It was indicated that a decision should be given to the Town of Hawkesbury by June 1, 1991 in order not to delay the Town's improvements programme.

(v) The Town of Hawkesbury also decided to advise other neighbouring municipalities of this deadline for reaching a decision to partake into an area system with water provided by the Town of Hawkesbury.

(vi) A copy of the Summary of Discussions and the list of attendees at the January 29, 1991 Open House is also provided in Appendix 'H'.

(vii) It is concluded that the above points do not affect the findings and recommendations of the ESR document. Therefore, no changes were effected to the document.

Prepared by:

Marcel E. Dugas, P.Eng.,
J.L. RICHARDS & ASSOCIATES LIMITED

A P P E N D I X 'A'

AVIS - EVALUATION ENVIRONNEMENTALE
Plan directeur et améliorations proposées
pour l'aquedue

Le Carillon - Septembre 1, 1989

AVIS AU PUBLIC

VILLE DE HAWKESBURY
ÉVALUATION ENVIRONNEMENTALE
PLAN DIRECTEUR ET AMÉLIORATIONS PROPOSÉES POUR L'AQUEDUC
LES COMMENTAIRES DU PUBLIC SONT MAINTENANT ACCEPTÉES JUSQU'À 15 HEURES, LE VENDREDI 6 OCTOBRE 1989

Tout comme l'exige la loi ontarienne sur les évaluations environnementales, la Ville de Hawkesbury avise par la présente toutes les personnes ou tous les partis intéressés que sujet aux commentaires reçus résultant de cet avis et à la réception d'autres approbations si nécessaires, la ville de Hawkesbury a l'intention de procéder à la planification, le design et la construction du projet mentionné ci-dessus.

Le but du plan directeur pour l'aqueduc est d'évaluer l'approvisionnement et le réseau de distribution existants de l'aqueduc municipal et d'effectuer les améliorations qui permettront la croissance continue de la ville. À date, les problèmes du système ont été identifiés, les questions environnementales définies et une gamme de solutions reconnue : réaménager ou reconstruire la station de pompage d'eau brute; construire une conduite neuve d'alimentation d'eau brute; améliorer le réseau de distribution; agrandir l'usine d'eau potable et le réservoir existants. Le projet, estimé à 17000000 $ sera construit sur une période d'années.

Le document décrivant les constatations préliminaires peut être examiné à l'endroit suivant et des commentaires du public peuvent être adressés à :

J. Jacques Poulin, AMCT
Greffier municipal
Ville de Hawkesbury
600, rue Higginson
Hawkesbury (Ontario)
K6A 1H1
numéro de téléphone : 632-0105
de 8 h 30 à 12 heures et de 13 heures à 16 h 30.

Pour examiner une copie de la classe sur les évaluations environnementales, ou pour de plus amples renseignements, veuillez communiquer avec la personne sus mentionnée.

Les individus ou les partis ont un délai de 30 jours de la date de cet avis pour soumettre leurs commentaires sur ce projet. Les commentaires doivent être par écrit et doivent être reçus par la ville de Hawkesbury avant 15 heures, le vendredi6 octobre 1989. Si les intérêts conc ernant ce projet ne peuvent être résolus, une personne ou des partis peuvent demander au ministre de l'Environnement d'avancer ce projet à une évaluation environnementale individuelle. Ces requêtes doivent être reçues à la date prescrite ci-dessus et soumises à l'adresse ci-dessous. Si aucun intérêt n'est signalé par la date prescrite, la préparation du plan directeur pour l'aqueduc et la construction des améliorations proposées à cet effet seront entamées.

L'honorable Jim Bradley
Ministre de l'Environnement
135, avenue St-Clair Ouest
15e étage
TORONTO (Ontario)
M4V 1P5

A P P E N D I X 'B'

NOTICE - ENVIRONMENTAL ASSESSMENT
Water Master Plan and Proposed Improvements

The Review - September 6, 1989

PUBLIC NOTICE

TOWN OF HAWKESBURY

ENVIRONMENTAL ASSESSMENT WATER MASTER PLAN AND PROPOSED IMPROVEMENTS

PUBLIC COMMENTS NOW BEING ACCEPTED

UNTIL 15:00 HOURS, FRIDAY, OCTOBER 6, 1989

As a requirement under Ontario's Environmental Assessment Act, the Town of Hawkesbury hereby notifies all interested individuals and parties that subject to the comments received as a result of this Notice and the receipt of other approvals as necessary, the Town of Hawkesbury intends to proceed with the planning, design and construction of the above-mentioned project.

The purpose of the Water Master Plan is to assess the existing water supply and distribution system of the town and to effect improvements to allow growth without physical restrictions. To date, problems in the system have been identified, environmental issues defined and a range of alternative solutions recognized: repair existing or construct new low lift pumping station; construct new raw water line; improve existing water distribution system; expand water treatment plant and storage facilities. The total estimated cost of $17,000,000.00 will be expended over a period of years.

The document outlining the preliminary findings will be available for review and public comment at the following location and times:

J. Jacques Poulin, AMCT
Municipal Clerk
Town of Hawkesbury
600 Higginson Street
Hawkesbury, Ontario
K6A 1H1
Telephone number: 632-0105
from 8:30 a.m. to 12 noon and 1 p.m. to 4:30 p.m.

To see a copy of the Class Environmental Assessment, or for further information, contact the above address.

Interested individuals and parties have 30 calendar days from the date of this Notice to comment on the proposal. Comments must be made in writing and must be received by the Municipal Office by 15:00 hours, on October 6, 1989.

If concerns regarding this project cannot be resolved, a person/party may request that the Minister of the Environment "bump-up" this project to an individual environmental assessment. Bump-up requests must be received by the above date and submitted to the address below. If there are no concerns expressed by the above date, the Water Master Plan and related improvements will proceed.

The Honourable Jim Bradley
Minister of the Environment
135 St. Clair Avenue West
15th Floor
Toronto, Ontario
M4V 1P5

The Review.
Sept. 6-1989

A P P E N D I X 'C'

LIST OF AGENCIES AND POTENTIALLY AFFECTED
PUBLIC ADVISED INDIVIDUALLY OF PROJECT

1. Mr. David Guscott, M.O.E. Kingston
2. Mr. G. McKenna, M.O.E. Cornwall
3. Mr. R. Lefebvre, Township of West Hawkesbury
4. Mr. G. Sauvé, Town of Vankleek Hill
5. Ministry of Culture, Ottawa
6. Mr. R. Cleroux, Ministry of Natural Resources, Cornwall
7. Capri Realties Ltd., l'Orignal
8. Hawkesbury River Front Estates, Don Mills
9. Mr. Omer Chartrand, Hawkesbury
10. Hotte Automobile Inc., Hawkesbury
11. 561503 Ontario Inc., Hawkesbury
12. Amoco Fabrics Ltd., Hawkesbury
13. PPG Canada, Hawkesbury
14. Hawkesbury Realty and Development Co., Hawkesbury
15. Mr. S. Siversky, Vankleek Hill
16. Mr. D. Lalande, Village of l'Orignal
17. J.C. Ravary Construction, Hawkesbury

A P P E N D I X 'D'

TYPICAL LETTER OF TRANSMITTAL OF
PRELIMINARY FINDINGS DOCUMENTS TO
POTENTIALLY AFFECTED PUBLIC

September 1, 1989
Our File: 10499

VIA COURIER

J.C. Lavary Construction
1 Main Street East
Hawkesbury, Ontario
K6A 1A1

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

Attached is a brief document which highlights the work carried out to date and some of the possibilities that exist and are under consideration.

Although it is not a requirement of the Environmental Assessment Act, proponents of projects are encouraged to consult the public and government agencies before submitting an Environmental Assessment so that early consultation will allow timely identification of issues to be addressed. The proponent, the Town of Hawkesbury, therefore, wishes to consult the parties which could be affected by this undertaking in order to obtain concerns, comments and input regarding this project.

It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

J.G. Ravary Construction, Hawkesbury

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Ministry of the Environment
Cornwall District Office
Attention: Mr. C. McKenna, P.Eng.
Southeastern Region
205 Amelia Street
CORNWALL, Ontario
K6H 3P3

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

Ministry of the Environment, Cornwall District, Attention:
Mr. G. McKenna, P.Eng., Cornwall

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Town of Vankleek Hill
Attention Mr. G. Sauvé
Clerk-Treasurer
P.O. Box 40
11 Queen Street
Vankleek Hill, Ontario
K0B 1R0

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

Town of Vankleek Hill, Mr. C. Sauvé, Clerk-Treasurer

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Ministry of Culture
Regional Manager
Ottawa Office
6th Floor, Room 612
Rideau Trust Bldg.
1 Nicholas Street
Ottawa, Ontario
K1N 7Z7

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

Ministry of Culture, Regional Manager, Ottawa.

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-2571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Mr. Ronald L. Cleroux
District Manager
Ministry of Natural Resources
Cornwall District
P.O. Box 1749
113 Amelia Street
Cornwall, Ontario
K6H 5V7

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

Mr. Ronald I. Cleroux, District Manager, Ministry of Natural Resources, Cornwall

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.L. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MLD:ac

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Capri Kealties Ltd.
392 Front Road
L'Orignal, Ontario
K0B 1K0

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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... 2

September 1, 1989
Our File: 10499

Capri Realties Ltd., L'Orignal

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Hawkesbury River Front Estate
c/o Jans August
501-45 Wynford Heights Crescent
Don Mills, Ontario
M3C 1L2

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a water master plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

Hawkesbury River Front Estate, c/o Jans August, Don Mills

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Omer Chartrand
643 Laflèche Road
Hawkesbury, Ontario
K6A 1N3

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

Attached is a brief document which highlights the work carried out to date and some of the possibilities that exist and are under consideration.

Although it is not a requirement of the Environmental Assessment Act, proponents of projects are encouraged to consult the public and government agencies before submitting an Environmental Assessment so that early consultation will allow timely identification of issues to be addressed. The proponent, the Town of Hawkesbury, therefore, wishes to consult the parties which could be affected by this undertaking in order to obtain concerns, comments and input regarding this project.

It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

... 2

September 1, 1989
Our File: 10499

Omer Chartrand, Hawkesbury

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Motte Automobile Inc.
700 Main Street West
Hawkesbury, Ontario
K6A 2J3

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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... 2

September 1, 1989
Our File: 10499

Motte Automobile, Hawkesbury

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

561503 Ontario Inc.
640 Main Street
Hawkesbury, ONtario
K6A 2J3

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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September 1, 1989
Our File: 10499

561503 Ontario Inc., Hawkesbury

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Amoco Fabrics Ltd.
1423 Cameron Street
Hawkesbury, Ontario
K6A 2B9

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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September 1, 1989
Our File: 10499

Amoco Fabrics Ltd., Hawkesbury

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

PPG Canada
50 St. Clair Avenue West
Toronto, Ontario
M4V 1N9

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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September 1, 1989
Our File: 10499

PPC Canada, Toronto

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng.,
J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Hawkesbury Realty and Development Co.
501 Cascon Street
Hawkesbury, Ontario
K6A 1N4

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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September 1, 1989
Our File: 10499

Hawkesbury Realty and Development Co., Hawkesbury

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P. Eng.,
J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10495

VIA COURIER

Mr. David Cuscott, Director
Ministry of the Environment
Southeastern Regional Office
Box 820
133 Dalton Avenue
KINGSTON, Ontario
K7L 4X6

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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... 2

September 1, 1989
Our File: 10499

Mr. DAvid Cuscott, Director, Ministry of the Environment, Southeastern Regional Office

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Township of West Hawkesbury
Attention: Mr. Robert Lefebvre
Clerk-Treasurer
948 Pleasant Corners Road East
Vankleek Hill, Ontario
K0B 1R0

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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It would, therefore, be appreciated if you could provide us with any comments regarding your interests within 30 days, i.e. October 6, 1989.

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September 1, 1989
Our File: 10499

Township of West Hawkesbury, Mr. Robert Lefebvre, Clerk-Treasurer,
Vankleek Hill

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Mr. S. Siversky
R.R. 3
Vankleek Hill, Ontario
K0B 1R0

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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September 1, 1989
Our File: 10499

Mr. S. Siversky, Vankleek Hill

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P. Eng.,
J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

September 1, 1989
Our File: 10499

VIA COURIER

Village of L'Orignal
Attention: Mrs. Diane Lalonde
Clerk-Treasurer
P.O. Box 271
L'Orignal, Ontario
K0B 1K0

Re: Town of Hawkesbury
Water Master Plan

Dear Sir:

The Town of Hawkesbury has retained J.L. Richards & Associates Limited, Consulting Engineers, Architect & Planners, to carry out a study of a Water Master Plan in order to identify its existing problems and look into finding alternative solutions to improving the system in order to meet present and future needs.

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September 1, 1989
Our File: 10499

Town of L'Orignal, Attention: Mrs. Diane Lalonde, Clerk-Treasurer,
L'Orignal

Should you have any questions or points which you wish to discuss before that time, please address your questions to:

Mr. Marcel Dugas, P.Eng.
J.L. Richards & Associates Limited
Tel. (613) 728-3571

or to

Mr. Kenneth Ménard, P.Eng.
Town Engineer
Town of Hawkesbury
Tel. (613) 632-7504

Thank you for your consideration.

Yours very truly,

M.E. Dugas, P.Eng., J. L. RICHARDS & ASSOCIATES LIMITED

MED:ad

Encl.

cc: Mr. Kenneth Ménard, P.Eng., Town of Hawkesbury

A P P E N D I X 'E'

PRELIMINARY FINDINGS DOCUMENT
WATER MASTER PLAN FOR
TOWN OF HAWKESBURY

WATER MASTER PLAN
FOR
THE TOWN OF HAWKESBURY

PRELIMINARY FINDINGS

March, 1989

Prepared for:

THE TOWN OF HAWKESBURY

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED
Consulting Engineers & Planners
864 Lady Ellen Place
Ottawa, Ontario
K1Z 5M2

JLR 10499

WATER MASTER PLAN
FOR
THE TOWN OF HAWKESBURY

PRELIMINARY FINDINGS

- TABLE OF CONTENTS -

		PAGE
MA		
	RPOSE OF PROJECT	1
	TENTIAL AREA WATERWORKS UNDERTAKEN	1
	ACKGROUND	2
	EXISTING AND FUTURE NEEDS	2
	DEFINITION OF PROBLEMS	3
	1 Existing Conditions	3
5.2	Projected Future Needs	5
	RIEF DESCRIPTION OF EXISTING ENVIRONMENT	6
	1 Natural Environment	7
	2 Socio/Economic Situation	7
	SSIBLE SOLUTIONS TO CORRECTING THE PROBLEMS	8
	ELIMINARY ASSESSMENT	9

TABLES

E 1 - TOWN OF HAWKESBURY, ACTUAL WATER CONSUMPTION

E 2 - TOWN OF HAWKESBURY, YEAR 2008 DESIGN POPULATION PROJECTION

E - TOWN OF HAWKESBURY, ESTIMATED CONSUMPTION PROJECTIONS

E 4 - TOWN OF HAWKESBURY, STORAGE REQUIREMENTS

E - TOWN OF HAWKESBURY, ALTERNATIVE METHODS OF SOLUTION TO PROBLEM

- TABLE OF CONTENTS - (continued)

TABLES (cont'd)

TABLE 6 - TOWN OF HAWKESBURY, LOW LIFT PUMPING STATION ALTERNATIVES

TABLE 7 - TOWN OF HAWKESBURY, LOW LIFT PUMPING STATION ALTERNATIVES, ESTIMATED CONSTRUCTION COST

TABLE 8 - TOWN OF HAWKESBURY, WATER TREATMENT PLANT, PRELIMINARY BUDGETS FOR REPAIR PROGRAM

TABLE 9 - TOWN OF HAWKESBURY, WATER - MASTER PLAN, PROPOSED PRIORITIZATION OF WORKS, ASSESSMENT AS OF FEBRUARY 15, 1989

DRAWINGS

86-9796-2 PLAN OF WATER DISTRIBUTION SYSTEM RECOMMENDED CORRECTIVE WORKS

10499 TENTATIVE LAYOUT OF WATER TREATMENT PLANT EXPANSION

WATER MASTER PLAN
FOR
THE TOWN OF HAWKESBURY

PRELIMINARY FINDINGS

SUMMARY

The Town of Hawkesbury wishes to assess its existing water supply and distribution system in light of its present and future needs in order to effect the necessary corrective works so that the Town may grow without physical restrictions.

The Town retained J.L. Richards & Associates Limited to carry out this study and prepare a Water Master Plan for the Town.

In light of the Environmental Assessment Act which provides for the protection, conservation and wise management of the province's environment, the proponent (in this case, the Town of Hawkesbury) is expected to consult government agencies and the affected public.

The present document is for the purpose of obtaining early consultation from the interested parties. The issues are defined, a range of alternatives identified and problems are identified. Input from the interested parties is requested and all comments will be addressed with serious cosiderations and will be incorporated in the final report.

WATER MASTER PLAN
FOR
THE TOWN OF HAWKESBURY

PRELIMINARY FINDINGS

1.0 PURPOSE OF PROJECT

The purpose of this project is to assess the existing water supply and distribution system in light of the Town's present and future development needs and to recommend the carrying out of certain works to effectively provide water in accordance with Provincial guidelines (sufficient quantity and quality at acceptable pressures) and meet the requirements of the above-noted needs.

2.0 POTENTIAL AREA WATERWORKS UNDERTAKEN

Certain neighbouring municipalities (Village of L'Orignal and the Town of Vankleek Hill) are reportedly experiencing water supply problems. In light of this situation, the Town of Hawkesbury invited the Village of L'Orignal, the Town of Vankleek Hill and the Township of West Hawkesbury to a round table discussion to determine the possibility of establishing an area water supply scheme using the Town's existing water treatment plant as the basis for the development of this scheme.

A meeting was held on May 31, 1988, at which were present all parties except the Village of L'Orignal. None of the municipalities subsequently expressed interest in the matter. The subject has been dropped by the Town of Hawkesbury since separate pursuits to solutions for individual problems appear to be developing for each municipality.

3.0 BACKGROUND

.1 Some components of the system are reaching their capacity and improvements will be required in the near future in order to: continue providing water of quality and at pressures in accordance with Provincial guidelines; and, avoid a halt in the Town's growth.

.2 The Town's present population is approximately 9,600 persons. Its Official Plan (O.P.) forecasts a population growth to 10,821 by 1997. By extending the O.P. growth rate for a 20-year period, it is expected that the overall Town population will be 11,953 by the year 2008.

.3 The Town's present water supply source is the Ottawa River, taken via the intake pipe and a raw water low lift pumping station constructed by Canadian International Paper Limited around 1917, when it operated a paper mill in Hawkesbury.

.4 The Town also has a sanitary sewage collection and disposal system.

4.0 EXISTING AND FUTURE NEEDS

.1 The Town's water requirements have steadily augmented over the years as population and industrial development increased. In 1986, the maximum daily demands reached 15, 725 m^3/d (3.35 MIGD), in 1987, 17,275 m^3/d (3.8 MIGD), and in 1988, nearing 18,200 m^3/d (4.0 MIGD). Approximately 30% of the total water produced is supplied for industrial needs. (Refer to Table 1.)

.2 The Town of Hawkesbury has an Official Plan which was revised in 1986. In 1987, a planning study was carried out on a major tract of land which came free in the Town because of the closing of the C.I.P. activities in Hawkesbury; the purpose of the study was to

investigate and recommend the land use possibilities for this site in a manner which was complementary to the Official Plan.

.3 These studies project a population growth to 10,821 persons for the year 1997. Continuing the same growth rate to the end of the 20-year period of the present study, the population is estimated to be 11,953 persons by the year 2008 (see Table 2). Also, there is a potential 276 hectares available for industrial growth within the Town.

.4 In light of the above, the total projected water requirements for the year 2008 is in the order of 45,500 m^3/d (10.0 MIGD) (see Table 3). Furthermore, the total water storage requirement will be 18,200 m^3 (4.0 MIG) (refer to Table 4).

5.0 DEFINITION OF PROBLEMS

The existing water supply and distribution system was assessed under two sets of conditions: existing and future needs, and the problems were subsequently defined.

.1 Existing Conditions

.1 Low Lift Station

This building was constructed in 1917 by Riordon Pulp and Paper Co. Ltd., the precursor to C.I.P. Ltd. A site visit showed that the building is in a state of disrepair and that corrective repairs are required to mainly restore the building envelope and check further deterioration.

.2 Raw Water Line

This line was constructed by the Town around 19 on C.I.P. lands. The pulp and paper company subsequently made use of its lands as required and constructed large, dry and wet process waste detention lagoons over the municipality's raw

water line. These areas have been mounded some 10 m (30 - 35 ft.) above the original ground surface levels. Some years ago (19..), a break occurred in this feeder line and it required approximately four days to affect the repairs. During that downtime, raw water was fed to the Town's water treatment plant via the C.I.P. raw water line which was cross-connected to the Town pipe. With the demolition of the C.I.P. facilities, this reliability of service no longer exists and the Town is in danger of a complete shutdown of its water supply should another raw watermain break occur. This risk is further compounded by the fact that this pipe is aged and known to be fragile.

.3 Water Treatment Plant

A number of structural deficiencies were observed in this building and these can be effected at a reasonable cost. The major deficiency, however, is that the plant has reached its capacity (4.0 MIGD) to produce quality water (18,200 m^3/d plant vs. 18,200 m^3/d water consumption). Immediate action is required in order to avoid a slow-down or a halt in the Town's growth.

.4 Water Storage

Provincial guidelines show that a municipality of 9,800 should have a water storage of 7,280 m^3 (1.6 MIG). The existing standpipe on Spence Street has a usable reservoir of 1,580 m^3 (347,000 IG) at this time, substantially less than the recommended storage.

.5 Water Distribution System

Flow tests carried out in September, 1988, and a subsequent computerized flow distribution analysis revealed a number of deficiencies in the system under fire protection flow conditions.

(i) The Main Street watermain has severe friction losses which either restrain sufficient water supply or cause low residual pressures to occur at points of delivery under fire conditions;

(ii) A similar condition was found in the McGill Street main between Main and Spence Streets.

.2 Projected Future Needs

.1 Low Lift Station

Pumping equipment changes will be required to supply the necessary raw water to the treatment plant.

.2 Water Treatment Plant

The present plant capacity requires an expansion from its present rating of 18,200 m^3/d (4.0 MIGD) to 45,500 m^3/d (10.0 MIGD) (refer to Table 3 for details). Major construction will be required at a substantial expenditure. A minor variance to the zoning setback distances may be required on the east side facing an existing commercial development.

.3 Raw Water Line

To supply the raw water to the expanded water treatment plant, a 600 mm (24 in.) diameter raw water line should be constructed between the low lift pumping station and the plant to replace the existing fragile 400 mm (16 in.) line. The latter could be retained as an emergency bypass line in the event of failure in the new line.

.4 Water Storage

A storage of 18,200 m^3 (4.0 MIG) is required under present provincial guidelines to meet the projected needs of year 2008. Table 4 provides the detailed information in this matter.

.5 Water Distribution System

The following additional improvements are necessary in order to supply water at acceptable pressures under domestic and fire flow conditions:

(i) Clean or replace existing watermain on Main Street from the water treatment plant to 160 m east of Hamilton Street;

(ii) New watermain on McGill Street;

(iii) New watermain on Prospect and Thorne Streets;

(iv) New watermain on Thériault Street between Aberdeen and Edmond.

Drawing 86-9792-2 shows the existing water distribution system and the required corrective works.

6.0 BRIEF DESCRIPTION OF EXISTING ENVIRONMENT

The proposed undertaking is located within an existing urbanized area and it is proposed to upgrade and expand the existing water system components (which have been in place for 20 to 30 years) as much as possible instead of constructing new items in different locations.

The following aspects of the environment have therefore been considered:

.1 Natural Environment

The raw water intake and low lift pumping station have been in service for approximately 70 years. Any effect, if such has occurred, on the flora, fauna or fish life has already taken place. The lands surrounding these structures are presently bare as the C.I.P. completely demolished all structures when it ceased operations.

The water treatment plant site faces the C.I.P. land on the north, existing commercial development on the east and west sides and an existing residential use on its south boundary. The Town presently has sufficient property to construct an expansion to the treatment plant.

The existing water distribution system lies within opened rights-of-way (street system) for the main part; some pipes are in as-yet unopened road allowances. Part of the main feeder line loop is located on busy Main Street, throughout its entire length.

A water storage reservoir (standpipe) is located off Spence Street in a commercial and/or industrial zoned part of the Town. The existing property is sufficiently large to allow construction of an additional reservoir on the site.

.2 Socio/Economic Situation

The Town population is presently 9,600 as previously noted. Once driven by the whims of the pulp and paper industry (C.I.P. was the major economic force), the Town has since diversified its economic base and has successfully survived the closing of the C.I.P. mill with minimum financial impact to the citizens. The Town Council wishes to encourage and continue this variety in growth and this is reflected in the Town's Official Plan and other major land use studies recently carried out. Present economic prospects are optimistic but there is concern that there may be insufficient land available to supply the forecasted growth in population.

7.0 POSSIBLE SOLUTIONS TO CORRECTING THE PROBLEMS

.1 In spite of the above-noted deficiencies, the existing water supply and distribution system is considered sound and with some improvements will prove to be a most reliable one to meet future needs. In light of the above, the following options were discarded as unrealistic or more expensive than solving the problem by reinforcing the existing system:

(i) Establish a new water system;
(ii) Obtain water from another source;
(iii) Limit community growth;
(iv) Do nothing.

.2 .1 With regards to the preferred option (improve existing system), five alternatives were considered as a method of solving the problem.

(i) Do nothing.
(ii) Reduce water demands.
(iii) Improve maintenance and operation of system.
(iv) Expand and upgrade the existing system.
(v) Consider a new water supply and distribution system.

The anticipated impact of each alternative on the existing environment is listed in Table 5 in point form as advantages and disadvantages.

.2 Special consideration was given to the Raw Water Low Lift Station in view of its age (circa 1917). The structure does not have a Heritage status but could be perceived by certain parties as having such a status. In light of this possibility, four options were considered.

(i) Do nothing.

(ii) Retain existing pump house building:

  (a) effect minimum repairs;

  (b) completely restore the building to create a usable functional space.

(iii) Demolish existing structure and construct a new facility.

(iv) Demolish existing superstructure, and construct new facility at same location.

Preliminary cost estimates for carrying out these options are found in Tables 6 and 7.

8.0 PRELIMINARY ASSESSMENT

The Town's main objectives are to (a) provide a reliable water service to its present consumers; and (b) maintain the reliability of such system as the Town grows, constructing the necessary capital works with the least possible impact on the environment and in the most cost effective manner.

To accomplish these goals, the "Do nothing" and the construction of a "New system" are unrealistic: the former fails to accomplish the goals while the latter does but at excessive cost. A combination of the remaining alternatives does, however, appear to provide a viable solution. In view of the need for a major outlay of capital, a prioritization of the various components of improvement work may be desirable, with the most urgent matters being addressed immediately. Table 9 suggests such a time table complete with preliminary cost estimates for the different items of work.

Regarding the old C.I.P. low lift station, restoration costs are high and unless grant monies can be obtained in the Heritage fund (or other sources) to cover the difference in cost between a conventional pumping station building ($250,000.) and a complete restoration of the existing

building ($900,000.), estimated in the order of $650,000., serious consideration is being given to demolition of this structure.

Finally, water meters will be considered as a means of further reducing water consumption excesses.

TABLE 1

TOWN OF HAWKESBURY

ACTUAL WATER CONSUMPTION

1986 - Average maximum day = 3.1 MIGD (maximum day)
(maximum day - June - 3.35 MIGD)
(5 months have consumption above average maximum day)

1987 - Avergae maximum day = 3.32 MIGD
(maximum day - June - 3.8 MIGD)
(5 months have consumption above average maximum day)

1988 - Average maximum day = 3.132 MIGD
(5 MO only)
(maximum day - June 3.8 MIGD)
(2 months of 5 months have consumption above average maximum day)

1986/87 showed 7% increase.

If 7% for 1987/88, then 1988 maximum day averaged
over whole year = 3.55 MIGD

and maximum day of year = 4.07 MIGD

Existing water treatment plant capacity = 4.0 MIGD

INDUSTRIAL FLOW RECORDS

1983 -- 11 - 12,000 IGD/ha
1984 -- 11 - 12,000 IGD/ha
1985 -- 11 - 12,000 IGD/ha
1987 10,768 IGD/ha

TABLE 2

TOWN OF HAWKESBURY

YEAR 2008 DESIGN POPULATION PROJECTION

(Ref. Town of Hawkesbury C.I.P. Lands Planning Study, September, 1987 Haigis/McNabb/Deleuw Ltd.)

POPULATION GROWTH

Rate of 1% per year

TABLE ES-2

PROJECTED POPULATION 1987 - 1997

Year	Projected Population	
1987	9,806	
1988	9,903	
1989	10,001	
1990	10,100	
1991	10,200	
1992	10,301	
1993	10,403	
1994	10,506	
1995	10,610	
1996	10,715	Study Projection
1997	10,821	
1998	10,929	Projection Based on Continued Study of Growth Rate
1999	11,038	
2000	11,149	
2001	11,260	
2002	11,373	
2003	11,487	
2004	11,602	
2005	11,718	
2006	11,835	
2007	11,953	
2008	12,072	

TABLE 3

TOWN OF HAWKESBURY

ESTIMATED CONSUMPTION PROJECTIONS

	(MIGD) Average Day	Maximum Day
ng population	1.688	3.207
pulation - 2353 @ 176 IGCD	0.414	0.787
	2.102	3.994
(T al Industrial Area = 276 ha)		
ng industrial and commercial: 1.95		
e 197 ha @ 13,000 IGD/ha = 2.56	4.51	
m day		5.863
(A a from O.P. Drawing)		
ng in above	I/A	I/A
ha 6,200 IGD/ha	0.031	0.0403
	6.464	9.8973
ROUNDED	6.5	10

ove

TABLE 4

TOWN OF HAWKESBURY

STORAGE REQUIREMENTS

MOE Guideline	Fire Underwriters
Storage = 3,750,000 IG	Storage = 4,000,000 IG

SELECT 4,000,000 IG

TABLE 5

TOWN OF HAWKESBURY

ALTERNATIVE METHODS OF SOLUTION TO PROBLEM

Alternative	Advantages	Disadvantages
1. Do nothing	- none or minimum expenditure outlay - no increase to taxpayers	- growth curtailed - no new industrial water users - reduced fire protection - eventual deterioration of existing structures and greater cost to repair - potential for disaster - some growth by infilling - greater load of WTP, deterioration of water quality, limited supply
2. Reduced water demands	- increased supply - minimal expenditure (studies, water meters)	- limited growth potential - reduced fire protection - eventual deterioration of existing structure - potential distaster situation - limited supply and water quality
3. Operation and maintenance improvements (No capital cost)	- improved fire protection - building deterioration checked	- curtailed growth - potential disaster situation - deteriorating water quality - increased cost to water user/taxpayer
4. Expanded/upgraded water system	- reliable system - unrestricted growth potential - improved fire protection - curtailed building deterioration - constant acceptable water quality characteristics	- major capital works and debentures - major increased cost for water user/taxpayer - limited impact to neighbouring properties - possible demolition of C.I.P. low lift pumping station

.../2

TOWN OF HAWKESBURY

ALTERNATIVE METHODS OF SOLUTION TO PROBLEM
(continued)

Alternative	Advantages	Disadvantages
5. New water system	- reliable system - unrestricted growth potential - improved fire protection - curtailed building deterioration - constant acceptable water quality characteristics	- excessive increased cost to user - major environmental impact throughout the Town

TABLE 6

TOWN OF HAWKESBURY

LOW LIFT PUMPING STATION ALTERNATIVES

1. Do nothing and re-assess the status of the pump house in five years.

2. Improve the existing structure to various levels of repair from a minimum of a viable building envelope to a complete restoration.

3. Demolish the existing pump house completely and construct a new pump house nearby, utilizing as much of the existing water intake as possible.

4. Demolish the existing pump house, salvaging a portion of the clearwell and foundations and construct a new smaller building on these foundations.

TABLE 7

TOWN OF HAWKESBURY

LOW LIFT PUMPING STATION ALTERNATIVES

ESTIMATED CONSTRUCTION COSTS

OPTION	ESTIMATED COST
1. Do nothing	NIL
2. (a) Minimum repair of existing pump house	$ 350,000.
(b) Complete restoration of existing pump house	$ 900,000.
3. Demolish existing pump house and construct new facility	$ 550,000.
4. Demolish existing pump house superstructure, construct new building on existing foundation, retain existing clearwell	$ 250,000.

TABLE 8

TOWN OF HAWKESBURY

WATER TREATMENT PLANT

PRELIMINARY BUDGETS

FOR REPAIR PROGRAM

1. Repair program based on present visual requirements	$ 60,000.

TABLE 9

TOWN OF HAWKESBURY

WATER - MASTER PLAN

PROPOSED PRIORITIZATION OF WORKS

ASSESSMENT AS OF FEBRUARY 15, 1989

Item	Preliminary Cost Estimate (including engineering)	Tentative Timing
1. New raw water line	$ 290,000.	1989
2. Swabbing and restoration of friction factor to watermain:		
(a) Main Street from WTP to 285 ft. west of Laurier		
(b) McGill Street from Main Street to Spence Street	$ 50,000.	1989
3. Water treatment plant expansion		
(a) Design	$ 385,000.	1989
(b) Construction	$11,300,000.	1990
4. Storage expansion		
(a) Pump chamber for existing standpipe to update storage to present day requirements	$ 1,200,000.	1990
(b) Additional storage at standpipe location, joining all storages together	$ 2,200,000.	1995
5. Low lift pumping station		
(a) Minimum repairs	$ 350,000.	1990
6. Water distribution system improvements	$ 750,000.	1995
TOTAL COST	$16,525,000.	
ROUNDED	$16,600,000.	

A P P E N D I X 'F'

NEWS ARTICLE ON PROJECT

Le Carillon - September 6, 1989

• Hawkesbury

Le système complet d'aqueduc amélioré

(LD) - Si le conseil municipal de Hawkesbury donne son aval au rapport final que lui soumettra la firme J.L. Richard d'Ottawa, les travaux d'aménagement du nouveau système d'aqueduc pourraient vraisemblablement être ébranlés en 1990. C'est ce qu'a indiqué au CARILLON l'expert conseil Marcel Dugas, de la firme J.L. Richard à Ottawa.

Dans un rapport préliminaire remis récemment à la municipalité, la firme J.L. Richard expose au conseil municipal les sommes d'argent et la liste des travaux proposés pour l'amélioration du présent système d'aqueduc. Les résidants de Hawkesbury sont invités à se rendre à l'Hôtel de ville afin de prendre connaissance du rapport et ils bénéficient par la suite de 30 jours pour emettre leurs commentaires quant aux possibilités proposées pour la restauration de l'aqueduc et l'impact de celles-ci sur l'environnement.

La réalisation du projet est estimée à 16 millions et les travaux pourraient s'échelonner sur un an ou plus, selon les ressources financières et la clémence de la température. Le maire de la ville, Yves Drouin a expliqué que Hawkesbury recevra sûrement des subventions pour la réalisation du projet, toutefois, comme le récent rapport n'est qu'une ébauche, le maire n'a pu élaborer quant au montant de ces subventions.

M. Dugas a expliqué que c'est tout le système d'aqueduc qui sera touché par ces travaux. Le nouveau système d'aqueduc sera de qualité supérieure à celui déjà existant puisque la capacité du conduit d'eau sera doublée et des améliorations marquées seront apportées à l'usine de pompage, au système de tuyauterie et le réservoir sud sera agrandit. Le réservoir actuel génère quatre millions de gallons d'eau chaque jour. Le nouveau réservoir pourra en générer entre six et huit millions. Toujours selon l'expert conseil, les travaux de construction n'occasionneront aucun inconvénient majeur pour les abonnés du service; l'activité régulière des employés et de leur matériel pourrait s'avérer le désavantage le plus important.

Voilà plus d'un an que la firme J.L. Richard étudie les corrections à apporter au système d'aqueduc de la ville de Hawkesbury. «Le conseil municipal a eu la présence d'esprit de se rendre compte que le système d'aqueduc avait atteint la limite de ses capacités», de dire M. Dugas.

La publicité aide à créer des emplois

Le Montagnard + The Echo Express
Sept 23/89

EXPRESS

CAPSULES

Section française du CECPR

HAWKESBURY — La Section de langue française du Conseil d'éducation de Prescott-Russell compte un nouvel agent de supervision. Il s'agit de Maurice Proulx, un employé du ministère de l'Education à Ottawa. M. Proulx remplace Gaston Saumure à l'unique poste de surintendant du système public francophone.

Dans un autre ordre d'idées, le ministère eeut que les petits conseils scolaires emploient leurs propres agents de supervision à compter de septembre 1990. Dans le but déclaré de favoriser l'autonomie, il a demandé que les regroupements locaux lui proposent des solutions de rechange au prêt de services.

Vankleek Hill

Water search

VANKLEEK HILL — Hope springs eternal that existing wells may hold a temporary answer to Vankleek Hill's long-running water shortage. The town plans to treat one of its four wells in an attempt to draw more water from it. "We might be able to get 40 to 50 extra gallons per minute there," says Mayor Aurèle Fournier. "We are also looking at other sites for drilling." The municipality is still pursuing a proposed pipeline to Hawkesbury and a regional water system as potential long-term solutions.

Public board

Daniel

Hungry for mo

Sep

E

By Richard Ma

HAWKESBURY - glish Roman Cath will have their ow mentary school in kesbury by next Sept ber if enough pa support the Pres Russell separate sc board's project.

"It's up to the parent We will have a r school as soon as we identify English ratepayers an ne if they ted," says nard, chair board's Cath Language Se they have to d board office know they are We will move be moved to service to as possibl

The se has two in Russ there a tholic sc Presc nu is t

A P P E N D I X 'G'

AGENCY COMMENTS ON PRELIMINARY FINDINGS DOCUMENT

7/C G. McKenna October 12, 1989

He spoke to Mike Holly (Kingston) and renewed report

They feel

Findings report needs to be beefed up to become an ESR (not a full fledged one) and that it be resubmitted to Mandatory Contacts, Affected Public and notice made to the General Public via advertisement.

Re: Financing

Maximum financing available to Hawkesbury (due to its size) = 15%
maybe 33% if work can be related to health related problems.
e.g. poor water quality = illness, disease (raw waterline)
(if plant highly overloaded and quality down)

He did not think undersizing which could cause risk of fire conflagration would fit under present M.O.E. standards.

Re: Area Water Works

McNeeley and area municipalites were in Toronto on September 21, 1989.
If M.O.E. agrees - then may be designated Area Scheme.
Study will be required.

7/C September 19, 1989

(Claude ?) Tessier
Capri Realty

Inquiries re: WDS, pressure, consujmption (general nature).

December 21, 1989 File: LM-11-16

J.L. Richards & Associates
864 Lady Ellen Place
Ottawa, Ontario
K1Z 5M2

ATTENTION: T. Kent

Dear Sir/Madam:

SUBJECT: Hawkesbury - Ottawa River

Given the general nature of your questions we note that we have fisheries concerns about any shoreline project of this nature. When more specific information is available about a proposed site and construction methods you should contact our office as a Work Permit under the Public Lands Act may be required.

Your questions about water volume should be directed to the Ministry of Environment as they regulate water taking permits.

Yours truly,

Jim Cameron

B. W. McCue
District Lands and Mineral
Resources Supervisor
CORNWALL DISTRICT
EASTERN REGION
113 Amelia Street
P.O. Box 1749
Cornwall, Ontario
K6H 5V7 (613) 933-1774
(1-800-267-2401)

J. Cameron/mm
Senior Lands Technician

Ainley Graham and Associates Limited
Consulting Engineers and Planners

Box 917, RR #5, Ottawa, Ontario K1G 3N3 • Telephone (613) 822-1052 • FAX (613) 822-1573
Location : 2724 Fenton Road, Albion Road Industrial Park, Gloucester, Ontario

October 24, 1989

File No. 38083

Town of Hawkesbury
600 Higginson Street
Hawkesbury, Ontario
K6A 1H1

Attention: Mr. Ken Menard, P. Eng.

Re: Vankleek Hill Water Supply

Dear Sir:

As engineer's for the Town of Vankleek Hill, we are currently investigating alternatives to increasing the Town's water supply in the very near future.

One of the alternatives that must be considered is obtaining water from the Town of Hawkesbury. It would therefore be very much appreciated if you will advise at your earliest convenience if you could make 100 - 150 g.p.m. available to the Town of Vankleek Hill within the next 1 - 3 years for a period of 10 years minimum. If you do have such capacity available, it would of course be understood that supply would be subject to the execution of a mutually satisfactory agreement between the two municipalities.

It would be appreciated if we could have your response as soon as possible so that we can consider it along with other alternatives.

Yours very truly,

AINLEY GRAHAM AND ASSOCIATES LIMITED,

A.R. Morrison, P. Eng.
Vice-President

cc Town of Vankleek Hill
cc Roger Brown, MOE, Toronto
cc Bob Watson, MOE, Kingston

ARM/jr

REÇU
30 OCT '89
CORPORATION DE LA TOWN DE HAWKESBURY

RECEIVED
OCT 30 '89
CORPORATION OF THE TOWN OF HAWKESBURY

Duplate Division, 545 Industrial Boulevard, Hawkesbury, Ontario, K6A 2S5
Telephone: (613) 632-2711

November 14, 1989

J.L. Richards &
Associates Ltd.
864 Lady Ellen Place,
OTTAWA, Ontario
K1Z 5M2

Attn: Mr. M.E. Dugas

Dear Sir,

Re: **WATER CONSUMPTION FORECAST**

With reference to your letter, dated Sept. 1, 1989, file #10499, to the Town of Hawkesbury, we were asked to forecast our water consumption during the past 5 years and for the next 10 years.

Following are the figures for the requested years.

Past 5 Years:	1989	Jan. - Jul.	43,702,550
	1988		74,847,610
	1987		104,818,330
	1986		93,063,300
	1985		133,795,650
Next 10 Years:	1990		110,000,000
	1991		125,000,000
	1992		125,000,000
	1993		125,000,000
	1994		125,000,000
	1995		125,625,000
	1996		126,250,000
	1997		126,880,000
	1998		127,760,000
	1999		128,395,000

If you have any questions please don't hesitate to contact me.

Yours truly,

H. Nasab/st

H. Nasab

HN/st
cc: B. Brockmueller

Ontario

Ministry of Culture and Communications
Heritage Branch
Planning & Development Review
390 Bay Street, 3rd Floor
Elgin Tower
Sault Ste. Marie, Ontario
P6A 1X2

Ministère de la Culture et des Communications

TEL.: (705) 759-0622

Your File:

Our File:

October 2, 1989

J. L. Richards & Associates Limited
Consulting Engineers, Architect & Planners
864 Lady Ellen Place
Ottawa, Ontario
K1Z 5M2

Dear Mr. M. E. Dugas:

RE: Town of Hawkesbury/Water Master Plan

Thank you for the opportunity to comment on the above project. As this sort of project can have direct and indirect impacts on the conservation of heritage resources, we are interested in being kept informed about its progress.

We recommend that the preferred locations to be impacted be assessed in advance by a heritage resource consultant licenced under the Ontario Heritage Act, R.S.O. 1980. A list accompanies this letter.

When faced with a choice between demolishing and retaining a building that may have heritage value we favour the latter course of action although we recognize that such decisions are often complex.

If you have any questions about this matter, please do not hesitate to call.

Sincerely yours,

Diane Y. Roy
per

Peter Carruthers
Environmental Assessment Co-ordinator

C.C.: Wm. Fox, Supervisor
P.D.R./Toronto

42-054A

Ministry of Natural Resources
Ontario

Ministère des Richesses naturelles

September 21, 1989

LM-11-16

J.L. Richards & Associates
864 Lady Ellen Place
Ottawa, Ontario
K1Z 5M2

Attention: M.E. Dugus

Dear Sir:

SUBJECT: Hawkesbury Water Plan

It appears that all of the proposed works will center around existing waterlines and based on this we have no comments to provide.

If any shoreline or natural streamcourse alterations are planned we wish to review the plans in advance.

Yours truly,

B.W. McCue
District Lands and Mineral
Resources Supervisor
CORNWALL DISTRICT
113 Amelia Street
P.O. Box 1749
Cornwall, Ontario
K6H 5V7
(613) 933-1774
1-800-267-2401

J. Cameron/das
Senior Lands Technician

CORPORATION OF THE TOWNSHIP OF WEST HAWKESBURY
MUNICIPALITÉ DU CANTON DE HAWKESBURY-OUEST

Our file: 466

September 13th, 1989

J.L. RICHARDS & ASSOCIATES
LIMITED
Consulting Engineers,
Architect & Planners
864 Lady Ellen Place
OTTAWA, Ontario
K1Z 5M2

Attention: Mr. M.E. Dugas, P.Eng.

Dear Sir:

RE: Water Master Plan
Town of Hawkesbury

Your letter of September 1st, 1989 regarding the above noted matter was submitted to Council at its regular meeting of September 12th, 1989.

I wish to advise that no comments or actions by this Municipality will be made regarding the above.

Yours very truly,

Robert Lefebvre
Clerk-Treasurer

/lll s
c.c.: Mr. Kenneth Ménard,
P. Eng., Town of
Hawkesbury

RECEIVED
SEP 18 1989

J. L. Richards & Associates Limited
OTTAWA OFFICE

948, est Chemin PLEASANT CORNERS Road East VANKLEEK HILL, ONTARIO K0B 1R0 TEL.: (613) 678-3003

A P P E N D I X 'H'

ACTIONS TAKEN ON COMMENTS RECEIVED

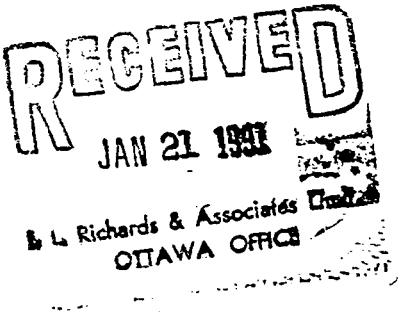
1. MNR letter dated January 16, 1991.
2. JLR letter dated May 4, 1990.
3. Summary of Discussions at January 29, 1991 Open House.
4. List of Parties present at January 29, 1991 Open House.

Ministry of Natural Resources
Ontario

Ministère des Richesses naturelles

January 16, 1991

File: PEA1-2



J.L. Richards and Associates Limited
Consulting Engineers, Architect and Planners
864 Lady Ellen Place
Ottawa, Ontario
K1Z 5M2

ATTENTION: Mr. M.E. Dugas

Dear Sir:

SUBJECT: Environmental Study Report
Water Master Plan for the Town of Hawkesbury
File #10499

The above noted Report has been reviewed by this office. We have these comments.

A Work Permit from our Ministry is required for all shoreline or stream alterations involving dredging filling, or construction work in the water (ie. pumphouse and stream crossings). Approval is also required under the Fisheries Act for any activities that could adversely affect fish habitat. Any alteration of fish habitat will require mitigation and / or compensation.

Applications for a Work Permit may be obtained from this office and should be submitted well (in advance of the proposed start date to ensure an adequate review period and to avoid potential delays.

The Study Report has not addressed the potential nuisance factor of Zebra Mussels. We have one (1) unconfirmed report of mussels in the Ottawa area (Ottawa River). Mussel control features should be incorporated into the design of the pumphouse and consider how to deal with mussels in the intake pipe.

The Proponent should be made aware that they will be responsible for any fish habitat compensation design associated with the project.

If you have any questions please contact this office.

Yours truly,

Jon Cameron

R.J. Cameron /mm
District Planner
CORNWALL DISTRICT
EASTERN REGION
113 Amelia Street
P.O. Box 1749
Cornwall, Ontario
K6H 5V7 (613) 933-1774

CL C. Lapointe

May 4, 1990
Our File: 10499

Mr. K. Ménard, P.Eng.,
Town Engineer,
Corporation of the Town of Hawkesbury,
600 Higginson Street,
HAWKESBURY, Ontario.
K6A 1H1

Re: Environmental Study Report for Water Master Plan

Dear Sir:

Further to meeting with you and the Committee on April 3, 1990, we have reviewed some of the matters discussed and report as follows:

1. Watermain on Route du Nord at the island:

   (a) The following assumptions were made for the water demand at the island:

   45 acres of low rise residential at a population density of 45 to 50 persons per acre, plus 20 acres of a Community College with an estimated population of 700 students, plus a small hotel.

   (b) We have looked into the matter of the possibility that a major trunk line on Route du Nord linking to Main Street would eliminate the need of improving the watermain on McGill and Spence Streets. Our network analysis of the matter has revealed that the latter improvements will be necessary in any event in order to provide the Provincial guideline residual pressures in all parts of the distribution system under maximum day demand and/or maximum day plus fire demands.

... 2

May 4, 1990
Our File: 10499

Mr. K. Ménard, P.Eng., Town Engineer,
Corporation of the Town of Hawkesbury

(c) When Route du Nord is constructed, we recommend that a 400 mm (16") diameter watermain be installed in order to further reinforce your distribution system. Ultimately, it would be prudent to construct a 400 mm dia. pipe on Route du Nord from McGill St. to John St., on John St. to Main St.; then twinning the existing 300 mm (12") dia. pipe on Main St. from John St. to Hamilton St. with a new 400 mm (16") dia. pipe. However, this matter is not of an urgent nature and could be effected whenever the Town considers it expedient. Therefore, we have not included the item in the report at this time. If it is required, please advise and we will amend the report accordingly.

2. In verifying the status of your Application for Subsidy to the Ministry of the Environment, we have just been informed (see attached) that a further application had been requested by the Ministry and that it had not been received by them. You should resubmit this application immediately, to hopefully be included in the 1990/91 budget or at least in the 1991/92 budget. If you need assistance in this matter, please contact the undersigned.

3. Enclosed are fifteen (15) copies of the updated version pursuant to our discussion. You will note that there is some some minor editing that has occurred throughout the text for clarity and correctness of language. In addition, we bring to your attention the following items which required greater modifications:

   a) In the Executive Summary you will note that Sections 3.3(i) and (iii), 4, 7 and 9 were modified to a larger degree. Also, we have added new Sections 3.3.5 and 3.3.6.

   b) In the body of the report, some minor modifications were carried out to Sections 3.2.2, 3.3, 4.1.3, 4.2.3(ii) and (iii), and 6.2. We have also added a preface to Section 4.2 and some information in Section 6.4(vii).

   c) We have re-arranged Table 2 in Section 5.2.4 for the sake of clarity.

   d) We have updated the costs in Section 6.3, 6.9.5 (was 6.8.5) (clauses in brackets will refer to the Section No. as denoted in the January submission of the Draft), 10.3 (leakage survey reduced from $500,000. to $100,000.), 10.4.4 and 10.4.5.

... 3

ay 4, 1990
Our File: 10499

Mr. K. Ménard, P.Eng., Town Engineer,
Corporation of the Town of Hawkesbury

e) We have added a new Section 6.6 on Wells, new third paragraph in Section 7.2, new Section 7.3, and new Section 4.2.6.

f) Carried out extensive revision to Section 6.10 (6.9), 8.2, 9.2 and 13.3.

g) Transferred the information of Section 7.3 to Section 6.7 (6.6).

h) We have added a 300 mm (12") dia. watermain improvement on Aberdeen St. from Cameron St. to Tupper St. which was inadvertently missed in the preparation of the report. Also, the improvement on McGill St. should have shown a 500 mm (20") dia. not 400 mm (16") dia. pipe. We apologize for this oversight. Cost estimates have been revised accordingly.

. Finally, you have indicated the possibility of translating this document in French, an item that was not required in our Terms of Reference. Should this be necessary, we will invoice you at cost for this work. Preliminary cost estimates indicate that this work would be in the order of $6,500.

We trust that these editing measures provide greater clarity and ompleteness to the report. Should you have any questions with regard o this matter, please do not hesitate to contact the undersigned.

We trust that this information is satisfactory and look forward to earing from you as to when we will meet with Council.

ours very truly,

M. E. Dugas, P.Eng.,
. L. RICHARDS & ASSOCIATES LIMITED

MED:jl

ncl.

J.L.Richards & Associates Limited

January 30, 1991
JLR File: 10499

TOWN OF VANKLEEK HILL

WATER MASTER PLAN AND ESR

SUMMARY OF DISCUSSIONS

AT JANUARY 29, 1991 OPEN HOUSE - 19:00 - 21:00 HRS

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1. Concern was expressed that inclusion of Lower Ottawa Valley Area Water Works will reduce remaining capacity of Town growth (Tessier). This is not the intent and design will ensure that future expansion will allow for the Town's full growth (Dugas).

2. Does Water Master Plan include for future residence on Hamilton Island and new Cite Collegiate? (Pelletier). Plan does not show this but the matter was subsequently addressed in a Richards' letter dated May 4, 1990. This letter will be included as an Appendix to the ESR.

3. Town of Vankleek Hill representatives appeared to be favourable to a supply from Hawkesbury. They estimated 6 months required to reach their decision. The Town, however, should obtain a reply by June 1, 1991, in order to ensure important security improvements are not delayed.

4. The Town intends to advise neighbouring municipalities of deadline requirements and attempt to hold a meeting with other municipalities on the matter of supplying water to them.

Prepared by: .....
M. E. Dugas, P.Eng.
Recording Secretary

MED:jl

J.L. Richards & Associates Limited

January 29, 1991
JLR File: 10499

TOWN OF
VILLE DE HAWKESBURY

WATER MASTER PLAN - OPEN HOUSE
PLAN DIRECTEUR POUR L'AQUEDUC - RENCONTRE D'INFORMATION

JANUARY 29, 1991 - 19:00 - 21:00 Hr.

LISTE DE PRESENCE - ATTENDANCE LIST

NOM/NAME	ADRESSE/ADDRESS	TELEPHONE
LUCIEN-BERNIQUEZ	383 THERIAULT	632-7437
Raymond Tailla	275 Kipling	632-7363
Armand Brunet	606 Hanna	632-6946
Royal Cayen	305 Spence	632-7916
Gilles Tessier	831 Sinclair	632-8729
Lucie Desjardins	332 Ottawa E	632-3224
Germain Tessier		
Cayen Realties Ltd.	391 FRONT. L'ORIGINAL ONT	675-4855
Ken O'Meara	600 Higginson	632-7504
JEAN PHANEUF	AMOCO	632-4191
[illegible] MERCIER	VANKLEEK HILL	678-2600
[illegible] Lauzier	Vankleek Hill	678-9915
JACQUES POULIN	600 HIGGINSON (MREFFIER)	632-0105
JEAN PRUNTINN	357 SHERIDAN HAWKS.	632-1863
Marcel Dugas	864 Lady Ellen Pl. Ottawa	728-3571