REGIONAL MUNICIPALITY OF OTTAWA CARLETON | MEMORANDUM

MUNICIPALITÉ RÉGIONALE D'OTTAWA CARLETON | NOTE DE SERVICE

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Your File/V/Réf.

DATE 28 May 1996

TO/DEST. The Chair and Members of Regional Council

FROM/EXP. Director, Finance and Administration Division
Environment and Transportation Department

SUBJECT/OBJET **AMERICAN WATER WORKS ASSOCIATION RESEARCH FOUNDATION - PURCHASE OF SERVICES**

INTRODUCTION

Since 1986, the RMOC has been purchasing services from the American Water Works Association Research Foundation (AWWARF). As requested by the Transportation and Works Committee at that time (Report No. 50, Regional Council, 09 July 1986), this information report is intended to address the effectiveness of these purchased services, practical value of the research conducted, and Canadian participation.

BACKGROUND

The concept of purchasing services related to drinking water research is required because individual utilities cannot afford to operate a research program that is responsive to the full range of issues and problems confronting water suppliers today. A co-operative in which utilities and consultants unite to pool their resources is an effective way to deal with this challenge. This practice is common among many gas, electric power, and water utilities around the world.

Change is occurring in the water industry at an astonishing rate. The list of issues, problems and concerns is extensive. The AWWARF is funding projects which seek answers to the industry's most pressing problems.

Each year, the research agenda is based on an extensive five-year plan that projects the industry's needs in six major areas of drinking water. These areas are: treatment, distribution, monitoring and analysis, management/administration, health effects, and resources. In 1995, the AWWARF expended approximately $7.9M (U.S.) on 52 research projects. With the resources from

contractors and the initiation of co-operative projects with other research organizations, the water industry's cumulative effort for 1995 was about $11.0M.

Projects supported by the AWWARF are usually conducted by utilities, universities or consultants. Project summaries or research reports are regularly made available to subscribers. Examples of research reports that reflect issues relevant to the RMOC are listed below:

- Water Treatment issues related to cryptosporidium and Giardia Llamblia
- Optimization of Chloramination for Distribution System Water Quality Control
- Water Treatment Plant Waste Management
- Various Ozone Projects
- Minimizing Residual Aluminum in Filtered Water

Analytical Methods:

- Evaluation of Streaming Current Detectors
- Disinfectant Residual Management
- Evaluation of Residual Chlorine Analyzers
- Evaluation of Particle Counting
- Measurement technologies for monitoring cryptosporidium

Distribution System:

- Water Quality Issues Associated with Travel Time and Different Pipe Materials
- Lead Control Strategies
- Assessment of water Distribution Systems and Associated Research Needs
- Rehabilitation Practices
- Automatic Meter Reading for the Industry

At present, the RMOC is an active research partner on several AWWARF projects that have been awarded to Ontario researchers. These projects are listed below:

- Giardia Cysts and Cryptosporidium Oocysts Survival in Watersheds and Factors Affecting Inactivation (Project #151) - This is a study of environmental factors that influence the survival of these common parasites. These are pathogens that have caused severe waterborne outbreaks in recent years, and are routinely present in natural rivers and lakes.
  Principal Researcher: University of Ottawa, Faculty of Medicine
  Project Budget $490,000 (U.S.), Project Status: In Progress

- Investigation of Biological Stability of Drinking Water in Treatment Plants and Distribution Systems (Project #154) - This is a study on the effect of water treatment on biological growth within the plant and throughout the distribution system, including identification of the substances that lead to bio-growth.
  Principal Researcher: University of Waterloo, Civil Engineering
  Project Budget $728,000 (U.S.), Project Status: In Progress

- Determination of Residual Life of Cast and Ductile Iron Watermains - This is a study to develop a method for evaluating the in-situ condition of watermains and the remaining life expectancy.
  Principal Researcher: National Research Council, Infrastructure Lab
  Project Budget $529,000 (U.S.), Project Status: In Progress

As a research or "industrial" partner on these projects, Ottawa-Carleton has the opportunity to provide input to the experiments and guide the research as it applies to our water treatment and infrastructure needs and concerns. The Environment and Transportation Department provides access to our water facilities and provides samples of infrastructure materials to the principal researchers which give direct experimental results.

In addition to research reports, information is made available through emerging technologies seminars, technology transfer conferences, newsletters, and videotapes. These mechanisms are proving to be very successful in getting the information from the principal investigators to the water industry. As well, during the last two years, the AWWARF has utilized teleconferences to bring the experts to the subscribers.

Participation by utilities in the AWWARF continues to grow with subscribers representing almost 50% of the population of North America. In addition to the RMOC, Canadian members are listed in Annex A.

Support from the AWWARF has been evident in a number of projects sponsored by Canadian utilities, done in conjunction with the utilities and/or contracted by Canadian consultants. A list of those projects is attached as Annex B.

Based on our 1995 water production figures and the current subscription rate of $0.43 per million litres of water produced, the cost for participation in the AWWARF is $50,145 for 1996. Funds for the Water Division's purchase of services from AWWARF were budgeted for and approved in the 1996 Operating Budget. This investment supports a broad spectrum of water-related research and assures access to the latest results. With anticipated revenue from the sale of water in excess of $50M, this represents a direct investment of less than one-tenth of one percent in this industry-wide research program.

Should you require further information, please do not hesitate to contact André Proulx at extension 2702 or myself at extension 2611.

Approved by
J. Yelle-Weatherall

ANNEX A

AWWARF CANADIAN SUBSCRIBERS

City of Calgary Waterworks Division, Calgary, Alberta
City of Edmonton Public Works, Edmonton, Alberta
Greater Vancouver Water District, Burnaby, B.C.
Greater Victoria Water District, Victoria, B.C.
Dewdney-Alouette Regional District, Mission, B.C.
City of Saint John, Saint John, N.B.
Halifax Water Commission, Halifax, N.S.
Peterborough Utilities Commission, Peterborough, Ontario
Municipality of Metropolitan Toronto, Toronto, Ontario
Scarborough Public Utilities Commission, Scarborough, Ontario
Windsor Utilities Commission, Windsor, Ontario
Public Utilities Commission, City of Brantford, Ontario
Kingston Public Utilities Commission, City of Kingston, Ontario
City of Toronto, Department of Public Works, Toronto, Ontario
City of Laval, Laval, Quebec
City of Regina, Regina, Saskatchewan
Buffalo Pound Water Administration Board, Regina, Saskatchewan
Charlottetown Water Commission, Charlottetown, P.E.I.
City of Fredericton Water and Sewer, Fredericton N.B.
Regional Municipality of Waterloo, Kitchener, Ontario
Regional Municipality of Ottawa-Carleton, Ottawa, Ontario
City of Winnipeg Waterworks, Winnipeg, Manitoba
Town of New Glasgow, New Glasgow, Nova Scotia
National Research Council of Canada, Ottawa Ontario

ANNEX B

CURRENT CANADIAN PROJECTS SUPPORTED BY AWWARF

1. Ozone and Ozone-Peroxide Disinfection of Giardia and Viruses ($180,755)
2. Ozone Disinfection of Giardia Lamblia and Cryptosporidium parvum ($136,068)
3. Effect of Various Disinfection Methods on the Inactivation of Cryptosporidium ($405,821)
4. Evaluation of Particle Counting as a Measure of Treatment Plant Performance ($324,944)
5. Full-Scale On-line Particle Counting Implementation ($212,500)
6. Investigation of Biological Stability of Drinking Water in Treatment Plants and Distribution Systems ($728,068)
7. Designing Reliable Biological Processes for Drinking Water Treatment and Evaluation of Their Impact on Water Quality ($476,000)
8. Incorporation of a Vital Stain for Giardia and Cryptosporidium Into the Immunofluorescence Assay ($135,064)
9. Ozone Disinfection of Giardia Lamblia and Cryptosporidium parvum ($136,068)
10. Cyst and Oocyst Survival in Watersheds and Factors Affecting Inactivation ($413,672)
11. Determination of Residual Life of Cast and Ductile Iron Watermains ($528,500)
12. Waterborne Transmission of Microbial Diseases ($1,234,000)
13. Optimizing Filtration in Biological Filters ($901,600)
14. Assess the Potential for Water Industry Participation in the Electrical Power Research Institute's Current Revision of its Utility Computer Architecture for Integration of Computer Automation Systems ($101,000)
15. Arsenic Retention in Biological Matrices ($217,350)