PROPOSED
WALKERTON CENTRE FOR WATER QUALITY

FEASIBILITY STUDY
PHASE II REPORT (Assessment of Options)

Prepared for:

Walkerton Centre for Water Quality Committee

Prepared by:
Conestoga-Rovers & Associates

651 Colby Drive
Waterloo, Ontario
Canada N2V 1C2

Office: (519) 884-0510
Fax: (519) 884-0525

web: http:\\www.CRAworld.com

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ABBREVIATIONS USED IN THIS REPORT

ACC	Agricultural Adaptation Council
ADM	Assistant Deputy Minister
ADMIN	Administrative
AESI	Agricultural Environmental Stewardship Initiative
CAEAL	Canadian Association of Environmental Analytical Laboratories
CARD	Canadian Adaptation and Rural Development
CBT	Computer Based Training
CENTRE	Centre for Water Quality located in Walkerton, Ontario, Canada
CERT	Certification
CFI	Canadian Foundation for Innovation
CIDA	Canadian International Development Agency
CRA	Conestoga-Rovers & Associates
CWQ	Centre for Water Quality
CWQC	Centre for Water Quality Committee
DM	Deputy Minister
HR	Human Resources
HRDC	Human Resources Development Canada
ICLEI	International Council for Local Environmental Initiatives
IISD	International Institute for Sustainable Development
MNR	Ministry of Natural Resources
MOE	Ministry of the Environment
NGO	Non-Governmental Organizations
O.R.	Ontario Regulation
OCETA	Ontario Centre for Environmental Technology Advancement
OCWA	Ontario Clean Water Agency
ODWS	Ontario Drinking Water Standard
OETC	Ontario Environmental Training Consortium
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
PUC	Public Utilities Commission
QC / QA	Quality Control / Quality Assurance
R & D	Research and Development

ABBREVIATIONS USED IN THIS REPORT (cont'd)

SI	Système Internationale. The international system of metric measurement, accepted by Canada as the metric system in Canada
TEAM	composed of Conestoga-Rovers & Associates, including GAP EnviroMicrobial Services (a division of CRA), OCETA, and Douglas A. Jones
TRG	Training
UN	United Nations
UNEP	United Nations Environment Programme
WHO	World Health Organization
WQ	Water Quality

EXECUTIVE SUMMARY

The "Walkerton Centre for Water Quality" is a unique and visionary endeavour dedicated to ensuring a clean and secure water supply for the citizens of Ontario and eventually, worldwide.

Today, in Ontario there is no one, single place, facility, institution or agency that is responsible for water quality and safety. The many facets of dealing with water quality and safety are widely dispersed. In fact, some aspects are not overseen at all, by anyone! Neither is there any one body that has the "big picture" of water quality in view. The Walkerton Centre for Water Quality (CWQ) boldly addresses this urgent need.

This Phase II Report for the CWQ feasibility study provides an evaluation of potential options for the Centre's functions, its form and structure, its funding and management. Recommendations are made for a Centre that, given the criteria established to evaluate the options and the collective experience of the Report's authors, has the highest potential for success as a useful, stable and financially-viable organization that will make a major contribution to the assurance of water quality in Ontario – and beyond. Two other characteristics of the Centre discussed in the Report are that it is a community-based concept that has true "grass-roots" origins and that the Centre is a practical, action-oriented, solution-generating body.

The Report, which follows on the heels of the Phase I (Inventory) Report, provides recommendations in response to identified gaps in organizational co-ordination, oversight/monitoring, and improvement of water testing, training and certification of water system management personnel and research and development. Moreover, it identifies means by which the Centre can serve a valuable function in the collection and dissemination of water quality information to people, agencies and other bodies throughout Ontario – and indeed the world.

The intent is, as set out by the Walkerton Centre for Water Quality Committee (CWQC) at the outset, to establish a world-class institute whose mandate focusses on bringing together, under one roof, many aspects of the water quality scene. No other organization, public sector agency, educational institution or private sector body does that now.

It is the firm view of the authors of this Report that there is a clear need for the Centre and that the Centre, once established in Walkerton, will make a significant contribution to the Walkerton and area economy through several direct and indirect benefits (discussed in the Report).

The Report provides a detailed list of Potential Functions of the Centre and describes the process followed by the CWQC and the Study Team to formally assess and evaluate those potential functions to produce Recommended Core Functions and Future Functions. The Report discusses existing business and organizational models and recommends a proposed model for the Centre. Financing and Prospective Key Partners / Players are also discussed. In the end the Report makes specific recommendations for the establishment of the CWQ as a stable, financially sound and clearly-mandated, Not-for-Profit Corporation, registered in Ontario (but operating world-wide) having many public and private sector partners.

1.0 INTRODUCTION

The Walkerton Centre for Water Quality is one of the most innovative and exciting "grass-roots", community-based initiatives to arise in Ontario in a very long time. And grass-roots it is indeed. The Walkerton Centre for Water Quality Committee consists of the following Walkerton and area organizations and individuals:

Joe Heisz	Chair
Pat Lippert	Secretary
Rick Lekx	Walkerton Chamber of Commerce
Ron Cox	East Ridge Business Park
Dick Radford	Municipality of Brockton
Maureen Schmidt	Human Resources Development Canada
Duncan McCallum	Saugeen Economic Development Committee
Bill Lang	Saugeen Economic Development Corporation
John Schut	Saugeen Shores resident
Colin Reesor	Brockton resident and farmer

There are other examples of such initiatives in Ontario's history where ideas spawned by ordinary citizens and community leaders around meeting room – and kitchen - tables have become valuable elements of our province's cultural, institutional, government and business mosaic. Such bodies include conservation authorities, the province's community college system, credit unions, agricultural co-operatives and others. Each one was born in response to a defined need at the time; and each one has fulfilled its mandate in its own way. Some have survived the decades and continue to provide useful service to our society; others have outlived their usefulness and have been disbanded, absorbed by others, or have evolved into entirely different entities.

But the Walkerton Centre for Water Quality, while it springs from that same historic Ontario tradition of 'grass-roots' activism, is not like those other entities. It is, as will be seen in this report, much different….and much more.

There has always been, there is now and there will always be a very basic need for good water in our society. Regardless of our individual 'station' in life we Ontarians of the year 2001 are no different from any other culture in the world in terms of our need for a continuous supply of clean water.

Whether one lives in a farmhouse in agricultural southern Ontario, in a northern Ontario home, in an institution, or in a high-rise condo in the heart of one of Ontario's modern cities, such as Toronto, the ability to turn on the tap and be assured of a continuous, safe

and secure supply of water lies at the very root of our viability as individuals, and therefore of our survivability as a society. As the citizens of Walkerton have experienced, *not* being able to do so has been a profound shock. One has only to think seriously about *not* being able to do that to appreciate the potential benefits of the Centre for Water Quality.

In our modern Ontarian society we have come to take a continuous supply of clean water for granted. We have come to expect that, whether we live in rural Ontario, northern Ontario or in a major urban centre, good water will always simply *be there* when we turn on the tap. That is a very tall, but reasonable, order for us as individuals to make. But such a standard can only be met with the serious attention and commitment of government and private sector organizations and of individual citizens. If Walkerton has taught us anything it has reminded us that water quality is not something that takes care of itself.

The assurance of a high quality water supply to the people of Ontario is a fundamental human necessity and right and is therefore part of the mandate and interest of many bodies in Ontario today. These include such bodies as the Government of Ontario (represented by the Ministries of the Environment, Health and Long-Term Care, Municipal Affairs, Natural Resources and others), agencies such as the Ontario Clean Water Agency (OCWA), municipalities, public utilities commissions, conservation authorities and the many corporations and individuals working in the water quality "industry".

One hopes – and expects – that all these bodies are striving to carry out their respective mandates / activities with the greatest of good intent and professionalism. But, as was seen in the Phase I Report for this feasibility study, a fundamental problem seems to prevail: that such participants in the water quality scene have somehow become disconnected from each other and have descended into micro-management of their respective small pieces of the overall water quality system. There are, no doubt, many reasons for that (all beyond the scope of this feasibility study). But the apparent result has been a loss of the "big picture"; a loss of the oversight and co-ordinative functions that are so important in assuring a supply of clean, safe water to our citizens.

It is sad that the original impetus for the Centre for Water Quality stems from the sickness and death of Walkerton residents in the *E. coli* tragedy in the spring of 2000. The creation of the Centre will not ease or erase the memories of those who became sick or who lost loved ones. It does, however, offer a hopeful sign that that suffering and loss will not have been in vain. It offers an opportunity for us to show that we have learned valuable lessons from a very bad situation and are determined not to let such a

thing happen again. Through the creation of the Walkerton Centre for Water Quality the knowledge from those lessons can be shared with all Ontarians, with all Canadians and with people around the world, especially in developing countries where water quality is a life and death issue of immense proportions.

There is, in the concept of the Walkerton Centre for Water Quality, the very real potential for the people of Walkerton, the people of Ontario, the Government of Ontario, businesses, educational institutions, school children – indeed anyone interested in water quality, anywhere – to move positively and constructively beyond the problem….. and on to solutions.

In the original October 10, 2000, Request for Proposals for completion of a feasibility study for the proposed Walkerton Centre for Water Quality the goal and vision for the proposed Centre were articulated. At that time it was stated that:

> "The goal will be to determine the viability of locating and developing a 'Centre for Water Quality' in the community of Walkerton……"
>
> "The vision for the Centre is to create a world class institute that would encompass training and certification of water plant personnel, laboratory testing, research and development on water quality and educational courses".

The intent of the originators of the concept for the proposed Walkerton Centre for Water Quality is clear – and very worthwhile. The challenge for the CRA Feasibility Study Team (Team) in completing the feasibility study is to explore and make impartial professional recommendations on the issue of 'viability': i.e., how the goal and vision may be best accomplished. That challenge includes the need to assess various *means* of achieving the goal and vision. And there may be more than one means to the end, as this Phase II Report will show.

This Phase II Report is the second of three stages of the feasibility study for the creation of the Walkerton Centre for Water Quality. It deals with the development and evaluation of alternative models for the Centre's mandate (i.e., Potential Functions), structure (including its proposed governance and management) and funding (including the exploration of public and private partnerships and other participants in the Centre's financial sustainability).

The Team, composed of Conestoga-Rovers & Associates, including GAP EnviroMicrobial Services (a division of CRA), the Ontario Centre for Environmental

Technology Advancement (OCETA) and Mr. Douglas A. Jones, carried out the bulk of the work and prepared this report. As such the Team assumes all responsibility for any errors or omissions in the Report and stands by its contents and recommendations. But the Centre for Water Quality Committee (CWQC) also played an active part in the work leading to the production of this report. It has always been one of the Team's fundamental tenets that the feasibility study must not merely be the work of a group of consultants. It must include and reflect the values, views and judgement as well as the local perspective of members of the community, as represented by the membership of the CWQC.

In completing Phase II the Team kept in mind some other fundamental principles:

- First, the Centre for Water Quality will be located in Walkerton and will focus on providing employment and fostering business opportunities for the people of Walkerton, the people of the surrounding area and the people of Ontario and Canada in that order of priority.
- Second, the Centre for Water Quality must be a practical, feasible and financially sustainable facility with realistic objectives designed to foster a unique public-private sector mandate and organization.
- Third, while not within the mandate or control of the Team, the process of assessing the feasibility of the Centre for Water Quality must be a transparent, traceable and rational process. As such the Team has conducted its work and prepared its reports in the full expectation that it may be subjected to public scrutiny by way of the Walkerton Inquiry or other public processes.
- Fourth, the Centre for Water Quality must be planned, designed, funded, built and operated in a flexible manner that ensures an innate ability to expand (or contract) the scope of its mandate as future economic, social and technological conditions may dictate. In sum, it is believed that the CWQ must be an organization and facility that is capable – and willing – to evolve (and therefore to thrive and survive) in response to whatever changing conditions the future may offer.

2.0 POTENTIAL FUNCTIONS OF CENTRE

2.1 SUMMARY OF INVENTORY DATA (PHASE I)

A critical first step in determining the feasibility of the Centre for Water Quality during Phase II was the identification of potential functions that might realistically be performed by the Centre. As noted above, the CWQC has a vision of the Centre as a world-class facility that can serve a useful and meaningful role in ensuring high water quality. The challenge for the Team was to assist the CWQC in giving substance and definition to that vision and to attempt to discriminate between those functions that would be 'viable' and those that might be difficult or impossible to implement. In other words the objective was to establish realistic priorities both in terms of whether to pursue certain activities at all and to identify which activities might be feasible to implement at start-up and those which should be deferred to a future date, once the Centre has become successfully established (e.g., 5 – 10 years after start-up).

As implied in the Introduction it is important that the feasibility study for the CWQ stand up to the scrutiny of potential funding agencies and business partners and the public. It must have credibility. Consequently the Team felt that, as part of the assessment of feasibility, a rational process for developing a list of potential functions that the CWQ might realistically conduct was a logical and important first step.

So, at the outset of Phase II the Team reviewed the results of the Phase I (Inventory) to extract and summarize information relating to identifiable water-quality-related activities (see Tables 1A - 1F). This was done, in part, to identify what agencies and organizations were *not* carrying out certain water quality-related activities, or where there was an apparent shortcoming or gap in the conduct of those activities. Such potential activities therefore represent possible needs and opportunities for the CWQ. The exercise also identified those activities that *are* being conducted by others - and therefore represent possible activity or business conflicts / competition.

The Phase I Inventory results provided the basis for the identification of potential opportunities and needs where the CWQ might have the most likelihood of success.

Table 2 provides a summary of Potential Functions initially identified from the Phase I (Inventory) Report. The functions are in no order of importance in this table, but are listed as they emerged from the Phase I Report. It is evident from the list that there are many water-quality-related activities that are of more immediate importance and those that may be deferred to a later date, once the CWQ has become financially stable. The

following Section briefly discusses potential CWQ functions without regard to their priorities; the ranking of potential functions is dealt with later in the report.

2.2 DESCRIPTION OF POTENTIAL FUNCTIONS

2.2.1 CERTIFICATION

Certification can be one way to help ensure a safe and secure supply of drinking water across Ontario. Certification could be a requirement for personnel employed in the water quality field or for laboratories who conduct water quality testing. Three potential functions under certification have been identified and are explained below.

Develop Certification Programs for areas where there are currently no certification requirements

It was discovered during the Phase I report that not all stakeholders involved in the water quality field have to become certified in their respective areas of expertise. For example, personnel working in laboratories have no certification requirements; nor do private trainers who currently certify water treatment operators. The CWQ could develop certification programs for those areas where there currently are no certification requirements.

Certify Operators and Water Quality Analysts and manage certification system

For the areas where certification is mandatory by present legislation (e.g., water treatment system operators and water quality analysts) there could be a potential role for the CWQ to certify those personnel and manage the certification system.

Work with the Canadian Association of Environmental Analytical Laboratories (CAEAL) on accreditation of laboratories

As with the certification of personnel, the area of accrediting laboratories is a potential function for the CWQ. With recent regulation changes (O.R. 459/00) laboratories must be accredited to perform drinking water testing. Part of the accreditation process includes regular challenge tests to the laboratories. Although an existing agency, CAEAL, is presently performing this task, the CWQ may be able to assist it with the challenge tests and other details associated with the accreditation process and in the future, bring some or all of CAEAL's activities under the Centre's umbrella, offering office space at the Centre and integrating CAEAL's work into the broader CWQ mandate.

2.2.2 TRAINING

Water Quality training can be a very broad topic encompassing several different groups of stakeholders. Potential functions dealing with training on water quality issues will be discussed in the following paragraphs.

Develop and deliver correspondence courses for Operators, WQ Analysts

Ontario Regulation 435/93 has a training requirement for water/wastewater treatment operators, but the requirement does not specify any particular courses or delivery mechanisms. Since there are no precise outlines for these courses, a large window of opportunity exists. One area that is relatively untouched in Ontario for training operators is in correspondence courses. As noted in the Phase I report there are American correspondence courses available to Canadian (including Ontario) water management personnel. However, those courses are not specific to Canadian or Ontario regulations and do not use SI (metric) units for math calculations. The CWQ could develop and deliver correspondence courses for operators and water quality analysts in Ontario and nation wide.

Develop and deliver general water quality related courses, workshops, seminars, demonstrations (courses)

There are some organizations, agencies and associations currently giving workshops, seminars and courses on water quality topics, but such organizations are dispersed and offer their courses to selective audiences. The CWQ could develop and deliver water quality related courses/workshops/seminars to various stakeholders and interested parties across Ontario, Canada and internationally. Promotion of these courses through the CWQ would allow stakeholders and the public to find out about the course easily, whereas finding out information on courses currently offered by others is difficult.

Develop and deliver courses, workshops, seminars (technical)

Courses that can be delivered in person by the CWQ or by other trainers under contract with the Centre to technical staff working with water quality could be developed and become one function of the CWQ. There are certain technical courses, workshops and seminars currently being offered by other trainers/institutions, but there are no regulations governing who can give the courses, or regulations on the standards for the course content.

Oversee quality and standardization of courses offered (external to CWQ)

Because there are no standards for course instructors, the CWQ could create a body to oversee the quality of instruction for all the courses offered. Standard courses could be developed and enforced across Ontario as well. Such standards could provide guidance to other water quality jurisdictions elsewhere in Canada and throughout the world.

Act as an advisory body to regulators on training issues

An Advisory role could be another potential function at the CWQ. Currently there is no one advising the Ministry of Environment (MOE) on training issues relating to water quality.

Develop and deliver on-line training courses

The geographical expanse of Ontario is a major factor (e.g., cost, transportation, time) in the provision of centralized training. With technological advances in the use of computers and other training methods, on-line courses represent a viable means of ensuring that all stakeholders are able to receive a consistently high standard of training. For the water quality industry, this is another untouched area of training that the CWQ could specialize in.

Develop and sell CBT courses to plant owners for internal training purposes

Another new way to conduct training is through Computer Based Training (CBT), where a particular course is available on CD ROM and can be administrated by the purchasing organization. For example a course on "How to interpret the Ontario Drinking Water Standards" could be developed and sold to stakeholders who would benefit from this information. The course would have exercises and tests, and the administrator at the organization/company would have a record of the test scores. An organization would be able to ensure that all the required employees take the appropriate courses and receive passing marks on the tests. The courses developed could vary from hours to weeks. The range of course topics that can be developed is extensive and the potential for distribution could be worldwide in scope.

Develop printed materials to educate public (available in printed form and through CWQ website)

Training and education do not always need to consist of formal courses. Fact sheets, brochures, manuals and other information material available to the general public also constitute a form of training and are an important tool to increase public awareness and education. Once such materials are developed, one of the greatest possible avenues for distribution of this knowledge is through the Internet.

2.2.3 RESEARCH AND DEVELOPMENT

Potential functions in the area of research and development (R&D) on water quality issues have been identified for the CWQ. There are several activities associated with R&D that could become functions of the Centre and they are described briefly below.

Establish an Information Clearinghouse

As noted in the Phase I report, research and development is an important aspect of water quality assurance. The present gap in availability is not in the amount of research being done; there is in fact a good deal of pure and applied water quality research being conducted at universities and other institutions around the world. The issue, rather, is whether (and how well) this information is made available to people outside the academic community. The CWQ could include a centralized service as an "information clearinghouse" for such R&D information.

The Information Clearinghouse, from an organizational viewpoint, could be included within the R&D Department or could stand alone, since many of the functional departments of the CWQ could also develop a segment of the Clearinghouse related to their respective function, e.g., training, etc.

R & D Services

The solution of specific problems, the means to protect and improve water sources and the advancement of knowledge about specific water quality issues are naturally categorized as Research and Development. Operation of the CWQ will generate needs in this area. There is also the potential to serve the needs of the entire public and private sector stakeholder group in Ontario, Canada and beyond. Without duplicating R&D services that exist elsewhere, the Centre's activities could include:

- Consolidation and Coordination of Water Quality R&D;
- Research Services;
- Workshops and Conferences;
- Educational Exhibitions; and
- Provision of CWQ Expertise to Public and Private Clients.

2.2.4 WATER TESTING

Water testing is a vital piece of the puzzle in the water quality picture and therefore has potential to play a large role in the CWQ. Five areas relating to water testing have been identified as possible functions for the CWQ.

Develop standard media and methodology for WQ testing

As mentioned in the Phase I report, there are no standard acceptable methods or media listed for use in microbial water quality testing. Without standardized methods or media for testing, there will continue to be discrepancies in testing results among laboratories analyzing water samples. The CWQ could become a key player in resolving this issue by developing standard media and methodologies for water quality testing for the MOE and regulatory authorities elsewhere.

Develop QC/QA procedures for each parameter tested

Quality Control / Quality Assurance (QC / QA) protocols and procedures for biological aspects of water testing are often poorly designed, understood and implemented when compared with those for chemical testing. If the CWQ developed QC / QA procedures that every lab could use for each parameter tested, this would help ensure that procedures are designed to a high standard – and held to that standard in practice.

Develop training programs for lab technicians

Laboratory technicians are not required to have specialized training in order to work in a water testing laboratory, and therefore there are no educational or training programs offered specifically for them. All laboratory staff (from managers to technical staff) could benefit from courses, workshops and seminars related to water testing. A fully equipped laboratory at the CWQ for use in the development, practicing and demonstration of water testing procedures would be a valuable element of the CWQ. It could also be used as part of any training programs provided by the Centre.

Serve as a resource centre for providing information to laboratories

Laboratories could benefit if they had an organization to contact for expertise, advice, questions and guidance. The CWQ could act as a resource centre for laboratories and provide the following services for them:

- Reference laboratory services;
- Quality standards analysis and consultation;
- Emerging technology and methodology assessment;
- Guest lectures and workshops; and
- Research and development.

Advisory body on testing methods and procedures

Laboratory deficiencies relating to standardization of methods and procedures could be mitigated if there was an advisory body that could address and advise the MOE and other regulatory bodies. This advisory body (part of the CWQ) would be unbiased (i.e., would have no particular interest in one commercial laboratory or patented process/equipment) and would oversee the standard methods, media and QC/QA procedures being developed at the CWQ.

2.2.5 HUMAN RESOURCES SERVICE

There are many organizations that currently specialize in providing human resource (HR) support and advice, but they are generally broad in nature and do not focus on one particular group such as water quality occupations. It would be useful to have one centralized area where information relevant to water quality professions is made available to any interested parties.

Information Centre on occupations

This HR function could have information and resources on all the different occupations involved in the drinking water process (from laboratory technicians to water treatment operators). With the specialized staff on hand, the expertise would be available to answer any technical questions that may be asked relating to that field.

Post help wanted ads

Not only could the HR function act as a key place to access information on the different occupations relating to water quality, but it could also be used to advertise job postings for related fields. This centralization for all help wanted advertisements could help both the employers and the personnel seeking work in that area.

Inquiry Centre

An Inquiry Centre set up as part of the HR function would be able to answer any questions or queries related to water quality. Examples of questions that may be asked could range from the types of occupations available, the qualifications required for different positions, the functions of the CWQ, and the different legislation that must be followed for drinking water testing.

Provide career counseling

Another function that could play a role in the CWQ's HR function would be to offer career counseling for the water quality occupations. Although career counseling in many forms is available to almost everyone everywhere, most of the time these centres do not have experienced water quality personnel who know the details of each job, and the dangers and potential problems that can arise from them. Through the extra knowledge available at the CWQ, the career counseling can be more focused and specialized for the clients.

2.2.6 PUBLIC POLICY

Public policy is a very important tool to help improve water quality within Ontario, Canada and around the world. The CWQ could develop public policy on all topics related to water quality.

Develop Public Policy on water quality

Given the division of authority under the Canadian Constitution the development of environmental public policy and regulation has been and will continue to be a key responsibility of provincial governments. The Government of Canada and even county and local governments also have roles to play, however, and so, for purposes of this

Phase II report, the roles of all levels of government are considered in terms of their potential for contribution to or participation in the CWQ.

Governments at all levels look to experts for guidance when developing public policy. The CWQ could become a key organization that provides, on a contractual basis, such expertise to governments seeking to address water quality issues. Potential areas of public policy development could be on water testing methods and media, training requirements for water treatment operators, groundwater protection, nutrient management, etc.

2.2.7 OUTREACH

The CWQ could be used as a means of educating and disseminating information to all interested parties on different water quality issues. These "outreach" functions of the Centre could greatly increase awareness levels throughout society and improve upon the *status quo*. There are many ways of achieving outreach and nine have been identified for potential functions of the CWQ.

Develop Internet based instructional websites

Today, computer access is available world wide making the Internet one of the most significant methods of providing information. Internet based instructional website material (for example a step by step "manual" on the CWQ website aimed at remote or individual water supply owners on such subjects as "How to manage your own water supply to minimize contamination risks", etc.) could be developed by the CWQ and used by anyone around the world. By providing this practical and useful information to everyone, improvements in water quality could be made internationally as well as closer to home.

Produce published material

Printed material such as technical papers, journals and books on water quality could be written and / or commissioned by the CWQ and made available for purchase.

Produce and sell videos and computer multi-media

Educational videos and computer multi-media are effective means of increasing awareness on water quality and could be part of the CWQ. The videos can vary in style

from technically instructional to documentaries, and made available through the Internet or by mail order for a fee.

Develop kits (with training aids) for schools

Learning about water and how to maintain a healthy supply of it should be information that is available to as many people as possible, and at an early age. Developing educational kits with training aids for schools would help increase awareness in school children. Given the financial constraints it is unlikely that many school boards will have funds for purchase of such materials in the foreseeable future. Given the importance of getting such materials into the hands of educators and students, however, the CWQ will need to be creative in finding ways to fund this function by means other than through direct sales.

Speakers Roster

Speakers rosters are another form of Outreach that may become a function of the CWQ. Staff from the Centre and other contracted "experts" could be asked to speak at conferences or seminars, or the CWQ may host its own conferences and charge admission / registration fees.

Develop news media (TV, Radio) programs

The news media (especially radio and television) represent an effective way to get information out to the public. Many commercial and public radio and television stations and networks produce weekly environmental programs and the specialty channels (e.g., The Discovery Channel, The Learning Network, The Life Network, etc.) presumably would consider "water quality" to be program material directly relevant to their viewers. The CWQ could become a regular voice / contributor to these media, providing information about new technologies, research, legislation, or any other topic relating to water quality.

Water Quality Science Centre

With all the knowledge and expertise available at the CWQ, a water quality science centre could be a potential function. Like the Toronto Science Centre and Science North (in Sudbury) this science centre would serve two key roles: education and tourism. It could be open to schools (for incorporation of water quality into science and technology curricula), and act as a tourist destination for the general public. The science centre could include: a mini water treatment plant demonstrating how drinking water is

purified; demonstrations of how water can be contaminated; nature's role in the water cycle; water conservation; and the history of water treatment, etc.

Provide central database for water sampling results

Citizens have the right to access water test results from their water treatment/distribution plant. These reports must be made available at the office of the owner, or at the municipality if the owner is not the municipality. The CWQ could establish a database that lists water plants with the location of the reports, general information about the facility, a contact name and number, etc.

Under O.R. 459/00 water system owners must also complete a quarterly report on their water system's performance. The reports must contain several mandatory sections and the owners must ensure that every user of the system has access to copies of the reports. If a plant serves more than 10,000 people, the owner must make the information available on the Internet free of charge. The CWQ could provide a central database where the municipal reports could be posted, or if the municipality has its own site then the CWQ could provide a link to the source website.

Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.

With O.R. 459/00, the water treatment/distribution system owners must submit their quarterly reports on water quality to the MOE. The CWQ could act as the designated agency for receipt of these reports and could be empowered to ensure they are filed on time, are complete and are accurate.

2.3 CRITERIA USED FOR DETERMINING POTENTIAL FUNCTIONS OF CENTRE

Recognizing that not all of the Potential Functions discussed above could reasonably be expected to be implemented by the CWQ the next step in the process was to establish criteria which could be used to evaluate the initial "long list" of Potential Functions and to assign priorities to them. Several criteria were identified and discussed with the CWQC, which provided input to modify and refine them to produce the following six key criteria:

(1) Potential for Improving the *status quo.*

(2) Potential for Job Creation (direct).

(3) Potential for Contribution to Local Economic / Business Development (Indirect).

(4) Potential for Funding / Income Streams.

(5) Potential for Conflict / Competition with Existing Agencies / Organizations.

(6) Potential for High Number of Clients.

Each criterion was assigned a rating consisting of three levels, in terms of assessing the potential for achieving each particular Potential Function:

High - rated numerically as 3
Medium - rated numerically as 2
Low - rated numerically as 1

Table 3 summarizes the six criteria and three rating levels.

2.4 CRITERIA WEIGHTING

The Team, in the context of its mandate, could at this point have proceeded to evaluate the "long list" of Potential Functions and produce a set of Functions for the CWQC to consider as part of the Phase II recommendations. It was deemed imperative, however, that the criteria (which already had input from the CWQC) be weighted by the CWQC itself to reflect the range of community values, opinions and priorities represented by the CWQC. Eight members of the CWQC individually ranked the six criteria in order of their priorities. From here the committee averaged the rankings to formulate a final committee ranking. The results produced a ranking of "most important" to "least important" in the following order:

First:	Potential for Contribution to Local Economic / Business Development (Indirect benefits)
Second:	Potential for Improving the s*tatus quo*
Third:	Potential for Job Creation (Direct benefits)
	Potential for Funding / Income Streams
	(N.B. These two criteria tied for third place)
Fourth:	Potential for High Number of Clients
Fifth:	Potential for Conflict / Competition with Existing Agencies / Organizations

Using the three levels of potential outcome mentioned in Section 2.3, each potential function identified was rated separately, assigning a value of 1, 2, or 3 for each criterion (see Table 4). Once a value of 1, 2, or 3 was assigned for each criterion, it was multiplied by the appropriate weighted average as determined by the CWQC. The values used for the weighted average were as follows (6 being the highest, 1 being the lowest):

6 - Potential for Contribution to Local Economic/Business Development (Indirect benefits)

5 - Potential for Improving the s*tatus quo*

3.5 - Potential for Job Creation (Direct benefits)

3.5 - Potential for Funding/Income Streams

2 - Potential for High Number of Clients

1 - Potential for Conflict/Competition with Existing Agencies/Organizations

A sum was calculated across each row to give a total rating for each potential function (with a maximum rating of 63). The next step was to rank the sum of each function from highest to lowest to determine the ranking of each potential function based on the CWQC priorities. The potential functions ranked in order of most feasible based on the priorities of the CWQC can be found in Table 5. Based on the results from this table, functions that are a part of the water testing Section ranked the highest. Functions that rated second, third and fourth were in the areas of: training, outreach and public policy, respectively.

2.5 RECOMMENDED FUNCTIONS FOR THE CWQ

Team members took the results from the CWQC ratings and, with the combined expertise and experience of Team members, generated two lists of potential functions - the core functions and future functions (see Table 6). Core functions can be described as the main components of the CWQ that will make up its first few years of operation. These functions should be financially viable, fill necessary gaps in the existing market and significantly improve the *status quo*.

When the Centre begins operations in the first year, it may not be feasible or practical to have all the core functions start at once. Some functions may take more time to set up and get established than others. The CWQ may find it useful and necessary to develop a timeframe over two years to implement all the core functions. Once the core functions

are in place and the Centre is stable and financially viable, the recommended future functions could be considered and implemented.

Sixteen core functions and sixteen future functions have been identified for the centre. The core functions recommended (and explained in detail below) fall under one of the five following areas within the CWQ:

- Water testing;
- Training;
- Public Policy;
- Research and Development; and
- Outreach.

For the future functions listed, some additional recommended activities have been added in the areas of Outreach and Training, along with two new areas: Certification and Human Resources Service. The advantages and disadvantages for each of the potential core and future functions are listed below under their appropriate area within the CWQ (the areas are listed in order of priority).

2.6 PROPOSED CORE FUNCTIONS

2.6.1 WATER TESTING

Functions relating to water testing have the potential to become one of the largest components of the CWQ. Because there is very little work currently being done in this area, the potential for generating a demand, funding and improving *status quo* is significant. There are many existing gaps in the current water testing field within Ontario, and beyond, that the CWQ could fill.

The CWQ could play a role in the communication process among laboratories, governments and the general public. Good water quality testing data are essential to the maintenance of quality water supplies to the public. However such data are of little use if they are not properly interpreted and communicated to those who need such information. The following potential functions address this potential "communications" role for the CWQ.

Develop standard media and methodology for WQ testing

Laboratories are responsible for developing their own media and methodologies for water quality testing. Because the methodologies are left solely up to the individual laboratories, there are differences in the way the tests are completed and therefore the results may differ between laboratories. Also, test results are difficult to compare against each other if different testing methodologies are used. If standard media and methodologies were developed for microbial water quality testing and every accredited lab was required to follow these methods, a consistent and standardized level of testing could be achieved.

The CWQ could be the main body responsible for developing and distributing these methodologies and media, and ensuring that the most current and sensitive methods are used. Authority from the provincial government would be necessary if the CWQ was to enforce the use of these developed methods, and if mandatory methods / media were to come into effect.

With water testing specialists working at the CWQ gathering the latest information on technologies and practices around the world, this function could become one of the largest and most important functions within the centre. There are 48 existing laboratories in Ontario which conduct water testing who would be able to use the most accurate and up to date methodologies and media. These same methodologies / media could be made available to other laboratories around the world.

Strong support and cooperation are required from the MOE and the Ministry of Health and Long-Term Care for this function to reach its full potential. To help ensure that each municipality's drinking water is tested using the best-known media and methodologies, regulatory changes would be required.

Without the needed authority, the CWQ could still develop these methodologies and media and make them available to the laboratories for a fee.

Develop QC/QA procedures for each parameter tested

The need for scientifically sound quality control procedures is absolutely necessary to ensure that test results are accurate and reproducible. Because very sensitive and precise methods are being employed in laboratories, assurance that the results are the best possible implies that a comprehensive set of control measurements have to be continually performed – and that those methodologies should be subject to some form of independent scrutiny.

Sometimes a laboratory may lose sight of this to a degree, and the laboratory's clients may not understand the significance of a good Quality Control/Quality Assurance program. As such, including the cost of a QC/QA program in the price of a test program may be a business competition issue: i.e., some competing laboratories may be providing services using a QC/QA program while others may not. The difference may be reflected in competitive bids for water quality work. Hence, the incentive to provide an appropriate QC/QA program may not be present in all laboratory management procedures. Profits may become the primary goal, with the result that the risk of generating substandard data may be accentuated.

To ensure that adequate QC/QA programs are in place, some guidelines, with absolute minimum requirements, should be introduced. To accomplish this effectively, discussions among the CWQ and private laboratories should be initiated. Ideally such discussion should include the provincial government but, if such participation is not forthcoming, the CWQ should take the initiative. Ultimately, government should insist on minimum standards, but private commercial laboratories should proceed to develop basic standards for QC/QA. The Centre for Water Quality could act as a centre to commence and facilitate such discussions, assuming that the participants agree that the primary objective is to produce scientifically sound water quality data of consistent quality.

Ultimately, under the present regulatory regime, profit lies at the root of the ability of a laboratory to provide, or not provide, an appropriate QC/QA program. The laboratory industry has historically been very competitive, with slim profit margins (e.g., prices in Ontario and across Canada are 50 to 100 percent lower than the same tests in the United States). Prices for microbiological testing of drinking water do not allow for much, if any, quality control and yet test results can determine life or death circumstances.

To address such a crucial issue as QC/QA in both chemistry and microbiology testing laboratories, the CWQ could provide the site, expertise, and, with some government support, the assurance, that private laboratories will adopt the programs. Ultimately, the uniform raising of analytical test costs to where profitability exists will be embraced. The objective should be to level the playing field but that requires an authoritative body such as the provincial government or the CWQ setting QC/QA standards and requirements that all laboratories must adhere to.

Initially, the assignment of such authority of the CWQ to enforce QC/QA does not appear to be realistic, but, if the CWQ can establish itself as a centre for excellence, then the concept becomes more feasible.

Quality Control / Quality Assurance procedures for water testing that are developed by the laboratories vary widely in their quality. These procedures should be of a high quality to ensure that each parameter in the laboratory is tested to a specific standard. Unless a QC / QA procedure for each parameter is developed and enforced by a body defined by the provincial government, there are no guarantees on testing quality

Develop training programs for lab technicians

Currently in Canada there are no formal certification procedures for technicians and scientists working in the area of Environmental Microbiology. Undergraduate courses in colleges and universities provide excellent theoretical and applied information but generally do not provide any significant quantity of applied in-lab training.

It is suggested that the CWQ could provide a qualification and certification program similar to that provided, for instance, by the Canadian Society for Medical Laboratory Science. The program would give entry level technicians, technologists and scientists in-depth and applied training in an environmental microbiology lab setting which would better prepare them for work in private and provincial testing laboratories.

A certification program could be structured under the following underlying principles:

1. Safe Work Practices in the Laboratory.
2. Data and Sample Collection and Management.
3. Sample Analysis Procedures and Data Validation / Quality Control Mechanisms.
4. Analytical Techniques and Methodologies.
5. Analytical Interpretation and Reporting of Results.
6. Quality System Design and Maintenance.

The certification process could be based on current college and university educational requirements for programs such as Science Laboratory Technician (college), Environmental Laboratory Technician (college), Bachelor of Science – Biology, Environmental Science, Biochemistry or Microbiology (university) and Masters of Science (in similar areas of study). Certification would still involve some in-class training as well as laboratory training at the CWQ. Certification could also be tailored to have re-certification programs in 4 or 5 year periods, with certification being a mandatory requirement for working in an environmental testing facility.

This type of certification program could be fee based and used as a method of revenue generation for the Centre. Unless the provincial government makes these certification and training programs mandatory, it may be difficult to get laboratory staff to take part in such programs.

Serve as a resource centre for providing information to laboratories

REFERENCE LABORATORY SERVICES

The CWQ could be a Centre for Reference and Expertise in the area of Environmental Microbiology as it applies to water quality. The centre would provide reference services to laboratories experiencing anomalous results and difficulties in identifying bacterial isolates. The centre could also be involved in consultation and identification of potential breakdowns in the laboratory analysis program for private and government laboratories as well as providing temporary staffing and management capabilities to new laboratory sections.

The reference centre would also be used to determine appropriate standardization of analysis and could be used for generation of proficiency testing panels to be used in certification and accreditation of laboratories. Whether this particular service would be used as a revenue generating service for the centre would have to be decided prior to inception.

QUALITY SYSTEM ANALYSIS AND CONSULTATION

The CWQ could provide Quality System consultation services and design of laboratory specific quality and data management systems. This is of particular importance as many laboratories have difficulty in determining appropriate systems for tracking data and quality system information and being able to provide that information to clients in a timely fashion.

EMERGING TECHNOLOGY AND METHODOLOGY ASSESSMENT

The CWQ could be involved in the assessment of emerging technologies and analysis of methodologies for application in water quality monitoring. As an independent organization, the CWQ would be in a good position to provide unbiased information on and evaluation of these technologies and methods with regard to water quality assessment, which would mean that results would be more likely to be accepted as impartial expertise.

GUEST LECTURES AND WORKSHOPS

The CWQ could provide guest lectures by eminent researchers in the fields of environmental science and provide access to laboratories and consultants to a central meeting centre. The Centre would also provide continuing education workshops in emerging technology fields and in areas of interest to environmental science.

RESEARCH AND DEVELOPMENT

The CWQ could be involved in development of research programs and provide facilities for guest researchers to conduct specific areas of research in water quality. Among the various activities the Centre could be involved in the development of research funding programs, publication of peer-reviewed journals in various water quality fields and provide trained research personnel for specific research projects. A journal titled, perhaps, "Water Quality" could be developed by the CWQ and made available worldwide. There are journals out there today that deal with similar issues with food quality, but relatively few deal specifically with water. An example of an article published in the Food Quality journal is provided in Appendix A.

Advisory body on testing methods and procedures

Another anticipated role of the CWQ would be to provide an advisory role to federal, provincial, municipal and private testing laboratories and accrediting bodies as to proper standardization requirements, Maximum Acceptable Concentrations (MACs), and adverse reporting notifications.

It is envisioned that the CWQ could maintain a multi-disciplinary advisory council, made up of experts, which would convene regularly and discuss various issues in the areas of quality system management and design, standardization of methodologies and analysis techniques, reporting systems and emergency response actions. Members of the advisory council would then report back to their respective departments and institutions – and to the Ontario Government - concerning recommendations made by the council.

Given the appropriate level of regulatory control, the advisory council would have a significant role in steering the state of current testing in analytical facilities and better assure that quality analysis and data are generated by any member facility.

The advisory council could also be used, under emergency situations such as the Walkerton tragedy, to provide timely and accurate information reporting to the public

during cases of outbreak or other emergency situations in which water quality could be compromised.

2.6.2 TRAINING

Develop and deliver general water quality related courses, workshops, seminars, and demonstrations (courses)

Various community groups, agricultural associations, educational institutions and government departments provide some form of information to the various water quality stakeholders. As mentioned in Section 2.2.2, these courses are not accessible to everyone in Ontario and trying to find out information on any course is difficult. Numerous stakeholders have been identified and are listed in Table 7. Those stakeholders represent a "client market" in Ontario, a number that could increase significantly considering the number of similar stakeholder groups throughout Canada and the world.

Courses covering a range of topics could be developed and offered by the CWQ, and tailored to meet the stakeholders needs. Table 7 lists potential courses along with the stakeholder group that may have an interest for each course. For example a course on basic water quality testing and its importance would benefit municipal staff and help them make better decisions on financial allocations for water testing; or a course on wellhead protection would be useful to rural citizens who have a private well.

When developing the courses, the CWQ may work in conjunction with other organizations or develop the courses alone and try to promote them to interested parties. The CWQ could be approached by key stakeholder groups and asked to provide speakers at an event or to host an event for them. By having a range of expertise working for, or under retainer to, the CWQ, the Center would be flexible enough that it could meet all such potential requests.

For the stakeholders living in Walkerton and the surrounding area (e.g., within a radius of 100 – 150 km), courses conducted at the CWQ could be cost effective. However for clients outside that area, the CWQ may have to consider providing services in a regional centre or on an "on-site" basis. The duration and subject of courses will be a key factor in how far a participant may be willing to travel. For example, for short (1 – 2 day) courses participants are probably unlikely to travel great distances (e.g., Thunder Bay to Walkerton).

Depending on the course content, government funding is available for certain topics. It will be important to have access to that funding as it can form part of the essential start up and operating funds necessary to ensure the CWQ's financial viability. Once courses are developed and advertised, user fees could become a primary means of keeping this function economically feasible. The CWQ should seek status as an educational institution so that it may issue receipts suitable for income tax deduction by course "students".

One area of training that is lacking in Ontario lies primarily with courses directed toward the agricultural sector, such as nutrient management, well head protection, well decommissioning, groundwater contamination, etc. There appears to be a demand for courses relating to rural/agricultural practices, but the potential clients may not be willing or able to pay course fees or travel too great a distance. Therefore the CWQ may need to subsidize the courses with other funding sources and/or host the courses in local communities across Ontario.

Develop and Deliver correspondence courses for Operators, WQ Analysts

Water/wastewater operators and Water Quality Analysts are required (under O.R. 435/93) to complete a certain number of training hours each year. Also, to advance to the next level in their occupation, operators and analysts must complete additional education. There is no regulation restricting the type of training or the delivery mechanism for this training, the only requirement is that the training be approved by the ministry.

The only correspondence courses currently available are written primarily for an American audience. If these courses could be modified to include Ontario legislation and metric calculations, water operators and analysts would benefit greatly.

Correspondence courses are ideal for operators who hold a Class I or higher license and cannot get the time off work to go on courses, or who live in remote areas. The CWQ could have a technical expert on hand that would be available to answer any questions from students taking the courses offered by the CWQ.

The CWQ could develop such courses for Ontario and could possibly expand the courses to include information on every province/territory so that the courses would be marketable nation wide. The courses could be produced in both official languages and meet the requirements of each province and territory's certification program.

Once the correspondence courses are in place, administrative staff and technical expertise would need to be available to carry out the day to day functions and marking of tests.

Develop and deliver on-line training courses

With computer and Internet technology today, on-line training is a common method used to deliver courses. Water quality courses and other courses that have been identified for stakeholders could be offered through the Internet as on-line courses. These courses are aimed at the participants who have computers at home or at work. Similar to the correspondence courses, administrative and technical staff will need to be available, along with course instructors.

For some general courses such as project management, there may be others offering the course on-line already. Courses more specific to water quality such as sources of groundwater contamination, are not readily available on-line and have a potential for high demand. Not only would the courses be made available to Ontario residents, but worldwide.

The courses would have to be developed by the CWQ and would involve computer staff to assist in operating the courses on-line. Initial funding would be required to set up the courses, but once the courses were running they could generate enough funds through user fees to continue operating on their own.

Develop printed materials to educate public (available in printed form and through CWQ Website)

Fact sheets are an effective and easy aid for increasing awareness and training, where important information is published and available for those who are interested. Water quality related fact sheets could be developed by the CWQ and provided to everyone via Internet and printed form. There are organizations that have developed fact sheets on a variety of water quality related issues which are available on their websites. However it is not easy to locate this information. By having one central location where everyone knows where to look would make it more practical and useful. Other organizations may wish to set up a link from their own website to the CWQ website for information on water quality.

Developing and providing fact sheets will need a source of funding, and will need to come from grants. This is not a profit making function since information will be provided over the Internet and through freely distributed printed materials. It will,

however, increase awareness levels of individuals who may never attend courses but have an interest or role to play.

Oversee quality and standardization of courses offered (external to CWQ)

Courses currently offered by private trainers, associations and other organizations are not monitored by a third party to ensure the quality of the course content and instruction are similar among the trainers. Without having mandatory courses or regulated trainers it is difficult to achieve a training standard. If the CWQ acted as an evaluator for the different courses offered, regular reports could be prepared comparing the course content and knowledge of instructors, and be made available to the MOE for its records.

The CWQ could also set out the details of the course curricula that each trainer would need to follow. By playing this role, the CWQ could effectively evaluate the trainers and courses against a set standard.

In order to fulfill this function, the CWQ would need authority from the MOE to monitor and assess different approved trainers.

2.6.3 PUBLIC POLICY

Develop public policy on water quality

One area dealing with water quality issues where there is a potential for demand is in the development of public policy. Little policy has been written on water quality and with the growing concern in today's society for a cleaner water supply, the CWQ could help fill this gap. To succeed at public policy development the Centre would have to have some of the best expertise on hand and would have to promote ideas on how to enhance the current situations.

Public policy development could be one of the largest sources of income for the CWQ if done properly. Not only could Ontario and Canada benefit from policy recommendations / development but developing countries around the world would also benefit. Funding is available from international sources for policy development in developing countries.

2.6.4 RESEARCH AND DEVELOPMENT

Establish an Information Clearing House

A clearinghouse encompasses all information and services compiled or organized by any source, from which interested parties can view and retrieve available data. Whether a specific document, directory, or metadata (i.e., information about data) records, the information content can range from simple paper media to complex digital databases using the Internet infrastructure. Further, the information and services can be accessible by any external organization, or restricted to internal staff and CWQ-designated persons. The clearinghouse is designed to:

- help interested parties to locate and use information and electronic services,
- develop tools that provide effective access to proposed databases, text files, and publications,
- facilitate discussions among participants,
- develop and present training materials, and
- inform scientists, engineers, researchers, academia, program planners, policy makers, and other users about the latest information materials available.

There are many factors affecting the direction or boundaries of a clearinghouse. One boundary, for example, may involve issues such as pricing practices, security and privacy, rights and legal issues regarding the transfer, access to, and use, of publications and databases owned by one organization to another for the public interest. Yet another boundary is accessibility to data, which can be stored in many forms and systems; users, at all levels, are interested in accessing data quickly and easily among distributed sites. Thus, it is important to:

- Create a planning manual, which not only defines the goals of the clearinghouse, but also adopts principles and policies to govern data access and use.
- Set specific strategies for accurate and systematic control over records, information search and retrieval.
- Develop methods and tools for creating, organizing, evaluating, and managing information resources.
- Standardize an approach to tracking, collecting, analyzing, and sharing new research, models, and scientific and technical data.
- Monitor the processes that will affect the clearinghouse over time.

- Ensure continued updating of the clearinghouse information. Be prepared to modify the components of the clearinghouse.
- Learn from stakeholder feedback, and find out what the interested parties see as necessary information.
- Establish policies, standards, and guidelines (e.g., composition of clearinghouse, content, participation, cooperative partnering, relationship and project collaboration with other organizations).
- Encourage participation by data producers in the clearinghouse; establish a cooperative relationship with similar not for profit organizations and individuals who publish directories or maintain databases.

A clearinghouse could take any one of a number of forms with special characteristics of communication that define the method of offering information and services. In the most basic sense, each model encompasses offering access to information and services in physical form, electronic form, or some combination of the two.

Consider first, the development and maintenance of documents and services in physical form. Physical information and services compiled by the source are stored, retrieved, and generally used on-site. This approach offers access to databases, technical support, and training, and also integrates functions like searching for, requesting, viewing, filing, and transferring to storage, paper records: business and technical literature, data sheets, brochures, catalogs, and annual reports.

The second form, electronic information and services, starts with adopting and exploiting the Internet. Documentation is typically collected and maintained in an electronic format that can be searched through a single entry point. This method of clearinghouse activity can feature a decentralized system of servers located on the Internet that contain field-level descriptions of available digital spatial data. The server acts as a search gateway, and may be installed at local, regional, or central offices, dictated by the logistics of each organization. Necessary requirements are access to multi-user computers upon which the server software, interfaces, and metadata collections are stored. On the host computer, server software typically communicates with an appropriate search engine to process the query and formulate the results. Prospective users must have access to a Web browser on a personal computer or workstation. The development of this form of clearinghouse minimizes duplication of effort in the collection of digital spatial data, and enhances cooperative collection and research activities.

According to the BTI Consulting Group of Boston, Massachusetts, the Internet represents an opportunity for the advancement of communication, to improve public access to databases, text files and publications, and also to change the environment work process to enhance cost savings. As the BTI Consulting Group puts it:

> "Environmental managers spend fully 66% of their time gathering, analyzing, storing or sharing information with others inside and outside their organization. Much of this information is touched and manipulated by other people, in different ways with no process control standards or quality control processes. For every dollar spent on environmental management another $1.76 is spent for managing the information behind it."

Online outreach must be proactive, interactive and ongoing; it must reflect the people (e.g., researchers, partners, clients, and fund providers) who might access the information, and mirror the core functions (e.g., education) of the organization.

SIMPLE MODEL

Some clearinghouse models are simple, only occasionally focusing upon the functional uses of convenient online tools. Taking Pollution Probe as an example, the Internet is an outlet for publishing its views on environmental issues. Featuring a compendium of publications, both in paper and electronic format, the Pollution Probe clearinghouse is designed to improve public disclosure of environmental information and to inform and influence environmental policy development by governments and corporations.

Searchers are often interested in finding many information sources associated with a subject area. Pollution Probe's online site does not include tools like keyword searches, Boolean (and/or/not) searching, concept searching (search engine matches the user's term with related terms), search by publication title and contributor, but instead offers access to free publications by selecting highlighted items. Other tools not accessible to users include search results ordered and ranked by relevance to search criteria, search terms highlighted within the publication body, subject/project browse capability, hyperlinked cross-references between articles, and links to related articles. Hence, the Pollution Probe clearinghouse is defined as a simple model.

CATALOGUE MODEL

The OCETA environmental technology and business profiles are an example of a simple catalogue model. The OCETA profile is an independent review of an innovative

environmental technology, or business. A compendium, of more than 100 profiles, has been published in print and electronic format, complete with text, graphics, illustrations, and vendor contact information at the beginning of each publication. The electronic format of the profiles are not viewed and retrieved using unique, online search tools, although all profiles are catalogued in a structured, subject-based category (e.g., water / wastewater treatment).

COMPLEX NETWORK MODEL

In contrast to the simple portal, other models of a clearinghouse are more intricately woven. This type of clearinghouse allows a complex network of users to exchange information in several formats, among different servers, with each other. Consider the International Council for Local Environmental Initiatives (ICLEI), for instance. ICLEI is a membership organization of local governments and associations. And more than 360 cities, towns, countries, and their associations from around the world are Members of the Council. Consequently, the clearinghouse is built around, and linked with, many parties, information resources or facilities, both internal and external: government, resources mangers, policy makers, consultants and contractors, universities, libraries, laboratories, regulatory agencies, and the community. Users are able to view Internet documents by selecting highlighted items, and retrieve hundreds of other valuable electronic resources by moving to other, linked documents. In some cases, however, viewing is restricted to use for internal or members only information. Among other things, registration is designed to track users' site usage patterns, thereby improving the relevance of future posts and online activities.

The ICLEI clearinghouse provides members in their respective countries, partner organizations, and casual users with access to searchable electronic databases using topics and keywords, and to search engines and Web site links. Across multiple repositories, ICLEI serves to improve member and public intellectual productivity of environmental issues through electronic supply of case studies, model program and project summaries worldwide, policy and practice manuals, management guides, current and proposed legislation, maps, searchable directories of professional experts and support organizations, and Web conferencing.

COMPOSITE MODEL

Any given organization may combine different models as part of its information management strategy. Thus, the "simple model" may be blended with the "complex network model" to yield a variation of each clearinghouse model. This type of clearinghouse model is flexible and is designed to deliver its functionality to users from

different applications according to the core functions (e.g., training, public policy, program support, research and development, verification, education and outreach), intended audience, and classification (e.g., mutual benefit, charitable foundation) of the organization.

The International Institute for Sustainable Development (IISD), for example, takes the form of services such as internet-based networks and linkages with similar organizations, augmented with search capabilities, information retrieval, information filtering, topic detection, document image processing, digital and graphic images, and summarization. Information, in any form, is accessed or managed through a single, Web-based interface. Publications like newsletters, reports, and other periodicals, provide valuable information for the clearinghouse source and ultimately, to interest parties. In addition, other core services of the clearinghouse are online reporting for conferences, workshops, symposia, and continuing negotiations on environment and sustainable development within the United Nations. Other Internet tools include a Web request service that provide users with the ability to communicate with members in the organization via e-mail, fax forms or printed request forms. The clearinghouse can continue to expand by adding links from other Web sites.

SPECIALIZED MODEL

Some clearinghouse models serve as a comprehensive source of information and dialogue for a particular market. They also have distinguishing user services available. For example, the online portal "About REMEDIATION" facilitates the exchange of information on site remediation of brownfields, contaminated lands and sediment cleanup. A dynamic, new resource the searchable online portal places particular emphasis on the latest remediation technology options. Evaluation tools, site assessment, property valuation, record review, government legislation, regulation and policy information, insurance and financing options, are also included on a selective basis, as are general interest articles on remediation news and case studies. The electronic clearinghouse is managed by OCETA in partnership with Environment Canada, Ontario Region, Royal LePage Commercial Inc., and Southam Environment Group.

The Ontario Waste Materials Exchange diverts wastes from landfill by means of a clearinghouse that provides a listing and brokering service for generators and users of secondary materials. OCETA's current funding partners include Environment Canada, Ontario Region and Regional Municipalities of Waterloo and Ottawa-Carleton. Establishment of an on-line searchable database has funding support from Shell Environmental Fund.

R & D Services

CONSOLIDATION AND COORDINATION OF WATER QUALITY R&D

On topics relating to water quality, much research has been accomplished in Ontario to date, and research projects are continuing. There are a number of cooperative efforts between various stakeholders. In all, the research topics covered in Ontario appear to be comprehensive with respect to the four major areas identified, and research centres are in place to perform the research. A number of research programs sponsored through the Federal and Provincial governments have achieved very useful results relating to water quality; however, a number of programs are now closed/completed.

Even though research results are extensive, there is not a consolidation of research information on water quality research in Ontario. In other words, there are no programs to synthesize and assemble the research results that have already been achieved.

A means of filling this gap could be offered as a CWQ service. The process would be to commission a series of review papers, sequentially as the resources of the CWQ allowed. It would be possible to establish, for a given year, featured themes. Then, within the identified themes, an R&D status review would be included. For example, a leading expert in farm nutrient practices would be commissioned to be the lead author of a paper (or larger document, such as a monograph) outlining the state of the art and the direction of leading research in the topic. The expert could be commissioned by the Centre with a very specific scope of work, and would be assisted by the research services at the Centre. Full or partial funding for each of the review papers commissioned could be acquired from interested stakeholders. The document that would be published (internet and hard copy) would be sold through the centre and many other distribution channels connected to appropriate stakeholder groups. It would be an undertaking of the Centre that the farm nutrient practices review document, for example, would be updated at intervals, say every two years, and that services would be available, for a fee, to meet specific inquiries on state of the art for the designated topic.

After a time, the Walkerton Centre for Water Quality could have a selection of very targeted papers/books for sale; and would be known as a place where new work on water quality topic reviews could be commissioned.

There are existing precedents in the current information marketplace, where the existence of valuable documents can be found through searching, but the actual text is only available by purchase from the owner.

This type of research and research consolidation is the foundation for needs analysis, identification of gaps or duplication of effort in water quality research. In addition to direct stakeholders, its market would therefore include policy research institutions and consultants, and it would also service internal needs of CWQ for its own work in public policy.

RESEARCH SERVICES

All members of the broad stakeholder group having interest in water quality have a need for information, but often would not have the means of acquiring it. The CWQ would offer broad research services, for a fee, to acquire information ranging from academic basic research to applied research to commercial availability of equipment or services. Research papers acquired and passed to the client during the course of offering a research service would also generate a charge, including possible charges for the document.

It would also be possible to consider standing contracts for research services that would enable a stakeholder to keep abreast of current information in their own interest areas.

WORKSHOPS AND CONFERENCES

Involvement in activities such as the clearinghouse, document commissioning and publication and research services would mean that the existence of unmet needs in water quality information transfer would be known to the CWQ staff. Thus, relevant workshops could be organized, appropriate presenters and attendees could be involved. Some workshops would be directed at the interests of local groups of concerned citizens. Similarly conferences could be organized, as commissioned by others, or commissioned by CWQ itself if a perceived need existed. While the physical facilities of the Centre could extend to hosting workshops, conferences would likely be held in an outside venue.

EDUCATIONAL EXHIBITIONS

The educational value of the work of the CWQ could be a value-added asset. Therefore, with support from appropriate stakeholders, (e.g., Health Canada, Ontario Ministry of Education, Ontario MNR Stewardship Committees, Trillium Foundation), educational

material could be developed in the form of an exhibition. This could be set up as a travelling exhibit for various communities, could include tours of water treatment plants, equipment manufacturers, model farms, research labs etc., depending on the target audience. If a permanent or temporary exhibition was set up as part of the CWQ, it could be a source of income through admission fees or donations.

PROVISION OF CWQ EXPERTISE TO PUBLIC AND PRIVATE CLIENTS

Not only could the CWQ provide the research and development services mentioned above, but it could also provide consulting services to public and private clients based upon its in-house expertise. This would be done on a fee for service basis and could include recommendations, testing and forensic services in the water quality field.

2.6.5 OUTREACH

Provide central database for water sampling results

Municipalities or plant owners are required to display lab reports on water testing in their office for any user of their water. The general public may not know where this information is available for their viewing or who to contact to find out. The CWQ could develop a database with this information in it and provide it on the Internet for people to locate their appropriate office.

There is no database like this available to the public at the moment. If this function was a part of the CWQ, when people searched on the CWQ's website for the information they would also see all the other functions the centre had to offer.

Although this function is not a profit making option, it will help increase awareness across Ontario that their water testing results are available for their viewing from their water system owner.

The CWQ could also act as a computer support group for municipalities that are required to post water quality quarterly reports on the Internet. For smaller municipalities that may not have the resources or technical support to update their websites every three months, it may be easier for them to pay someone else to post these reports for them. The municipalities could hire the CWQ to post their report on a site designated for quarterly reports under the municipality's name.

Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.

Quarterly reports prepared by the water system owner must be submitted to the Director not later than 30 days after the end of each quarter. This represents a large number of reports that must be reviewed and verified for accuracy, completeness, accessibility, etc.

This is a new Task taken on by the government and it may be a useful role if the CWQ took on the responsibility of reviewing and recording the quarterly reports. Such a Task could be conducted under contract with the Ontario government for a minimum of five years, and the CWQ could give an annual summary report to the government detailing any findings or recommendations.

The CWQ would need a formal arrangement (e.g., contract) and delegated authority from the Ontario Government in order to perform this function at the Centre.

Develop Internet based instructional websites

Internet access is available around the world, making it one of the easiest and fastest means to disseminate information. The opportunity to develop instructional-based websites for Canadians and the global population is high, and is one that the CWQ should take a closer look at.

Simple instructional "how to" literature could be developed to help the general public understand many of the concepts dealing with water quality. Websites developed by the CWQ would greatly benefit less developed countries where they have access to the Internet. International funding is available for programs that develop educational material.

Full time staff would be required to constantly develop and promote these instructional websites.

2.7 PROPOSED FUTURE FUNCTIONS

The core functions are not the only potential functions recommended for the CWQ. As noted earlier, the immediate priority for the CWQ is to become well-established as a financially and structurally stable organization. Once the CWQ starts generating revenues and has a better "feel" for what the demands and gaps are in the water quality

field, new functions can be considered and an acceleration or shift in emphasis could occur, as appropriate. Potential future functions have been identified and should be considered when the CWQ is ready to expand and carry out more functions. They are listed in detail below. As noted at the outset of this report flexibility and the ability of the CWQ to evolve in response to changing circumstances is an essential survival mechanism.

2.7.1 OUTREACH

Produce published material

Published material includes all information produced on water quality. It would not, of course be material produced by the CWQ, although some material may be. Rather it would include material produced by others in the field and made available (e.g., on a contractual royalty basis) for purchase through the CWQ.

Examples of materials written or made available by the CWQ could include books, technical papers, "fact sheets", pamphlets, maps, graphic materials, etc. Purchases of this material could be made on-line, by mail or fax order, or in person at a mini-bookstore located at the CWQ itself.

This function, once established at the CWQ, should be designed as a self-funding enterprise (a division of the CWQ known as the "Walkerton Centre for Water Quality Enterprises" ("CWQ Enterprises")) and should require little or no extra funding. Full time staff would be required to operate the mini-bookstore, and staff would be required to develop some of the material that will produced.

Speakers Roster

As the CWQ becomes known throughout Ontario, Canada and the world, experts from the Centre may be asked to speak on a certain water quality issue at conferences, workshops, seminars, as "guest speakers" for university courses, etc. Normally an honorarium is given for such a service, or the CWQ could establish a schedule of fees for such requests. As well the CWQ may host international water quality seminars and arrange for several guest speakers, charging a registration fee to all the participants.

Once the CWQ becomes recognized by the various stakeholders, it can be expected that the request for speaking at certain functions will increase. Normally preparations are required by the speaker prior to the event, and travel may be required. These extra costs

should be incorporated into the price set by the CWQ when responding to such requests.

Develop news media (TV, Radio) programs

News media could be a future function for the CWQ. Television and radio programs could air segments on various water quality issues and host question and answer sessions over the radio. Mini television series could be developed on water quality issues and distributed worldwide. The CWQ could work with other existing producers such as David Suzuki (CBC's "The Nature of Things") to develop a larger audience for certain topics.

It is hard – and can be costly – to get a weekly slot on a regular program whether TV or radio, unless the producer is well known and the topic is of interest to the public. The CWQ may have to demonstrate its knowledge and develop a strong reputation in order to air regular programs. This comes with time, but with all the proposed functions for the CWQ, it should not take long for it to become a world class organization, comfortable and productive in the use of electronic broadcast media.

Produce and sell videos and computer multi-media

Educational videos and computer multi-media could be produced by the CWQ and made available for purchase by schools, television networks, stakeholders and the public. The content of the videos could be in the form of a documentary aimed for a specific interest group (an example – how application of fertilizer on farm land has contaminated the drinking water), or may be broader in nature to catch the interests of all (an example – how do the water treatment plants actually ensure you are getting clean water?).

Videos/computer multi-media could be developed for a younger audience where basic water quality science topics are presented and discussed.

Videos can be made available on-line and viewed right on the computer screen, or they can be played from a VHS tape or Digital Video Disk.

Water Quality Science Centre

Establishing a Water Quality Science Centre would involve millions of dollars in capital costs. That would take time to acquire from either funding sources or profits generated by the CWQ. Determining the functions and features that this science centre would

offer is a lengthy and thorough process, and should not be completed without the proper preparations. Because of the large time factor requirement, including the water quality science centre as one of the core functions in the CWQ is not practical.

Planning for a science centre could take place in the first years of the operation at the CWQ though. Having a science centre that would provide information on all aspects of water quality and demonstrate ways of contamination and purification would be beneficial to all who visited. The science centre would be available for school trips, and open to the public year round. During the summer months a day camp could be established for students to come and learn about water quality and its importance.

Develop kits (with training aids) for schools

Little has been developed with respect to the topic of water quality for teachers in schools to use during their lessons. If the CWQ developed water quality training kits for each necessary grade and distributed them to each school, water quality awareness at every age level would increase. The training kits could include training aids and instructor manuals to help explain the lesson plans.

Charging user fees for this potential function is not a possible funding source since most Boards of Education have very restrictive budgets for this type of purchasing. There are however, foundations that will give grants to non-profit corporations who develop training programs and packages relating to environmental issues. Once the CWQ is established, it would be possible to apply for these grants making this function a viable one for the future.

2.7.2 TRAINING

Develop and sell CBT courses to plant owners for internal training purposes

Computer based training (CBT) is another delivery method for courses and can be useful for small organizations who do not have the time or funds to travel to other course locations.

Courses that do not require any hands-on, practical experience can be developed into this format. The number of potential courses that the CWQ could offer is unlimited, for example most of the courses listed on Table 7 could be developed as CBT courses.

A computer is required to run these courses and the student should have basic computer skills (and access to appropriate computer equipment) to operate the program.

The courses can be interactive on the computer (for example, they could include sound, movie clips, quizzes, examples, photos) to help make the course more enjoyable and interesting.

Clients could request specialized courses directed at their specific job and the CBT could be altered to meet their needs. For example, some employers have to give a health and safety lecture/course to their staff. A CBT could be developed specifically for a water treatment plant or a water testing laboratory, and could focus on the dangers associated with that occupation, rather than just a general safety course. This would be more interesting to the employee because they would be able to relate more to the issues being discussed.

If the CWQ considers this as a function, full time staff would be required to design and develop the courses, as well as market the products to potential clients. It would be important to get a feeling for what types of training the various stakeholders are willing to receive from an instructor versus a self-study CBT.

CBT could be designed to keep a database of the all the training completed at the organization as well as the test marks of each student. This would be useful to the organization if they were required to keep training records or use the test marks for other purposes.

Develop and deliver courses, workshops, seminars (technical)

Technical courses, workshops and seminars (courses) are courses aimed specifically to the technical stakeholders involved in the water treatment process (i.e., water treatment operators).

There are no formal courses or programs that are mandatory for the technical water quality occupations. Personnel employed as an operator or water quality analyst are required to take a certain number of hours of training each year. There are several trainers across Ontario who have developed and are currently delivering training to these clients. If the CWQ decided to instruct their own similar courses, there would be direct competition with the existing trainers.

The other trainers travel to their clients since that is more cost effective for the organization receiving the training. Since training is not mandatory and water systems

are run on a tight budget, the possibility of the client travelling to a course is low. The CWQ would have to be as competitive if not more than the other trainers, which means the courses would have to be made available at or near the location of the client.

If the CWQ considered this option, instead of directly competing with the other trainers, some form of cooperation with them could be established. For example, the CWQ could hire them to deliver a course developed by the CWQ, or the CWQ could make them partners and help improve their existing training packages to create one standardized superior package that everyone would use.

It is very hard to guarantee the number of students because there is no regulation governing mandatory training.

Offering technical courses would only be a viable function of the CWQ if there were certain regulatory changes, such as:

- a mandatory training program for every class of operator;
- private trainers were not authorized to train the operators;
- the CWQ was awarded a contract to solely provide this training to the operators; and
- government subsidized the courses.

Unless these legislative changes come into effect, the CWQ will be fighting with existing trainers for a limited market of clients. If the CWQ did consider this option there must be something unique about the way the courses are offered to put them ahead of the other trainers. For example:

- a real life treatment / distribution plant where students can learn hands on;
- real life laboratory so that operators can see what the lab process entails;
- plant simulators for all levels of facilities; and / or
- computer technology that is used in the various plants.

Providing these unique characteristics would be costly for the CWQ, and would have an effect on the course fee. In order for the CWQ to financially succeed at this function, the courses would have to remain competitive with the other trainers.

One may argue that these additional training features are more advanced and provide a better course for the student when compared to the training aids provided by other

trainers. However, the other trainers travel to their location and can help or assist (if required) the operators at their own plant. What better environment is there to learn in than your own workplace? A simulator or different type of treatment plant can not replace what the students use in their daily operations.

Act as an advisory body to regulators on training issues

There is already an advisory committee on water/wastewater operator certification established to provide the MOE with expert advice. This committee looks at certification and licensing issues and concerns for operators. No formal committee has been appointed to advise and offer future direction on operator training issues.

The CWQ could act as the advisory body to the regulators on training issues. Experts from other associations, existing trainers and operators could make up the committee. The ministry would have to agree to the idea and approve the committee before this function would be a part of the CWQ.

2.7.3 CERTIFICATION

Develop Certification Programs for areas where there are currently no certification requirements

Certification is only mandatory for operators and water quality analysts working in a water facility. All the other key players in the water quality picture do not require formal certification. Other positions exist within the water quality field where certification would help ensure that knowledge, education and work experience levels are to the standard they should be.

The CWQ could identify the occupations where certification would help improve the *status quo* and develop a certification program for any particular job. Certification is not feasible however without the government's role in making it a legal requirement. The CWQ and government would have to work together on the identification and development of the certification requirements.

Once the certification programs were in place, the CWQ could administer the certifications and testing requirements.

Certify Operators and Water Quality Analysts and manage certification system

The certification programs for operators and WQ Analysts have been developed and are being implemented by another organization. The other organization is responsible to the ministry for implementing and administrating all the necessary procedures for the certification. A contract has been given to this organization, giving it the necessary authority to perform the tasks.

If the CWQ considered this function there would be an immediate conflict with the other organization. But when the contract came up for tender the next time, the CWQ could apply and compete with the other bidders.

Through examination of the existing organization performing this function, four full time positions are required, and the only source of profit is through the certification and renewal fees.

Although it may not make sense to consider this activity as a core function of the CWQ right now, it should definitely be considered as one of the potential future functions.

Work with CAEAL on accreditation of laboratories

Laboratories testing drinking water in Ontario require accreditation before they are able to perform the testing. The Canadian Association of Environmental Analytical Laboratories (CAEAL) has been given the authority to grant this accreditation to the laboratories. Although CAEAL is responsible for the accreditation process, there may be the option of working with them. The process for accreditation does not just stop when the certificate is issued, instead there are regular challenge tests that each accredited lab must conduct.

The CWQ could arrange with CAEAL to assist with these challenge tests and become partners in the accreditation process. CAEAL may also wish to establish an office at the CWQ to make use of the expertise and resources available.

2.7.4 HUMAN RESOURCES SERVICE

Information Centre on occupations

For most occupations where specific training is required, inquiries can be directed to HRDC, the school of training or instructors. However, there are no training programs or schools specific to the water quality field, therefore very little information is available.

The CWQ, in working with the local HRDC, could provide such information or service. The CWQ would encourage and promote the occupations as well as training and positions available across Ontario, Canada and the World. It would ensure this information be made available to HRDC, high schools and guidance departments and other important potential sources such as the YMCA Employment Services, Apprenticeship (Ministry of Training, Colleges and Universities), etc. The CWQ would become a central source of information in the water quality field for employers and employees.

Post help wanted ads

With the idea of making the CWQ a one-stop-shop for water quality, it makes sense to include the feature of posting job notices for all water related positions. These positions could be posted on the Internet and through any literature produced by the CWQ.

When a company wants to place a notice of employment opportunity at the CWQ, a minimal fee can be charged to cover the administrative and computer costs. This activity is not to be looked at as a large source of revenue, but rather a way to get exposure to the personnel working in the water field as they visit the website.

Once companies are aware of the service provided by the CWQ of posting help wanted advertisements, there would only need to be minimal staff to maintain and update the website and anywhere else the notices are posted.

Inquiry Centre

There currently is no one place where questions relating to water quality can be asked and answered, or if not answered at least directed to someone who can, within Ontario. If the CWQ offered this function it could help all stakeholders identified with their area of search and speed up the process.

As the CWQ grows it will be able to answer most questions brought forth as inside expertise, resources and information increases.

Fees are not usually associated with a service like this, however as one learns more of what the CWQ can offer them, they may take advantage of other functions which are user fee based.

Provide career counseling

There are times when it is important to have the option of speaking to a career counselor who is impartial and yet knowledgeable about a particular occupation. Because occupations in the water quality field are not well known and there is little information currently about them, it may be hard for counselors to understand the questions or concerns raised by an employee.

If the CWQ offered a career counseling service as part of its Human Resources function, all personnel working with or around water could take advantage of the opportunity to talk with qualified personnel who also know specifics about their jobs.

Employers could arrange for the CWQ to be a contact for employee counseling while the CWQ charges a fee for this service. Who would use this function is dependent upon the type of counseling required. If the questions can easily be answered over the telephone or email, then this service can be virtually worldwide, however if it involves a one on one conversation in person, that limits the potential number of clients to the surrounding area.

3.0 BUSINESS STRUCTURE

When looking at all the proposed functions that could potentially make up the Centre for Water Quality, this Centre is truly unique. Based on the diversity of specialized activities that will be offered at the CWQ, the Team had to come up with a business structure most appropriate for this type of organization. Five business options were studied in detail (sole proprietorship, partnership, corporation, cooperative, and establishment by regulatory statute) in order to come up with the final recommendation.

To help the Team with determining which form of business structure would be best for the CWQ, other existing organizations with similar functions to that of the proposed centre were examined. Table 8 provides details on some existing organizations and is summarized below in Section 3.1.

Based on the information obtained from existing organizations and the expertise from the Team members, it is recommended that the CWQ be established as a provincial not-for-profit, non-charitable corporation. Not-for-profit organizations are established to provide a particular service to a community, which coincides with the CWQ mandate.

When setting up a not-for-profit corporation in Ontario an option of becoming charitable or non-charitable exists. There are advantages and disadvantages to both, and from weighing these pros and cons, it is recommended that the CWQ be established as a Not-For-Profit, Non-Charitable organization and operate essentially as a business venture whose "profits" are plowed back into the organization, rather than paid out to shareholders as dividends, etc.

There is the question, however, of how the CWQ can generate extra income. The solution is to establish a "Centre for Water Quality Foundation" that would have charitable status and all the benefits associated with it. The mandate of the Foundation would be to raise and provide funds primarily to the CWQ. By setting up this Foundation, the CWQ itself will be able to function as a business venture unlimited by the requirements of the Income Tax Act applicable to charitable organizations. In the first years of operation of the CWQ, the foundation could be organized and established to provide this extra source of revenue. The foundation could be located in the same building as the CWQ and could share the same administration staff and resources.

Such an approach is not without precedent in Ontario. Many conservation authorities, faced with severely declining provincial government revenues and frozen and diminishing municipal property tax levies (yet still having significant conservation mandates and public expectations) have established conservation foundations to

augment their revenues from user fees and other cost-recovery initiatives such as timber sales and the sale of property. Such foundations are no substitute for public funding that truly reflects the authorities' mandates but they are a viable mechanism for raising funds.

3.1 BUSINESS MODELS OF EXISTING ORGANIZATIONS

As mentioned above, existing organizations were summarized in Table 8. Each entry in the Table is a condensation of information on major characteristics of the organization, for each of the following headings:

- Name of Existing Organization;
- Structure of Centre;
- Partners;
- Public Policy Activity;
- Programs / Services;
- International Expertise;
- Marketing / Delivery Mechanisms;
- Training / Certification;
- Research Centre / Clearinghouse; and
- Fundraising / Revenue Sources.

The structure of the organization is of particular interest, as well as the nature of their expertise, and the type of service and activity that is undertaken by the organization. None of the 24 identified organizations has the same mission as the proposed CWQ, but each has certain characteristics that are of interest in defining the nature of CWQ and building the business strategy for it. Certain features on each existing organization are described briefly below.

Canadian Centre for Pollution Prevention

- Industry partners;
- Clearinghouse is the core function, education, outreach and training; and
- Core support from federal government.

Canadian Energy Efficiency Centre

- Member Fees;
- Clearinghouse, complex model; and
- Industry funding.

Centre for Development and Environment

- Functions within a university department;
- Research collaboration and networks internationally; and
- Self supporting by fees.

David Suzuki Foundation

- 24,000 members, staff of 30;
- Goal is to influence public policy; and
- No government funding.

Environmental Concern

- Seven departments, each with director and staff; and
- Consulting, educational and research services, courses and workshops.

Global Water Partnership

- Voluntary partnership;
- Emphasis on sustainable water resources development; and
- Private sector and government support.

Great Lakes Information Network

- In-kind contributions, supported by major government bodies in the U.S. and also Environment Canada; and
- Clearinghouse.

International Council for Local Environmental Initiatives (ICLEI)

- Local government involvement, internationally, in-kind support;
- Clearinghouse, policy guidance and consultancy, educational services to governments; and
- National and provincial governments and international institutions provide 44% of funds.

International Lake Environment Committee Foundation

- UN / Japanese model;
- International information exchange, educational program; and
- UN Funds.

International Institute for Sustainable Development (IISD)

- Federal and provincial partners / advisors, active Board of Directors;
- Clearinghouse, policy research; and
- Federal government and government agencies fund 55%, revenue from 60 sources totals $10 million, $3 million from outside Canada.

International Water Management Institute

- Scientific research organization, tools and methods to help developing countries Agricultural focus, policy work on water scarcity; and
- Funds from governments of industrialized countries and international development organizations.

Oneworld

- Association of two organizations, one not for profit and one charitable foundation, owned and governed by non-profit entities; and
- Many public and private partners and donors, many countries, many strategic alliances and Memoranda of Understandings (MOU's).

OCETA (Ontario Centre for Environmental Technology Advancement)

- Clientele is government and private; specialized consulting services fund 80% of organization;
- Clearinghouses management experience, advisory input to public policy; and
- Very well connected to private sector small companies (SMEs), base funding for public policy delivery from private sector, major international programs.

Ontario College Application Services and Ontario Universities Application Centre

- Provincial funding; and
- Application and acceptance processing for education leading to certification / certificates and / or degrees.

Pembina Institute for Appropriate Development

- Volunteer Board of Directors, core staff, plus draw on outside experts; and
- Specialized clearinghouse, workshops, customized training, policy recommendations to governments.

Pollution Probe

- Charitable NGO, National organization with 25,000 supporters; and
- Research and education mandate, influences government policy.

Sierra Legal Defense Fund

- Charitable NGO;
- Analysis and research, strategic counsel and litigation – environmental; and
- Foundation grants (50%) private support (41%).

United Nation Environment Program (UNEP)

- Part of family of UN organizations;
- Publications, information services, emphasis on creating effective partnerships; and
- Funds from regular budgets of the UN, Trust Funds, Environment Fund, counterpart contributions.

United Nations University International Network on Water Environment and Health (UNU/INEWEH)

- Close working relationship with Canadian government agencies, particularly NWRI, several Canadian universities, agreements with 20 institutions;
- Mandate includes – measure and understand aquatic systems, provide affordable water infrastructure; and
- Funded by government, UN, no significant revenue.

Waterfront Regeneration Trust

- Independent entrepreneurial organization, staff background in municipal government; and
- Policy role in advising provincial government, hosts international symposiums.

Worldwatch Institute

- Partner with many private foundations, staff of 30 plus contributing researchers; and
- Environmental and emerging global issues research organization, publications are authoritative references for governments.

4.0 FINANCING

The recommendation for the corporate structure of the proposed centre is that of a not-for-profit private corporation. The outline of the public policy mandate has been agreed, and several business lines that will support the mandate have been identified. However, in order to reach the point where the business segments can support a self-sustaining organization, two things are required:

a) A sufficient capital investment to build the management and organization with the required equipment and facilities; and

b) Several years of development time to establish the business products and services, the revenues from these activities, and the client base.

The CWQ will only be successful if it can establish itself as a centre of excellence in an area of specialization, which differentiates it from other organizations. This will not be possible without exceptionally good management and highly qualified staff resources. The challenge in creating such an organization is no different from that facing any entrepreneurial new business and the potential causes of failure will be similar. The most common reason for failure even for businesses with unique products or technologies, is inadequate initial capital to achieve the point at which revenues from operations support the ongoing requirements of the business.

4.1 SOURCES OF INITIAL CAPITAL

For most new business start-ups, the initial capital comes from the founding stakeholder entrepreneur, investment partners, etc. As the business develops successfully, the "owners" can raise more equity and develop new revenue sources to augment founding resources.

A "not-for-profit" organization, with a public policy mandate cannot follow this pattern despite having similar capital needs. The typical sources available for creating such organizations are the federal, provincial or municipal governments or various philanthropic foundations. In the case of CWQ, the most obvious funding choice would be the Provincial Government, which could consider the Centre to be a sound, creative response to improving the management process within Ontario for water quality. It might be possible to augment a strong commitment from the Province as the lead funder, with additional financing from various departments of the Federal Government,

for example Health Canada and Environment Canada (discussed in more detail in Section 5).

Foundations that have a strong interest in health and environment might also be considered as a funding option for the CWQ. There are many foundations that give funds for each of the proposed activities for the Centre, and some of this funding can be up to $500 000. A list of all the foundations that support environmental programs can be found in Appendix B, although certain foundations may apply more to the CWQ than others. It is important to note that some foundations require the organization to have a registered charitable number and/or be established for a couple of years prior to obtaining funds. Some foundations have certain deadlines for applying for funding and the process may take some time. Foundation funding may be more useful for developing additional functions at the CWQ once the centre is up and running, rather than relying on it for initial start up.

It is important for the CWQ to establish both public and private partnerships. Private industries that rely on safe clean water or that have an interest in water quality could become partners with the CWQ. For some companies it may be in their interest to be affiliated with such a Centre, and they would be willing to supply a portion of the initial capital required for this Centre.

4.2 FUNDING REQUIREMENTS

The business plan demonstrates the need for the initial funding capital. Two options are open to provide the new organization with financing that will give it a good chance to succeed.

a) An initial front-end payment of $ capital;

b) A commitment of the same amount with payment spread over 4 years.

These options can be designed to have the same net present value, so the government need not consider one more or less expensive than the other.

The best option for the CWQ, would be for an initial front-end payment, as this allows for considerable flexibility in building the organization and managing the growth of revenues that will ultimately establish financial self-sufficiency. Any "start-up" requires front end loading when expenses are high, and revenues very low, however, it is not necessary that all the funding commitment be provided in the first year.

The alternative of multi-year funding has a number of advantages from the funders' viewpoint. First, the provision of annual funds allows for a more conservative build-up of organizational resources and for performance assessment on an agreed periodic basis. Additionally, the absence of an up-front capital funding forces management to aggressively address revenue generation from both business lines and other sources. A number of funding sources, which may include government departments or foundations, might be reluctant to provide funds to an already well-endowed organization. Additionally, proof of performance experience and expertise may be required before such parties can feel comfortable about committing new funds.

In approaching the Provincial Government, it is possible to present the case for initial capital start-up funds combined with an operational contract to provide new services. The business plan makes a proposal to provide, for example, new training and certification programs that would create province-wide standards. This is partly a response to the early testimony at the Walkerton inquiry and in some respects, returns to the status that existed in the early 1990s when this role was fulfilled by the MOE. A contract for 5 years to specifically re-establish a capacity for such services, could form the basis on which the organization could build.

Given the vital requirements for this initial funding, the process of dialogue with provincial politicians and various government departments should begin as soon as possible.

5.0 POTENTIAL PARTNERS/KEY PLAYERS

How successful the CWQ will be is partially dependant upon who the initial partners and key players of the Centre are. It is important for the CWQ to have a balance of partners between the public and private sectors. As time progresses and the Centre becomes more financially viable, a shift in partners may occur. During the initial start up however, the main partners will more than likely be from the government rather than the private sector.

When speaking in terms of partners or key players, they have to be able to offer the CWQ something that the Centre will benefit from, for example either funding, support or expertise. It is important to note that although the Centre can not exist without the essential funding, it is just as important to have support (in the form of written correspondence) from other related industries, associations or expertise.

Within the public sector there are four potential levels from which funding may be made available. These are sources where the CWQ should be looking for initial capital and start-up funds. Private sector industries, organizations and associations that have an interest in water quality could benefit from being a partner of the CWQ. There are industries who have a history of investing in/supporting other ventures like the proposed CWQ, who may be very willing to become a key player in this Centre.

5.1 PROVINCIAL GOVERNMENT

5.1.1 MINISTRY OF THE ENVIRONMENT

Drinking water quality is the responsibility of the provincial government and the Ministry of the Environment (MOE) has the authority to control many essential aspects related to it. Accordingly, close cooperation and even partnership with the Government of Ontario (and especially the Ministry of the Environment) will be an important feature of the Centre for Water Quality's early business development and success. In this respect, the Government of Ontario and especially the MOE's solid financial, policy/regulatory and public support are important considerations for the Centre's startup.

During the Phase I report completed for the CWQC, many gaps were identified within the water quality picture. The CWQ could help close these gaps and assume many functions to assist the Ontario Government in improving the current situation. In order to succeed at this though, financial support and some authority must be

delegated / assigned to the CWQ. During the first years after start up, the MOE should be the CWQ's principal partner.

5.1.2 MINISTRY OF HEALTH AND LONG-TERM CARE

Another ministry that has a key role in water quality is the Ministry of Health and Long-Term Care. Local public health units are official health agencies and one of their roles is to promote health and help prevent disease. This includes some water quality testing and oversight of testing parameters and testing results. Based on the recommended functions for the CWQ, the functions that are highest on the priority list are those relating to water testing. Although the role of this Ministry lies primarily with receiving notices of unacceptable water testing results and taking necessary actions based on these results, it has an interest in the process of how these results are reported and the parameters used for testing. As a key player in the drinking water cycle, it may be willing to fund certain water testing functions at the CWQ.

5.1.3 ONTARIO MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS (OMAFRA)

Next to water testing on the potential functions ranking was the activity of developing and delivering water quality related courses, workshops, seminars and demonstrations. These courses would be directed mostly towards the agricultural and rural audience since they make up some of the key stakeholders who have an interest in water quality.

There is a funding program currently in place by OMAFRA called "Healthy Futures for Ontario Agriculture". The program is designed to encourage partnerships in Ontario's agriculture and food sectors that will safeguard rural water quality and quantity.

OMAFRA has expressed great interest in funding rural water quality projects. Recently some administrative aspects in their program have been clarified and amended to encourage more rural water quality projects. This funding program is a $90 million cost-sharing grant, and they are receiving new applications until March 31, 2002 (with payments on approved projects made no later than March 31, 2003). More information on this funding program can be found in Appendix C.

5.2 FEDERAL GOVERNMENT

Since the CWQ will provide information and services that will not only benefit Ontario residents but all Canadians, certain departments within the Federal government should be included as key players.

5.2.1 ENVIRONMENT CANADA

The protection of drinking water lies primarily within the jurisdiction of provincial governments, however the Federal government has a role and interest in protecting this resource. Environment Canada has made clean water one of its priorities, and is actively involved in freshwater and water pollution issues.

Having support from both the provincial and federal levels of government is important for the CWQ. The more key players involved with the Centre, the more chance of success the CWQ will have in the long term. As well, by having Environment Canada's support the activities from the CWQ could potentially become national in scale.

There is an existing funding program by Environment Canada "EcoAction", which supports projects that protect, rehabilitate or enhance the natural environment, and build the capacity of communities to sustain activities into the future. All the proposed functions for the CWQ are directly related to clean water so this program and the CWQ would appear to have a natural "fit".

EcoAction funding is available to environmental non-profit organizations, and has funding deadlines on February 1st and October 1st of every year. Information on this program in found in Appendix D.

5.2.2 HEALTH CANADA

Health Canada plays a role in any topic that can have an affect on human health, one of them being water. Similar to the provincial ministries of Health, this federal department focuses primarily on the drinking water process. The Department has developed national drinking water guidelines which include parameters for water testing. It provides information on water testing, water treatment and water quality in general, all of which will be key functions of the CWQ.

In a recent joint initiative, Health Canada has been involved in funding programs with Environment Canada to support community capacity to act on issues involving both human health and the environment. This program (the Community Animation Program) enabled individuals and communities to make their own decisions to promote good health and ensure a healthy environment. Although this particular program ended last year (March 2000), Health Canada may be willing to participate and become a partner in the CWQ.

5.2.3 AGRICULTURE AND AGRI-FOOD CANADA

Water quality and agriculture are directly linked as witnessed during the Walkerton tragedy. This is not a new concept and has been a part of the day to day operations in Agriculture and Agri-Food Canada for years. Their mandate is to provide information, research and technology, and policies and programs to achieve security of the food system, health of the environment and innovation for growth.

Agriculture and Agri-Food Canada have been involved with: examining the quality of surface water and groundwater in relation to agricultural activities; discussing water related ecological issues that have resulted from the co-existence of agriculture and natural ecosystems in the rural environment; finding ways in which the quality of water can be optimized for the various competing users; and discussing the limitations that water quality places on the expansion of agricultural and other development in rural areas.

This Federal department has been involved with agricultural-environmental programs for over fifteen years and has two programs underway right now. The first is the Agricultural Environmental Stewardship Initiative (AESI) which addresses the national environmental priority issues (one being water quality) through education and awareness, technology transfer, and stewardship tools. In the list of proposed functions for the CWQ, there are activities which are very similar to those currently performed under the AESI. Building a partnership with them on these activities may be a great opportunity for both the CWQ and AESI.

The other fund which Agriculture and Agri-Food Canada uses to support projects is the Canadian Adaptation and Rural Development (CARD) Fund. This funding is available in Ontario through the Agricultural Adaptation Council (AAC) for agriculture and rural communities. For the period of 1999 – 2003, $28.6 million is allocated to this fund. These funds are to be used for projects that are geared towards the CARD priority areas,

one of which is environmental sustainability. Many of the Outreach and Training functions of the CWQ would apply to this funding program (see Appendix E).

5.2.4 INDUSTRY CANADA

Industry Canada works within all parts of the country to improve conditions for investment and improve Canada's innovation performance. Program areas include developing industry and technology capability, fostering scientific research, and promoting tourism and small business development. One component of the CWQ will be research and development activities relating to water quality. Under the list of future functions for the Centre, a water quality science centre has been proposed. This science centre would include scientific research on many aspects of water, and would be a tourism site.

Industry Canada gives funding for certain programs through the Canada Foundation for Innovation (CFI). The Government of Canada has invested over a billion dollars in the CFI to address the urgent need of Canada's research community for new, state-of-the-art research infrastructure. The CFI's financial support is provided in partnership with all levels of government, and with the private and voluntary sectors. Its work focuses on health, science, engineering, and the environment. Just recently (March 2001), it was announced that another $750-million be will available to extend the CFI's various research infrastructure funding programs to 2010. Some of this funding will help support operating costs of new research infrastructure and Canadian participation in world-leading international research projects. More details on CFI can be located in Appendix F.

5.2.5 HUMAN RESOURCES DEVELOPMENT CANADA

Human Resources Development Canada (HRDC) mission statement is to enable Canadians to participate fully in the workplace and the community. HRDC is committed to providing high quality service that pursues a human development agenda in all its activities. HRDC is the largest federal department in terms of both its scope and mandate. It has programs and services that respond to the needs of all Canadians such as children, families, youth, seniors, the unemployed, people with disabilities and Aboriginal peoples.

It is acknowledged and appreciated that Phases I and II of the feasibility study could not have been achieved without the support and resources of HRDC and the Walkerton

Human Resource Centre of Canada. This has moved the idea of developing a Centre for Water Quality a step closer to becoming a reality.

The following HRDC programs may play an important role in the future activities related to the development of the Centre for Water Quality.

LOCAL LABOUR MARKET PARTNERSHIPS

The "Local Labour Market Partnerships" (LLMP) is a program where HRDC can work together with the local community on human resource and labour force issues. LLMP is used to support communities to help themselves to develop plans and strategies to address human resource needs and the evolution of their own labour force or labour market. By working with stakeholders in the community and securing broad community support, LLMP's can be very effective in addressing local labour force priorities, gaps and opportunities.

JOB CREATION PARTNERSHIPS

Under this program, HRDC can provide staffing and financial support for projects that provide unemployed individuals with meaningful work experience while benefiting the local community.

Partners – organizations, associations or businesses – which have organized the project and have a vested interest in it, must sponsor these projects. This might mean covering overhead costs or providing services in kind, such as training. The sponsoring partner(s) might be a non-for-profit organization, municipal or provincial government, band/tribal council, public health institutions, educational institution, business association, or individual business.

The projects must benefit the local community, and provide the potential for long-term employment.

The unemployed individuals must meet the following criteria:

They are experiencing difficulty returning to the workforce, ***and*** *either are in receipt of Employment Insurance Benefits now, have received benefits in a period that ended within the last 3 years, or have had a maternity or parental claim that began within the last 5 years.*

TARGETED WAGE SUBSIDY

Targeted Wage Subsidy is a program sponsored by HRDC. It is a great opportunity for a business to access financial assistance for on-the-job work experience in order to hire "eligible" employees.

The unemployed individual must meet the same criteria as in the Job Creation Partnerships program.

This program offers employers a reimbursement of a negotiated percentage of wages paid for an agreed upon time (minimum of 12 weeks) depending on the potential employee and skill involved. This program is designed to subsidize permanent full time jobs.

The objectives of this program are:

- to assist individuals to prepare for, obtain and maintain employment;
- to enable employers to hire individuals who face barriers to employment by offering temporary wage subsidies; and
- to assist individuals experiencing difficulty in finding work to benefit from on-the-job work experience.

ONE-ON-ONE INTERNSHIP PROGRAM

This wage subsidy program is identical to the above Targeted Wage Subsidy program with the only change being in the "eligibility" criteria of the individual. The eligibility criteria for this program are they must be unemployed, between the ages of 15 and 29 years and out of school.

ONLINE PLACEMENT AND RECRUITMENT SERVICES

The following are services provided by HRDC for employers to advertise their job opportunities:

Electronic Labour Exchange:

An electronic matching services for workers and employers. Create a profile of an individuals skill and experience, find job opportunities, advertise your skills and save the profile for future use.

Job Bank:

Listing of jobs across Canada or zero in on a more specific area of our country. This site offers the choice of searching by keyword, category or National Occupational Classification code. Employers may post their job listings locally, nationally or globally.

Other Services to Assist Individuals with their Job Search Techniques:

WorkSearch:

A powerful new Internet service designed to guide Canadians through all aspects of the work search process.

Youth Employment Information:

Bridging the gap between education and employment, this resource was created to provide youth with help preparing for and finding work.

Canada WorkInfoNET:

The Canada WorkInfoNET web site is about helping Canadians connect to the resources they need in the areas of jobs, work and recruiting; learning, education and training; occupations and careers; labour market information and outlook; self-employment; workplace issues and supports; and financial help and issues.

Canada Prospects:

A document published annually to provide employment prospects in a variety of job sectors and strategies for succeeding in today's workplace.

National Graduate Register:

This Web site is developed by Industry Canada to match employers and recent post-secondary graduates. By enrolling in the Register, employers can post company profile and use search criteria to match skills to potential employees.

5.2.6 CANADIAN INTERNATIONAL DEVELOPMENT AGENCY

The Canadian International Development Agency (CIDA) is the federal agency charged with planning and implementing most of Canada's international development cooperation program. CIDA administers approximately 80 percent of the aid budget. CIDA supports projects in more than 100 countries, which represent four fifths of the world's population. It works in partnership with developing countries, Canadian organizations, institutions and businesses, as well as international organizations and agencies.

CIDA has many assistance programs in place including one that is focused on helping to protect the environment. To achieve this goal, the program concentrates on the following priorities:

- *Basic human needs* to support primary health care, basic education, family planning, nutrition, water and sanitation, and shelter.
- *Infrastructure services* to help developing countries deliver environmentally sound infrastructure services – for example, rural electricity, roads, telecommunications, clean water and sanitation – with an emphasis on poorer groups and building local capacity.
- *The environment* to help developing countries to protect their environment and to contribute to addressing global and regional issues.

Opportunities to work with CIDA are directly linked to these priorities. For example, support for "basic human needs" could include supplying vaccines and other medications, training health personnel, and providing water treatment systems.

CIDA works through their partnership program, which financially supports projects initiated and implemented by Canadian institutions, associations and NGOs, as well as private-sector initiatives that can benefit developing countries.

5.3 MUNICIPAL GOVERNMENT

5.3.1 COUNTY OF BRUCE AND MUNICIPALITY OF BROCKTON

The County of Bruce and Municipality of Brockton can play a key role in the development of the CWQ. Although the financial resources are very limited, they have other resources and powers that can make useful contributions to the CWQ. The CWQC has indicated that its primary objective is to establish the CWQ in a new purpose-built facility. Achieving this will, therefore, involve various planning and infrastructure

approvals, property tax issues, etc., all of which the two levels of government are responsible for and therefore are in a position to facilitate. The County and Municipality could help ensure that these approvals are expeditiously dealt with during the planning and development stages.

Another example of local municipal participation in the CWQ could include the availability / accessibility of the local water supply and treatment system as a "real life" component of the CWQ's R&D, training and certification and public outreach / education programs. Walkerton would benefit in turn by having probably the best-studied, most intensively managed municipal water system in the world!

Beyond all this, it is simply crucial to have full support from both levels of local government to help back up the idea of a Centre for Water Quality in their area, when approaching other potential funding sources.

5.4 INTERNATIONAL

5.4.1 UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

The United Nations Environment Program (UNEP) is built on a heritage of service to the environment. UNEP's uniqueness lies in its advocacy of environmental concerns within the international system. In this, it makes a particular effort to nurture partnerships with other UN bodies possessing complementary skills and delivery capabilities and enhancing the participation of civil society - the private sector, scientific community and NGOs in the achievement of sustainable development. UNEP's approach to environmental management revolves around the creation of effective partnerships. It combines the values and interests of governments with the strengths of UN agencies, NGOs and the private sector. UNEP promotes partnerships by demonstrating what makes sustainable development happen.

UNEP is an international forum for governments to address current and emerging environmental issues. It has been central to the negotiation of major international environmental agreements and supports innovative environmental projects in many countries. Having the UNEP as a key partner of the CWQ would bring this Centre to the next level of potential clients – the international market.

Canada's own Environment Minister David Anderson was recently elected as president of UNEP Governing Council (see Appendix G). Because a Canadian Minister was elected to this position, Canada will act as a key leader in developing the international

environmental agenda and influence key environmental issues for the next two years. Water quality is already an international concern and the CWQ could help find solutions to the existing problems worldwide. Working with the UNEP and their partners may be an opportunity that the CWQ should consider.

5.4.2 WORLD HEALTH ORGANIZATION

Another international organization that has a vision similar to that of the CWQ on water quality is the World Health Organization (WHO). For over 45 years the WHO has been concerned with drinking water quality and its effect upon human health. One of the primary goals of WHO is that all people, whatever their stage of development and their social and economic conditions, have the right to have access to an adequate supply of safe drinking water. A major WHO function to achieve such goals is the responsibility to propose regulations, and to make recommendations with respect to international health matters. If the CWQ incorporates the function of public policy development relating to water quality, there will be similar visions and goals as the WHO. The WHO could be one of the key partners in the CWQ.

The WHO will make suitable arrangements for consultation and cooperation with non-governmental organizations (NGOs) in carrying out its international health work.

The objectives of WHO's collaboration with NGOs are to promote the policies, strategies and programmes derived from the decisions of the Organization's governing bodies; to collaborate with regard to various WHO programmes in jointly agreed activities to implement these strategies; and to play an appropriate role in ensuring the harmonizing of intersectoral interests among the various sectoral bodies concerned in a country, regional or global setting.

5.5 PRIVATE SECTOR CORPORATIONS

5.5.1 INDUSTRIES THAT RELY HEAVILY ON CLEAN WATER

Many industries depend on a steady supply of clean water for production and sales of their products. Because of this vital ingredient in their production these industries have great interest in aspects that could affect water quality. Businesses/industries involved in the following areas could become key partners in the CWQ:

- Automotive sector;
- Chemical;
- Food & Beverage;
- Iron & Steel;
- Microelectronics;
- Pharmaceuticals; and
- Pulp & Paper;

Just to emphasis how dependent some of these companies are on clean water, the coffee industry – a multi-billion dollar industry in North America - was examined. A coffee shop whose primary source of revenue is through the sale of beverages (i.e., coffee, tea, hot chocolate…) cannot operate if the incoming water is contaminated, otherwise the beverages could make its customers ill. If a boiled water advisory is put into effect, the coffee shop will not be able to treat all the water prior to using it for coffee. If municipal water delivered to the shop is contaminated for a period of time, the coffee shop would not be able to survive financially unless other measures or sources of water can be used. In any event, a continuous supply of clean, safe water is absolutely critical to the survival of such businesses.

Moreover, the very "perception" that there may be a water quality problem can be fatal to any business that depends on the public's confidence that the water-based service it is purchasing is safe and secure.

Companies who cannot survive without clean, purified water have a high stake and interest in ensuring that contamination is prevented or treated before it comes out of the tap. Because of the importance of high water quality for each of these industries, it is reasonable to expect that they should be prepared to invest in and be associated with the "Centre for Water Quality".

For instance, many companies in the pulp and paper industry have developed foundations or donation programs to help communities with environmental projects. One such large, water-using industry – Domtar – has demonstrated that it is willing to develop partnerships with environmental organizations. Domtar considers requests for support from non-profit organizations which meet its objectives and fall within its three primary areas of interest:

- Heightening school-age children's awareness of the importance of the environment;
- Researching and developing new environmentally-related processes, especially through university research; and
- Raising the general public's awareness of the importance of recycling and any other activities that benefit the environment.

In addition to making substantial financial contributions, Domtar grants donations in kind (e.g., donations of paper for brochures).

5.5.2 INDUSTRIES INVOLVED WITH TREATMENT OF WATER AND ITS EQUIPMENT

UNITED WATERS CANADA (SUBSIDIARY OF SUEZ LYONNAISE DES EAUX)

United Waters Canada operates as a subsidiary of Suez Lyonnaise des Eaux, who is one of the world's largest water services company. Suez Lyonnaise des Eaux has developed a global network of research and complementary competence centres to meet the needs of its customers and anticipate market needs. This network includes:

- The CIRSEE (International Centre for Research into Water and the Environment);
- The Northumbrian Lyonnaise Technology and Research Centre (NLTRC);
- ASTRAN (Technology and Research Network in the Asia Pacific region specializing in the management of water resources);
- The Nalco laboratories in Naperville (United States) and laboratories in Leyden (Holland) and Singapore;
- The CERDEG near Paris and the DENARD in Virginia (USA);
- The Eurawasser Lyonnaise Centre of Competence (ELCC) in Berlin; and
- The CTC (Centre Technique Comptage) in Lyon.

This company (similar to the CWQ) has come to realize that the sharing and transfer of knowledge throughout the various branches of the water sector is a major challenge, and has made it a priority to improve this worldwide knowledge transfer. They have made business investments in areas of database development, centres for transfer of knowledge and communication, and have combined technical assistance with its research centres.

They claim to have the world's largest private water research budget of 130 million euros (approximately $188 million Canadian) in 1999, involving 750 researchers worldwide. This funding was allocated for research in all areas of the water cycle and included:

- Protection of resources;
- Production and supply of drinking water;
- Chemical conditioning;
- Collection, treatment and reuse of wastewater; and
- Treatment and valorization of sludge.

Suez Lyonnaise des Eaux has invested in Centres in many countries, but they have not partnered or invested in a Canadian centre yet. They have been purchasing smaller companies throughout the world and within Canada to strengthen their global network and to have direct access to water industry expertise. Some of the functions proposed for the CWQ are parallel to those performed in other Suez Lyonnaise des Eaux centres, making the Suez Lyonnaise des Eaux a highly potential prospective partner.

THAMES WATER NORTH AMERICA

Thames Water North America is part of Thames Water United Kingdom. They are the largest water and wastewater company in the UK and have established companies globally. Their expertise ranges from consultant services to construction and operation of complete water and wastewater systems. They also offer comprehensive chemistry and microbiology services, and analyze water at their Water Quality Centre. They are actively involved in research and development and have companies worldwide manufacturing water / wastewater process equipment

Thames Water is very involved in social investments for different communities. They will give money to charities, perform work in local communities, and do major engineering projects that bring long term benefits to local communities.

Thames Water may be more focused on local communities, and they are not established in Canada as much as other countries. They are however committed to finding innovative solutions which means thinking ahead, anticipating needs, and challenging the *status quo*, all of which are functions that will be performed at the CWQ and can be beneficial to any country. They are willing to invest and develop partnerships that are

related to their business objectives or operating areas and that contribute to the social, economic and environmental well being of local communities in a sustainable manner.

They do provide support for relevant charities in the forms of cash, staff time and in-kind giving in a sustainable manner, lead by a board level Charities Committee. They have developed a strategic partnership with WaterAid (their principal charity), but also donate to other charitable organizations. The CWQ could build a partnership with Thames Water for many of the outreach and training programs that would help all countries.

Thames Water is also involved with some outreach programs similar to those proposed for the CWQ such as developing kits for schools. They have developed downloadable material for teachers, parents and other interested adults and an on-line game and background material directly accessible for students.

Research by Thames Water focuses on improving drinking water and effluent quality with new and environmentally friendly treatment processes. Areas of research currently being conducting are:

- Network infrastructure: developing technology to manage and maintain water and wastewater networks;
- Treatment technologies: quality monitoring and purification systems for water and wastewater; and
- Resources and sustainability: more efficient use and reuse of water resources.

Because the Thames Water is involved with all aspects of water quality (water testing, training, improving *status quo*, R&D and outreach), and are a willing donor for organizations that work towards their goals and objectives, the CWQ should seriously consider them as a future partner.

AZURIX NORTH AMERICA

Azurix conducts its operations in the United States and Canada through the organization formerly known as Philip Utilities Management Corporation (PUMC), a Canadian-based water and wastewater services company that provides operating and facilities management services to 18 water and wastewater facilities in North America. Azurix also has operations in Latin America and a few in the United Kingdom.

The company has been structured as a corporation with public shares, and is listed on the stock exchange. It is constantly acquiring new companies and is expanding, but there is little evidence of any investment in organizations such as the CWQ. The company does believe that community relations are important and has demonstrated an interest in the areas of education and the environment, particularly as they affect children and young adults.

One advantage when considering a partnership with Azurix is that it has a plant in Ontario and knows of the *status quo* and current situations in Ontario relating to water quality. Because this company is primarily based in North America rather than Europe, the affiliation associated with the CWQ may be more beneficial to it and therefore it may have more to gain by becoming a partner.

AQUATECH

Aquatech International Corporation is an equipment manufacturer of industrial water and wastewater treatment systems located in Pennsylvania, USA with support offices in India, Singapore, and the United Kingdom and installations in over 25 countries. Aquatech offers water treatment solutions in design and engineering, project management, manufacturing, turnkey installation and commissioning/field troubleshooting.

Like Azurix, Aquatech is not actively involved in supporting other organizations that are focused on improving the water quality situation. It is headquartered in North America, though, and has done business in Canada. It is a successful business in the water industry and, by having access to the latest technologies and innovations through the CWQ, Aquatech may have an interest in becoming a partner.

USFILTER

The extent to which partners can contribute to the CWQ depends partially on their size and business success. One of the largest providers of commercial, industrial, municipal and residential water and wastewater treatment systems, products and services in North America is USFilter (based in California).

USFilter belongs to the parent company of Vivendi Environment (Paris-based) who is a world wide leader in environmental services providing customers on every continent with a complete range of water, waste, energy, and transportation services. Vivendi Environment operates in more than 100 countries and with more than 70,000 employees worldwide. In 1999, Vivendi Water had *proforma* sales of $13 billion.

Through more than 20,000 water professionals, USFilter provides customized water management solutions to municipalities, businesses, industries, and consumers (bottled water service for homes, sophisticated water treatment technologies for manufacturers, and the design, construction, operation and financing of entire water and wastewater management systems are some of their activities). In 1999, USFilter's sales in North America alone were $4.5 billion.

USFilter and its subsidiaries (e.g., Culligan) can be found across Ontario. The company is aware of the Walkerton tragedy. A company such as USFilter that is very successful and is directly related to water could possibly offer support to the CWQ.

5.5.3 PRIVATE TRAINERS

Another industry related to water quality in Ontario is training. Currently training of water treatment/distribution operators is performed by private companies and individuals. These trainers are responsible for their own marketing and obtaining of clients. They must compete with one another and arrange all associated administration themselves. It is highly unlikely that these trainers have extra funding to invest in the CWQ, but they may however like to become key players of the CWQ bringing with them their expertise and clients. In return the CWQ could develop training courses and schedules and have the existing trainers focus on the course delivery rather than administrative items.

5.6 EDUCATIONAL INSTITUTIONS

There are many universities who conduct R&D and other activities relating to water quality in Ontario and Canada. When the CWQ begins to collect information for their clearinghouse and Outreach functions, support and cooperation from these universities will be needed to complete the tasks efficiently. There are international universities established through the United Nations (UN).

The International Network on Water, Environment and Health (UNU/INWEH) is a new member of the UN University family of organizations. It was created by the U.N. University Governing Council in 1996 with core funding provided by the Government of Canada to strengthen water management capacity, particularly of developing countries, and to provide on-the-ground project support. It is headquartered at McMaster University in Hamilton, Ontario.

Having this international university right here in Ontario is an excellent opportunity for the CWQ to build international partnerships. Since the CWQ would like to serve Canadians as well as all other countries in the world, it is important to have partners or key players that will assist in this mission of the Centre.

5.7 NON-PROFIT ORGANIZATIONS

When establishing the CWQ and building partnerships, interested non-profit organizations with similar mandates and objectives may like to become a partner of the centre or even become part of it. Financial assistance may be available from them along with resources that are required for the development of each function. For example, an organization who currently performs public policy development on water testing procedures may be able to aid the CWQ with their expertise and knowledge. The non-profit organizations can give to the CWQ but they will also benefit by being associated with all the activities and contacts from within the CWQ.

5.8 CONSULTING FIRMS

Private sector consulting firms having expertise in water quality matters must be active players in partnership with the CWQ, which could certainly benefit from the extensive water quality related knowledge and experience possessed by such firms. Such firms could participate in many ways in the Centre, as full partners/investors, as advisors and as contractors commissioned to conduct specific technical work for the Centre, etc.

5.9 ASSOCIATIONS

Many of the key stakeholders involved with water quality are in at least one association relating to water. Some of the larger associations such as the American Water Works Association (Ontario Branch) and the Ontario Federation of Agriculture have financial or technical support to invest in activities or organizations that will help their cause and concerns. Such associations could be key for CWQ, especially in getting their support and approval for proposed roles the Centre will fulfill. Letters of support/endorsement from these key stakeholders will go a long way and are just as important as other partners who will provide funding.

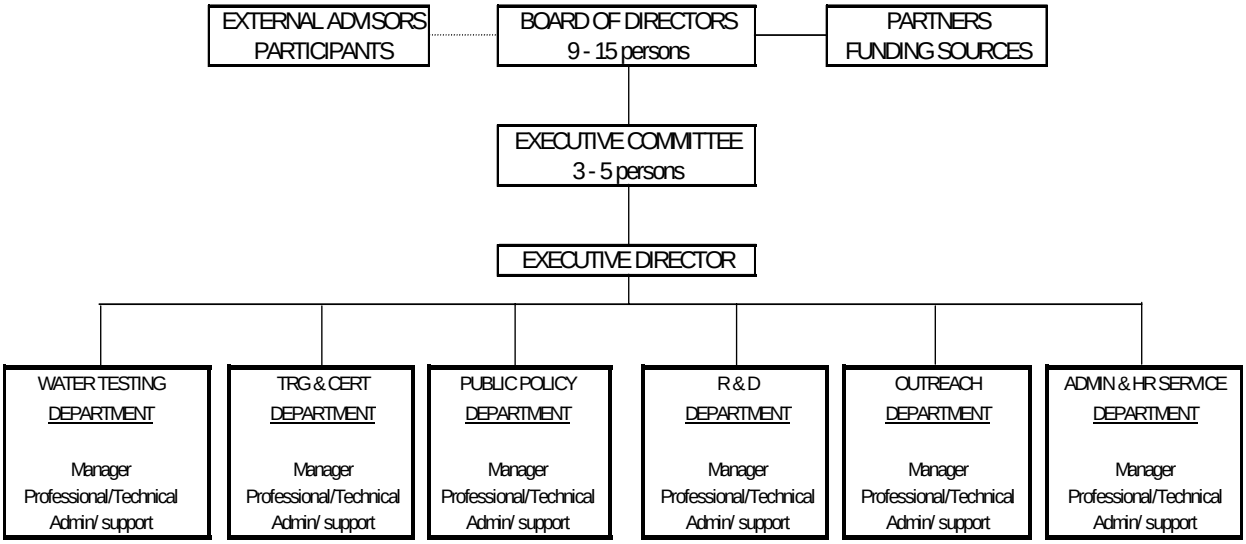
6.0 ORGANIZATION STRUCTURE

As with any organization a sound management structure, employing quality people doing quality work, forms the very heart and soul of the Centre for Water Quality. After all, people are the organization's only true "asset". Certainly, the organization may have capital invested in buildings, equipment and other inert tangibles, but it is *people* who enable the organization to achieve its mandate.

So designing how the Centre functions (i.e., who does what?) is a critical part of creating the organization. On the one hand it must be sufficiently capitalized and staffed to enable it to properly carry out its assigned functions. On the other hand we must not create an organization prone to excessive bureaucracy and cost.

6.1 RECOMMENDED ORGANIZATIONAL STRUCTURE

Having evaluated a variety of examples of other organizations the Team has concluded (and so recommends in Section 8.0 of this report) that the Centre for Water Quality be established as a public-private partnership taking the form of a Not-for-Profit Corporation. Such a corporation should have the following general structure:



6.2 KEY ORGANIZATIONAL COMPONENTS

The following is an outline of the key organizational components of the proposed organization structure illustrated in Section 6.1.

- Board of Directors (9 – 15 persons). At the outset the Board would be self-creating, but the Centre's Charter and By-Laws should provide for a mechanism for future renewal of Board members on a formalized basis.
- Executive Committee (3 – 5 persons): President / Chairman, Vice-President, Secretary, Treasurer, etc. All Executive positions should be appointed by the Board of Directors from among the members of the Board.
- Executive Director (a qualified, full-time, paid person who serves as the Chief Administrative Officer of the Centre. The Executive Director should be an *ex officio* member of the Executive Committee and all other committees of the Board. The Executive Director reports to and is accountable to the Board of Directors through the Executive Committee).
- Manager for each of the (initially) six key program areas. Each manager would be an *ex officio* member of the Board Committee overseeing his / her respective function.
- Professional and Technical personnel.
- Administrative / support personnel.

7.0 IMPLEMENTATION

The next stage of the Feasibility Study is Phase III (Implementation). As previously noted the intent of this stage is to identify and open actual discussions with prospective Partners / Key Players and to begin to put "real" numbers (and other information) on the Table (and into the business plan). The Action Plan, set out below, provides a recommended list of tasks to be performed during the coming weeks and months as part of the Implementation of the CWQ. As noted below, full implementation of the CWQ is affected by factors beyond the control of the CWQC and so those aspects of implementation must be delayed most likely until the first quarter of 2002.

7.1 FACTORS AFFECTING IMPLEMENTATION

The Centre for Water Quality is not a concept that is advancing through a vacuum; it exists in a real-world social, political and economic context. As such there are several factors that will affect the timing and manner of implementation of the Centre for Water Quality.

The first, clearly, is the ongoing Walkerton Inquiry, whose findings may have implications on the functions and structure of the organization. If the Inquiry firmly endorses the CWQ as one of several realistic responses to the water quality related issues examined by the Inquiry (and formally includes the CWQ as part of recommendations coming out of the Inquiry) then the chances of the CWQ moving on to the next stage will be greatly enhanced. In this regard the Ontario Government – a key participant in the CWQ – has already indicated that it will make no decisions relating to the water quality issues being addressed by the Inquiry (and by the CWQ) until it has received and reviewed the Inquiry report (due to be released by the end of 2001).

Another factor is the performance of the Ontario economy during the coming year or two. Since private sector partners are seen to be key players in the CWQ, the financial health of such partners as a consequence of the performance of their respective economic sectors, will be a determinant in whether and to what extent – they may be able to participate.

As noted on several occasions throughout the feasibility study the CWQ is a "grass roots" community-based initiative. Such local initiative has propelled the CWQ rapidly forward to date but the success of the Centre will continue to rely on local input / priorities – and community support – especially during the crucial 5-year start-up period.

7.2 "ACTION PLAN"

To assist the CWQC in planning its activities in the coming months the following "Action Plan" has been prepared that identifies a series of specific tasks/steps that the CWQC should consider in the weeks and months to come. The tasks listed below are meant to provide a general indication of activities to be undertaken during the coming year. At the outset, a comprehensive Work Plan and Schedule should be prepared as part of detailed preparations for the Implementation of the CWQ. The Phase III Work Plan and Schedule should be reviewed on a monthly basis by the CWQC and Implementation Team and revised/updated as required.

There is nothing "hard and fast" about the general time milestones given for each task. However the CRA Team prepared the activities in the context of the "Factors Affecting Implementation", discussed in Section 7.1 of this Report and made its estimates on the basis of its experience in actually carrying out the kind of work needed for such activities. That said, the CWQ may wish to amend the timelines during preparation of the detailed Implementation Work Plan and Schedule mentioned above. The CRA Team stand ready to assist the CWQ in that important first Implementation step.

Task 1:

Set up an "Implementation Team" (made up of key CWQC members and others) whose primary responsibility will be to carry out the Implementation Work Plan and Schedule, (as represented by the following general Implementation Tasks) during the coming year. (Report regularly to CWQC) (Beginning April 2001).

Task 2:

In accordance with the Implementation Strategy distribute copies of the Feasibility Plan to key persons and organizations (e.g., selected provincial Cabinet Ministers, local municipalities and counties, etc.). Produce press releases; hold one or more press conferences to raise public awareness about the CWQ (Spring 2001).

Task 3:

Provide testimony to the Walkerton Inquiry about the CWQ and in particular the results of Phase I and II. (Walkerton Chamber of Commerce). (Summer/Autumn 2001).

Provide other input to Inquiry staff as required for remainder of Inquiry (April – December 2001).

Task 4:

Continue to develop the CWQ business plan as more detailed information becomes known (Begin April 2001…..).

Task 5:

Develop an information kit/package. The package should be attractive, graphically well-designed and colourful. In addition to an introductory letter from the CWQC Chair the package should provide an overview of the CWQ, concise summaries of the Phase I and Phase II findings and recommendations, contain "fact sheets" on the water quality issues/functions and work that the CWQ will address, etc. The kit should be suitable for use as a "press kit" and as a financial development kit, depending on which materials are included (Summer 2001).

Task 6:

Develop a specific list of organizations (e.g., governments at all levels, corporations, foundations *et al.*) and approach those organizations and individuals to discuss the CWQ and to solicit, at least, preliminary letters of interest, endorsement of the CWQ concept or (more desirable) clear intentions of more substantial support for the CWQ (Spring-Summer 2001).

Task 7:

Develop detailed organization "architecture" for the CWQ. (i.e., flesh out the core functions to be pursued in the first five years; determine staffing requirements; determine physical support requirements based on the estimated number of staff – i.e., including equipment, supplies, furniture, consumables, and, finally….an estimate of floor space required (making allowance for future expansion, etc) (Summer 2001).

Task 8:

On the basis of the facility size estimate, identify a suitable site location for the CWQ in Walkerton (Summer 2001).

Task 9:

Engage a local architect to prepare a very preliminary conceptual drawing of the CWQ on its potential site (elevations only, no detailed design) – for use in "illustrating" the CWQ to prospective partners, financial contributors, etc. (Produce illustrations in both paper and electronic "fly by" versions (Summer 2001).

Task 10:

Refine actual costs of establishing the Centre and how much money will be required to successfully run the CWQ for the first 5 years (Fall 2001).

Task 11:

With CWQ details in hand (e.g., feasibility study results, financial and organizational details and conceptual design, preferred site, letters of support, etc.) undertake a focused, concerted campaign to meet with prospective key partners, funders, investors, etc. to lay groundwork for establishing formal relationships in 2001 (Fall 2001).

Task 12:

Review the Report of the Walkerton Inquiry – especially with regard to any recommendations it contains concerning the CWQ (Winter 2001 / 2002).

Task 13:

Meet with Ontario Government and Government of Canada (Premier, Cabinet Ministers and senior D.M and A.D.M. level staff, *et al.*) to discuss specific details of financial and other support for officially getting the CWQ "off the ground" (Start Winter 2002).

Task 14:

During the spring and summer of 2002, with formal financial commitments and funds in hand, the CWQ can then commence detailed planning for:

- Securing CWQ Site lands, servicing, planning and other approvals;
- Completing Detailed Design of CWQ building;
- Construction;
- Hiring of staff;

- Purchasing / leasing of equipment, etc.; and
- Myriad other details.

Task 7, above, contains a phrase: i.e., "flesh out the core functions to be pursued in the first five years". This activity is certainly crucial to the CWQ in its ability to demonstrate to prospective partners and funders that it truly has a functional, pragmatic view of the work it will be doing. But the activity becomes even more crucial during the work leading up to actually designing and building the CWQ (both organizationally and physically) in the spring and summer of 2002. Programs for delivery of the Core Functions must be designed in detail, staff job descriptions (and associated salary schedules, performance criteria, etc., etc.) prepared, human resource policies developed, support facilities and services identified and procured, etc.

As the CRA Team has said before the CWQ is a truly unique organization, being built virtually from scratch. That will involve a good deal of effort, commitment, time and money to do right. And, as implied in the Introduction to this Phase II Report, there is no other option but to do it right….the first time.

7.3 DRAFT BUSINESS PLAN

A Draft Business Plan for the CWQ is being developed and will be provided to the CWQC in the near future. It is important to note, however, that at this stage it is very difficult to produce a complete business plan, given the absence of critical information that can only be determined later in the process. Nevertheless, the Draft Business Plan provides, at this stage, a good outline of the documentation and business strategy needed for the CWQ and will provide a focus for discussion by the CWQC of organizational details for the Centre as the concept evolves in the months to come. Task 4, above, indicates that the activity starts formally in April 2002, even though preliminary aspects of it have been underway as part of the Phase II work in January – March 2001).

8.0 RECOMMENDATIONS

The proposed Walkerton Centre for Water Quality is an organization that would help ensure a clean, secure water supply to citizens of Ontario, and eventually world wide. During the Phase I feasibility study, the need for a Centre such as the proposed CWQ was clearly shown. A Phase II study was conducted to determine what role the CWQ could play in order to fulfill the needs identified during the Phase I study. Upon completion of a thorough evaluation of potential options for the Centre's functions, structure and funding, a number of recommendations have been identified and are listed throughout this report.

If implemented, these recommendations would allow the CWQ to achieve a high level of success and become a useful, stable and financially viable organization. The final recommendations for the CWQ have been summarized below.

RECOMMENDATION 1: FUNCTIONS OF CENTRE FOR WATER QUALITY

Thirty-two recommended functions for the CWQ have been identified in this report. These functions were divided into two categories – core and future functions. Core functions are recommended activities for the Centre in its first few years of operation. No one particular core function is more important than another, they have all been identified as either a necessity to improve *status quo* or to fill an existing gap within the water quality picture. Future functions are also very important functions that the CWQ should consider and implement once the CWQ is established. Some of the future functions are just as important as the core functions, but because of other factors such as time requirements to establish, funding to support the activities or certain legislative authority, they have been classified as future functions.

Although the primary focus of the CWQ will initially be on issues within Ontario, it won't be long until this Centre can help other provinces and territories across Canada, as well as other countries around the world. It is recommended that the following functions be considered and implemented as part of the CWQ.

CORE FUNCTIONS

WATER TESTING

- *Develop QC/QA procedures for each parameter tested*
- *Develop training program for lab technicians*
- *Advisory body on testing methods and procedures*

- *Serve as a resource centre for providing information to aid laboratories*
- *Develop standard media & methodology for WQ testing*

TRAINING

- *Develop and deliver general water quality related courses, workshops, seminars, demonstrations (courses)*
- *Develop and deliver correspondence courses for Operators, WQ Analysts*
- *Develop and deliver on-line training courses*
- *Develop printed materials to educate public (available in printed form and through the CWQ website)*
- *Oversee quality & standardization of courses offered (external to CWQ)*

PUBLIC POLICY

- *Develop public policy on water quality*

RESEARCH & DEVELOPMENT

- *Establish an Information Clearing House*
- *Centre where research papers can be purchased*

OUTREACH

- *Provide central database for water sampling results*
- *Develop Internet based instructional websites*
- *Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.*

FUTURE FUNCTIONS

TRAINING

- *Develop and sell CBT courses to plant owners for internal training purposes*
- *Develop and deliver courses, workshops, seminars (technical)*
- *Act as an advisory body to regulators on training issues*

OUTREACH

- *Produce printed material*
- *Water quality science centre*
- *Develop kits (with training aids) for schools*

- *Produce and sell videos & computer multi-media*
- *Develop news media (TV, Radio) programs*
- *Speakers Roster*

CERTIFICATION

- *Develop Certification Programs for areas where there are currently no certification requirements*
- *Certify Operators & Water Quality Analysts & manage certification system*
- *Work with CAEAL on accreditation of laboratories*

HUMAN RESOURCES SERVICE

- *Inquiry centre*
- *Information centre on occupations*
- *Provide career counseling*
- *Post help wanted ads*

RECOMMENDATION 2: BUSINESS STRUCTURE

After examining all the business structures available to the CWQ, it is recommended that this Centre be set up as a provincial not-for-profit, non-charitable corporation. During the first few years of operation, or as soon as possible, the CWQ should establish another organization called "The Centre for Water Quality Foundation". This foundation would be a provincial not-for-profit, charitable organization whose sole purpose would be to fund specific programs / projects of the Centre for Water Quality. By having a foundation for the CWQ, it would enable the Centre to issue tax receipts for donations.

RECOMMENDATION 3: FINANCING

It is necessary to have the financial support right from day one in order to establish this CWQ. Two methods of initial start-up funding were identified and discussed in this report – a large initial front end payment or a commitment of the same amount with payment spread over 4 years.

Because there are no existing facilities suitable for the CWQ within the Town of Walkerton, new facilities will need to be developed. This will require a great deal of

investment capital up front, and therefore it is recommended that the Centre try to obtain funding in the form of initial front end payment.

The exact amount of funding required for the first five years of operation will be determined during the implementation phase (Phase III). Once a total estimated cost is established, this financial data can be provided to potential funders/partners when discussing partnerships.

RECOMMENDATION 4: POTENTIAL PARTNERS/KEY PLAYERS

Several potential partners and key players that could play an important role in the establishment of the CWQ were identified in Section 5 of this report. Suggested partners range from various levels of government to different sectors of the water related private industry to different organizations and educational institutions. Among these suggested partners, the means and methods that they can contribute to the Centre will vary. For instance, some may be able to offer financial support while others can offer resources or personal expertise. The Centre for Water Quality should try to focus on establishing a private-public partnership with many of the agencies/organizations identified in Section 5. An organization such as this Centre will not have difficulties finding suitable partners and key players, however it is recommended that one partner in particular become involved with this Centre.

Given its primary responsibility for water quality in Ontario, the Ontario Ministry of the Environment is an obvious and natural partner for the Centre. The MOE's financial support and delegation of some authority could provide important impetus and 'critical mass'. Support from other government ministries, both provincial and federal, as well as private industry partnerships will be equally important for the CWQ's business development and ongoing success.

RECOMMENDATION 5: ORGANIZATIONAL STRUCTURE

The CWQ should be established with a relatively flat organization structure. At the top of the organization would be a Board of Directors consisting of approximately 9 – 15 persons, along with external advisors/participants and the various partners/funding sources. Under the Board of Directors would be an executive committee comprised of 3 – 5 persons. An Executive Director would report to the Executive Committee, and be responsible for 6 departments. Each department would have its own manager, professional/technical staff and administrative/support staff. The six departments that should make up the CWQ are:

- Water Testing;
- Training and Certification;
- Public Policy;
- Research and Development;
- Outreach; and
- Administration and Human Resources Service.

RECOMMENDATION 6: IMPLEMENTATION

Throughout the remainder of this year and until the Walkerton Inquiry has submitted its final report, it is recommended that the CWQC keep a close eye on all factors that may affect the implementation of this proposed Centre, and remain flexible to deal with any outcomes. In the interim, while the Inquiry is still underway, it is recommended that the CWQC begin the tasks outlined previously in Section 7.2, Action Plan.

Phase III, Implementation involves several tasks, all of which are important pieces in putting this Centre for Water Quality together. It is recommended that Tasks 1 through 11 be completed prior to the release of the Inquiry's recommendations, and that the CWQC be prepared to leap forward with Tasks 13 and 14 after its release.

The next several months will entail a great deal of planning and action in order to prepare for the establishment of the Centre for Water Quality. This time will be very exciting for all those involved, including the residents of Walkerton, prospective partners and staff, all personnel involved with water quality and various government departments. This next Phase is very important. How well the implementation Phase is carried out will determine how successful the CWQ will be in the future.

TABLE 1A

TRAINING

	Water Treatment Operators	*Water Distribution Operators*	*Wastewater Collection Operators*	*Wastewater Treatment Operators*	*Small Water System Operators*	*Camp/RV Owners*	*Water Quality Analyst*	*Staff in Labs*	*Trainers*	*MOE inspectors and staff*	*Public Health Unit Staff*
Is training mandatory?	Yes	Yes	Yes	Yes	Yes	Depends on size	Yes	No	No		Yes
Are there mandatory classes?	No	No	No	No	Yes	Yes	No	No	No		Yes
Are there courses designed specifically for this group relating to water quality?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes-teaching No-specific topic		Medical courses
Who is the training given by?	Various private trainers	Various private trainers	Various private trainers	Various private trainers	Correspondence course - OETC	through OETC	Various private trainers	N / A	Universities / colleges		Universities, colleges
Is training available throughout Ontario?	Trainer will go to location, really remote area ???	Trainer will go to location, really remote area ???	Trainer will go to location, really remote area ???	Trainer will go to location, really remote area ???	Yes	Yes	Trainer will go to location, really remote area ???	No	Yes		Yes
Is the training feasible to user?	varies up to $500 course	varies up to $500 course	varies up to $500 course	varies up to $500 course	Costs $30	Cost $30	varies up to $500 course	N / A	Tuition Fees		Tuition Fees
Is the training standardized?	No	No	No	No	Yes	Yes	No	No	No		Yes
Does another agency have responsibility for this training? How?	No, OETC suggests trainers though	No, OETC suggests trainers though	No, OETC suggests trainers though	No, OETC suggests trainers though	OETC	Yes	No	No	No		Yes - Ministry Health
Would there be a conflict with the other agency if CWQ considered this?	Possibly	Possibly	Possibly	Possibly	Yes	Yes	Possibly	No	No		No
Can the CWQ and existing agency be compatible in this issue? How?	Yes, work together, OETC must approve CWQ courses	Yes, work together, OETC must approve CWQ courses	Yes, work together, OETC must approve CWQ courses	Yes, work together, OETC must approve CWQ courses	Maybe - CWQ offer non-correspondence course	Maybe - CWQ offer non-correspondence course	Yes, work together, OETC must approve CWQ courses	N / A	Yes, CWQ offer specialized water courses		Yes, CWQ offer water quality courses
Is anyone overseeing the training?	No	No	No	No	Yes, OETC	Yes, OETC	No	No	Yes, college		Yes
Is anyone monitoring the quality of the training?	No	No	No	No	Yes	Yes	No	No	Yes		Yes
In the past was this training successful at anytime?	Yes	Yes	Yes	Yes	N / A	N / A	N / A	No	Yes		Yes
Is there a demand for this training?	No	No	No	No	Yes	Yes	No	No	No		No
If currently regulated, are we allowed to get involved in this training?	Yes	Yes	Yes	Yes	Maybe	Maybe	Yes	N / A	N / A		Yes- can offer seminars
Should there be a body to provide advice on regulation?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Is there information readily available on this training?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Not externally

TABLE 1A

TRAINING

	Water Treatment Operators	*Water Distribution Operators*	*Wastewater Collection Operators*	*Wastewater Treatment Operators*	*Small Water System Operators*	*Camp/RV Owners*	*Water Quality Analyst*	*Staff in Labs*	*Trainers*	*MOE inspectors and staff*	*Public Health Unit Staff*
Is the information available to everyone in Ontario?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Is the information easily accessible?	Yes- just call the trainer	Yes- just call the trainer	Yes- just call the trainer	Yes- just call the trainer	Yes	Yes	Yes	No	Yes	No	No
If not available should it be?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are there potential funding sources / income streams from this training?	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees
Who would be interested in funding this?	Plant operators, municipalities, industries	Plant operators, municipalities, industries	Plant operators, municipalities, industries	Plant operators, municipalities, industries	users	users	Plant operators, municipalities, industries	Labs, industries	users	MOE	Ministry Health, users
Could potential jobs be created from this training?	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin	Yes - trainers, admin
Jobs in Walkerton area?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jobs in Grey and Bruce County?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jobs in Ontario?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Would this training improve the status quo?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 1B

CERTIFICATION

	Facilities	*Water Treatment Operators*	*Water Distribution Operators*	*Wastewater Collection Operators*	*Wastewater Treatment Operators*	*Small Water System Operators*	*Water Quality Analyst*	*Labs*	*Laboratory Staff*	*MOE inspectors and staff*	*Trainers*	*Agricultural Sector*	*Camp/RV Owners*	*Public Health Unit Staff*	*Council Members*	*PUC Staff*	*OCWA Staff*	*Non-gov't Agencies*	*OGDs*	*Municipal Employees*	*Certification Staff*
Is certification required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Accreditation required	No	No	No	No	Sometimes	Medical Req'ts	No	No	No	No	No	No	No
Who does this certification?	OETC	OETC	OETC	OETC	OETC	OETC	OETC	CAEAL	N / A	N / A	N / A	N / A	OETC	Ministry Health	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Is certification available to everyone eligible in Ontario?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N / A	N / A	N / A	N / A	Yes	Yes	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Are the certification expenses feasible to user?	No fee	Yes $25 / yr	Yes $25 / yr	Yes $25 / yr	Yes $25 / yr	Yes $25 / yr	Yes $25 / yr	$135- $450 test group fee / study	N / A	N / A	N / A	N / A	Yes $25 / yr	N / A	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Are there regulations governing the certification procedures?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Procedures on accreditation	N / A	N / A	N / A	N / A	Yes	Yes	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Does an agency currently have responsibility for this certification? When does their contract expire?	OETC - expires late 2000 hoping for renewal	OETC - expires late 2000 hoping for renewal	OETC - expires late 2000 hoping for renewal	OETC - expires late 2000 hoping for renewal	OETC - expires late 2000 hoping for renewal	OETC - expires late 2000 hoping for renewal	OETC - expires late 2000 hoping for renewal	CAEAL and SCC	No	No	No	No	OETC - expires late 2000 hoping for renewal	Yes	No	No	No	No	No	No	No
Would there be a conflict with the other agency if CWQ considered this role?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N / A	N / A	N / A	N / A	Yes	Yes	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Can the CWQ and existing agency be compatible in this issue? How?	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	N / A	N / A	N / A	N / A	Maybe- CWQ could provide advice	Maybe- CWQ could provide advice	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Is anyone overseeing the certification?	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	CAEAL & SCC	N / A	N / A	N / A	N / A	MOE & Advisory committee	Ministry Health	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Is anyone monitoring the quality of the certification?	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	MOE & Advisory committee	No	N / A	N / A	N / A	N / A	MOE & Advisory committee	Ministry Health	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Has certification requirements changed over the past 20 years? How?	Yes, became mandatory	Yes, became mandatory	Yes, became mandatory	Yes, became mandatory	Yes, became mandatory	Yes, became mandatory	Yes, became mandatory	Yes, accreditation mandatory	N / A	N / A	N / A	N / A	Yes	No	N / A	N / A	N / A	N / A	N / A	N / A	N / A
If no certification is required would it be beneficial to have mandatory cert?	N / A	N / A	N / A	N / A	N / A	N / A	N / A	N / A	Yes	Yes	Yes	No	N / A	N / A	No	Yes	Yes	No	No	No	No

TABLE 1B

CERTIFICATION

	Facilities	*Water Treatment Operators*	*Water Distribution Operators*	*Wastewater Collection Operators*	*Wastewater Treatment Operators*	*Small Water System Operators*	*Water Quality Analyst*	*Labs*	*Laboratory Staff*	*MOE inspectors and staff*	*Trainers*	*Agricultural Sector*	*Camp/RV Owners*	*Public Health Unit Staff*	*Council Members*	*PUC Staff*	*OCWA Staff*	*Non-gov't Agencies*	*OGDs*	*Municipal Employees*	*Certification Staff*
Is there a body to give advice on certification?	Yes, Advisory Committee	Yes, Advisory Committee	Yes, Advisory Committee	Yes, Advisory Committee	Yes, Advisory Committee	Yes, Advisory Committee	Yes, Advisory Committee	Yes, SCC	No	No	No	No	Yes, Advisory Committee	Yes, Health Professions Regulatory Advisory	No	No	No	No	No	No	No
Who comprises this body?	reps - associations & bargaining agents	reps - associations & bargaining agents	reps - associations & bargaining agents	reps - associations & bargaining agents	reps - associations & bargaining agents	reps - associations & bargaining agents	reps - associations & bargaining agents	Experts in the field	N / A	N / A	N / A	N / A	reps - associations & bargaining agents	medical experts	N / A	N / A	N / A	N / A	N / A	N / A	N / A
If no body- should there be one to provide advice on certification?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N / A	Yes	Yes	Yes	Yes	Yes	N / A	N / A	N / A	N / A
How many people does this certification apply to?	> 1000	> 1000	> 1000	> 1000	> 1000	0 - 500	500 - 1000	< 50 labs	N / A	N / A	N / A	N / A	0 - 500	0 - 500	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Is there information readily available on certification procedures?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N / A	N / A	N / A	N / A	Yes	Yes	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Is the information available to everyone in Ontario?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N / A	N / A	N / A	N / A	Yes	Yes	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Who would benefit from this information?	owners	operators	operators	operators	operators	operators	analysts	owners, mgrs, staff	N / A	N / A	N / A	N / A	owners	Health staff	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Are there potential funding sources / income streams for certification?	Yes - cert fee	Yes - cert fee	Yes - cert fee	Yes - cert fee	Yes - cert fee	Yes - cert fee	Yes - cert fee	Yes- accreditation fees	If cert req'd, user fees	If cert req'd, user fees	If cert req'd, user fees	No	Yes - cert fee	No	No	If cert req'd, user fees	If cert req'd, user fees	No	No	No	No
Could potential jobs be created from certification?	Already exist	Already exist	Already exist	Already exist	Already exist	Already exist	Already exist	Already exist	Yes	Yes	Yes	N / A	Already exist	Already exist	N / A	Yes	Yes	N / A	N / A	N / A	N / A
Jobs in Walkerton area?	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Yes	Yes	Yes	No	Possibly	Possibly	No	Yes	Yes	No	No	No	No
Jobs in Grey and Bruce County?	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Yes	Yes	Yes	No	Possibly	Possibly	No	Yes	Yes	No	No	No	No
Jobs in Ontario?	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Yes	Yes	Yes	No	Possibly	Possibly	No	Yes	Yes	No	No	No	No
Would this certification improve the status quo?	N / A	N / A	N / A	N / A	N / A	N / A	N / A	N / A	Yes	Yes	Yes	N / A	N / A	N / A	N / A	Yes	Yes	N / A	N / A	N / A	N / A

TABLE 1C

RESEARCH AND DEVELOPMENT

	Agricultural Wastewater	*Air Water Interaction*	*Analysis*	*Aquatic Ecosystems*	*Climate Change*	*Complex Effluents*	*Conservation*	*Drinking Water*
Need for consolidation of research information on this topic?	High	High	High	High	High	High	High	High
Where is this information retained?	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications
Is there a central location where information can be found?	NO	NO	NO	NO	NO	NO	NO	NO
Is there a Clearinghouse that may include part of this topic?	IWMI	NO	NO	NO	ICLEI; IISD; Pembina Inst.	NO	IWMI	Cdn Ctr PollutionPrev; ICLEI; IWMI
Can anyone access past research project results?	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult
Who would benefit from R&D services on water quality?	industry, government, research institutions, farmers, public, NGOs	government, research institutions, public, NGOs	industry, government, research institutions, farmers, public, NGOs	government, research institutions, public, NGOs	government, research institutions, farmers, public, NGOs	industry, government, research institutions, NGOs	government, research institutions, public, NGOs	industry, government, research institutions, farmers, public, NGOs
Would it be beneficial to water quality objectives to have a central location?	YES	YES	YES	YES	YES	YES	YES	YES
Is there a central location where this is taking place?	NO	NO	NO	NO	NO	NO	NO	NO
Would this central location create jobs?	YES	YES	YES	YES	YES	YES	YES	YES
In Walkerton?	YES	YES	YES	YES	YES	YES	YES	YES
In Grey & Bruce Counties?	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
In Ontario?	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
Would there be a conflict with an agency if the CWQ considered this?	NO	NO	NO	NO	NO	NO	NO	NO
Are there potential funding sources / income streams for a centre that would provide this information?	YES	YES	YES	YES	YES	YES	YES	YES

	Farm Runoff	*Groundwater*	*Hydrogeology & Hydrology*	*International Network*	*Land Use*	*Manure Management*	*Modelling*	*Municipal Wastewater*
Need for consolidation of research information on this topic?	High	High	High	High	High	High	High	High
Where is this information retained?	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications
Is there a central location where information can be found?	NO	NO	NO	NO	NO	NO	NO	NO
Is there a Clearinghouse that may include part of this topic?	IWMI	IWMI	ICLEI; OCETA	ICLEI; OCETA	ICLEI; OCETA	IWMI	NO	Cdn Ctr for Pollution Prev.
Can anyone access past research project results?	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult
Who would benefit from R&D services on water quality?	government, research institutions, farmers, public, NGOs	industry, government, research institutions, farmers, public, NGOs	industry, government, research institutions, farmers, NGOs	industry, government, research institutions, NGOs	industry, government, research institutions, farmers, public, NGOs	government, research institutions, farmers, public, NGOs	industry, government, research institutions, NGOs	industry, government, research institutions, farmers, public, NGOs
Would it be beneficial to water quality objectives to have a central location?	YES	YES	YES	YES	YES	YES	YES	YES
Is there a central location where this is taking place?	NO	NO	NO	NO	NO	NO	NO	NO
Would this central location create jobs?	YES	YES	YES	YES	YES	YES	YES	YES
In Walkerton?	YES	YES	YES	YES	YES	YES	YES	YES
In Grey & Bruce Counties?	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
In Ontario?	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
Would there be a conflict with an agency if the CWQ considered this?	NO	NO	NO	NO	NO	NO	NO	NO
Are there potential funding sources / income streams for a centre that would provide this information?	YES	YES	YES	YES	YES	YES	YES	YES

	Nitrogen and Nutrient Management	*Point & NonPoint Source Contamination*	*Septic Systems*	*Soil Management*	*Wastewater*	*Watershed Management*	*Water Policy*	*Wetlands*
Need for consolidation of research information on this topic?	High	High	High	High	High	High	High	High
Where is this information retained?	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications	individual researcher organization / internet site / peer reviewed, government and popular publications
Is there a central location where information can be found?	NO	NO	NO	NO	NO	NO	NO	NO
Is there a Clearinghouse that may include part of this topic?	IWMI	IWMI	IWMI	IWMI; OCETA	Cdn Ctr for Polln Prev	Waterfr. Reg. Trust	ICLEI; Waterfr. Regen. Tr.	OCETA (aboutRemediation)
Can anyone access past research project results?	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult	Very difficult
Who would benefit from R&D services on water quality?	government, research institutions, farmers, NGOs	industry, government, research institutions, farmers, public, NGOs	industry, government, research institutions, farmers, public, NGOs	industry, government, research institutions, farmers, public, NGOs	industry, government, research institutions, farmers, public, NGOs	government, research institutions, public, NGOs	government, research institutions, public, NGOs	government, research institutions, farmers, public, NGOs
Would it be beneficial to water quality objectives to have a central location?	YES	YES	YES	YES	YES	YES	YES	YES
Is there a central location where this is taking place?	NO	NO	NO	NO	NO	NO	NO	NO
Would this central location create jobs?	YES	YES	YES	YES	YES	YES	YES	YES
In Walkerton?	YES	YES	YES	YES	YES	YES	YES	YES
In Grey & Bruce Counties?	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
In Ontario?	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
Would there be a conflict with an agency if the CWQ considered this?	NO	NO	NO	NO	NO	NO	NO	NO
Are there potential funding sources / income streams for a centre that would provide this information?	YES	YES	YES	YES	YES	YES	YES	YES

TABLE 1D

OUTREACH EDUCATION/ INFORMATION

	Agricultural Sector	*Citizens & Environmental Groups*	*Private Well Owners*	*Municipal Council Members*	*Municipal Employees*	*PUC Members/ Admin Staff*	*OCWA Staff*	*Non-gov't Organizations*	*Other Gov't Departments*	*Schools*	*Certification Staff*
Is there existing information / education programs designed specifically for this group relating to water quality?	Yes	No	No	No	No	Yes	Yes	No	No	No	No
Who is the information / education provided by?	OMAFRA, various community organizations	N / A	N / A	N / A	N / A	various private trainers	OCWA training program	N / A	N / A	N / A	N / A
Is education / information available throughout Ontario?	No	No	No	No	No	Yes	Yes	No	No	No	No
Is the education / information affordable to user?	varies up to $250 course	N / A	N / A	N / A	N / A	varies up to $500 course	OCWA pays	N / A	N / A	N / A	N / A
Is the education / information standardized?	Yes	No	No	No	No	No	No	No	No	No	No
Does another agency / organization have responsibility for this education / information? How?	OMAFRA is giving some courses	No	No	No	Their union, municipality	No	Yes - OCWA themselves	No	Their dept.	No	No
Would there be a conflict with the other agency / organization if CWQ considered doing this?	No	No	No	No	No	No	Yes	No	No	No	No
Can the CWQ and existing agency be compatible in this issue? How?	Yes, offer courses different from OMAFRA's	N / A	N / A	N / A	Yes, offer seminars, workshops	N / A	Maybe- CWQ work together with their trainers	N / A	Yes, offer seminars, workshops	N / A	N / A
Is anyone overseeing / co-ordinating the education / information activity?	No	No	No	No	No	No	No	No	No	No	No
Is anyone monitoring the quality of the education / information?	No	No	No	No	No	No	No	No	No	No	No
Is there presently a demand for this education / information?	No	No	No	No	No	No	No	No	No	No	No
Is there information readily available on this education / information?	No	No	No	No	No	No	No	No	No	No	No
Is the information available to everyone in Ontario?	Yes	No	No	No	No	No	No	No	No	No	No

TABLE 1D

OUTREACH EDUCATION/ INFORMATION

	Agricultural Sector	*Citizens & Environmental Groups*	*Private Well Owners*	*Municipal Council Members*	*Municipal Employees*	*PUC Members/ Admin Staff*	*OCWA Staff*	*Non-gov't Organizations*	*Other Gov't Departments*	*Schools*	*Certification Staff*
Is the information easily accessible?	No	No	No	No	No	No	No	No	No	No	No
If not available should it be?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are there potential funding sources / income streams from this education / information?	Yes - user fees , funding	Yes - user fees , funding	Yes - user fees , funding	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - user fees	Yes - external	Yes - user fees
Who would be interested in funding this?	OMAFRA, MOE, Ministry Health, Ontario Federation Agriculture	OMAFRA, MOE, Ministry Health	OMAFRA, MOE, Ministry Health, Ontario Federation Agriculture	Municipalities	Municipalities	PUCs	OCWA	Commercial sponsors, foundations, users	gov't depts	Commercial sponsors, foundations	MOE, users
Could potential jobs be created from this education / information?	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin	Yes - instructors, admin
Jobs in Walkerton area?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jobs in Grey and Bruce County?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Jobs in Ontario?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Would this training improve the status quo?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there anyone currently providing water quality related speaker rosters to this group?	No	No	No	No	No	No	No	No	No	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there anyone currently providing water quality related printed materials to this group?	Yes, OMAFRA BMPs	Yes, scattered, local health units, MOE	Yes, scattered, local health units, MOE	No	No	No	Maybe OCWA	No	Possibly their own department	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there anyone currently providing water quality related videos to this group?	No	No	No	No	No	No	No	No	No	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there anyone currently providing water quality related computer multi-media to this group?	No	No	No	No	No	No	No	No	No	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 1D

OUTREACH EDUCATION/ INFORMATION

	Agricultural Sector	*Citizens & Environmental Groups*	*Private Well Owners*	*Municipal Council Members*	*Municipal Employees*	*PUC Members/ Admin Staff*	*OCWA Staff*	*Non-gov't Organizations*	*Other Gov't Departments*	*Schools*	*Certification Staff*
Is there anyone currently providing water quality related "kits" with training aids, information to this group?	No	No	No	No	No	No	No	No	No	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there anyone currently providing water quality related speaking engagements to this group?	No	No	No	No	No	No	No	No	No	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there anyone currently providing water quality related internet based instructional websites to this group?	Yes, various gov't sites, associations	No	Yes, various gov't sites, associations	No	No	No	Maybe OCWA	No	No	No	No
Would it be beneficial if there were?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Would this group benefit if news media PSA relating to water quality was available?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is anyone providing news media to this group currently?	No	No	No	No	No	No	No	No	No	No	No
Are there water quality educational programs currently provided on the radio, videos, TV for these groups?	No	No	No	No	No	No	No	No	No	No	No
Would these groups benefit if these programs were available?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are water quality "factoid" articles printed in a central location for these groups on a regular basis?	No	No	No	No	No	No	No	No	No	No	No
Should they be printed and available regularly?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 1E

WATER TESTING

	Methodologies for testing water	***Mandatory Parameters for testing***	***Reporting Lab Results***	***QC/QA procedures***
Are there current regulation requirements?	No	Yes	Yes	No
What areas of water testing need more explanation or direction?	Media and Methodologies for testing water	Interpretation of the results	Regulation interpretation on reporting requirements	Proper QC / QA procedures
Is there a body enforcing the regulations?	MOE	MOE	MOE	MOE
Are lab staff aware / understand the regulations?	Not all	Not all	Not all	Not all
Is there an advisory body providing information to the regulators?	CAEAL, MOE, Ministry Health	CAEAL, MOE, Ministry Health	CAEAL, MOE, Ministry Health	CAEAL, MOE, Ministry Health
Would it be useful to have a body that could advise policy makers?	Yes	Yes	Yes	Yes
Would that body be in conflict with any other organization?	Possibly CAEAL	Possibly CAEAL	Possibly CAEAL	Possibly CAEAL
Is this aspect of the lab standardized throughout Ontario?	No	Yes	Yes	No
Should they be standardized?	Yes	Yes	Yes	Yes
How should they be standardized?	Have a set method / media for each parameter tested	Are standardized in regulation	Are standardized in regulation	Each lab should have the same QC / QA procedures to ensure each lab is equal
How could this standardization be enforced?	Through regulation, and as part of accreditation procedures	Have inspectors monitor labs, have mandatory training for lab staff (example- results interpretation)	Have inspectors monitor labs, have mandatory training for lab staff (example- results interpretation)	Through regulation and accreditation procedures
Would standardization be feasible for the lab?	Yes, they develop their own currently	Labs are already following regulation	Labs are already following regulation	Yes, they develop their own currently
Are all labs using the most accurate and up to date procedures?	No	Following regulation	Following regulation	No
How can lab staff keep up to date on this issue? Are there ways information is passed to the labs?	Courses, seminars, mandatory training - info not passed to labs	Courses, seminars, mandatory training - info not passed to labs	Courses, seminars, mandatory training - info not passed to labs	Courses, seminars, mandatory training - info not passed to labs
Does another agency have responsibility for overseeing this aspect in the lab?	No	No	No	No
Would there be a conflict with the other agency if CWQ considered this?	No	No	No	No
Is anyone monitoring the quality of the laboratory's work?	CAEAL, MOE	CAEAL, MOE	MOE	CAEAL, MOE
Is there a demand from labs for improvement / more information on this aspect within the lab?	Yes	Yes	Yes	Yes
If regulated, are we allowed to get involved? How?	N / A	Yes, can education lab staff	Yes, can educate lab staff	N / A
How many labs does this apply to?	Approximately 48 labs in Ontario	Approximately 48 labs in Ontario	Approximately 48 labs in Ontario	Approximately 48 labs in Ontario
Is there information readily available on this aspect for lab staff?	No	Only the regulation	Only the regulation	No
Is the information available to everyone in Ontario?	No	Yes	Yes	No
Is the information easily accessible?	No	Yes	Yes	No
If not available should it be?	Yes	Yes	Yes	Yes
Who would benefit from this information?	lab staff, public health units, public citizens, water operators, water quality analysts	lab staff, public health units, public citizens, water operators, water quality analysts	lab staff, public health units, public citizens, water operators, water quality analysts	lab staff, public health units, public citizens, water operators, water quality analysts
Are there potential funding sources from this service?	Yes	Yes	Yes	Yes
Who would be interested in funding this?	Labs, industries, researchers	User fees from courses, seminars	User fees from courses, seminars	Labs
Could potential jobs be created from this?	Yes	Yes	Yes	Yes
Jobs in Walkerton area?	Yes	Yes	Yes	Yes
Jobs in Grey and Bruce County?	Yes	Yes	Yes	Yes
Jobs in Ontario?	Yes	Yes	Yes	Yes
Would this improve the status quo?	Yes	Yes	Yes	Yes

TABLE 1F

HUMAN RESOURCES SERVICE

	Career Counseling	***Centre for general inquiries***	***Recruiting for water treatment operators***	***Recruiting for wastewater operators***	***Recruiting for laboratory staff***	***Job descriptions & suitability***	***Explain pre-requisites***	***Explain requirements for certification***	***Help Wanted***
Is there anywhere one can access this?	Yes	Yes	No	No	No	No	No	Yes	Yes
Who is the currently doing this?	Human Resource Centres, local community centres, employers, schools	OETC for water operators	No one	No one	No one	No one	No one	OETC for water operators	Municipalities, plant operators through websites, newspapers
Is it available throughout Ontario?	Yes - in major cities, by phone	Yes by phone, email	No	No	No	No	No	Yes by phone, email, internet, published brochures	Usually locally, if on internet available across Ontario
If available is it feasible for the user?	free	free	N / A	N / A	N / A	N / A	N / A	free	cost of internet or newspaper, free computer at HRDC office
Are the answers provided to inquiries standardized in Ontario?	No- depends on who was asked	yes	N / A	N / A	N / A	N / A	N / A	Yes	Yes
Does another agency have designated responsibility for this? How?	No	no	No	No	No	No	No	No	No
Would there be a conflict with the other agency if CWQ considered this?	N / A	N / A	N / A	N / A	N / A	N / A	N / A	N / A	N / A
Can the CWQ and existing agencies be compatible in this issue? How?	Yes - give more specialized advice by experts from the CWQ	Yes - give more specialized advice by experts from the CWQ	Yes - give more specialized advice by experts from the CWQ	Yes - give more specialized advice by experts from the CWQ	Yes - give more specialized advice by experts from the CWQ	Yes - give more specialized advice by experts from the CWQ	Yes - give more specialized advice by experts from the CWQ	Yes - give information by experts from the CWQ	Yes, CWQ could be a place where job posting are listed for clients
Has this been provided in the past for fields working in water quality?	No	No	No	No	No	No	No	No	No
Is there a demand for this service?	Possibly	Yes	Possibly	Possibly	Possibly	Possibly	Possibly	Yes	Yes
How many personnel are in these occupations that could use this service?	>1000	>1000	0-500	0-500	0-500	>1000	>1000	>1000	>1000
If regulated, are we allowed to get involved in this service?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there information readily available on this?	No	Yes	No	No	No	No	No	Yes	No
Is the information available to everyone in Ontario?	No	Yes	No	No	No	No	No	Yes	No
If not available should it be?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 1F

HUMAN RESOURCES SERVICE

	Career Counseling	***Centre for general inquiries***	***Recruiting for water treatment operators***	***Recruiting for wastewater operators***	***Recruiting for laboratory staff***	***Job descriptions & suitability***	***Explain pre-requisites***	***Explain requirements for certification***	***Help Wanted***
Who would benefit from this information?	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field	All personnel working in the field or interested in the field
Are there potential funding sources / income streams from this service?	Possibly from employers	No	Possibly from employers	Possibly from employers	Possibly from employers	No	No	No	No
Could potential jobs be created from this service?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jobs in Walkerton area?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jobs in Grey and Bruce County?	No	No	No	No	No	No	No	No	No
Jobs in Ontario?	No	No	No	No	No	No	No	No	No
Would this improve the status quo?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 2

POTENTIAL FUNCTIONS FOR CWQ

WATER TESTING

Develop standard media & methodology for WQ testing
Develop QC/QA procedures for each parameter tested
Develop training program for lab technicians
Advisory body on testing methods and procedures
Serve as a resource centre for providing information to laboratories

TRAINING

Develop and deliver general water quality related courses, workshops, seminars, demonstrations (courses)
Develop and deliver correspondence courses for Operators, WQ Analysts
Develop and deliver on-line training courses
Develop printed materials to educate public (available in printed form and through CWQ website)
Oversee quality & standardization of courses offered (external to CWQ)
Develop and sell CBT courses to plant owners for internal training purposes
Develop and deliver courses, workshops, seminars (technical)
Act as an advisory body to regulators on training issues

PUBLIC POLICY

Develop public policy on water quality

RESEARCH & DEVELOPMENT

Establish an Information Clearing House
R & D Services

OUTREACH

Provide central data base for water sampling results
Develop Internet based instructional websites
Speakers Roster
Produce published material
Produce and sell videos & computer multi-media
Develop kits (with training aids) for schools
Water quality science centre
Develop news media (TV, Radio) programs
Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.

CERTIFICATION

Certify Operators & Water Quality Analysts & manage certification system
Develop Certification Programs for areas where there are currently no certification requirements
Work with CAEAL on accreditation of laboratories

HUMAN RESOURCES SERVICE

Inquiry centre
Information centre on occupations
Provide career counseling
Post help wanted ads

TABLE 3

CRITERIA DESCRIPTIONS

POTENTIAL FOR IMPROVING *STATUS QUO*

3 - By carrying out this function in the CWQ, there may be significant potential for improvement in the status quo
2 - By carrying out this function in the CWQ, there may be moderate potential for improvement in the status quo
1 - By carrying out this function in the CWQ, there may be little potential for improvement or change in the status quo

POTENTIAL FOR JOB CREATION (DIRECT)

3 - Many people may be required to properly carry out the described function (primarily permanent jobs + numerous part time/ temporary) (administrators, specialists, technicians, etc.)
2 - Some people required to properly carry out the described function (some full time permanent jobs but more part time/ temporary)
1 - Few staff required to carry out the described function

POTENTIAL FOR CONTRIBUTION TO LOCAL ECONOMIC/ BUSINESS DEVELOPMENT (INDIRECT)

3 - Significant potential for people to come to Walkerton & the CWQ for employment or courses/information creating spin off effects; significant potential for attraction of other water quality related businesses, organizations, etc…
2 - Moderate potential for people to come to Walkerton & the CWQ for employment or courses/information creating spin off effects; moderate potential for attraction of other water related businesses, organizations, etc...
1 - Little potential for people to come to Walkerton to work/study at the CWQ; little potential for attraction of other water related businesses, organizations, etc…

POTENTIAL FOR FUNDING/ INCOME STREAMS

3 - Continuous users fees, financial participation from industries, foundations, governments, etc. to fund CWQ
2 - User fees still a part of funding, rely more on businesses, foundations and governments for funding
1 - Little potential for user fees, limited potential for other funding to support this function

POTENTIAL FOR CONFLICT/COMPETITION WITH EXISTING AGENCIES/ ORGANIZATIONS

3 - No agencies/ organizations are currently performing this function
2 - There are some agencies/ organizations currently performing this function
1 - An existing agency/ organization is currently performing this function and has authority to do so by regulation/ contract

POTENTIAL FOR HIGH NUMBERS OF CLIENTS

3 - Potentially significant demand for this function, little or no service available elsewhere
2 - Potentially moderate demand for this function, some service available elsewhere
1 - Potentially low demand for this function, significant level of service available elsewhere

TABLE 4

RATING OF EACH FUNCTION USING CWQC WEIGHTING

POSSIBLE FUNCTIONS OF CWQ	***POTENTIAL FOR CONTRIBUTION TO LOCAL ECONOMIC/ BUSINESS DEVELOPMENT (INDIRECT)***	***POTENTIAL FOR IMPROVING STATUS QUO***	***POTENTIAL FOR JOB CREATION (DIRECT)***	***POTENTIAL FOR FUNDING/ INCOME STREAMS***	***POTENTIAL FOR HIGH NUMBERS OF CLIENTS***	***POTENTIAL FOR CONFLICT/ COMPETITION WITH EXISTING AGENCIES/ ORGANIZATIONS***	***RATING SUM (maximum of 63)***
	6	5	3.5	3.5	2	1	
CERTIFICATION							
Develop Certification Programs for areas where there are currently no certification requirements	2 12	3 15	2 7	3 10.5	2 4	1 1	49.5
Certify Operators & Water Quality Analysts & manage certification system	2 12	2 10	2 7	3 10.5	2 4	1 1	44.5
Work with CAEAL on accreditation of laboratories	2 12	2 10	2 7	3 10.5	2 4	1 1	44.5
TRAINING							
Develop and deliver correspondence courses for Operators, WQ Analysts	2 12	3 15	2 7	3 10.5	3 6	3 3	53.5
Develop and deliver courses, workshops, seminars (technical)	2 12	2 10	2 7	3 10.5	3 6	2 2	47.5
Oversee quality & standardization of courses offered (external to CWQ)	2 12	3 15	2 7	2 7	3 6	3 3	50
Act as an advisory body to regulators on training issues	2 12	3 15	2 7	2 7	3 6	3 3	38
Develop and deliver on-line training courses	2 12	3 15	2 7	3 10.5	3 6	3 3	53.5
Develop and sell CBT courses to plant owners for internal training purposes	2 12	2 10	2 7	3 10.5	3 6	3 3	48.5
Develop printed material to educate public (available in printed form and through CWQ website)	2 12	3 15	2 7	2 7	2 4	3 3	48
Develop and deliver general water quality related courses, workshops, seminars, demonstrations	2 12	3 15	3 10.5	3 10.5	3 6	3 3	57

TABLE 4

RATING OF EACH FUNCTION USING CWQC WEIGHTING

POSSIBLE FUNCTIONS OF CWQ	*POTENTIAL FOR CONTRIBUTION TO LOCAL ECONOMIC/ BUSINESS DEVELOPMENT (INDIRECT)* 6	*POTENTIAL FOR IMPROVING STATUS QUO* 5	*POTENTIAL FOR JOB CREATION (DIRECT)* 3.5	*POTENTIAL FOR FUNDING/ INCOME STREAMS* 3.5	*POTENTIAL FOR HIGH NUMBERS OF CLIENTS* 2	*POTENTIAL FOR CONFLICT/ COMPETITION WITH EXISTING AGENCIES/ ORGANIZATIONS* 1	*RATING SUM (maximum of 63)*
RESEARCH & DEVELOPMENT							
Establish an Information Clearing House	2 12	3 15	2 7	2 7	3 6	3 3	 50
R & D Services	1 6	2 10	2 7	3 10.5	3 6	2 2	 41.5
WATER TESTING							
Develop standard media & methodology for WQ testing	3 18	3 15	3 10.5	3 10.5	3 6	3 3	 63
Develop QC / QA procedures for each parameter tested	3 18	3 15	3 10.5	3 10.5	3 6	3 3	 63
Develop training program for lab technicians	3 18	3 15	3 10.5	3 10.5	3 6	3 3	 63
Serve as a resource centre for providing information to laboratories	2 12	3 15	3 10.5	2 7	3 6	3 3	 53.5
Advisory body on testing methods and procedures	2 12	3 15	3 10.5	1 3.5	2 4	3 3	 48
HUMAN RESOURCES SERVICE							
Information centre on occupations	2 12	3 15	2 7	2 7	3 6	2 2	 49
Post help wanted ads	1 6	3 15	2 7	2 7	3 6	2 2	 43
Inquiry centre	2 12	3 15	2 7	2 7	3 6	2 2	 49
Provide career counseling	2 12	2 10	2 7	2 7	3 6	2 2	 44
PUBLIC POLICY							
Develop public policy on water quality	2 12	3 15	2 7	3 10.5	3 6	2 2	 52.5
OUTREACH							
Develop internet based instructional websites	2 12	3 15	3 10.5	3 10.5	3 6	3 3	 57
Produce Published material	2 12	3 15	3 10.5	2 7	3 6	3 3	 53.5
Produce and sell videos & computer multi-media	2 12	3 15	3 10.5	2 7	3 6	3 3	 53.5

TABLE 4

RATING OF EACH FUNCTION USING CWQC WEIGHTING

POSSIBLE FUNCTIONS OF CWQ	***POTENTIAL FOR CONTRIBUTION TO LOCAL ECONOMIC/ BUSINESS DEVELOPMENT (INDIRECT)***	***POTENTIAL FOR IMPROVING STATUS QUO***	***POTENTIAL FOR JOB CREATION (DIRECT)***	***POTENTIAL FOR FUNDING/ INCOME STREAMS***	***POTENTIAL FOR HIGH NUMBERS OF CLIENTS***	***POTENTIAL FOR CONFLICT/ COMPETITION WITH EXISTING AGENCIES/ ORGANIZATIONS***	***RATING SUM (maximum of 63)***
	6	5	3.5	3.5	2	1	
Develop kits (with training aids) for schools	2 12	3 15	3 10.5	1 3.5	3 6	3 3	50
Speakers Roster	1 6	3 15	2 7	2 7	3 6	3 3	44
Provide central database for water sampling results	1 6	3 15	3 10.5	2 7	3 6	3 3	47.5
Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.	1 6	2 10	3 10.5	2 7	3 6	1 1	40.5
Water Quality Science Centre	3 18	3 15	3 10.5	3 10.5	3 6	3 3	63
Develop news media (TV, Radio) programs	1 6	3 15	2 7	1 3.5	3 6	3 3	40.5

TABLE 5

RANKING OF FUNCTIONS BASED ON CWQC CRITERIA WEIGHTING

1	Develop standard media & methodology for WQ testing
	Develop QC/QA procedures for each parameter tested
	Develop training program for lab technicians
	Water quality science centre
2	Develop internet based instructional websites
	Develop and deliver general water quality related courses, workshops, seminars, demonstrations (courses)
3	Develop and deliver correspondence courses for Operators, WQ Analysts
	Develop and deliver on-line training courses
	Serve as a resource centre for providing information to laboratories
	Produce published material
	Produce and sell videos & computer multi-media
4	Develop public policy on water quality
5	Oversee quality & standardization of courses offered (external to CWQ)
	Act as an advisory body to regulators on training issues
	Establish an Information Clearing House
	Develop kits (with training aids) for schools
6	Develop Certification Programs for areas where there are currently no certification requirements
7	Information centre on occupations
	Inquiry centre
8	Develop and sell CBT courses to plant owners for internal training purposes
9	Advisory body on testing methods and procedures
	Develop printed materials to educate public (available in printed form and through CWQ website)
	Provide central database for water sampling results
10	Develop and deliver courses, workshops, seminars (technical)
11	Certify Operators & Water Quality Analysts & manage certification system
	Work with CAEAL on accreditation of laboratories
12	Provide career counseling
	Speakers Roster
13	Post help wanted ads
14	R & D Services
15	Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.
	Develop news media (TV, Radio) programs

TABLE 6

RECOMMENDED CORE AND FUTURE FUNCTIONS

CORE FUNCTIONS

WATER TESTING

Develop standard media & methodology for WQ testing
Develop QC/QA procedures for each parameter tested
Develop training program for lab technicians
Advisory body on testing methods and procedures
Serve as a resource centre for providing information to laboratories

TRAINING

Develop and deliver general water quality related courses, workshops, seminars, demonstrations (courses)
Develop and deliver correspondence courses for Operators, WQ Analysts
Develop and deliver on-line training courses
Develop printed materials to educate public (available in printed form and through the CWQ website)
Oversee quality & standardization of courses offered (external to CWQ)

PUBLIC POLICY

Develop public policy on water quality

RESEARCH & DEVELOPMENT

Establish an Information Clearing House
Centre where research papers can be purchased

OUTREACH

Provide central database for water sampling results
Develop Internet based instructional websites
Review and record quarterly reports prepared by municipalities, OCWA, plant operators, etc.

FUTURE FUNCTIONS

TRAINING

Develop and sell CBT courses to plant owners for internal training purposes
Develop and deliver courses, workshops, seminars (technical)
Act as an advisory body to regulators on training issues

OUTREACH

Produce printed material
Water quality science centre
Develop kits (with training aids) for schools
Produce and sell videos & computer multi-media
Develop news media (TV, Radio) programs
Speakers Roster

CERTIFICATION

Develop Certification Programs for areas where there are currently no certification requirements
Certify Operators & Water Quality Analysts & manage certification system
Work with CAEAL on accreditation of laboratories

HUMAN RESOURCES SERVICE

Inquiry centre
Information centre on occupations
Provide career counseling
Post help wanted ads

TABLE 7

POTENTIAL COURSES AND CLIENTS

			WOULD THIS COURSE APPLY TO THESE POTENTIAL CLIENTS?																			
COURSES:	***Is course offered now? By who?***	***Potential # of students for a course of this topic (yearly)?***	***Water Treatment Operators***	***Water Distribution Operators***	***Wastewater Collection Operators***	***Wastewater Treatment Operators***	***Small Water System Operators***	***Water Quality Analyst***	***Staff in Labs***	***MOE inspectors and staff***	***Trainers***	***Agricultural Sector***	***Rural Citizens***	***Private Well Owners***	***Camp/RV Owners***	***Public Health Unit Staff***	***Council Members***	***PUC Staff***	***OCWA Staff***	***Non-gov't Agencies***	***OGDs***	***Municipal Employees***	***Certification Staff***
administration	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Basic Environmental concerns	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Basic Math	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	No	No	Yes	Yes	No	No	No	No
basic water testing, in-plant performance	Y, private trainers	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	Yes	Yes	No	No	No	No
Communications	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
compliance training	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Computer skills	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Construction Fundamentals and theory	No	500 - 1000	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No
corrosion control	No	500 - 1000	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No
crisis management	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
current procedures in lab	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
disinfection theory	Y, private trainers	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No
distribution systems	Y, private trainers	500 - 1000	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No
English	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
environmental law / regulation	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ethics	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
financial management	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 7

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handling and disposal of process wastes	No	500 - 1000	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No
health and safety	Y, private trainers	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
human relations	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hydraulics	No	500 - 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
instrumentation	No	500 - 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	No
lab reporting requirements	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
laboratory testing methods	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
laboratory operations	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
laboratory procedures	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Land Survey Fundamentals	Y, college / university	< 500	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
maintenance concepts	No	< 500	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
management skills	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
microbiological principles	Y, college / university	> 1000	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No
political processes	No	> 1000	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
problem solving techniques	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
project management	Y, college / university	> 1000	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QC / QA in labs	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No
Report Writing	Y, college / university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
results interpretation	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
risk management	No	500 - 1000	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No

TABLE 7

POTENTIAL COURSES AND CLIENTS

			WOULD THIS COURSE APPLY TO THESE POTENTIAL CLIENTS?																			
COURSES:	***Is course offered now? By who?***	***Potential # of students for a course of this topic (yearly)?***	***Water Treatment Operators***	***Water Distribution Operators***	***Wastewater Collection Operators***	***Wastewater Treatment Operators***	***Small Water System Operators***	***Water Quality Analyst***	***Staff in Labs***	***MOE inspectors and staff***	***Trainers***	***Agricultural Sector***	***Rural Citizens***	***Private Well Owners***	***Camp/RV Owners***	***Public Health Unit Staff***	***Council Members***	***PUC Staff***	***OCWA Staff***	***Non-gov't Agencies***	***OGDs***	***Municipal Employees***	***Certification Staff***
sampling procedures	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No	No	No
small water system operation	Y, correspondence	< 500	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Soil mechanics & Foundations	Y, college/university	< 500	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
spills and due diligence	No	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Surface and Groundwater sources	No	> 1000	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No
taste and odour control	No	> 1000	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Theory of structures	No	< 500	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Water Chemistry	Y, college/university	> 1000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No	No	Yes	Yes	No	No	No	No
Water Microbiology	Y, college/university	500 - 1000	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Water treatment history	No	500 - 1000	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Water treatment methodology-unit operations-design parameters	No	500 - 1000	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
water treatment practices and principles	No	500 - 1000	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
water treatment process control	Y, private trainers	500 - 1000	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
nutrient mgt	Y, OMAFRA	> 1000		No	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No
well decommissioning	No	> 1000	Yes	Yes	No	No	Yes	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
groundwater contamination	No	> 1000	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No	No
well head protection	No	> 1000	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
farming practices	No	> 1000			No	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
pesticides	No	> 1000	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No

TABLE 8

SUMMARY OF EXISTING ORGANIZATIONS

NAME OF EXISTING ORGANIZATION	*STRUCTURE OF CENTRE*	*PARTNERS*	*PROGRAMS / SERVICES*	*INTERNATIONAL EXPERTISE*	*MARKETING / DELIVERY MECHANISMS*	*FUNDRAISING / REVENUE SOURCES*	*PUBLIC POLICY*	*TRAINING/ CERTIFICATION*	*RESEARCH CENTRE/ CLEARINGHOUSE*
CANADIAN CENTRE FOR POLLUTION PREVENTION (C2P2)	Board of Directors represents business, governments, trade associations and academia; organization based on members and sponsors	sponsors are Canadian Vehicle Mfg. Assoc, Chrysler Canada, Environment Canada Office of P2, Environment Canada - Ont Reg., Ford Motor Co. of Canada, General Motors of Canada, Manitoba Environment, Nova Scotia Dept of the Environment, Ontario Ministry of the Environment	SERVICES:- Education and Outreach; P2 Program Support, Research & Writing; Training, Communication Tools, Event Management; Tools and Resources, Connection with Experts; PROGRAMS: CEPA support tools; Dry Cleaner Training; Clearinghouse, Canadian P2 Successes; Cleanprint Canada; Health Care Website and Resource Guide; Pest Management; P2 for Enforcement Staff;	Chair of the UNEP Info Sharing Workgp, to foster communications between clean production providers; Chair Info Sharing Group of the Great Lakes Regional Pollution Prevention Roundtable; International P2 Summit, Oct 2000; key role in Global Cleaner Production Network; Environmental Training in Palestine;	Delivery from staff; collaboration with private and public sector, e.g. Jacques Whitford, Global Env. Mgmt Sys., Fedr'n of Cdn. Municipalities	Environment Canada and private sector sponsors	not usually involved in policy development, rather are part of a strategy to fulfill the CCME commitment to pollution prevention; write and produce the federal government annual report Progress in Pollution Prevention	P2 Training, including Workshop Design and Delivery, goal to allow participants to support their own P2 work; Guidance Manuals and other support literature' educational services, e.g. newsletter, website; Training topics: P2 Planning, P2 for Envorcement Staff, P2 Practitioners Course and Certificate, Healthcare Training; Total Cost Assessment; Dry Clenear Certification Training in Ontario Dry Cleaner Certification in Ontario	Information on technical developments in P2; literature search core business of C2P2 is the CPPIC, Canadian Pollution Prevention Information Clearinghouse, working with Environment Canada; launched in 1998, is a comprehensive Internet database, continuing updates; C2P2 researches, reviews, abstracts, references, conferences, news, that are relevant to Canadians and valuable in encouraging the adoption of P2.
CANADIAN ENERGY EFFICIENCY CENTRE	The structure has connections to the Canadian Energy Efficiency Alliance, which has a membership-type structure. For the Alliance, there are corporate members, corporate allies, and corporate leaders, with fees of $1500, $7500 and $15,000. At present, the Canadian Energy Efficiency Centre is a Virtual Centre, with a full time director, housed within the consulting offices of Lourie Love. However, there are plans for moving to a physical centre as soon as possible. The Energy Efficiency Centre's startup funding was from Enbridge and OPG, each contributing $100,000; business plan is based on a series of market requirements; the mission is "to be the first place in Canada that organizations turn to for information or assistance regarding energy efficiency." Looking for a partnership with synergistic organizations, e.g. Kortwright Centre, Living Cities Initiative	Enbridge, Ontario Power Generation, MEST and MOE(Govt. of Ont), 40 members	Canadian Energy Efficiency Directory On-line; Networking Hub for Energy Efficiency, On-line Training Resources, Resource Centre; plan extensive use of interactive web site with large volume of content; main content will be resources in various categories, also news and events, directories, product catalogues	no stated goals to work internationally at this time	interactive web site, developed so that Centre staff can readily add material; communications planning and execution from external consultant.	have $200,000 start up funding from Enbridge and OPG., want to raise $5 million to have a physical centre; Canadian Energy Efficiency Alliance provides in-kind support and connection to its members; membership fees apply for Canadian Energy Efficiency Alliance.	prepared to do "ad hoc policy and advocacy papers"; recently completed National Report Card on Energy Efficiency, a report card on energy efficiency activities, not including transportation	Energy efficiency training - first course has taken place, and is now offered nationally to attain status of CEM Certified Energy Manager; educational activities in energy efficiency for professionals, distribution of publications Cdn Energy Alliance issues certificate for Certified Energy Manager	Clearinghouse function is a main focus of the Centre; comprehensive, non-biased information on energy efficient building technology, document and put on-line GHG reduction case studies; facilitate the introduction and transfer of advanced technologies and management practices from abroad through joint ventures and foreign investment;
CANADIAN ENERGY RESEARCH INSTITUTE	independent, non-profit research institute; founded in 1975; Board of Directors represent the sponsor organizations; staff of specialists; advisory committee; build bridges between scholarship and policy, bringing the insights of scientific research, economic analysis, and practical experience to the attention of government policy-makers, business sector decision-makers, the media, and citizens in Canada and abroad.	sponsored by eleven parties: the Alberta Department of Energy; the Alberta Energy and Utilities Board; the B.C. Ministry of Employment and Investment; Environment Canada; Indian and Northern Development Canada; Industry Canada; Natural Resources Canada; the Northwest Territoties department of Resources, Wildlife & Economic Development; Nova Scotia Department of Natural Resources; the Ontario Ministry of Energy, Science and Technology; the Private Energy Research Association (comprised of over 140 corporate members from the energy production, transportation, marketing, distributing and consuming industries in Canada and abroad and from the financial community); the University of Calgary	enegry technology initiative, focused on climate change; sustainable transportation workshop; conduct studies to assist industry and government parties in finding solutions to energy problems and in formulating practical energy policies; development of expertise in the analysis of a range of energy issues	international research program: historical assessment and outlook for the oil industry of the FSU; economic and environmental considerations in power sector development in India; integration of mexico into the continental North American natural gas market; 3-volume study on the petroleum industry in latin America; executing agency for a five-year, CIDA-financed institutional strengthening program between Canada and the Government of Columbia.	regularly publish and distribute research reports and studies (e.g. World Energy market Analysis Report); hold seminars, conferences (e.g. Climate Change) , briefings, workshops (e.g. held the Alberta Offset Development Workshop); broadcast media	sponsored by eleven Canadian parties; international associate sponsors provide further financial support	analysis of energy economics and policy issues in the producing, transportation, and consuming sectors		research program focused on environmental issues which impact the energy sector.
CENTRE FOR DEVELOPMENT AND ENVIRONMENT (CDE)	CDE is a department of the Institute of Geography at the University of Berne; has board of directors with 6 departments (university functions, support services, global networks, regional programmes and projects, East Africa Programmes and Environmental Mandates) ; has 4 Co-directors, 20 programme staff; 14 special services; and 9 programme associates	within the framework of its global initiatives, CDE maintains networks with institutions and individuals in over 50 countries in the North and the South	research collaboration and networks; education and capacity-building; development of concepts and tools; information and documentation; training, awareness creation / sensitisation; development support services / consulting.active in regional, national and international programmes.		internet, publications / media, papers, maps, CD-ROMs, research papers, seminars, courses	It is financially self-supporting and does not engage in fund-raising. Its operating expenses are covered by the fees it receives for the work it performs. Management and expertise are supplied in part by academic staff from the university, which also provides infrastructural support in return for CDE's university functions in training and supervision.			

TABLE 8

SUMMARY OF EXISTING ORGANIZATIONS

NAME OF EXISTING ORGANIZATION	*STRUCTURE OF CENTRE*	*PARTNERS*	*PROGRAMS / SERVICES*	*INTERNATIONAL EXPERTISE*	*MARKETING / DELIVERY MECHANISMS*	*FUNDRAISING / REVENUE SOURCES*	*PUBLIC POLICY*	*TRAINING/ CERTIFICATION*	*RESEARCH CENTRE/ CLEARINGHOUSE*
DAVID SUZUKI FOUNDATION	mix of paid staff members (e.g. Director of Development), voluteers and Board members; federally registered Canadian charity, incorporated in 1990 following Suzuki's radio series, "It's a Matter of Survival"; one main office in Vancouver, and a small satellite office in Prince Rupert; board of directors (8) are experienced in the main project areas; David Suzuki is Chair of the Foundation Board; about 24,000 members; the foundation employs over thirty staff - President, Executive Director, Directors (5): i. Finance, ii. Communications, iii. Development, iv. Climate Change Project, v. Pacific Salmon Forests Project, Administrative Staff (7), Communications (5), Climate Change Project (3), Pacific Salmon Forests Projects (10); in 1995, hired a Volunteer Coordinator - rely on voluntary contributions to sustain the organisation; employ specialists to work for a short time on specific projects; define and communicate ways to achieve a balance between social, economic, and ecological needs; study the causes of, and alterntaives to, environmental threats; inform the public	a membership list of about 24,000	The foundation focuses on two major campaigns - Climate Change and the Pacific Salmon Forests Project. Climate Change is a campaign to educate the public as well as government and business leaders about the strategies for reducing global warming caused by human activities. Pacific Salmon Forests is a project that works toward a broad, economically and ecologically sound vision of Canada's northwest coast that conserves the coastal temperate rainforest. Other active programs include natural resource use in British Columbia: Fisheries, Canadian Rainforests and Salmon Aquaculture.	Yes, projects included working with the Kayapo people of the Lower Amazon, the Ainu of Japan, and with OREWA in Columbia; as well, commissioned reports on a dam research project in Australia, and worked with indigenous peoples of the Amazon at the Rio Summit of 1992.	public appearances by David Suzuki and Foundation Staff; a newsletter is mailed to members three times a year; members and the staff of the foundation communicate through publications (newsletters, scientific studies, research reports, books, information kits), advertisements, news releases, community events, and the website;	The David Suzuki Foundation accepts no funding from any government. Instead, the Foundation is funded by one time, or on-going, monthly, donations from members, and by grants from other charitable foundations. In addition, the Foundation raises additional funds through the sale of some books, T shirts and tapes.	urge decision makers to adopt policies which encourage and guide individuals and businesses, so their daily decisions reflect the need to act within nature's constraints	N / A	N / A
ENVIRONMENTAL CONCERN INC.	a nonprofit, non-advocacy corporation; President, and VP; 7 departments under VP, each with a director and their own staff	They are run independantly, no partners; founded by Dr. Edgar Garbisch	Consulting Department's -site assessment for wetland mitigation & restoration projects, habitat evaluations, wetland delineation, enhancement, and creation of wetlands. Construction Department- construction of wetlands, ponds, shoreline bank erosion control projects, as well as in native species landscaping, and control of invasive plants.The Education Department provides training for educators and wetland professionals locally and nationally. Research Department-practical horticulture. Research objectives- gain knowledge to better designed and successfully constructed wetlands, to assist wetland nurseries in the successful and economical propagation of wetland plant species. Nursery Department grows native wetland plant species for wholesale / retail distribution, produces many publications		Conduct courses, workshops in area of client Act as consulting firm and work in area of project	Consulting- has government and private clients User fees for courses Sell memberships (annually) Sell publications (from $17.00 to $65.00 US) Nursery Sales Workshop Fees include the following as applicable: * One day workshop $400 * Half day workshop $250 * Two hour workshop $200 * Travel $20.00 / hour * Mileage $0.32 / mile * Airfare Actual cost * Tolls, parking Actual cost * Lodging Actual cost * Meals ($45 / day max) Actual cost * Shipping, misc. Actual cost			
GLOBAL WATER PARTNERSHIP	international partnership among organizations interested in sustainable water resources development - "*support countries in the sustainable management of their water resources*"; voluntary membership; the highest decision-making body of GWP is the Consultative Group (CG). It consists of the representatives of all the GWP members of the Partnership and is the highest policy-making body of the network. The CG meets annually and the GWP Chair (elected by the members of the Partnership), presides over the meetings. Decisions in the CG are taken by consensus and guide the overall development of GWP; the executive secretary is guided by a steering committee, which advises the CG on key policy matters while making decisions on operational issues ; technical advisory committee (12 professionals and scientists) provides professional and scientific advice to the CG and safeguards the technical quality of GWP; GWP network is divided into several regions of the world, each with its own regional TAC. .	The Partners of GWP are the organisations, institutions and agencies interested in sustainable management of water resources who are in a position to contribute to, or use, the services of GWP´s field programmes; partners may be governments, intergovernmental organizations, including professional, academic, commercial and industrial bodies; partnership is voluntary;	support action at local, national, regional or river-basin level that follows principles of sustainable water resources management; water and sanitation, irrigation and drainage - each includes accociated programmes which are intended to have a "catalytic" effect on investment		collaboration with governments and existing networks; encourage governments, aid agencies and other stakeholders to adopt policies and programmes; build mechanisms for sharing informtion and experiences	All GWP core and programme costs are financed through the Partnership´s Financial Support Group (FSG). The FSG consists of all those institutions that finance the Partnership, including not only donor agencies from industrialised countries, but also contributing agencies from developing countries as well as the private sector.			online publications and newsletters

TABLE 8

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GREAT LAKES INFORMATION NETWORK (GLIN)	managed by the Great Lakes Commission, a nonpartisan, eight-state compact agency; as the only Great Lakes organization with a statutory mandate to represent the collective views of the eight Great Lakes states, the Commission was uniquely suited to spearhead the GLIN initiative; The Great Lakes Information Network (GLIN) is a Great Lakes Commission-led collaborative project of agencies and organizations in the binational Great Lakes region to link data, information and people via the Internet; GLIN Adisory Board oversees GLIN content development, promotes GLIN partnership and use at regional meetings and conferences, and recommends long-term goals for the project Chair, Vice-chair and members (one rep from every organization involved whether gov't, industry, research...)	financial backing and substantial in-kind contributions have come from the following: Ameritech Foundation U.S. Department of Commerce, National Telecommunications and Information Administration U.S. Environmental Protection Agency-Great Lakes National Program Office U.S. Army Corps of Engineers, Detroit District Environment Canada U.S. Geological Survey, Federal Geographic Data Committee Great Lakes Protection Fund Council of Great Lakes Governors regional partners, representing all levels of government, academia, business, industry and the nonprofit sector	online information relating to the binational Great Lakes-St. Lawrence region of North America, offers data and information about the region's environment, economy, tourism, education, maps and GIS and more To provide a quick and easy gateway to the Great Lakes region of North America. GLIN guides users to the highest quality data holdings from partner agencies throughout the region. Topics include environment, economy, tourism, education, history, demographics and more. To enhance communication and networking by hosting regional workshops and training seminars, in addition to more than 70 moderated, topic-specific email lists—all free to anyone with an email account. To develop, test and share new technical and decision-support tools with partner agencies.		Internet; communication; E-mail Lists; newsgroups; newsletters; images; photo galleries; Webcams; news; Daily News; funding and grants; glin-announce Archive; Great Lakes Calendar; jobs and careers; media sources; references; laws and policy; weather and climate	GLIN development and maintenance services are provided by the Great Lakes Commission; technical support and connectivity is provided by Merit Network, Inc.; additional funding from in-kind contributions			
INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES (ICLEI)	an association of local governments dedicated to the prevention and solution of local, regional, and global environmental problems through local action; each local government Member holds a position on the Council; the Members of the Council establish the strategic plan; every two years the Council elects 15 representatives to serve on the ICLEI Executive Committee, with an additional 6 positions appointed by the International Union of Local Authorities; the executive committee oversees the implementation of the strategic plan and ICLEI operations; ICLEI's affairs are carried out through affiliated not-for-profit companies nationally incorporated in Canada, the United States of America, Australia, and Germany, as well as through a partner organization in Japan	formed in 1990 under the sponsorship of the United Nations Environment Program, the International Union of Local Authorities (IULA), and the Center for Innovative Diplomacy; ICLEI maintains a Memorandum of Understanding with IULA; has official consultative status with the UN, through which it advocates the interests of local government before international bodies; ICLEI is a democratic, membership organization of local governments and associations; more than 360 cities, towns, countries, and their associations from around the world are Members of the Council; the organization focuses on building and supporting a worldwide movement of local governments to achieve tangible improvements in global environmental conditions through cumulative impact of local governments;	The Council's strategic objectives are achieved through ICLEI's international campaigns - the *Cities for Climate Protection Campaign* , the *Local Agenda 21 Initiative* (ICLEI works with more than 1,800 local governments to develop and test sustainable planning and to implement specific pilot projects), and the *Water Campaign (sustainable use of freshwater resources)* . In addition, ICLEI provides technical assistance and training programs focusing on issues such as financing and implementing energy-efficiency measures in buildings, reducing greenhouse gas emissions through waste management programs and land-use planning, strategies and programs to reduce emissions in the transportation sector, environmental budgeting, environmental assessment, sustainable transport, eco-procurement, reduction of ground level ozone, and management of green spaces; international training programs; professional exchange; conferences and workshops; research projects; technical support; recognition of good practice	initiate and implement campaigns to generate political awareness, and recruit local governments to make formal action commitments to the priority issues identified by ICEL's Members; build the capacity of local governments through the provision of information and training; over the past two years more than 5,500 representatives from 48 countries have participated in ICLEI conferences, seminars, and workshops.	facilitated membership interaction - worldwide network of local government representatives meet at workshops, seminars, and conferences; electronic conferences on the website; participation in international campaigns, international and regional projects, meetings, and UN events, e.g. Conference of Parties, Commission on Sustainable Development; ICLEI Members have exclusive access to all ICLEI publications electronically; diverse publications, fact sheets, videos, speakers, interactive website; environmental management toolkits; newsletter and case study series; policy and practice manuals;	ICLEI is funded in part by membership fees (11%); the hosts of ICLEI's offices have provided support in the form of grants, staff secondments, office space, and other in-kind support (4%); other funding comes from fee for service contracts and project grants: municipal governments (11%), private foundations and associations (24%), national governments, the European Union, United Nations agencies and other international institutions, provincial / state and local governments (44%), and the private sector (6%); ICLIE is often made aware of funding opportunities; funders are directed to Members, and Members to funders, where there is a match.	provides policy guidance and consultancy services to increase local governments' capacity to address global challenges.	ICLEI's training mission is to exchange and help build the know-how of local government officials in their capacities as policy makers and managers for environmental sustainability. ICLEI's International Training Centre (ITC) provides training services to local governments, especially ICLEI Members. The ITC provides training and education programs, organizes international conferences, seminars and workshops, and offers distance training, study tours, and exchange programs.	ICLEI's serves as an information clearinghouse on sustainable development; interactive website (search engine using topics and keywords, searchable electronic databases, web conferencing system, maps, emissions calculator, energy fact sheets, guest book, feedback form, technical support, information exchange and referral, database of direct links to specialized search engines and web sites); document library: newsletter, online case study series and project summaries worldwide; policy and practice manuals, technical manuals, management guides, publications, e.g. Local Environment journal; access to professionals and elected officials with proven solutions to specific problems; environment management tools; conferences and workshops;
INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION (ILEC)	approved as a nonprofit, non-governmental foundation by the Environment Agency and the Ministry of Foreign Affairs of the Japanese Government in accordance with the Civil Law; Board of Directors (11 members), the chairperson is also the president of the ILEC Foundation. There are councilors (9) and Auditors (2). Under the Board of directors and Auditors is the ILEC Foundation (consisting of President, VP, Executive Director and Secretary General). Reporting to the Foundation is the Scientific Committee (ILEC) (4) and the Secretariat (consisting of secretary general, deputy secretary general, general affairs division, support and training division, and research division)	Japan Gov'ts Environmental Information Center (a Japanese NGO) United Nations University, Lake Biwa Research Institute, Global Environment Center (Japanese NGO to support the UNEP International Environment Center) UNEP International Environmental Technology Centre, APEC Virtual Center, EMECS: International Center for the Environmental Management of Enclosed Coastal Seas, Japan Society for Water Environment, United Nations Environment Programme (UNEP), Japan International Cooperation Agency (JICA), Overseas Economic Cooperation Fund Canadian International Development Agency (CIDA) , GTZ, SIDA, US Agency for International Development (USAID)	a) To collect and provide information of the environments and mgt of lakes; b) To promote research on the environmental management of lakes; c) To support developing countries for environmentally sound development planning of lake resources; d) To organize training on the environment and managemental of lakes: e) To support the United Nations Environment Programme for its activities that contribute to the lake environment conservation in developing countries; f) To promote interchange with governmental agencies, local organizations and research institutes engaged in intern'l cooperation for conservation of lake environments.		organize world lake conference annually; work with schools in different countries developing courses for students and teachers; issue periodicals, journals and newletters; created lake database	Basically have 3 accounts: 1) General Account for ILEC Foundation's original activities; 2) Special Account for the UNEP Centre for management of the premises; 3) Special Account for Cooperation with UNEP / IETC for programs and projects that contribute to the activities of UNEP / IETC. Sell publications, courses, educational programs for schools, subsidies, loans, projects, membership fees, external funding and donations			

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INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IISD)	Board of Directors provide ongoing support and guidance, determine and monitor the institute's programs and services.	advisory participants - Manitoba Conservation, Province of Manitoba, CIDA, Environment Canada, IDRC	Reporting Services; Measurement and Indicators - develop sets of indicators for decision makers to measure progress toward sustainable development; Knowledge Communications program - focuses its work on delivering IIDS's knowledge, and that of its partners, by using the Internet; the program manages and develops material for three Web sites: IISDnet, featuring research from the Institutes programs; SD Gateway, the knowledge developed by a group of seven non governmental organizations; Linkages, through its reporting services, IISD's coverage of international negotiations; Trade and Sustainable Development; Great Plains program - encourage more sustainable forms of agriculture and other natural resource use; Community Adaptation and Sustainable Livelihoods; Solutions for Business	N / A	internal staff make presentations to, and host workshops for, organizations, government departments and universities	IISD receives funding from public & private sources; began in 1990 with a total annual commitment of $5 million for its first 5 yrs from Cdn public sector, through CIDA, Env Can & the Gov't of Manitoba; annual core funding was reduced by $2 M in 1995, IISD has secured support from other national gov'ts, international agencies, & non-governmental institutions, foundations, private sector: Governments and agencies, Canada (55%), e.g. CIDA, DFAIT, Env Can; Gov'ts and agencies, International (27%), UN agencies (6%) e.g. UNEP, UNDP; International organizations (3%) e.g. World Bank, OECD; Foundations (6%); Private sector and other (3%) e.g. Cowater International Inc, Harvard University; revenue from about sixty sources now totals about $10 million, with some $3 million from sources outside Canada.	policy research and recommendations on international trade and investment, economic instruments, climate change, measurements and indicators, and sustainable development.	N / A	Internet-based networks and linkages with similar institutions worldwide on trade, climate change and general information on sustainable development; on-line reporting service for conferences, workshops, symposia, and continuing negotiations on environment and sustainable development within the United Nations; use Internet communications to cover and report on international negotiations and broker knowledge gained through collaborative projects with global partners; electronic publications; electronic mailing list for the international climate change policy community. Also see programs.
INTERNATIONAL WATER MANAGEMENT INSTITUTE (IWRI)	scientific research organization founded in 1983; member of the Consultative Group on International Agricultural Research (CGIAR) and is the group's lead center in water resource issues; dedicated to studying the issues of sustainable and productive use of water resources, particularly as they relate to agriculture, water scarcity and food security in the developing world; team of scientists and researchers from several disciplines cooperate on common projects; IWMI headquarters is in Sri Lanka. It has offices in Pakistan and Nepal, and scientists based in South Africa, West Africa, Kenya and Mexico. Non-resident research is underway in Turkey and Iran.	Yes, works with partners to develop tools and methods to help developing countries; IWMI works with a variety of partners in the developing countries, including: national policy-makers, government agencies, irrigation managers, scientists and researchers, farmers, local communities and non-governmental organizations. It also collaborates with international development agencies and scientific research groups.	focus on the use of water in agriculture and on the needs of developing countries; research focuses on four areas: policy and institutional issues that will help governments better manage their water resources; research into health and environmental aspects of water use in agriculture; application of information technology tools and modeling systems to bring a new view to water management; and research into a broad range of irrigation and water resources questions.	dozens of research and development projects in Asia, Africa, the Middle East and Latin America: India, Pakistan, Sri Lanka (e.g.Malaria reduction through water management), Mexico (e.g.improved access to water for poor men and women), the Philippines, Iran, Vietnam, China (e.g. Water savings in rice irrigation), and Africa (e.g. Water accounting for better resource planning); identify the larger issues related to water management and food security; help developing countries build their research capacities; clarify the link between poverty and access to water; develop, test and promote management practices and tools.		IWMI's research is donor supported. It receives funding from the governments of industrialized nations and international development organizations.	strategic research that support governments' policy decision on water scarcity / food security in poor countries		report series; publish books, journals, workshop proceedings, newsletters, and other kinds of informational literature; some of these are currently available on-line (newsletters and annual reports), others can be ordered using the publication catalogue provided.
ONEWORLD	2 companies- a foundation and an incorpated non-profit. Foundation is a charitable company that has no shares: it is controlled by 'members' rather than by shareholders, and is governed in accordance with a Constitution. OneWorld International Foundation wholly-owns OneWorld International Ltd. The latter is a not-for-profit company, which covenants back to the Foundation any balance it makes. / Foundation Board of Trustees, on the principle of one centre, one trustee; OWBT would be invited to have a Trustee on the Board of the Foundation - just as a Director of OneWorld International would be invited to be on the Board of OWBT; owned and governed by not-for-profit entities; each of the centres in the network houses a partnership manager who administers partners in the centre's locality.	Have thousands of partners from hundreds of countries	radio programs with special features, news, weekly bulletins, TV channels on line, reports and factsheets on line, on-line shopping (books, cards, magazines, music…), campaigns, job postings		internet , on line radio, TV	on-line shopping, user fees for radio, TV programs, partnership fees, charitable donations (British Telecom Community Partnership Programme, European Commission, Ford Foundation, HIVOS, Netherlands Ministry of Foreign Affairs; Directorate General for International Co-operation, The Rockefeller Foundation, UK, Department for International Development, UK National Lottery) and OneWorld has strategic alliances and memoranda of understanding with: Association for Progressive Communication; Association mondiale des radiodiffuseurs communautaires; HIVOS; The United Nations Development Programme; The United Nations Development Programme			

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ONTARIO CENTRE FOR ENVIRONMENTAL TECHNOLOGY ADVANCEMENT (OCETA)	responsible to a volunteer Board of Directors; President & CEO responsible for operations; staff of 20; three offices in Ontario, ETV Canada Inc. and OCETA Technologies Inc. are subsidiaries; owned by its "Members"	Federal, Provincial and Municipal partner group - major participation by Environment Canada, Industry Canada; also, Regional Municipality of Waterloo, City of Toronto, Toronto Economic Development Corp., Greater Hamilton Technology Enterprise Centre, Ontario Ministry of the Environment	SME Clients - comprehensive advisory services for commercialization of new technologies; Eco-Efficiency Innovation - facility audits at SME manufacturing plants identifying energy and water savings; Sustainable Development Program - energy efficiency and pollution prevention, specifically for the needs of Canada's Technology Triangle (CTT) and City of Toronto; Environmental Technology Verification; Ontario Waste Materials Exchange; Environmental Technology & Business Profiles; about Remediation - an online site remediation directory. Also see International Programs.	major international programs completed and in progress; international technology transfer programs on ETV for China, Indonesia and Bangladesh; technology transfer programs on Waste Exchange and EcoEfficiency to Vietnam and China; Bangladesh program on Arsenic Mitigation Technologies interacting with many stakeholders in a 4 year program.	program deliverables provided by work of internal staff, including new hires for new programs; market opportunities in person, send notices via postal mail and e-mail directly to current and potential supporters, clients, etc., Web site, workshops, promotional materials.	contract delivery for public and private sector; funding from Environment Canada for services to SMEs provides a base (20%) of revenue. In kind support from GHTEC, CITE; contract funding comes from municipalities, cities, federal government, provincial government, private sector market analysis, business planning, and brokerage for fund raising.	Yes, OCETA provides advisory input to public policy making under both voluntary and contractual arrangements.	occasional workshops delivered relating to various programs Environmental Technology Verification, delivered under license from Environment Canada; verification of performance claims of environmental technology	no direct technical research; extensive review activity, and assistance with government funding, on behalf of clients; project liason with universities on behalf of ESTAC, a funding organization; MOU with CRESTech, an Ontario Centre of Excellence Ontario Waste Exchange and aboutRemediation are information clearinghouses; formerly managed SIE, an information clearinghouse for environmental technologies in NAFTA; website, e-mail lists and newsgroups, newsletter and Technology Profile Program, all of which are means of information communication.
ONTARIO COLLEGE APPLICATION SERVICES (OCAS)	OCAS is an operating division of the Association of Colleges of Applied Arts and Technology of Ontario (ACAATO); OCAS is directed by a Management Board (8); OCAS has an Executive Director, with three departments under it, and each of these departments have their own sections; employs fifty-three full-time staff; thirty part-time staff	Technology Partners:Cognos; Sun microsystems; Symant; Netscape; Sybase; Dell	Application and acceptance processing International transcript evaluation Software development and training Statistical reporting Publications provides administrative systems and application processing services for Ontario's 25 Colleges of Applied Arts and Technology, three Agricultural Colleges and The Michener Institute for Applied Health Sciences.		Internet, schools	ACAATO is financed by all colleges on a voluntary basis, with dues assessed according to enrolment; the association's structure and priorities are currently under review to enable ACAATO to address changing college needs.			
ONTARIO UNIVERSITIES' APPLICATION CENTRE (OUAC)	OUAC is one part of the Council of Ontario Universities; founded in 1971 by the Committee of Presidents of the Universities of Ontario (now called the Council of Ontario Universities) and the Ontario Universities' Council on Admissions, the activities of the OUAC are monitored by an 18-member Advisory Board; board is appointed by, and reports to, the Council of Ontario Universities and is responsible for overseeing the operations and management of the OUAC; board includes representation from each of its user groups and is chaired by a university president; just over 100 part-time, hourly staff during its peak processing cycle and 35 full-time employees	universities	key function is the processing of applications for admission to the province's 17 universities and the Ontario College of Art & Design		Internet; schools	annual operating budget of just over $5 million is derived primarily from application fees; about two-thirds of the fees collected from undergraduate applicants is transferred to the universities in support of their admissions services; the OUAC transfers a total of just over $8 million to the universities for this purpose; special project and research services provided by the OUAC generate about $500,000 per year			
PEMBINA INSTITUTE FOR APPROPRIATE DEVELOPMENT	an active, volunteer Board of Directors governs the Institute; full-time, executive director; main program areas have a director and core staff in place; also, as required, frequently draw on experts from a network of academic and private sector consultants to supplement core staff on specific projects	N / A	Climate Change Program - advocacy; policy research & analysis; consulting services; public education, outreach; Eco-Efficient Technologies Program - focus on alternative energy technologies, mgt practices; Energy Watch Program - informing public discourse; public participation; Environmental Education Program - multi-media education package; Corporate Eco-efficiency Services - provide R&D to private sector corp, gov't agencies, First nations, interest groups, NGOs; corporate climate change policy & action plans; environmental & sustainable development, education, training; public policy analysis and design; public consultation; research & briefing reports; speaking & presentations; sustainable business strategic planning; workshop facilitation & documentation; Environmental Information Services - production of policy & research documents, technical manuals, guides, education resources to enhance public awareness, articles for use in other publications, information and promotion pieces	N / A	speaking engagements and workshops delivered by internal staff, senior personnel to government, private corporations or industry associations, in which practical tools and strategic advice on improving corporate environmental performance is shared; education and training engagements in the area of, e.g. greenhouse gas action planning, measurement and reporting; technical conferences; exchanges with selected other organizations; quarterly newsletter; use e-mail and the Internet for publication and other announcements; offer electronic access to documents; collaborate with other organizations to publish documents such as conference and workshop proceedings; prepare detailed policy and technical materials for clients, as part of consulting services	provide consulting, contract research and project development services on a client-confidential basis to private sector corporations and government agencies, e.g. Government of Canada's Climate Change Action Fund, Natural Resources Canada's Office of Energy efficiency, Ontario Power Generation, Golder Associates; charitable donations help raise funds for education activities	Yes, policy recommendations are grounded in research and analysis, and are supported by extensive information networks; e.g. Policy Research, Climate Change Program - highlighted how Canada is moving to renewable energy technologies; collaborated with others in designing a Canadian early Emission Reduction Program to encourage action on climate change	Yes, has developed and delivered many customized employee training programs and support materials for the federal government, provincial agencies and energy companies; past work on areas of environmental citizenship and sustainable development awareness, awareness and implementation of environmental management systems, environmental performance indicators, life-cycle value assessment, personal and corporate climate change action; teacher seminars and workshops;offered professional development opportunities on a wide range of relevant environmental topics; distribution of educational materials	Yes, electronic searchable database of municipal success stories with practical, usable examples of eco-efficiency projects; promotes its products and services in print and electronic form through the use of news releases, quarterly newsletter; exchanges with selected orgs; publications; website of interactive tools, resources and success stories; free downloadable reports from the website; a range of publications: Encompass magazine, annual report, policy, research, education and technical materials; media coverage in press; educational materials are available for loan to community residents; answer calls about current environmental issues; compile and maintain up-to date information; Life-Cycle Value Assessment (LCVA) Clearinghouse - subscription service features a body of data-sets for generic LCVA use, methodology guidance, user forms and templates, current research and sources for life-cycle assessment

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POLLUTION PROBE	partnership-building organization; started as a small group of UofT students in 1969; has grown into a national organization with more than 25,000 supporters	engage government agencies, private businesses and other non-profit organizations	N / A	N / A	bring together leading scientific researchers and policy thinkers in government, industry, and environment and health groups in workshops, conferences and other forums; pollution probe uses these forums to get the information needed to public reports and other resource documents that all stakeholders can use to promote progressive policies and programmes	donar-based organization (draw upon the financial support of a broad spectrum of individuals)	Yes, informing and influencing responsible environmental policy development by governments and corporations is a major outcome of their research and education mandate; manage environmental policy development projects, e.g. improving environmental standards, voluntary initiatives, risk assessment , public disclosure of environmental information	policy development regarding the improvement of environmental standards	library of publications
SIERRA LEGAL DEFENCE FUND (SLDF)	independent, Canadian charitable organization incorporated in 1990; provides free legal services to, and works co-operatively with, other environmental conservation groups and citizens across Canada; specializes in environmental litigation and aims to enhance public access to the legal system, set important legal precedents that will stregthen existing laws, and provide professional advice on the development of environmental legislation; board of directors (17); executive director; lawyers, scientists, administration, litigation support; over fifty staff occupying three separate offices: Vancouver, B.C. head office handles centralized major administration, member services, communications, and fundraising functions; distribution of labour - litigation (39%), legal projects (22%), administration (13%), fundraising (11%), communications (6%), member services (2%), public education (1%), other (6%).	SLDF is a separate organization from the Sierra Club, although it enjoys a strong, mutually supportive relationship with this group; SLDF maintains an informal, collegial connection with its sister organization in the U.S. - Earthjustice Legal Defence Fund (formerly the Sierra Club Legal Defence Fund); supporters: senior partners, partners, advocates, associates, defenders club, foundations and trusts	1) strategic counsel and litigation - SLDF's lawyers have brought cases on behalf of clients on a variety of issues: forestry (44%), toxins (21%), public participation (12%), water pollution (8%), mining, oil and gas (5%), endangered species habitat protection (3%), other (7%), e.g. won the right for a coalition of three national and international organizations to participate at *Ontario's Walkerton inquiry* to address systemic problems facing municipal water supplies, 2) scientific analysis and research	N / A	in-depth research reports, available free of chanrge to the public; media releases; updates on the website	SLDF is funded *primarily* through foundation grants (50%) and donations (41%). It has over 20,000 individual supporters across Canada.	N / A	N / A	N / A
UNITED NATION ENVIRONMENT PROGRAMME (UNEP)	The Governing Council was established in accordance with General Assembly Resolution 2997 (XXVII) (Institutional and financial arrangements for international environmental co-operation) of 15 December 1975. Governing Council reports to the General Assembly through the Economic and Social Council. / Executive Director - the following report to the executive director: deputy director, secretariat for governing voices, evaluation and oversight, spokesman, communications and public information; the following report to the deputy executive director: GEF coordination, programme coordination and management, and all department heeds.	UNEP's approach to environmental management revolves around the creation of effective partnerships. Combines the values and interests of governments with the strengths of UN agencies, IGOs, NGOs and the private sector. UNEP promotes partnerships by demonstrating what makes sustainable development happen	environmental monitoring, assessment, information and research including early warning; enhanced coordination of environmental conventions and development of environment policy instruments; freshwater; technology transfer and industry; and support to Africa.		internet, training, media room, library, information services, publications, networks, audio visual services, information clearing houses, environmental links, environmental education and training opportunities	The resources available to UNEP for the administration and implementation of its programme come from four distinct sources:REGULAR BUDGETS OF THE UNITED NATIONS This is the budget for the core activities of the United Nations, which is funded by the United Nations members from assessed contributions, ENVIRONMENT FUND- voluntary fund established to provide additional financing for environmental programmes under UNEP, TRUST FUNDS- extra-budgetary resources whose programmes are agreed and negotiated between UNEP and the donor (or several donors) and form separate accounts, COUNTERPART CONTRIBUTIONS- extra-budgetary resources which provide additional resources to the UNEP programme of work or the programme of work of trust funds administered by UNEP			

TABLE 8

SUMMARY OF EXISTING ORGANIZATIONS

NAME OF EXISTING ORGANIZATION	*STRUCTURE OF CENTRE*	*PARTNERS*	*PROGRAMS / SERVICES*	*INTERNATIONAL EXPERTISE*	*MARKETING / DELIVERY MECHANISMS*	*FUNDRAISING / REVENUE SOURCES*	*PUBLIC POLICY*	*TRAINING/ CERTIFICATION*	*RESEARCH CENTRE/ CLEARINGHOUSE*
UNITED NATIONS UNIVERSITY (INTERNATIONAL NETWORK ON WATER, ENVIRONMENT AND HEALTH) (UNU/INEWEH)	not for profit neutral partner, without vested commercial or national interest, operating within the family of United Nations Organizations; the Council of the UNU is the governing board of the University and is composed of 24 members who are appointed by the Secretary-General of the United Nations and the Director-General of UNESCO; members serve in their individual capacity for six-year terms; the Rector of the UNU is the chief academic and administrative officer of the University and is a member of the Council; the University shall consist of: Council; Rector; University Centre to assist the Rector; the research and training centres and programmes; each research and training centre or programme shall be under the authority of a director; the directors shall collaborate with the Rector, in particular in order to ensure the co-ordination of programmes of research and training.	It has close working partnerships with Canadian government agencies, particularly Environment Canada's National Water Research Institute, with several Canadian universities, and with other UN bodies, particularly the UN Development Programme, which helps with project implementation, fund raising and government liaison in developing countries. About 120 experts from 50 institutional partners, including agencies from six national governments, private sector corporations, Canadian provincial and municipal agencies, NGOs and professional associations, have been engaged in project activities. Formal cooperation agreements have been signed with over 20 institutions.	1) educate and train, 2) measure and understand aquatic systems, 3) legislate, regulate and achieve compliance, and 4) provide appropriate, affordable water infrastructure, services and products			voluntary contributions ,income derived by Government, United Nations, the specialized agencies or the International Atomic Energy Agency; and By non-governmental sources, including foundations, universities and individuals;The UNU budget for the current biennium (2000-2001) stands at US$72 million. Currently, pledges to the Endowment Fund, operating and specific programme contributions made by 56 governments and 159 other benefactors totaled some US$350 million. Government of Canada provided $4.2 million over a 4-year start-up ending March 31, 2001 for UNU/INWEH . As of July 2000, INWEH has commenced or completed 19 capacity-development or research projects involving 17 countries and $3.0 million in revenue and counterpart funding, while another 8 projects have been planned or approved in principle.			
WATERFRONT REGENERATION TRUST	independent, entrepreneurial not for profit organization; executive leader; staff have backgrounds in municipal government; officially established in 1992 as an outgrowth of the Royal Commission on the Future of the Toronto Waterfront; leader in the redevelopment of brownfields in the Toronto region - seen as vehicle to develop greenway along northern shore of Ontario; the Trust can act as facilitator, mediator, or technical consultant;		cleanup and reuse of contaminated properties; ecosystem planning -completed over 80 projects along the shore of lake Ontario over a five year period by "applying an ecosystem approach and by bringing people, ideas and resources together to invest in waterfront revitalization." e.g. the Trust is helping build consensus around Toronto's bid for the 2008 Summer Olympics	international waterfront gateway strategy for Buffalo, NY and Fort Erie, Ontario	host major symposiums; publications and technical work planning reports - major report on green infrastructure; business models that can be applied to large urban areas; investor roundtables; ecological literacy; speaking engagements; newsletter with a circulation of 12,000; connection with universities in Ontario	Provincial government, municipalities, conservation authorities, service clubs, and the private sector	prominent policy role of advising the provincial government regarding necessary guidance for the environmental cleanup of contaminated properties; work closely with MOE and other stakeholders to develop guidance for municipalities to integrate the cleanup criteria into their local land use planning and zonning processes		resource centre; newsletter
WORLD HEALTH ORGANIZATION COLLABORATING CENTER	Collaborating Center								
WORLDWATCH INSTITUTE	Environmental research organization in Washington, D.C.; its mission is to foster a sustainable society in which human needs are met in ways that do not threaten the health of the natural environment or future generations; to this end, the Institute conducts interdisciplinary research on emerging global issues, the results of which are published and disseminated to decision makers and the media; officers of the Institute include a President and four Vice Presidents, and a Treasurer; Board of Directors is from U.S. and 2 other countries; staff of about 30; many contributing researchers, a variety of origins.	many private foundations, including the Compton Foundation, Geraldine R Dodge Foundation, the Ford Fdn., ...Turner Foundation, U.N. Population Fund.....	analysis of major issues affecting sustainable development; books and publications in 5 languages; internet links; speakers	global orientation; project support is from U.S. but capable of international work.		support from a number of private foundations, contributions in the range of $50,000 and up; also contributions from "Friends" of Worldwatch	significant capability for policy background development, but not known whether government in the U.S. uses their services; Worldwatch papers and books are generally intended as authoritative references for governments and others.	N / A	major activity is research on emerging global issues, and resulting analysis and publication.