CANADIAN ENVIRONMENTAL LAW ASSOCIATION

L'ASSOCIATION CANADIENNE DU DROIT DE L'ENVIRONNEMENT

Ontario Environment Network

Permanent Protection of Ontario Drinking Water

A Source Protection Workshop

May 26 & 27, 2003

Held at Friends House

60 Lowther Avenue, Toronto, ON M5R 1C7

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Sponsored by: the Canadian Environmental Law Association and the Water Caucus of the Ontario Environment Network

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AGENDA

Monday, May 26:

10:30 Welcome - Paul Muldoon Executive Director
Canadian Environmental Law Association &
Janet O'Neill, Ontario Environment Network Water Caucus

10:40 Opening Remarks: Isobel Heathcote, Professor
School of Engineering and Environmental Sciences, University of Guelph

11:00 Why we need Source Protection
Walkerton - Bruce Davidson, Concerned Walkerton Citiizens
Urban - Lino Grima, University of Toronto
Water Quantity - Carol Dillon, Tay River Defence Fund

11:40 New Watershed Tools - Wendy Leger, Senior Analyst, Water Projects,
Environment Canada

12:10 Go-around for introductions of all participants

12:30 Lunch (provided)

1:30 The Context : Post Walkerton Regulation – CELA Lawyer, Rick Lindgren

1:45 – 4:15 The Source Protection Framework: CELA Lawyers
Theresa McClenaghan, Ramani Nadarajah
1:45 Overview
2:00 – 4:15: Framework divided into four pieces with 20 minutes for
presentation and 10 minutes of questions for each piece

3:00 – 3:15 Break

4:15 – 5:00 Comments on Source Protection Framework:
Joe Castrilli, Lawyer & CELA Board Member
Debbe Crandall, Save the Oak Ridges Moraine
Vicki Barron, Waterfront Regeneration Trust
Shelly Petrie, Toronto Environmental Alliance

5:00 Close for day *Evening: Dinner at local restaurant*

Tuesday May 27:

9:15 How the Source Protection Framework could change provincial and local planning and decision-making and environmental protection,
Rick Lindgren & Theresa McClenaghan

9:45 Plenary discussion: Working towards common themes for comments to the government on the Source Protection Framework

10:45 Break

11:00 Strategizing on how to get the Source Protection Framework passed and implemented - Paul Muldoon

12:15 Lunch

1:00 Working Together: How can we support each other in our work around source protection?

1:45: Closing Remarks: Paul Muldoon,

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OPENING REMARKS

Presentation by:
Isobel Heathcote, Professor, School of Engineering and Environmental Science
University of Guelph, May 26, 2003

Environmental management in the past dealt primarily with point sources. These were easy to find, sample, and it was easy to know what the source was, so a media and discipline specific approach was possible. As a result, there has been some success in reducing these sources, with some parameters up to 100 x lower than in the 1970s. In the past, there was also far less public consultation. Environmental management was undertaken as a top-down design driven by governments. Consultation has improved since then.

Non-point or diffuse sources are the most difficult to deal with, so they have not been addressed in the past. According to an upcoming International Joint Commission report, land use is the single most important influence on water. Measures to control non-point sources are cheap to implement, but difficult to implement because there is the cumulative impact of combined sources including municipal solid waste, agriculture, industry, and urban runoff. The media and discipline specific approaches that are effective in treating point sources don't work with non-point sources.

Non-point sources require an approach that takes the natural watershed as the basis for management. Stakeholder involvement is critical. The water budget needs to be considered in total. Watershed management is not a new idea - it is used in Europe, it has been used for a long time by the Tennessee Valley Authority in the U.S., and even in Ontario it was used by the former River Systems Unit within the Ministry of the Environment back in the 1980s. The 1985 report entitled *Currents of Change* from the Inquiry on Federal Water Policy led by Peter Pearse made some important recommendations on watershed management. However, the cutbacks that have taken effect since the late 1980s and the 1990s have reduced the expertise at both the provincial and federal levels. That expertise has moved to the private sector.

The treatment of non-point sources requires decision-making. For example, with an objective like bacteria-free beaches, choices need to be made such as whether you want to have these just in summer or have measures in place only during storms can affect whether the objective is achievable. The decision criteria are affected by different value systems - the best decision may mean different things to different people. Because of this, it is important to involve stakeholders. There must be an inventory of all sources. There is a need to look at land and air as well to understand water and to look at both the biophysical and the human context of wants and needs as well. There must be shared analysis, shared decision-making, and shared implementation. All uses and users, and all pollution sources must be included.

Source protection is only one aspect of watershed management. A master plan would also include things like water flow and depth for navigation uses, fisheries management. It is much broader than drinking water quality alone.

While source protection is only element, as the first barrier in a multiple-barrier system, it is very critical, potentially affecting virtually every river, stream, lake, and aquifer. Good source protection is collaborative, taking into account the local culture and economy, and specific to individual circumstances. The economic impact of source protection is huge, in potential savings.

WHY WE NEED SOURCE PROTECTION

Presentation by:
1. **Walkerton - Bruce Davidson, Concerned Walkerton Citizens**
2. **Urban - Lino Grima, University of Toronto**
3. **Water Quantity - Carol Dillon, Tay River Defence Fund**

1. Walkerton - Bruce Davidson, Concerned Walkerton Citizens

End of Bruce's presentation:
- After tragedy, people were lied to about ongoing health implications
- Not asked to get health tests during 1st year, now no proof for compensation purposes
- Chronic symptoms being treated as minor illnesses
- Key message: Prevention costs less than treating problems caused by the lack of prevention: cutbacks do not represent an economic savings. By saving 40 million, the provincial government ended up instead having to pay 150 million just for Walkerton, not to mention all of the non-monetary costs

Activism is the only way to get changes past political masters

Walkerton is now looking for permanent water source:
- Community wants to keep wellfield as opposed to Great Lakes as the source
- With wellhead protection and proper filtration they feel that this is the best option
- need to engage people
- 1000 people still ill

2. Urban - Lino Grima, University of Toronto (PowerPoint presentation):

Original RAP process for Toronto cost $90,000

Source control for large cities:
- combined sewer overflows not the problem; but combined sewers are the problem
- language is very critical – things like source protection vs. protection at source

Boil water advisories are still high across province
walkerton – transformational event – faith in system shaken
failure in governance
content analysis – 21 / 22 items in part 2 related to governance
not an isolated event several hundred in Milwaukee 100 sick, 90 died
N. Battleford – can hit large cities as well as small

Multiple barriers are the key overall principle
Source control recommendations from Walkerton Inquiry report

In Toronto, there are 3 governance conflicts that affect water
- Privatization
- Combined sewers & overflows – problem in Toronto, Ottawa, Kingston, Niagara Falls, Chicago, etc.

- Water Efficiency Plan

25% of Toronto has combined stormwater and sanitary sewers

- combined sewers overflow frequently
- 2 to 6 mill e.coli in combined sewers – health hazards much greater
- 2 to 300 thou e.coli in storm water – no human waste in it
- qualitatively different
- posted beaches in summer

The solution is road sewer separation:
- ½ bill dollars – storage for combined sewer overflow
- during storms, water goes far into lakes & endangers intake

3. Carol Dillon, Tay River Defence Fund:

Tay River Defence Fund is involved in fighting for a more proactive approach to water-taking permits:
- Prevention has been a hard fight
- 12,000 people in the watershed
- The water comes from the Tay River – small river, 18" deep
- 6,000 get their water in Perth from the municipal supply
- 6,000 rurals get water from groundwater
- The Safe Drinking Water Act didn't address private wells, although 2,000,000 Ontarians get their water from private wells

3 ½ years ago, an industry moved in, wanting a Permit to Take Water (PTTW) to take large amounts of water from the Tay River. There were lots of comments to MOE under the EBR about the proposed PTTW – 283 people responded, which is a very large number of responses.

This was the 1st step under EBR, but nonetheless, after 7 months MOE gave industry everything they wanted - 4,500 cu. metres / day – enough to sustain 18,000 people in Ottawa

Parks Canada, the Ontario Ministry of Natural Resources (MNR), the federal Department of Fisheries and Oceans, and the local conservation authority saw errors, but others didn't. The community was unhappy with the government's decision, but it was hard to oppose since they did not have enough information about the river and about water uses in the area. They knew there were 17 permits but how much unpermitted use was there – e.g. agricultural, recreational, water trucks that fill up at Tay – nobody was keeping track of the overall water budget.

The company had made $80,000 donation to local conservation authority, so the CA had a conflict of interest in meeting its funding base.

The group applied for leave to appeal; and a formal oral hearing was held under the EBR – they were the first group in 8 years to get through the process, 46 had tried & failed.
The Environmental Review Tribunal held a 35 day hearing that was very thorough – and in the end, they gave company 2 x as much as they were previously taking from groundwater and lengthened the term, but asked for more studies – how much water in system, how much going out, what are future needs.

The company didn't like the decision, especially the provision that the group be listed on the permit as having the right to participate, to be informed about water-taking, to attend meetings on decision-making re water. The company appealed, with the result that 1 year later the Minister overturned the Environmental Review Tribunal decision.

Now they are wondering what use appeals under the EBR are, if the Minister can overturn them. They are still fighting this – looking for social change, and a change in mental attitude. They need more information and more community involvement, and it will continue to be a long, hard fight.

NEW WATERSHED TOOLS

Presentation by:
Wendy Leger, Senior Analyst, Water Projects
Environment Canada, May 26, 2004

Presentation outlining the Canada-Ontario Water Use & Supply project - identifying watershed sensitivities to water availability
Presentation from Black Creek Pioneer Village workshop

- Trying to collectively get links between different groups' information
- Integration of data to try to assess overall watershed sensitivity
- Improved data sharing, coordination, exchange

Canadian side of Great Lakes basin:
- primary level is the whole Canadian side of the basin
- study will gather information down to the quaternary watershed for sub-watersheds

What do we know about similarities / difference between sub-watersheds:
- varying climate
- geology - differences in glacial deposits
- land cover & land use

Most information is either very local or holistic:
- no overall map
- why do things happen like streams drying up

We need a variety of information on sub-watershed basis:
- want to gather baseline data - pulling together existing data MUD, Ministry of the Environment water use, census data
- industrial water use, agricultural, power, diversions
- 3 working groups

Water Use Working Group - looking at water use data sources:
- defining watershed can require work because there are discrepancies between different agencies & how they measure these
- base flow separation - groundwater discharge vs. total stream flow
- base flow separation - how persistent the flow is
- base flow index - size of base flow

Extrapolate based on geology to cover whole area - Piggott from NWRI

Ecological Requirements Workgroup:
- lots of information being gathered
- sensitivities of system to changes in water resources, quantity / quality relationship
- endangered species impact

- water requirements for aquatic habitats, etc. - not enough data on headwater streams so new data is being gathered there
- are there any watershed management objectives

Already have some pilot data - it shows that groundwater conditions can be good right beside and area with poor conditions

- water use information
- overall goal of combining information to categorize overall groundwater sensitivity at the quaternary level - low to high sensitivity with background information on why they had that ranking - working on a methodology for characterizing sensitivity
- definition of sensitive
- source for decision-makers, shared information
- could inform the Permit to Take Water process, Fisheries, SARA, Boundary Waters Treaty, Annex, water conservation strategies
- goal of March 2005 for completion

Questions

Q. Is the data available publicly?
WL: Water us is available - it has been aggregated at the tertiary level, since the quaternary is not possible yet.

Q. No one came to their group for their data - others could have been missed as well.
WL: They are trying to collect as much information as is available, so she should send their data to her.

Q. Is someone in permits department of MOE aware of how fast pieces of watershed can be wiped out - does anyone at MOE know what you're doing?
WL: Yes, thy have contact at MOE.

Q. What does percentages of base flow mean?
WL: high base flow is good, low is more vulnerable.

Q. The municipal sector are largest takers but some is being returned to Lake Ontario unless there's a mechanism to enforce existing laws, the information will be difficult to use - MOE will do nothing - need to make connections to land use effects
WL. The study will give people a tool, can't speak for MOE, broad overview of Great Lakes basin, also identifies areas where more study is needed.

Q. Part of source protection plans is the creation of water budgets - will Wendy's work help in creating data needed?
WL. Yes, by combining existing Conservation Authority detail with higher level aggregate data.

Q. We already know that some of the most contaminated watersheds are in southern Ontario - we need more scientific data, but will we have a government in place that will Act?
WL. Can't comment on MOE.

Q. Who is the point person at MOE involved in this - is there support for ongoing involvement?
WL. Scott Duff, Mark Gordon, Irmi Powlowski, Erin Todd, David Neufeld (might have said other names as well)

Q. In southern Ontario, there is a big difference according to whether water is on or off the Canadian shield?
WL. They may not have enough information for the Canadian shield, so they may need to see a difference methodology there.

Q. At the provincial scale, there is no understanding of water resources - no stations, no knowledge - it is not good for local information. This Environment Canada information will help in understanding prevention at the provincial level.

Q. Need to be aware that in determining water sensitivity, there is some component of value judgments. Public outreach to help in determination - things like the workshop at Black Creek, etc.
WL: They have an advisory committee and hope to involve others - no answers yet because has use been raised at the Black Creek workshop

Q. Do they know about the Aggregate Vulnerability Index?
WL Study used as basis of by-law in Perth that governs sludge spreading that has so far gone unchallenged.
WL. They would be interested in the study.

Note: The Water Use & Supple web site is at http://www.on.ec.gc.ca/water/water-use/intro-e.html

THE CONTEXT : POST WALKERTON REGULATION
THE SAFE DRINKING WATER ACT AT A GLANCE

Preparation by:
Richard D. Lindgren, CELA Counsel, May 26, 2003

The *Safe Drinking Water Act* ("SDWA") was enacted by the Ontario Government in December 2002. Once fully proclaimed into force, the SDWA will impose important legal duties upon municipal (and prescribed non-municipal) drinking water systems. The SDWA will be administered and enforced by the Ministry of the Environment ("MOE"). Among other things, the SDWA:

- authorizes the MOE to set drinking water quality standards, quality management standards, and other regulatory standards;
- imposes various operational duties upon drinking water suppliers in relation to testing, reporting, treatment, and distribution of drinking water;
- requires training and certification of drinking water system operators;
- establishes a system of permits, licences and approvals for drinking water systems and laboratories performing drinking water testing; and
- creates a broad range of inspection and enforcement tools, and includes stringent penalties for non-compliance.

Numerous sections of the SDWA are scheduled to come into force on June 1, 2003. These sections include: Ministerial powers and duties (subsection 3(1) to (3)); duties of owners and operating authorities (subsection 11(1) and (2)); duty to report adverse test results (section 18); prohibition against contaminating drinking water systems (section 20); approvals for municipal drinking water systems (sections 31, 32, 34 to 39, 41, 45, 51); regulation of non-municipal drinking water systems (sections 52, 53, 54(1), (3) to (6), 55 to 61); inspections, compliance and enforcement (sections 81 to 120, 122 to 125); appeals (sections 126 to 136); offences (sections 137 to 155); miscellaneous provisions and regulation-making (sections 156 to 170).

Five related regulations are also scheduled to come into force on June 1, 2003. These regulations are: Ontario Drinking Water Standards (O.Reg. 169/03); Drinking Water Systems (O.Reg. 170/03); Definitions of Words and Expressions Used in the Act (O.Reg. 171/03); Definitions of "Deficiency" and "Municipal Drinking Water System" (O.Reg. 172/03); Schools, Private Schools and Day Nurseries (O.Reg. 173/03).

Significantly, several key sections of the SDWA will <u>not</u> be coming into force on June 1, 2003. These sections include: requirement for MOE to prepare annual reports on drinking water (subsection 3(4)); establishment of the Advisory Council on Drinking Water Quality and Testing Standards (subsection 4(1)); imposition of a statutory standard of care upon owners of municipal drinking water systems (subsection 19(1)); drinking water testing (sections 62 to 80); and administrative penalties (section 121). At this time, it is unclear when these sections will be proclaimed in force.

Similarly, new regulations have <u>not</u> yet been promulgated under the SDWA in relation to operator training/certification, inspection/compliance matters, quality management standards, or laboratory licencing. Some of these regulations are imminent, while others may be released by the MOE before the end of 2003.

PROTECTING DRINKING WATER: THE LEGISLATIVE CONTEXT

Presentation by:
Richard D. Lindgren, CELA Counsel, May 26, 2003

The provincial framework for protecting drinking water in Ontario is evolving from the decades-old *Ontario Water Resources Act* to more specialized laws such as the *Safe Drinking Water Act* and the forthcoming source protection regime.

It should be noted, however, that Ontario's environmental legislation – such as the *Environmental Protection Act*, *Environmental Assessment Act,* and *Pesticides Act* – will continue to play an important role in addressing potential sources of water pollution. Other provincial statutes – such as the *Conservation Authorities Act*, *Health Promotion and Protection Act*, *Planning Act,* and *Municipal Act* – also provide legal tools that may be used to protect drinking water quality and quantity. In addition to the above-noted legislation, Ontario has recently passed two statutes that are relevant to protecting drinking water: the *Sustainable Water and Sewage Systems Act,* and the *Nutrient Management Act.*

In summary, the *Sustainable Water and Sewage Systems Act*:

- was passed in December 2002, but has not yet been proclaimed in force;
- requires municipalities to prepare and submit audited reports on the full cost of their water services (e.g. source protection, capital and operating costs);
- requires municipalities to prepare and submit audited cost recovery plans for their water services; and
- will be administered by the Ministry of the Environment ("MOE").

In summary, the *Nutrient Management Act*:

- was passed in June 2002, but has not yet been proclaimed in force;
- authorizes the passage of regulations regarding farm animals, nutrient management plans and strategies, restrictions on land application of nutrients, construction standards, and minimum separation distances from municipal wells and surface water; and
- specifies that regulations under the Act supersede municipal by-laws which address the same subject-matter.

In March 2003, the Ontario government announced that it was taking a "new direction" under the Act, and that certain regulations would begin to apply to new or expanded "large" livestock farms (e.g. more than 300 nutrient units) on July 1, 2003. Existing "large" livestock farms are to be covered by the regulations in July 2005. Other classes of agricultural operations may not be covered until 2008 at the earliest, depending upon future recommendations from a provincial advisory committee, and upon the future availability of cost-shared funding. A protocol is being developed to facilitate joint administration of the Act by the MOE (investigation/enforcement) and the Ontario Ministry of Agriculture, Food and Rural Affairs (monitoring/assistance).

Questions and Answers:

Q. With all of the missing pieces, it looks like PUCs still won't be covered by the statutory duty of care in the Act?
RL. This was possibly delayed by municipalities.
Q. They will use not enough money / help as an excuse.

Q. Finance question – we will have the status quo unless the money is there to implement the provisions; this is also true for the Nutrient Management Act.
RL. Financial administration is entirely discretionary under the Act. CELA's view is that the mechanism for financing measures is crucial. There should be a mandatory duty to provide provincial funding. Lack of funding could kill the whole thing.

Q. I have heard of a small subdivision, around 5 + units. The SDWA requirements were too onerous for little groups, so the subdivision went for private wells instead.
RL. Under the SDWA there are several classes of operation. These are set out in schedules under the regulations. There are fewer requirements for smaller systems than larger. The Act also allows small systems to apply for variances – these will be time-limited but may still provide some relief.

WOULD SOURCE PROTECTION HAVE HELPED TO PREVENT THE WALKERTON TRAGEDY?

Presentation by:
Theresa McClenaghan, CELA Counsel, May 26, 2004

Would Source Protection Have Helped to Prevent the Walkerton Tragedy?

- Bacterial contaminants (E. coli 0157:H7 and Campylobacter) entered the Walkerton municipal water system through several failures
- All of the parties and experts stressed the importance of a multi-barrier defence

Source Protection is First

- "keeping contaminants out of drinking water sources is an efficient way of keeping them out of drinking water"
- Real source protection means a plan

We're not the first

- Other jurisdictions already do source protection
- Examples include New York, New Brunswick, U.S. Groundwater Protection Rule, Europe

Do we have source protection in Ontario?

- The Conservation Authorities and Municipalities are much too limited with their existing tools
- Private landowners (such as farmers, industry, developers) are not adequately involved in source protection
- There is not yet any overall provincial policy favouring source protection

What has to change in Ontario?

- Source Protection Plans
- On a watershed basis
- Integral to a "systematic land use planning approach that protects drinking water sources"
- Developed by local authorities led by conservation authorities

How to do Source Protection

- All decisions, local and provincial to be consistent with the watershed's source protection plan
- Examples include water taking permits, land use development applications, farm plans (nutrient management strategies), biosolids certificates of approval
- Must include quality and quantity

Without Source Protection, We're Not Protected

- "In a multiple-barrier system for providing safe drinking water, the selection and protection of reliable, high-quality drinking water sources is the first barrier"
- The rest of the barriers (treatment, distribution system, monitoring programs, responses to adverse conditions) all rely on the first

It's time to act

- Justice O'Connor gave us the road map
- Conservation authorities, municipalities, NGO's and First Nations have the expertise
- The potential for tragedy is all-too-present if we limit our attention to the "pipes and pumps" end of our water system

Source Protection Framework must be implemented

- The advisory committee appointed by the province in November, 2003 met for one to two days per week for four months, supported by a technical working group of staff of several ministries and staff of other agencies including municipalities and conservation authorities

The framework moves the yardstick

- Supported by all of the members of the advisory committee, including myself, the framework builds on Mr. Justice O'Connor's 22 recommendations dealing with source protection and provides specific guidance as to the content of needed legislation, scope of source protection plans, roles and responsibilities and principles

SOURCE PROTECTION OPTIONS FOR INTERIM RISK MANAGEMENT

Presentation by:
Richard D. Lindgren, CELA Counsel, May 26, 2003

As new regulatory tools are developed to implement watershed-based source protection plans, it is necessary to undertake interim measures to protect drinking water sources against contamination or depletion.

Accordingly, the Advisory Committee recommended that "the province, municipalities, and conservation authorities use their available powers to manage potential threats to human health, and protect sources of drinking water by taking action with respect to high-risk activities and land uses until source protection plans are approved and implemented" (Final Report, Recommendation 17).

Provincial Tools

At the provincial level, the Advisory Committee identified the *Ontario Water Resources Act* ("OWRA") as providing legal authority for designating interim drinking water sources and prohibiting certain land uses and development within such areas. For example, section 33 of the OWRA empowers the Director to define areas of "sources of public water supply" in which "no material of any kind that may impair the quality of water therein shall be placed, discharged or allowed to remain", and in which "no act shall be done and no water shall be taken that may unduly diminish the amount of water available in such area as a public water supply". Similarly, section 36 of the OWRA empowers the Director to control water well construction within designated areas.

In addition to the above-noted provisions, the Ontario government has other legal tools to protect water resources, including:

- investigate and enjoin sources of groundwater or surface water pollution pursuant to section 29 of the OWRA;
- issue administrative orders under section 32 of the OWRA to require measures to alleviate the effects of water quality impairment;
- enforce water pollution standards (e.g. MISA effluent standards) and ensure compliance with discharge limits prescribed under statutory approvals (e.g. certificates of approval under the *Environmental Protection Act*);
- rigorously apply the *Environmental Assessment Act* to all public and private undertakings that may pose a threat to drinking water sources; and
- refuse to issue permits to take water under section 34 of the OWRA where there is an unreasonable risk to drinking water sources.

Municipal Tools

At the municipal level, the Advisory Committee referred to *Planning Act* ("PA") powers that can be used to control land use and development. For example, under Parts III and V of the PA, municipalities may pass or amend Official Plans and zoning by-laws that identify and protect watercourses, wetlands, riparian zones, headwater areas, and other water-related natural heritage features. Similarly, municipalities are empowered under section 38 of the PA to enact interim control by-laws that essentially freeze the status

quo for up to two years within designated areas in order to allow more detailed planning or environmental studies to occur.

In addition to the above-noted PA powers, there are other tools currently available to municipalities to protect water resources, including:

- enact and enforce sewer use by-laws and pesticide by-laws;
- enact and enforce nutrient management by-laws for the various classes of agricultural operations that will not be caught by provincial standards set under the *Nutrient Management Act*;
- undertake public education and landowner contact programs; and
- consider land acquisition options (e.g. purchase, land swap, expropriation) or other mechanisms (e.g. stewardship agreement, conservation easement, etc.) to secure vulnerable or sensitive areas.

Conservation Authority Tools

Under section 21 of the *Conservation Authorities Act* ("CAA"), conservation authorities are currently empowered to:

- develop programs to conserve, restore and manage natural resources within watersheds;
- purchase, lease or expropriate lands; and
- control surface water flow to prevent pollution.

Under section 28 of the CAA, conservation authorities may make regulations that:

- restrict surface water use;
- regulate watercourse alterations; and
- control development near or within floodplains, wetlands, and river and stream valleys.

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In summary, judicious use (and timely enforcement) of existing legal tools can provide a reasonable degree of interim protection for drinking water sources while watershed-based source protection plans are being developed and implemented. Where public officials fail or refuse to take these measures, then it is open to private citizens to consider appropriate political, media or legal action (e.g. OMB appeal, private prosecution, judicial review application, EBR remedies, etc.).

WATERSHED SOURCE PROTECTION FRAMEWORK FUNDAMENTALS

Presentation by:
Theresa McClenaghan, CELA Counsel, May 26, 2003

Responsibility and Accountability

- Ultimate responsibility for ensuring source protection is to be with the province, specifically the Ministry of Environment
- In addition, all governments and stakeholders share responsibility to ensure a sustainable supply of safe clean drinking water (Rec. 2)

Goals of Source Protection Plans

- To protect human health
- Through protection of current and future sources of drinking water
- Including inland lakes, rivers and groundwater
- From potential contamination and depletion
- Through locally developed watershed based source protection plans (Rec. 3)

Scope of Framework regarding Great Lakes

- Most population in Ontario receives drinking water from Great Lakes
- Communities that take water from Great Lakes nevertheless share in responsibility to protect and enhance Great Lakes drinking water as well as inland water sources
- Source protection plans will contribute to protection and improvement of Great Lakes water quality and quantity

Great Lakes cont.

- Ministry of Environment to require any entity that discharges to the Great Lakes (waste water, rural run-off, storm water) to improve quality of discharges to standard that meets source water protection objectives (Rec. 4)
- Rec. 5 requests the province to recognize the benefits of source protection and incorporate into future agreements

Principles Guiding Source Protection

- Sustainability - water essential for health and ecosystem; must be valued as finite; SPP's to consider historical, existing, new and future land uses
- Comprehensive - SPP's must take a precautionary approach
- that uses best available science and is subject to continuous improvement

Principles cont'd

- Shared responsibility and stewardship - MoE has ultimate accountability; responsibility for specific outcomes is shared among water managers, users and land owners
- Public participation and transparency - from first development through to implementation; meaningful input
- Cost effectiveness and fairness - Costs and impacts to be clear, fair and economically sustainable; SPP's access all information practical and reasonable; use technologies and risk management practices to maximize protection of public health
- Continuous improvement - including peer review, successful implementation, assessment, monitoring, through to modifications

Legislative Basis for Source Protection Planning

- Advisory committee recommended that the framework be enshrined in new watershed based source protection legislation
- Need to be clear about when source protection takes precedence over other matters
- Source protection provisions to be consolidated in one piece of legislation
- New legislative provisions to focus on gaps
- Advisory committee stressed Justice O'Connor's recommendations 4 and 5: provincial decisions affecting quality of drinking water must be consistent with approved SPP's and where potential for significant direct threat to drinking water sources, municipal official plans and decisions must be consistent with SPP's
- For other matters, municipal official plans and decisions should have regard to SPP's
- Plans should designate areas where consistency required (Part Two Walkerton Inquiry Report recommendations 4 and 5; page 9 of Framework)
- Where human health is a concern, source protection legislation will supersede other legislation
- Over time, official plans must be amended to be in keeping with SPP's
- Similarly, Provincially issued permits to take water and certificates of approval to be consistent with approved SPP's
- SPP's must be done as quickly as possible
- The legislation must include a schedule of initial plans in the legislation - Rec. 10 - all plans to be done within three years of start date; all plans to be started within two years of effective date of legislation; SPP areas will be phased so the higher risk watersheds may be the first to start
- Minister of the Environment will identify the planning areas - candidate areas are included in the framework
- Minister of Environment will designate the organization with lead responsibility to co-ordinate plan development
- The Advisory committee also recommended that other legislation such as the Environmental Protection Act, the Nutrient Management Act, the Drainage Act, the Brownfields Statute Law Amendment Act, the Mining Act and others be amended where necessary to be consistent with source protection legislation (Rec. 9)

First Nations

- Importance of First Nations' participation in source protection planning is stressed.
- Walkerton statement that there is no justification for lower health standards is endorsed

- First Nations to be full participants in source water protection planning and implementation (Rec. 15, 16)

Financing Initial Source Protection Plans

- Advisory committee recommended that the province "substantially fund the development of all initial source protection plans" to ensure they are developed quickly
- Costs are to be analyzed and a formal funding strategy developed (Rec. 19, 20)
- This is one of the key areas where more work must be done to ensure success

To Be Dealt With in Other Sessions

- Parts of chapter 2, Framework Fundamentals not dealt with in this presentation are Gaps in the current system New Powers for Municipalities and New Responsibilities for Conservation Authorities; Interim Risk Management - these will all be discussed in the first session tomorrow morning.

Questions and Answers:

Q. The province may grossly underestimate costs if there is the kind of expertise that should be available to Source Protection Plan Committees (SPCCs) – about 7 expert jobs are necessary.
TM. Funding for this is an issue. As well, the question of where expertise lies today is also a concern. Resources must be available to ensure consistency across all SPPCs.
The ones with more resources may go first as models requiring original research that can then be used by other SPPCs.

Q. Why is the Ministry of the Environment (MOE) involved? If it were the Ministry of Health there would be an economic benefit to improving source protection.
TM. MOE has been designated as the lead ministry, following the recommendation that came from Justice O'Connor in the Walkerton Inquiry report.

Q. The main source protection objective is the health of drinking water. The government has a vague record on this. There should be a way to ensure the drinking water sources meet the Provincial Water Quality Objectives (PWQOs) – if you're below, get up to that, if you're at or above, ensure you don't get worse.

Q. What kind of standards will there be for water discharged to the Great Lakes?
A. Ontario Drinking Water Standards plus PWQOs.
Q. Where are they applied, and when are they used in decision-making?
A. PWQOs should be reviewed to see if they're good enough for drinking water protection

Q. Should be some good possibilities for economies of scale – couldn't committees use the Oak Ridges Moraine (ORM) plan as a model?

TM. Whether plans should mimic the ORM or not was part of the Committee's debate.
- meant to build on available information
- content of plans involves gathering first & then ?
- should be further consultation on this

Q. What will happen with the comments from this workshop – will they go as input into framework?
A. No, but they will be part of CELA's submission to the government on the framework. Also, all political parties will be asked to support the framework; it is not intended to be a partisan document.

Q. How will vulnerability be defined is an issue, as well as financing?
A. There is a technical committee that is doing more work on vulnerability and a funding committee that is looking at financing mechanisms.

Q. Was the Ministry of Municipal Affairs and Housing on the Committee?
A. Yes. The representatives were were Brad Graham and Edward Sajecki.
Q. I haven't heard of them. Will MMAH pay any attention to Source Protection Plans (SPPs)?
A. SPPs will prevail over other municipal & provincial legislation where provisions are made on basis of human health.

Q. Will SPPs be more enforceable than official plans?
A. Yes, because of prevailing.

SOURCE PROTECTION FRAMEWORK:
THE PLANNING PROCESS

Presentation by:
Ramani Nadarajah, CELA Counsel, May 26, 2004

I. Introduction:

Five key areas:
- How the planning process will be initatied and carried out
- The composition of the Source Protection Planning Committees
- Key components of the Plan to provide context for public involvement
- The appeal process
- The various stages at which members of the public can get involved

II. The Planning Process:

A. New Legislation:

New watershed-based source protection legislation will be developed. The legislation will include a schedule setting out the timeline for completion of initial SPPs, requiring that all plans be started within two years of the effective date of legislation and that all plans be completed within three years of the date they started. All plans would be expected to be complete by the end of the fifth year. The legislation will also set out the details for completion of the SPPs.

The Conservation Authorities will be the lead organization with responsibility for the coordination and development of the Source Protection Plans and the Ministry of the Environment will approve them. There will be 16 Planning Areas in Southern Ontario, and 8 Planning Areas in Northern Ontario.

B. Commencement of the Planning Process:

Source Protection Planning Committees:
Once the legislation is passed, the first step will be the creation of a Source Protection Planning Committee (SPPC) for each Planning Area. The minimum composition requirements for all SPPCs are:
- 1/3 municipal representatives
- 1/3 provincial, First Nations, and federal representatives
- 1/3 local public health officials and other stakeholders

The Chair of the SPPC will be appointed by the Minister of the Environment on the recommendation of the Board of Directors of the Conservation Authority (CA). Beyond that, the composition of SPPCs will vary according to local interests and issues. Each stakeholder will select its own representative for the committee. Membership will be limited to a maximum of 18 plus the Chair.

In addition, the SPPC should establish an independent expert panel to assist with the technical and scientific aspects of the planning process. The SPPCs can also establish any working groups required, which would provide further opportunities for input into the planning process.

Each SPPC will start the planning process, and will report to the Board of Directors of the (CA). The SPPC will act as an Advisory Committee to the Board. The Board of the CA will ultimately submit the SPP to the Ministry of the Environment for approval.

C. Transparency of the Local Planning Process:

One of the key responsibilities for the SPPC is to establish and coordinate a transparent local planning process. The Source Protection Framework sets out the minimum requirements of a transparent local planning process, and this includes:

- meetings of the SPPC are to be advertised and open to public attendance;
- draft plans and proposals will be published widely;
- there will be adequate time and information to allow for a range of views to be heard and considered;
- invitation will be made for public comment in writing;
- where appropriate, documentation of response to public input will be provided; and
- allow for involvement of public and other affected local parties
- involvement of other affected local parties

III. What will the initial Source Protection Plan look like?

Key components of the plan will include both technical information about the watershed's characteristics and the identification of source protection issues for the watershed, including, among others:

- a water budget, including future water needs;
- maps that identify high, medium, and low vulnerable areas, and sensitive water resources;
- a baseline map to identify the state of the watershed;
- natural features including wetland, woodlands and riparian zones and areas that may pose a significant direct threat to drinking water;
- maps of all significant water takings;
- inventory of major point and non-point sources of contaminants;
- potential water allocation problems;
- the need for special limits to water taking;
- areas where the SPP should affect municipal land use;
- contaminated site issues;
- areas where farm water protection plans are needed;
- areas where biosolids and septage are a concern; and
- identification of knowledge gaps and research needs for the watershed.

IV. How and When Can the Public Get Involved?

A. *Initial Involvement:*

The most critical stage of public involvement is right now. The most important task is to ensure that the government acts on the guidance provided by the Source Protection Framework to the legislation. The Advisory Committee has recommended that the government should undertake broad consultation on its recommendation, and the comment period is till June 21.

B. Second Stage of Involvement:

When the legislation has passed, the public can get involved at the Source Protection Planning Committee level. If you think you have special technical expertise or knowledge of the local watershed, or if you have simply been involved in water issues, you can and should try to get on the SPPC. You can write to the CA in and ask to be on the SPPC. If you are not selected, you can still be involved with the working group that assists the SPPC.

If you want to be involved with a discrete issue, but do not want to be on either the SPPC or a working group, you can always attend the SPPC meetings, which are open to the public.

(i) Terms of Reference:
One of the key things to watch for will be the terms of reference which the SPPC will have to prepare, which will set out the process for local public consultation among other things. The terms of reference have to be agreed to by the Board of Directors of the CA as one of the first steps in the planning process. It will be important to ensure that the terms of reference will provide ample opportunity for members of the public to make their views known. If you think that the process is not adequate, make sure you document your concerns to both the SPPC and the Board of Directors of the CA in writing.

(ii) Attending SPPC meetings
If you participating by simply attending the SPPC meetings and have a serious concerns about an issue- for example you think that the water budget is does not accurately reflect the takings in the watershed, document your concerns in writing.

One of the things the SPPC is required to do is to document its response to public input.

If you fail to document your concerns it may be more difficult to challenge the source protection plan in the appeal process.

If you don't have the time or resources to be attending meetings, you can always certainly comment on the draft plans and once again I would recommend you document any concerns in writing.

C. Appeal Rights:

Once the plan is finalized, the SPPC submits it to the Board of Directors of the CA which submits it the MoE for approval. If the Plan gets approved and your concerns have not been addressed, one option would be to appeal the plan. The right to appeal will be limited and has not been defined in the Advisory Committee's report. However, it is expected that the legislation will set out a right of appeal in some capacity.

In addition, there will be limited rights to also appeal provincial and municipal decisions that are inconsistent with the plan. So, for example, if a PTTW was issued and was found to be inconsistent with the plan, it is expected there will be a right to appeal. The same right applies to Official Plans as well.

Where there is a risk to human health, Source Protection Plans will supersede other legislation. Otherwise, provincial decisions regarding PTTW as well as planning decisions have to be consistent with SPPs.

D. Review and Update of Plans:

Finally let's say the source water protection plan was approved and since then you have found critical information which you think was missed in the plan. Well there is still an opportunity for involvement .The Source Protection Plan will be reviewed and revised as necessary and there is an opportunity for new participants as well as the groups who were involved in the initial plan be convene periodically to review and revise the plan.

Questions:

Q. What happens in areas with no Conservation Authorities?
RN: In areas with no Conservation Authorities, the MOE will designate an authority – it could be the MOE itself.

Q. Are there any water budgets now?
A. (from audience members) - The Grand and Credit Rivers, and Duffin's already have water budgets, and they will be starting one for the Rouge.

Q. Are matters to be decided by consensus by the SPPC?
RN. Consensus, but it is not spelled out.

Q. I know of one example where the terms of reference were set out but not enforced. How could this be dealt with in this framework process?
RN. The composition of the committees is not cast in stone - it would change depending on the planning area. For example, an agricultural community may have more representatives on the SPPC than would, for example, an industrial area. The terms of reference are intended to set the framework but if there are concerns that it is not being followed than these concerns should be raised with the CA and documented.

Q. How would stakeholders for the SPPCs be chosen?
RN. Each stakeholder would choose its own representative.

Q. How was the composition of the SPPCs decided on? Where does the number 18 derive from? How sacrosanct is the composition? There are already councils or alliances in local areas that deal with source protection issues – who will speak for NGOs & how do we ensure that environmental groups will be heard? The 6 members of public could be industry / golf / water bottlers with environmentalists shut out?
RN. If the Committee was over-represented by industrial concerns, ENGOs can challenge this at the stage when the terms of reference are set out. Also, there are working groups that ENGOs can be involved with.

Q. Will there be general terms of reference that are recommended?
RN. No, but there are other models in other watershed agreements.
Q. Having model terms of reference would help the committees.

Q. What other models did you look at in terms of public participation?
TM – O'Connor had a good section which was carried directly into framework process.
There is a need to strengthen role for ENGOs but having a requirement could be a problem if a community has no proper representative.

RN. This is an Advisory Committee report not government policy, it has not been accepted yet. This is the time to send comments on the report. You can criticize elements, but ensure you support the framework as a whole.

Q. The local MPP doesn't recognize their environmental group. In this instance, they can demand that they be on the Committee and can go to the local media. The process will then be seen as invalid by the public unless there is representation. If there is no ENGO involvement in the SPPC, groups can respond to the terms of reference.

SOURCE PROTECTION FORUM
RISK MANAGEMENT

Presentation by:
Theresa McClenaghan, CELA Counsel, May 26, 2004

Threat Assessment

- Threats may be natural or from human activity
- May be point or non-point
- Management of threats will be site-specific
- May be guided by need to meet Ontario Drinking Water Standards
- Risk dependent on many factors
- Such as characteristics of the threat, e.g. chemical toxicity
- And characteristics of the water source (e.g. its vulnerability)

What is vulnerability

- "Vulnerability" in the glossary (not legal definition) is "an expression of the ease with which a threatening or hazardous material can gain access to the resource (through environmental pathways"

Threat Assessment cont'd

- Source protection planning to begin with an assessment of all threats to water resources
- Advisory committee recommends a more prescriptive approach to managing threats in the most vulnerable areas
- Based on precautionary approach, committee recommends identifying vulnerable areas as soon as possible to remove uncertainty
- Committee recommended immediate work to develop a provincially-mandated threat assessment process
- That process would include a single reference list of potential threats to drinking water sources
- A mechanism to prioritize responses to threats (protection of human health first)
- Process also to mandate similar threats be dealt with in the same way in all watersheds
- A provincial guide to aid in assessment of cumulative impacts and assimilative capacities within and among watersheds
- Assumptions that are able to deal with the range of watershed characteristics in Ontario in aim of consistency from one to another
- The Committee outlined the results that the provincial threat assessment process must achieve:
- Identifying types of threat (point versus non-point; transient vs. stationary; quality vs. quantity; surface vs. groundwater; direct and indirect and emerging)

Threat Assessment cont'd

- The process will also have to ensure assessments of threats are at the appropriate scale; identification of areas where the water resource is vulnerable to impact, and technically sound collection of information
- The threat assessment process will also have to analyze vulnerability considering factors such as physical barriers (aquitards, slope of land, hydraulic gradients, vegetation), as well as reliability of data, areas of groundwater recharge, surface water to groundwater relationships and well heads and surface water intakes
- In addition, the threat assessment process will have to be able to assess sensitivity of water sources associated with the nature of the threat, physical characteristics of the water feature, relationships between ground and surface water, proximity to supply intakes, presence, features and functions of natural systems such as wetlands, woodlands and riparian zones; existing water quality and quantity concerns
- The threat assessment process will also have to be able to assess cumulative impacts and assimilative capacity, which the report notes are important for long term decisions regarding watershed development
- The threat assessment process just described must be developed by a working group of experts over the next six months
- The working group will also be required to develop the initial definitions of "vulnerable areas" and "sensitive water resources" to be used in all planning areas
- In developing the process and definitions, the approach must be consistent with the detailed discussion in chapter 4 of the report both as to threat assessment and as to risk management (Recommendations 43 to 46)

Risk Management Strategies

- Advisory Committee only went as far as broad issue identification
- Risk management strategies outlined apply to both ground and surface waters unless otherwise specified
- Risk management strategies include the following:
- For New Uses in the Most Vulnerable Areas: use all available tools, existing and new, to ensure prohibition, redirection, or stringent requirements
- Covers intensive and high-risk land uses, uses associated with high risk factors, waste management or disposal activities, application of biosolids, septage and manure, and directing development away from vulnerable areas
- For New Uses in Less Vulnerable Areas: High risk uses or uses associated with high risk factors in less vulnerable areas to be managed through use of all available tools, existing and new, as appropriate
- For Existing Uses in Most Vulnerable Areas:
- Manage existing high risk activities to reduce risk
- Use all available tools, existing and new
- Ensure management, possible redirection of activity or stringent requirements

Existing Uses in Most Vulnerable Areas

- Covers intensive and high risk land uses
- Uses associated with high risk factors including expansion of high risk uses
- Waste management or disposal
- Application of biosolids, septage and manure
- Remediation of effects of development in vulnerable areas
- Owners required to improve chemical storage, handling and undertake monitoring and reporting
- For Existing Uses in Less Vulnerable Areas:
- Address through increased emphasis on education, voluntary measures and incentive-based instruments
- For Water Quantity issues:
- Water taking rules to be improved so that unsound water takings are consistently rejected
- Province to recognize the role performed by natural features on the landscape such as wetlands and woodlands

Water Quantity

- Groundwater takings to be evaluated in context of water budget on watershed basis
- Aquifers may extend beyond current watershed boundaries
- Large takings have potential to influence groundwater flow patterns
- New or amended groundwater water taking permits only when municipalities and landowners can make changes locally to protect new well head protection zone from altered municipal well head protection areas
- Surface water takings should only be permitted in context of water budget; approval should consider impact on assimilative capacity of water body, impact on water body for other uses and users and the water quality objectives of the source protection plan

Wells

- Advisory committee made additional comments on the need for collection of information on location of wells, including requiring landowners to provide the necessary information
- The necessity to determine status and options for dealing with wells that pose actual or potential threat to a drinking water source
- Siting and integrity of wells to be a first priority in assessment and management of threats to drinking water
- Inventory of unused and abandoned wells so they can be decommissioned
- Siting of new wells to draw on best quality water sources
- Private water supplies to be subject of information and outreach strategy to protect supply from local contamination

Septic Systems and Underground Fuel Storage Tanks

- Existing rules to be enforced
- where needed, new approaches and tools to be developed
- Ability to do periodic re-inspections to be clarified to ensure mechanism available
- At minimum all septics inspected as condition of sale and on redevelopment
- Minimum requirement for periodic pump out

Landscape Restoration

- To consider use of landscape restoration to reduce threats to drinking water sources where appropriate
- Examples include riparian buffers of natural vegetation, strategically placed wetlands

Additional Standards for Surface Water

- Provincial Water Quality Objectives to be the benchmarks used in developing source protection plans
- SPP's to identify strategies for protecting the source from degradation beyond PWQO
- Protecting pristine sources from degradation to PWQO if they have better quality
- Where degradation already exists, SPP's should be required to identify strategies for remediation
- In all cases, timelines for achievement of results to be provided
- At the provincial level, to be universal criteria for wastewater discharges
- New tools to be developed with municipalities and conservation authorities for dealing with range of point and non-point sources, including in vulnerable areas, those addressed through the Nutrient Management Act
- PWQO's should be peer reviewed so as to meet highest international standards from perspective of source protection (Rec. 48)

Questions and Answers:

Q. Vulnerability / Sensitivity issue – what is vulnerability? Does sensitivity matter? TM. At this point, the Committee has a working definition of vulnerability at least. An area could be vulnerable but not sensitive if vulnerability does not pose a threat. A technical definition will be done by the Technical Committee, and this will be available in approximately six months. Vulnerable areas should be immediately identified, as the government can't move forward with legislation till those 2 things are done.

The threat assessment process needs to happen in the next 6 months. This will be done by another technical committee. CELA has asked to be part of that group

Q. What is difference between wellhead protection vs. watershed management?
TM. Wellhead protection is a specific subset of issues within the watershed, but there are other issues as well that make up watershed management.

Q. There is a need for an education strategy on source protection.

Q. Did the Committee look at water quantity? Did the Committee cover aggregate reserves as natural reserves under the Framework?
TM. Aggregate reserves were not singled out as a feature for protection under the Framework.

Q. We may be faced almost daily with small or large Ontario Municipal Board decisions before this framework is in place? Will there be any way to stop losing things while this five year process is underway? Q. What will be done to prevent a rush to put things through before the system is in place?
TM. See the interim measures discussed in the presentation.

Q. The NMA regulations coming into force in July will be weaker than municipal by-laws used in existing framework.. In the meantime there may be a possible rush to beat the deadlines. Would it be possible to have a moratorium in new intensive hog farms while the source protection process is undertaken?
TM. New municipal tools are needed right away, but you can also pressure municipalities to use the tools they have already. Municipalities can still do by-laws because the NMA regulations are not relevant to most agricultural operations.

Large operations will still be covered by the July NMA regulations, new or expanding operations can still be covered under the NMA by-laws if they are smaller than the threshold.

Q. What is non-vulnerable? What is degraded –Provincial Water Quality Objectives can't be met in the next100 years in Toronto?
TM. The process over the next 6 months will define vulnerability.

SOURCE PROTECTION FRAMEWORK
INFORMATION MANAGEMENT

Presentation by:
Theresa McClenaghan, CELA Counsel, May 26, 2003

Monitoring and Information Management

Successful implementation of source protection requires best data, when needed

- Monitoring and reporting system should be able to prove the following:

Monitoring and Information Management

- Assess background quality and quantity
- Determine changing conditions
- Capture extreme conditions
- Identify existing and emerging problems
- Recognize value, features and function of wetlands woodlands and riparian areas in protecting drinking water sources

The information system should also be able to:

- Support resource management decisions
- Provide for reporting networks, provincial and local
- Provide basis for water protection and management policies
- Evaluate effectiveness of programs and practices
- Improve understanding of natural and human factors affecting water quality and quantity
- Provide early indications of successes and failures of source protection activities through lead indicators (p. 43)

Monitoring and Information

- Province should build on the Water Resources Information Project; Land Information Ontario; the Provincial Groundwater Monitoring Network and the Surface Water Quality and Quantity Monitoring Networks. (Rec. 49)
- Recommendations 50-53 outline roles and responsibilities related to information

Outcome Measures and Evaluation

- The primary purpose of source protection as arising from the Walkerton Inquiry is protection of human health
- No specific human health measures proposed at this time

Outcome Measures

- Source protection will also result in cost avoidance for water treatment, improved ecological integrity, safe environment for future generations; some of these can be measured. (page 46)

- Indicators relating to process included:
- number of completed source protection plans
- proportion of province protected by completed source protection plans, measured geographically and by population
- Other outcome measures for process include number of municipalities with well head protection plans; availability of data to public academia and public interest groups; level of public reporting; evidence that Ontarians are aware of efforts to protect water resources for present and future generations
- Another process outcome was increased industry and public participation in water preservation and conservation activities
- Water quality and quantity indicators at the watershed level will include: protection of waters from degradation; improvement and restoration of degraded ground and surface waters
- Other watershed level measures will include assessing water quantity, as well as protecting ecosystems and restoring altered systems to naturally functioning condition
- The measures for these watershed level indicators could include the following:
- reduced occurrences of pathogens and viruses in water
- better source water quality after wet weather events, measured by turbidity, total coliform, E. coli
- reduced levels of contaminants (pesticides, fecal contaminants, nitrates, phosphorous, inorganic chemicals)
- better health of biota in surface waters including wetlands, disclosing less stress and adverse impacts from contaminants

Other indicators could include:
- Increased number and lengths of surface waters meeting all PWQO's
- Improvement in fish tissue concentration for key contaminants
- Changes in multi-year average stream base flow volumes and groundwater levels

Outcome measures

Additional measures include:
- Number of municipalities managing within water budget
- Change in total hectarage or percentage of landscape comprised of wetlands, riparian zones and forested lands that perform significant hydrological functions within headwater, recharge and discharge zones
- Recommendation 54 calls on the province to work with stakeholders to identify desired outcomes; this is to be done within six months of the beginning of the planning process

Research Related to Source Protection

- Advisory committee stressed that precautionary principle embedded in the framework
- Critical to take action despite any gaps in science and information
- Scientific basis on which SPP based is continually evolving
- Drinking water research must be adequately resourced and shared
- Must include source protection
- To increase our understanding of impacts on human health
- Integration of research
- Timely dissemination of research findings to all levels, from academic to those in charge of day to day activities.

Report Conclusions

- Chapter 6 of the Framework reviews the scope of the Framework. Development of a framework for Farm Water Protection Plans must follow closely behind source protection planning and be consistent with it.
- The committee reiterated the need for the province to develop a comprehensive source to tap drinking water policy as recommended by Justice O'Connor (Walkerton part II recommendation 65)
- The committee calls on the government to begin source protection planning NOW.

Questions and Answers:

Q. Are all area issues included or just water? Would it cover deposition through air for example?
TM. Yes, air is included as a threat, but the public must ensure that these are included by the Committee.

Q. Should farm water plans follow source water plans? Should farm water plans be developed under the NMA or the under the source protection legislation?
TM. The NMA doesn't deal with farm water plans at all. The Framework speaks of the need to proceed with Justice O'Connor's recommendation for a framework for farm water protection plans to be developed immediately after source protection plans.

Q. Then are farm water plans to be developed under source protection legislation instead?
TM. It could be done either under the NMA or source protection legislation, but is not in either at this point. It could also be separate new legislation.

Q. Why aren't environmental farm plans included in here?
TM. They are not included because they are voluntary. We need mandatory measures that are consistent with Source Protection Plans

Q. Are there any provisions to ensure communication between different Source Protection Committees?
TM. This is not spelled out so it would be a good comment to make; the Framework mentions measures to increase consistency, but not inter-committee communication.

HOW THE SOURCE PROTECTION FRAMEWORK COULD CHANGE PROVINCIAL AND LOCAL PLANNING AND DECISION-MAKING AND ENVIRONMENTAL PROTECTION

Prepared by:
Theresa McClenaghan, CELA Counsel, May 27, 2003

Identification of where source protection issues exist

- Recommendation 31, page 25
- "Where a significant direct threat exists to the safety of the drinking water source"
- "potential water allocation problems"
- "need for special operational limits to water taking"
- "areas where the plan might need to influence or govern municipal land use and zoning"
- "Areas where farm water protection plans are needed"
- "Areas where biosolids and septage spreading need special consideration"
- "Contaminated site issues that need priority action"
- "Priority areas for identifying and properly decommissioning unused or abandoned wells"
- "Priority areas for ending the misuse of abandoned pits and quarries or for their rehabilitation
- "identification of knowledge gaps and research needs for the watershed"

Implementation Plan

- Recommendation 31 also calls for inclusion in a source protection plan of an implementation plan to manage the identified source protection issues

Monitoring and Reporting Plan

- In addition, recommendation 31 calls for source protection plans to include a monitoring and reporting plan

Bringing source protection plans to ground

- There are two main methods by which the issues identified in source protection plans will actually be addressed in the watershed.
- One method is that source protection plans will be used to govern or affect municipal and provincial and other agency decision making

Source protection initiatives

- The other method is that initiatives must be undertaken to achieve the source protection plan's objectives
- Accordingly, the Framework stresses repeatedly the need for roles and responsibilities to be clearly specified in implementation plans and in monitoring and reporting plans

Provincial decisions

- For vulnerable areas, certain provincial decisions will have to be consistent with source protection plans.
- For example, Justice O'Connor listed water taking permits, certificates of approval for emissions to water or air, biosolids application certificates of approval
- Accordingly, the plan will be implemented through these decisions

Local Decisions

- One of the responsibilities of municipalities within the watershed will be to ensure that their Official Plans and other planning documents and decisions reflect the source protection plans -
- In vulnerable areas, to be consistent with SPP's
- In other areas, to have regard for SPP's

New Tools

- In order to implement source protection plans, municipalities and other agencies will need to be given new tools
- Among its other responsibilities under the Framework, the government is required to develop new tools for use in effectively implementing source protection planning
- New tools for non-point sources will also be required

Gaps in the Current System

- Municipalities and other agencies identified certain gaps in their current powers that will have to be addressed in order to pursue source protection (p. 11)
- This included powers such as the following:

Gaps

- Require routine disclosure of chemicals used or stored on site
- Require measures for containment of chemicals, including plans for leaks and spills
- Require monitoring including installation of monitoring wells
- Enter into agreements with property owners and attach conditions such as secondary containment etc.
- Control drilling of new private wells
- Require plugging and sealing of unused wells in vulnerable areas
- Require regular maintenance, repairs and enable periodic inspection of septic systems
- Require effective decommissioning of septic systems prior to redevelopment
- Require notification of contaminants discovered during re-development
- Require or promote conservation initiatives
- Deal effectively with non-compliance such as adding a charge to the municipal tax bill for the cost to the municipality of the work done

New Tools still to be developed

- The report recommended that the province work with municipalities and other stakeholders to identify the appropriate scope and types of new municipal powers that should be made available

- The report also recommended that this process deal with funding issues
- The powers must then be actually provided to municipalities and other agencies

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SOURCE PROTECTION: OPTIONS FOR INTERIM RISK MANAGEMENT

Presented by:
Richard D. Lindgren, CELA Counsel, May 27, 2003

As new regulatory tools are developed to implement watershed-based source protection plans, it is necessary to undertake interim measures to protect drinking water sources against contamination or depletion.

Accordingly, the Advisory Committee recommended that "the province, municipalities, and conservation authorities use their available powers to manage potential threats to human health, and protect sources of drinking water by taking action with respect to high-risk activities and land uses until source protection plans are approved and implemented" (Final Report, Recommendation 17).

Provincial Tools

At the provincial level, the Advisory Committee identified the *Ontario Water Resources Act* ("OWRA") as providing legal authority for designating interim drinking water sources and prohibiting certain land uses and development within such areas. For example, section 33 of the OWRA empowers the Director to define areas of "sources of public water supply" in which "no material of any kind that may impair the quality of water therein shall be placed, discharged or allowed to remain", and in which "no act shall be done and no water shall be taken that may unduly diminish the amount of water available in such area as a public water supply". Similarly, section 36 of the OWRA empowers the Director to control water well construction within designated areas.

In addition to the above-noted provisions, the Ontario government has other legal tools to protect water resources, including:

- investigate and enjoin sources of groundwater or surface water pollution pursuant to section 29 of the OWRA;
- issue administrative orders under section 32 of the OWRA to require measures to alleviate the effects of water quality impairment;
- enforce water pollution standards (e.g. MISA effluent standards) and ensure compliance with discharge limits prescribed under statutory approvals (e.g. certificates of approval under the *Environmental Protection Act*);
- rigorously apply the *Environmental Assessment Act* to all public and private undertakings that may pose a threat to drinking water sources; and
- refuse to issue permits to take water under section 34 of the OWRA where there is an unreasonable risk to drinking water sources.

Municipal Tools

At the municipal level, the Advisory Committee referred to *Planning Act* ("PA") powers that can be used to control land use and development. For example, under Parts III and V of the PA, municipalities may pass or amend Official Plans and zoning by-laws that identify and protect watercourses, wetlands, riparian zones, headwater areas, and other water-related natural heritage features. Similarly, municipalities are empowered under section 38 of the PA to enact interim control by-laws that essentially freeze the status quo for up to two years within designated areas in order to allow more detailed planning or environmental studies to occur.

In addition to the above-noted PA powers, there are other tools currently available to municipalities to protect water resources, including:

- enact and enforce sewer use by-laws and pesticide by-laws;
- enact and enforce nutrient management by-laws for the various classes of agricultural operations that will not be caught by provincial standards set under the *Nutrient Management Act*;
- undertake public education and landowner contact programs; and
- consider land acquisition options (e.g. purchase, land swap, expropriation) or other mechanisms (e.g. stewardship agreement, conservation easement, etc.) to secure vulnerable or sensitive areas.

Conservation Authority Tools

Under section 21 of the *Conservation Authorities Act* ("CAA"), conservation authorities are currently empowered to:

- develop programs to conserve, restore and manage natural resources within watersheds;
- purchase, lease or expropriate lands; and
- control surface water flow to prevent pollution.

Under section 28 of the CAA, conservation authorities may make regulations that:

- restrict surface water use;
- regulate watercourse alterations; and
- control development near or within floodplains, wetlands, and river and stream valleys.

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In summary, judicious use (and timely enforcement) of existing legal tools can provide a reasonable degree of interim protection for drinking water sources while watershed-based source protection plans are being developed and implemented. Where public officials fail or refuse to take these measures, then it is open to private citizens to consider appropriate political, media or legal action (e.g. OMB appeal, private prosecution, judicial review application, EBR remedies, etc.).

Questions and Answers:

Q. Municipalities can choose not to use environmental powers but the problem is political, not legal powers.

Q. Concerning the proposed NMA regulations – ½ of councillors are farmers in some areas, so they won't put through nutrient management by-laws.
RL If they don't put these in place, you can go to the Ontario Municipal Board (OMB). If they go to OMB, they need evidence. The main reason groups fail at the OMB is because they don't have evidence. You can't just state that you are concerned, you need persuasive site-specific evidence, and that requires money to pay for a hydrogeology report or a surface water report.

Q. What is the current practice for interim control by-laws?
RL. The current practice is 1 year with a 1 year extension.
Comment from audience. In the Oak Ridges Moraine Conservation Plan, until the 5 year period is up, for major development the onus is on the developer to do a water budget and other things.

Q. Are we going to touch on some financial tools municipalities would have now?
Comment from Theresa: There is the report by C.M. Watson that CELA submitted to the Walkerton Inquiry. A sustainable sewer system submission is also there.

Q. Where people are drawing water from a lake, can the lake be designated as a protected water supply?
RL – I see no reason why not, but certainly not for every lake.

SHORT COMMENTS ON THE SOURCE PROTECTION FRAMEWORK

1. **Joe Castrilli, Lawyer & CELA Board Member**
2. **Debbe Crandall, Save the Oak Ridges Moraine**
3. **Vicki Barron, Waterfront Regeneration Trust**
4. **Shelly Petrie, Toronto Environmental Alliance**

May 17, 2005

1. Joe Castrilli, Lawyer & CELA Board Member:

The framework report is a very good starting point for legislation. It pulls together many long-unmet needs. It is important to note that it is still just a framework document; and the eventual legislation will be crucial.

Small drinking water systems have a greater challenge in cost-effectively treating water, so especially in rural areas, source protection is the first barrier & may be the only barrier. However, rural areas are also the heaviest areas of agriculture, with threats from pesticides, manure, soil erosion, etc. In the U.S., the EPA now regards agriculture as single largest threat to drinking water in the U.S. that remains largely unregulated – this is likely to be true in Ontario as well. The biggest flaw in the document is the lack of addressing agricultural sources.

The regulatory development process under the *Nutrient Management Act* (NMA) leaves very large gaps in the regulation of farming operations – this was true even before Premier Eves March announcement, and now it is much worse. As a result, source protection legislation will need to be very specific in gap-filling in terms of addressing agriculture.

Is source protection legislation likely to be up to the task? On p. 28 of the framework report, under the section on provincial responsibilities, the 6th bullet on on the NMA states that for vulnerable areas, source protection measures may address issues in the NMA. The question will be whether source protection legislation would trump the NMA in vulnerable areas.

Comment from Theresa McClenaghan:
Given the change in the government's direction as announced, to delay implementing Nutrient Management Act regulations for many years for most farms, we should comment that the framework should provide that source protection can supersede other NMA provisions in non-vulnerable areas too.

2. Debbe Crandall, Save the Oak Ridges Moraine:

The Oak Ridges Moraine Advisory Panel provided recommendations and advice to the Minister. To be successful, you must emphasize the really important points that you want to see go through rather than criticize the negative things. Coordination among groups is another important factor.

There could be something like the ORM Foundation to address non-regulatory issues. Funding issues require skills and planning, without that, this source protection plan will fall apart.

Expertise is another crucial issue. In developing the Oak Ridges Moraine plan, it was apparent that the province doesn't have a lot of dedicated staff – since all the cutbacks, there is very little expertise left around.

For example, the work being done on wellhead protection areas could be done faster. The Ministry of the Environment has yet to develop criteria for municipalities to develop wellhead protection areas, and that's just for 26 municipalities in the Oak Ridges Moraine.

Another lesson from the Moraine experience was that the province needed to be more fully involved in guiding the process in the early stages.

Nine Conservation Authorities (CAs) in the Moraine coalition were working on groundwater management and flow models. Their work could be a template for the rest of Ontario.

Overall, the framework report is an excellent starting point for improving source protection in Ontario.

3. Vicki Barron, Waterfront Regeneration Trust:

Local communities have known we needed this long before the province.
Will it come to implementation?

This will be a program, not a project. It will not be a one-time effort; but will have to be sustained. There are plenty of possible models from work already done. The capacity to deal with this is a big issue. Roles & responsibilities should be recommendations, not just listed.

Financing will also be important, as there can't be accountability without a funding commitment. The CELA model bill, and the CA user pay measures both have some ideas for funding options.

4. Shelley Petrie, Toronto Environmental Alliance:

How to get to the problem-solving part of it – for example, Toronto storm water storage tanks end up just putting the combined sewage outflow in lake, not rivers. Currently, we are dealing with problems after the damage done, not in a preventive manner. Even with treatment, Toronto still can't meet the Provincial Water Quality Objectives.

Municipalities lack the pollution prevention tools that would help source protection efforts. Sewer use by-laws are an attempt to get industry to get to zero, but in reality, they just have to meet the limits, not get to zero. The federal government could do more in terms of pollution prevention but they won't.

In funding, we shouldn't use emissions charges. These amount to paying to pollute.
There may be conflicts within watersheds – issues may benefit some but harm others in the watershed.

Regarding public consultation, there should be the ability for the public to make deputations to the Committees. Feedback on concerns should be made public. For example, they could make questions and answers public by posting them on the Internet so that the same things were not raised over and over again.

DRAFT COMMON THEMES FOR COMMENTS TO THE GOVERNMENT ON THE SOURCE PROTECTION FRAMEWORK

At the Tuesday, May 27, 2003, Source Protection Workshop there was a plenary discussion on drafting some common themes for letters to the government on source protection. As a follow-up to that meeting, here is the list of points that emerged from the discussion:

First of all, because this framework is only advice to the government at this point, it is important to have as the main comment upfront that we support the source protection framework document. Next, the letters could mention some of the points from Isabel Heathcote's opening remarks on source protection. The letters could then list the most important aspects in the framework. Finally, a few issues where the framework could be strengthened could be addressed, based on the comments below.

1. Overall statement of support:

As Justice O'Connor stated in the *Part Two Report of the Walkerton Inquiry*, "In a multiple-barrier system for providing safe drinking water, the selection and protection of reliable, high-quality drinking water sources is the first barrier." As the first barrier, source protection is a critical element in the protection of drinking water in Ontario. We strenuously support the report, Protecting Ontario's Drinking Water: Toward a Watershed-based Source Protection Planning Framework, as an important first step in establishing a source protection regime in Ontario.

2. Points from Isobel Heathcote's comments:

- Non-point / diffuse sources like urban runoff and agriculture are among the most difficult challenges.
- Land use is the single most important influence on water.
- The natural watershed is the best basis for management.
- Involvement of everyone is important.
- Consider the water cycle.
- Inventory all sources; identify most significant.
- There needs to be shared analysis, shared decision-making, and shared implementation of solutions.
- Integration of water management on a watershed basis, across media, and across human systems.
- Source protection is just one aspect of a watershed plan.
- Virtually every stream, river, lake, or aquifer is currently or potentially a drinking water source.

- Economic impact of source protection is huge - in savings.

3. Important aspects of the framework:

- The Source Protection Planning Committees are a good idea. It is critical that there be strong public participation on the committees because the public is directly affected and they are the ones most committed to change.

- The framework addresses the existing tools that can be used to ensure interim protection while the plans are being developed, and as information becomes available.

- The framework document correctly recognizes that gaps in tools for municipalities need to be addressed.

- Recommendation 42, that the province, CAs, municipalities and other stakeholders ensure that public education and dissemination of information is undertaken to ensure that Ontarians fully embrace the importance of protecting our drinking water sources, is crucial.

- It is very important that the framework and legislation be prescriptive in the approach to identifying and managing vulnerable areas

- The requirement for periodic review of plans is important (recommendations 36 and 37)

- The committees represent multiple interests, since many interests can be involved in complicated issues.

4. Things that should be strengthened:

- The Committees need to add representation by the public & by NGOs of all types compared to the weight given to governments of all levels.

- There are concerns with the size and composition of the SPCCs. There needs to be guaranteed seats for NGOs along with industry on the committees

- Citizen participation in committees should be a separate category, rather than being included with stakeholders, and should be at the front of the list instead of government representatives.

- Citizens should be at the centre of the process, because they are the most affected. Citizen representation was key to the success of the groundwater management study Grey County undertook to deal with problems created by water taking in the area. The SPCCs should have the same kind of model as the one used in the AEMOT process.

- Committees would be strengthened by increasing citizen participation. Ministries & municipal staff are willing to be on committees but not interested enough to be stakeholders. They should provide a liaison role with ministries and act as guides to legislation and policy, and not be part of voting or consensus.

- Citizen participation on the committees is essential but must be free from the political mechanism at the provincial and municipal level because they can attempt to stack the deck. The process must be transparent.

- Citizen participants should be people without vested interests.

- Recommendation 24 that the Committee Chair should be chosen by the province based on recommmendation by the board of the CA should be changed to the Chair being chosen by the community, and officially appointed by the province.

- Composition of SPPCs should separate users from NGOs and the public. Definition of the public side is also important since community meetings can also be rigged.

- The framework needs to be accessible to the public in order to engage them.

- There needs to be some kind of concise, easy to understand version of the framework.

- The framework should include the economic benefits of prevention compared to remediation.

- Support for source protection would be strengthened if the framework included economic analysis to help alleviate concerns over the cost of source protection measures if it showed that source protection would save money over the next 20 years. This would help with public support for the framework, and give political parties more reason to advocate source protection.

- Application to agriculture needs to be made more clear since the Nutrient Management Act regulations have now changed, specifically to fill the gap that has now been left.

- More measures should be included to address the needs of the majority of Ontario residents who get their drinking water from the Great Lakes, and of urban residents. Examples of urban issues that need to be addressed include:
  - Instead of wet weather plans to dump pollution further into lake, there is the need for measures to protect water further upstream
  - Biosolids & septage are addressed extensively throughout the framework document but not fertilizers.
    - Aggregates are addressed but not contaminated sites leaching into drinking water in sites in Toronto
    - Other urban problems include golf courses drilling wells in Toronto because there isn't enough water in dry weather, sewers crossing several watersheds, infiltration and exfiltration everywhere under developments

- The distinction between more vulnerable / less vulnerable on p. xiv needs strengthening by saying that everything is vulnerable, nothing is non-vulnerable. The question then is what is most vulnerable.

- Funding is important.

- Ministries involved should ensure that there are adequate staff and financial resources to enable the process of creating Source Protection Plans to take place.

- The process would be strengthened by giving citizens funding to participate, to recognize that they sometimes put in hundreds of hours in unpaid time.

- Groups engaged in watershed protection should be given financial support by the province.

- Coordination among different ministries involved is critical.

- Responsibility for public health needs to be articulated.

- How would the precautionary principle be used in the process. For example, would the OMB adhere to the principle.

- MOE needs to develop the watershed management branch to implement source protection, and it should make that administrative reform right now. This was one of Justice O'Connor's recommendations in the Walkerton Inquiry report.

- Pass the Conservation Lands Tax Incentive Program legislation to include all land trusts in the community conservation lands category

- Make sure that all possible land contaminants are identified in the threat assessment.

- Stress that it is a living, adaptive document.

THE HISTORY OF WATERSHED MANAGEMENT IN ONTARIO: AN ABRIDGED LIST OF REFERENCES AND PINNACLE EVENTS

An abridged list of references produced from the May 26 and 27 CELA/OEN Workshop to address *Protecting Ontario's Drinking Water: Toward a Watershed-based Source Protection Planning Framework*

Prepared by:
Dr. Isobel Heathcote, University of Guelph
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June 5, 2003

On May 26 and 27th, the Canadian Environmental Law Association (CELA) and the Ontario Environment Network (OEN) hosted a two-day workshop to address the proposed legislation for source water protection. The origins of the legislation came from Justice O'Connor's report from the Walkerton Inquiry in which he recommended a multi-tiered approach to drinking water management. His first recommendation was source water protection.

In November 2002, the Ontario Provincial government appointed an Advisory Committee to develop a viable framework to implement source water protection.

The Advisory Committee completed their report in April 2003 in which there are 55 recommendations. In accordance to the Environmental Bill of Rights, the Advisory Committee's report, entitled *Protecting Ontario's Drinking Water: Toward a Watershed-based Source Protection Planning Framework*, has been posted for public review and comment.

The purpose of the two-day CELA/OEN conference was to get a detailed overview of the framework and provide an opportunity for citizen groups and environmental NGOs to raise their concerns and agree upon the endorsement of the proposed framework.

An additional outcome of the workshop was several papers prepared by volunteers that would help to refine comments on the proposed framework and provide background information for those interested. This document is one of those papers.

This paper provides a historical overview of watershed management with an emphasis on Ontario. It comprises of an abridged list of references organized in chronological order to provide readers a sense of the research and documented initiatives throughout the past century that has shaped watershed management in Ontario. Furthermore, it provides a list of events that has influenced watershed management to date.

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PINNACLE MOMENTS IN WATERSHED MANAGEMENT FOR ONTARIO, CANADA

19th Century (cited by Jones and Plewes, 1997)

Water was controlled and flows regulated to provide canals and transportation access for defense and commerce. Whole watershed systems were controlled to allow the passage of rafts of logs to be floated to mills for processing into lumber for local and overseas sale and trade. Wetlands were flooded or drained to facilitate commerce.

Ontario Hydro, a provincial utility, had acquired most of the hydraulic generation facilities to operate on behalf of all provincial residents.

The agricultural community involved in water management. Swamps and wetlands were drained to provide opportunities for growing crops in the muck soils. Large water management schemes required the construction of polders and dykes with the result that entire watersheds were regulated, drained, irrigated and watercourses received contaminated discharges containing pesticides and fertilizers from over-application.

1946 – Ontario enacts the *Conservation Authorities Act,* entrenching in legislation the notion of managing water resources on a watershed basis.

1954 – Hurricane Hazel hits Southern Ontario and causes millions of dollars in damage. Public becomes aware of the need for flood control on a watershed level

1962 - Rachel Carson's *Silent Spring* reveals the effects of chemical pollution on water sources and the impact on biological health. (cited by Heathcote, 1998)

March 1977 – United Nations sponsored a conference on water at Mar del Plata, Argentina. Resulted in an "action plan" with the following recommendations for water management policy: (all points cited by Heathcote, 1998)

1) Each country should formulate and keep under review a general statement of policy relating to the use, management and conservation of water as a framework for planning and implementation. National development plans and policies should specify the main objectives of water-use policy, which in turn should be translated into guidelines, strategies, and programs.

2) Institutional arrangements adopted by each country should ensure that the development and management of water resources take place within the context of national and planning, and that there be real coordination among all bodies responsible for the investigation, development, and management of water resources.

3) Each country should examine and keep under review existing legislative and administrative structures concerning water management and, where appropriate, should enact comprehensive legislation for a coordinated approach to water planning. It may be desirable that provisions, concerning water resources management, conservation, and protection against pollution be

combined in a unitary legal instrument. Legislation should define the rules of public ownership of water and of large water engineering works, as well as the provisions governing land ownership problems and any litigation that may result from them. This legislation should be flexible enough to accommodate future changes in priorities and perspectives.

3) Countries should make necessary efforts to adopt measures for obtaining effective participation in the planning and decision-making process involving users and public authorities. This participation can constructively influence choices between alternative plans and policies. If necessary, legislation should provide for such participation as an integral party of the planning, programming, implementation, and evaluating process.

1987 – The World Commission on Environment and Development (sometimes known as the Brundtland Commission) releases *Our Common Future* and introduces the notion of sustainability and sustainable development to the world.

January 1992 – International Conference on Water and the Environment (the Dublin Conference). The conference results in the Dublin Statement regarding goals and principles for water management.

GUIDING PRINCIPLES	CONCERTED ACTION IS NEEDED TO REVERSE THE PRESENT TRENDS OF OVER CONSUMPTION, POLLUTION, AND RISING THREATS OF FROM DROUGHT AND FLOODS. THE CONFERENCE REPORT SETS OUT RECOMMENDATIONS FOR ACTION AT LOCAL, NATIONAL AND INTERNATIONAL LEVELS, BASED ON FOUR GUIDING PRINCIPLES.
Principle 1	Fresh water is a finite and vulnerable resource, essential to sustainable life, development and the environment. Since water sustains life, effective management of water resources demands holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.
Principle 2	Water development and management should be based on a participatory approach, involving users, planners, and policy makers at all levels. The participatory approach involves raising awareness of the importance of water among policy-makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects.
Principle 3	Women play a central part in the provision, management and safeguarding of water. This pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resources programmes, including decision-making and implementation, in ways defined by them.
Principle 4	Water has an economic value in all its competing uses and should be recognized as an economic good. Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmental damaging uses of the resources managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

(Table - the Dublin Statement as described by Young et al, 1994 cited by Mitchell and Shrubsole, 1997: 6)

1992 - The United Nations Conference on Environment and Development is held in Rio De Janeiro. The Rio Declaration on Environment and Development (1992) is endorsed at that conference and draws attention to the increasing scarcity of water, and the need for careful water planning and management. The conference also emphasizes the importance of capacity building in environmental management.

1993 - The Province of Ontario commences the project to determine the future role of the Province in watershed management. Nearly three and a half years have elapsed since the project was commissioned. (Cited by Jones and Plewes, 1997)

October 1994 – Ontario government publishes *Watershed Planning Initiative Evaluation Plan* (Cited by Jones and Plewes, 1997)

April 1995 – Ontario government publishes *Final Report of the Watershed Planning Initiative Science and Technology Task Group* (Cited by Jones and Plewes, 1997)
August 1995 – Ontario government publishes *Report of the Watershed Planning Initiative Coordination, Resources and Effectiveness Task Group* (Cited by Jones and Plewes, 1997)

December 1995 – Ontario government releases *Final Report of the Watershed Planning Initiative Relevance and Responsiveness Task Team* (Cited by Jones and Plewes, 1997)

Fall 1996 – Ontario government releases *An Evaluation Of Watershed Management In Ontario, Final Report*. (Cited by Jones and Plewes, 1997)

The evaluation was undertaken by an inter-ministerial team with representation from four Ministries; Association of Conservation Authorities of Ontario; and, Association of Municipalities of Ontario. Three guidance documents were released at the beginning of the project (Cited by Jones and Plewes, 1997):

- ✓ *Water Management on a Watershed Basis: Implementing an Ecosystem Approach*;
- ✓ *Subwatershed Planning*; and,
- ✓ *Integrating Water Management Objectives into Municipal Planning Documents*.

May 2000 – An aggressive form of *E.coli* infiltrates the groundwater supply for the Town of Walkerton. As a result seven people died.

2000 – Ontario government launches programs for the study of groundwater in various townships

2000 - Ontario government starts a province-wide groundwater monitoring network with Conservation Authorities as partners.

2002 – Justice O'Connor's report on the Walkerton Inquiry recommends source water protection as a multi-barrier approach to drinking water protection.