

SOURCE PROTECTION



PLAN

Lake Ontario Water Utilities - Understanding the Source

**Ron Motum, Supervisor, Technical Support Division,
Works Department, Regional Municipality of Durham**

June 13, 2007

**Collaborative Public Consultation
Canadian Centre for Inland Waters,
Burlington, Ontario**

Water Utilities Understanding of Source Water Protection?



- Source Protection Plan is simply protecting water resources such as lakes, rivers and groundwater, from contamination or overuse.
- Source Protection Plan has been identified as the first line of defense in protecting Ontario's drinking water.
- The Clean Water Act requires development of Source Protection Plans.

The Water Utilities Role

- The Water Utilities can support the development of a Source Protection Plan by:
 - Providing historical raw water quality data
 - Including ODWQS data, temperature, bacteriological, turbidity, conductivity
 - Providing input on operational events that may be significant and related to source water
 - Identifying known potential threats and source water impacts – an assessment

The Water Utilities Role – Cont'd



- Providing water intake, wastewater outfall locations and coordinates, including plan and profiles
- Providing storm sewer map locations
- Providing Certificate of Approval, Permit To Take Water, First Engineer's Reports
- Providing copies of studies or reports having relevance to source water
- Providing input from Sewer-Use By-law enforcement staff



The Region of Durham



■ Background:

- Region of Durham owns and operates 14 water supply systems
- 5 systems draw water from Lake Ontario
- 1 system draws water from Lake Simcoe
- The remaining 8 systems are groundwater supplies



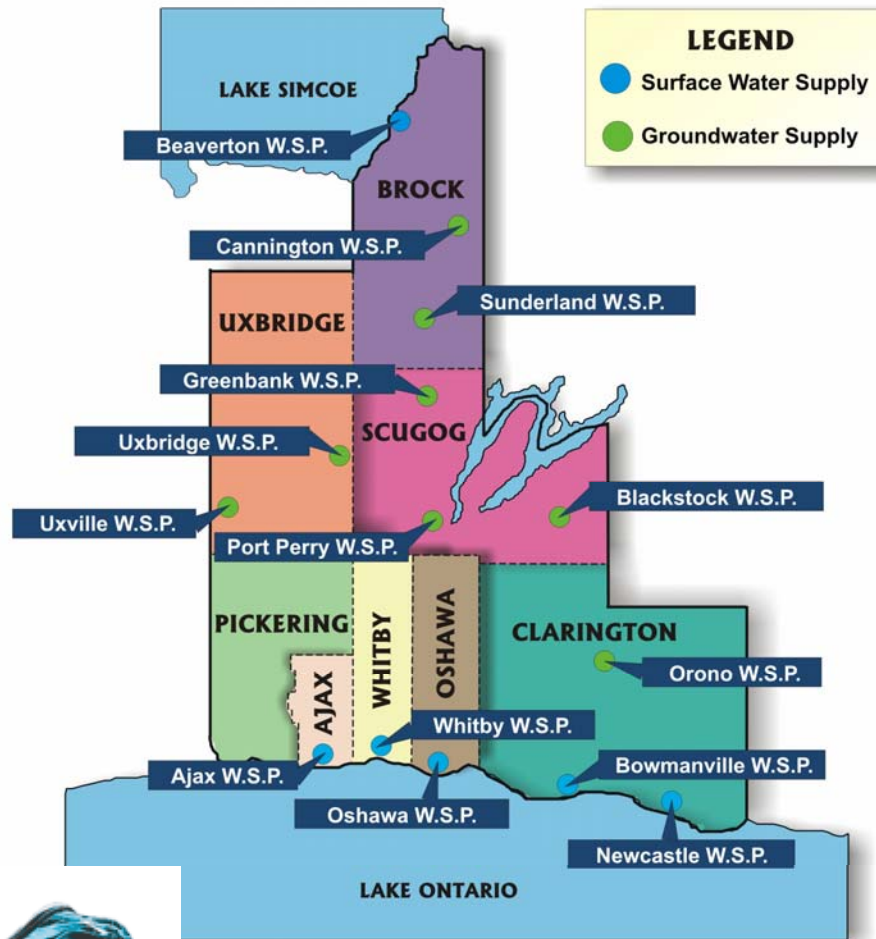
THE GOLDEN HORSESHOE





Regional Municipality of Durham
Works Department

Municipal Water Supply Systems



Ontario
Clean Water Act



Water Treatment



- All surface water plants are direct filtration except for Oshawa WSP which includes sedimentation
- The Ajax and the Beaverton WSP's have GAC capabilities
- Superchlorination/Dechlorination is available at Ajax WSP
- Ultraviolet Disinfection has been added to the Beaverton WSP on Lake Simcoe



Region of Durham's Experience



- Taste & Odour and Attached Algae and Source Water Protection
 - Taste & Odour (Geosmin & 2-MIB)
 - First significant episode occurred in late summer of 1993 on Lake Ontario
 - Significant episodes have occurred since in 1994, 1998, and 1999 on Lake Ontario based water plants
 - Less intense episodes occur every year.
 - Episodes have occurred every year since 1996 on Lake Simcoe



Region of Durham's Experience



- Attached Algae
 - Since approx. 2003, excessive amounts of *Cladophora* was observed on the north shore of Lake Ontario by a number of municipalities, including those in Durham Region
 - Summer of 2005, excessive amounts of *Spyrogira* required water restriction efforts for the Region of Durham, particularly the Whitby Water Supply Plant



Region of Durham's Experience



- Source Water Protection
 - The *Clean Water Act*, 2006 provides the framework for source protection planning in Ontario
 - The Region of Durham had initiated a Wellhead Protection Studies in 2001/2002 for groundwater supplies and continues to build on this for Source Water Protection
 - Similarly through the Consortium model, Source Water Protection studies have been initiated



Ontario Water Works Research Consortium

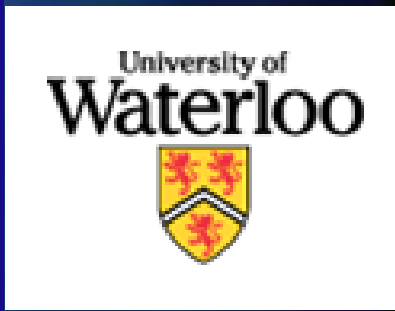


- Initially, established in 2000 to identify and research Tastes & Odours in Lake Ontario.
- A consolidated effort of resources to fund scientific research directed at this problem.
- Further expanded to focus on Attached Algae problems occurring along the shoreline.
- Natural to use this model for to support the development of Source Protection Plans.





ONTARIO WATER WORKS RESEARCH CONSORTIUM OWWRC



The Consortium – Helping to Understand the Source



- In 2005, the original members initiated action on Source Protection
- Expanded to include Conservation Authorities, the Ministry of the Environment, Environment Canada and other Water Utilities as far as Prince Edward County
- Build on nearly 7 years of historical and relevant water quality data and research related to Taste & Odour/Attached Algae



The Consortium - Benefits



- Remove the “silo” approach for each Water Utility
- Reduce costs by sharing resources and information
- Maintain the unique opportunity for Water Utilities, Conservation Authorities, Consultants and the scientific (MOE/EC) and academia community to work together.



The Consortium - Benefits



- Sharing avoids costly duplication of the research.
- Enables a more extensive project than what one municipality could undertake.
- The interests of all participating utilities can be addressed.
- Sharing of information and resources at three levels of government; Federal, Provincial, and Regional/Local.



The Consortium - Benefits



- Setting the common approach for Source Protection studies while addressing individual situations relative to Intake Protection Zones (IPZ 1 & 2)
- Bringing historical and new data together from all levels to establish clear IPZ's
- Including support from Conservation Authorities on watershed inputs and effects on IPZ's



The Consortium - Benefits



- Look at interactions based on common modeling for the Western Basin of Lake Ontario
- Allow increased focus on higher impacted intakes
- Provide a foundation to continue to build on the knowledge and research already gained



The Consortium - Benefits



- Provide a final product worthy that meets the Ministry of the Environment Source Protection program requirements
- Will assist Utilities to with a common approach to meet Drinking Water Quality Management Standards related to Risk Assessment and Risk Assessment Outcomes
- Creates an established on-going focus on source water and collaboration with SWP Committees.



Summary



- The benefit for Durham Region and its customers, will be a better understanding of their source water that will include a broader study of all aspects related to all the potential impacts on water quality.



Questions



■ Thank you.

Ron Motum, Supervisor
Technical Support Division
ron.motum@region.durham.on.ca

Regional Municipality of Durham
605 Rossland Road
Whitby, ON L1N 6A3

