



2006 | Water
Municipality of Chelsea
Quebec
 Population: 6,500



H₂O Chelsea

Summary

Chelsea sits atop the Precambrian Shield of Gatineau Park. This not only prevents the municipality from developing a water or sewage system, it also means that residents must rely exclusively on groundwater for drinking water. Recognizing the need to protect this precious resource, H₂O Chelsea aims to maintain the area's high water quality by providing educational initiatives to residents. The program is delivered in partnership with a local non-governmental organization and the University of Ottawa. Since 2003, almost 1,000 wells have been inspected and more than 1,000 residents have been surveyed to assess their water use. Results from that survey prompted Chelsea Council to require that developments on all parcels of land four hectares or larger must demonstrate that the groundwater supply is sufficient to provide water to the proposed number of residences.

Background

Chelsea prides itself as an environmentally conscious municipality, one with close ties to its natural surroundings and an obligation to respect nature. Two thirds of the Chelsea area lies within Gatineau Park. Residents of the town rely exclusively on wells for drinking water. Given the geological constraints of the area, installing a municipal water system using water from other sources, such as the Gatineau River, was too expensive.

Instead, Chelsea opted to preserve and protect its water resources for future generations. Patrick Henry, H₂O Chelsea's project coordinator, explains that although well water is a private responsibility, the municipality "took the leap" with its involvement in the project. "H₂O Chelsea fulfilled the municipality's vision of environmental stewardship and complemented the many sustainable development programs, legislation and practices that Chelsea has implemented over the past decade."

Those programs include a ban on the cosmetic use of pesticides, a wetlands protection bylaw, comprehensive waste management and composting programs, and a municipality-wide septic tank emptying program. A sustainable development officer oversees all the municipality's environmental initiatives and was initially in charge of H₂O Chelsea.

H₂O Chelsea also helps the municipality achieve its objectives under FCM's PCP program. Using the PCP framework, Chelsea aims to ensure that it has a sufficient quality and quantity of water, now and in the future.

Project Development

Chelsea's Watershed Management Committee, a subcommittee of the Sustainable Development Advisory Committee, was first established to develop water-friendly policies and initiatives and to guide the project.

Like many of Chelsea's municipal committees, the Watershed Management Committee includes both resident volunteers and municipal councillors.

One of the subcommittee's first steps was to gather current data on Chelsea's water resources to inform future management decisions. The subcommittee enlisted the expertise of students and faculty from the University of Ottawa's Institute of Environment to prepare a groundwater monitoring program. The initial program proposal was developed by one of the Institute's graduate students, who then mapped out the details in a document entitled Surface and Ground Water Monitoring in Chelsea, Quebec.

Based on the proposal's objectives, University of Ottawa professors and students developed sampling protocols, datasheets and databases, analyzed water samples, and analyzed and interpreted sample data.

H₂O Chelsea's project coordinator and the subcommittee then worked on educational and community components of the project. In early 2003, the subcommittee presented the H₂O Chelsea project to Council. It was readily accepted.

Project Implementation

H₂O Chelsea is a partnership among the Municipality of Chelsea, Action Chelsea for the Respect of the Environment (ACRE) (a nonprofit organization), and the University of Ottawa. ACRE focuses on funding campaigns and the university provides scientific expertise. The municipality publicizes and manages the project and provides annual funding of \$20,000, office space and administrative resources.

"Each partner brings different skill sets and areas of expertise," notes Mr. Henry. He singles out Dr. Scott Findlay, Director of the Institute of Environment for particular praise. "He spearheaded the project and continues to be a motivating force."

In the spring of 2003, a water questionnaire was delivered to every household and business in Chelsea. More than 600 residents answered questions about water shortages and pollution.

"The survey results pinpointed areas of water quality concern as well as areas that had experienced a higher number of well water shortages compared to other neighbourhoods," says Mr. Henry. This information was used to develop the project's research programs. Similar water questionnaires were sent out in 2004 and 2005. The first survey had invited residents to participate in the project, and they responded enthusiastically. At any given time, between 40 and 100 volunteers participate in the program.

H₂O Chelsea consists of two main components: ongoing water sampling and community education and outreach. In the monitoring component, well water levels are measured to determine seasonal and annual fluctuations in groundwater. This is a long-term initiative requiring many years of sampling to accurately track groundwater levels. Seasonal employees and volunteers sample water wells on an ongoing basis.

Lake and stream sampling programs were established in 2003 to determine the baseline conditions of local water bodies (Beamish, Kingsmere and Meech Lakes and Meech, Chelsea, Fortune and Hayworth Creeks). Regular monitoring helps to determine the effects of human activity and to identify problem areas for future conservation and mitigation. Four teams of volunteers sample the lakes and streams for heavy metals, coliforms and dissolved oxygen, as well as other substances.

The program relies heavily on volunteers. In 2006, 35 volunteers monitored 40 stream sites. Their efforts revealed decreased water quality in Meech Creek associated with a cattle operation in Meech Valley. The H₂O Chelsea results were forwarded to the National Capital Commission (owners of the property), and to Environment Canada and the Environment Ministry of Quebec. Based on these reports, the latter two departments inspected the property. They issued infraction notices, which eventually led to termination of the land lease.

Chelsea engages the community using a variety of educational outreach activities that focus on conserving water and preserving the quality of well water. The municipality also provides resources to residents on treatment options should well sampling reveal any concerns.

Water specialists present conservation information to residents at local community centres, schools and churches. News about project activities, upcoming events, and well-testing services is announced at special events, like Chelsea Community Day, Earth Day and the United Nations World Water Day Fair. A regular newsletter and displays at City Hall continue to inform the public about updates and results. H₂O Chelsea also developed an interdisciplinary water resources curriculum for local schools.

Thanks to H₂O Chelsea's efforts to provide reliable and accurate water data and to engage its community through outreach activities, Mr. Henry sees no end to the project. "For the public to be an active partner in water resource protection, it has to be informed of the issues and be involved," he says. "Residents, businesses and the municipality all have a good incentive to continue the program since concerns over the quantity and quality of their water are unlikely to diminish in the future."

Results

- Stream and lake water sampling identified contaminated sites and areas at risk of water shortages and natural contaminants. Mitigation strategies were then proposed. A comprehensive annual report is produced. It contains sampling data, results and recommendations.
- Community participation has been tremendous with as many as 100 resident volunteers working on the project at any time of year.
- By partnering with others, Chelsea acquired extensive water quality and quantity data at a fraction of the cost of hiring private consultants.
- Results from the water survey prompted Chelsea Council to adopt its Comprehensive Development Program. The program requires developers of properties four hectares (10 acres) or larger to conduct in-depth water quantity tests to ensure a sufficient supply of groundwater before the development is approved.
- In 2005, data from 700 well water tests were compiled. The data represented 517 unique sites that had not been sampled previously, an 89 percent increase in the number of sites tested from 2004. Under H₂O Chelsea's Well Water Quality program, residents receive group rates to test their wells for a wide variety of substances (e.g., bacteria, metals, etc.). Between 2003 and 2005, data on the quality of more than 850 wells were collected.
- Sampling results showed that about one quarter of Chelsea's water wells had some bacterial contamination attributable to surface water contamination by rains, snow melt, local water bodies such as wetlands, or a combination of these factors. Water kits were sent to all homes and to businesses that provide information on protecting and preserving water quality.
- Results from the 2003 and 2004 water survey also prompted Chelsea Council to invest \$50,000 in a comprehensive Water Census. Developed and implemented by H₂O Chelsea, the Water Census aims to acquire more detailed information on water use and availability, particularly in neighbourhoods with reports of water shortage above background levels.

Lessons Learned

- **PARTNERS ARE KEY.** H₂O Chelsea's success depended on key partners such as ACRE and the University of Ottawa. Expertise was available for free and funding opportunities were "more numerous since each of the partners qualifies for different funding programs," notes Mr. Henry. In addition, Dr. Scott Findlay, the Institute's Director, played a key role in developing the project, engaging students and other faculty by drawing on their knowledge and skills in sampling, protocols, database development, laboratory analysis and the analysis and interpretation of sample data.
- **NURTURE VOLUNTEERS.** The steering committee and project coordinator realized the importance of recruiting volunteers. Their high level of commitment meant that results could be reported back to the community on a regular basis.
- **KEEP MOMENTUM GOING.** Many residents tested their wells in 2003, but few re-tested them in 2004. H₂O Chelsea is reviewing how it can provide tools that will motivate residents to test their wells regularly.

Related and Future Initiatives

Beginning in 2007, H₂O Chelsea will transfer its resources and knowledge to other communities via its website, direct mailings, and training sessions. Interested communities will be able to adopt Chelsea's monitoring and education programs at a fraction of what it would cost to develop their own.

A Water Resources Mapping Portal is being developed in conjunction with Natural Resources Canada's GeoConnections program. Residents in municipalities across Canada will be able to implement H₂O Chelsea's programs, upload their sampling data through a bilingual portal, and then map, view and access the results online.

Through the portal, water quality and quantity data collected by participating communities will become part of a publicly accessible water resource database, providing an overview of the state of water resources across Canada.

The Chelsea Conservation Database, proposed by ACRE, now identifies vulnerable ecological zones within the watershed. This project complements H₂O Chelsea's water conservation efforts.

Partners and Collaboration

Internal

Municipality of Chelsea

External

University of Ottawa, Institute of Environment
Action Chelsea for the Respect of the Environment (ACRE)
Resident volunteers from the Chelsea community
Fonds d'action québécois pour le développement durable
Centre local de développement (CLD) des Collines de L'Outaouais
North American Fund for Environmental Cooperation
Walter and Duncan Gordon Foundation
Environment Canada, Ecological Monitoring and Assessment Network

Promotional Activities

As noted above, Chelsea undertook several promotional activities as part of the H₂O Chelsea project. Water kits were delivered to every business and household in Chelsea and a water conservation curriculum for elementary schools was developed.

Updated information about the project is readily available from the H₂O Chelsea website, through annual presentations and displays, and in articles published by the local newspaper.

Contact Information

Patrick Henry, H₂O Chelsea Project Coordinator
Municipality of Chelsea, Quebec
Tel.: (819) 827-1124
E-mail: p.henry@chelsea.ca
Website: www.h2ochelsea.ca

A copy of the program proposal, *Surface and Ground Water Monitoring in Chelsea, Quebec*, can be downloaded from the following site: www.ie.uottawa.ca/English/programs/Water%20monitoring%20program%20January%202003%20b.pdf