

H₂O Chelsea Water Questionnaire Implementation Manual



The H₂O Chelsea Water Questionnaire is a two-page series of questions asking residents for their observations regarding water quantity and quality in the community. The Questionnaire will help:

- ✓ Guide the development of your water monitoring programs (e.g. define research priorities).
- ✓ Inform municipal personnel about water quality and quantity concerns in the community.
- ✓ Communicate information regarding your water research program and provide a platform for seeking volunteer assistance.

Residents are asked to complete the questionnaire annually. Responses are kept confidential and are not filed in the property's municipal records.

The Water Questionnaire asks residents for feedback regarding water quantity and quality concerns in the community.

The two key questions asked by the Water Questionnaire:

- ✓ Is the resident aware of any surface or groundwater quality concerns in his neighbourhood?
- ✓ Has the resident ever experienced a well-water shortages? If so, when?

The Water Questionnaire¹ can be completed by respondents using a hardcopy document and through an online form².

Implementing the Water Questionnaire in your Community

The options for implementing the Water Questionnaire in your community are numerous and will be affected by your project's financial and human resources. Here is a brief description of how the Water Questionnaire was first implemented in Chelsea.

In 2003, hard copies were mailed to all residences and businesses by way of the municipal newsletter. Reminders to complete the questionnaire were sent to residents via newspaper articles and a leaflet sent in the mail.

In subsequent years, we again sent out a hardcopy of the questionnaire but encouraged participants to submit their response through the online form. Encouraging the use of the online form is worthwhile as the data submitted through the form is automatically entered into the project database (i.e. data entry costs). In future years we will consider eliminating the mailing of the hard copy entirely (i.e. no printing and mailing costs), however, this will lower the response

¹ A hard copy of the 2005 Questionnaire is appended to this manual

² Online form-Questionnaire 2005

http://chelsea.ca/english/environment/h2o_chelsea.asp

rate (experts confirm that hard copy surveys mailed to residents yield higher response rates than online surveys).

Consult a specialist....

We recommend that you collaborate with relevant specialists in order to modify our Water Questionnaire to best suit your community's information needs.

All of the tools necessary to implement the Water Questionnaire in your community (online form, database, information letters for residents etc.) are available free of charge on our project website³. We encourage communities to consult water resource professionals (university professors, government, consultants etc.) in order to customize the questionnaire for use in their community.

Scientific Context

The Water Questionnaire collects qualitative data (i.e. written responses from residents, not quantitative measurements such as the depth of a well). The key questions deal with water quality concerns and well-water quantity shortages.

With respect to water quality, the questionnaire responses allowed us to identify areas of public concern and develop our water sampling efforts accordingly. For example, based on numerous responses from several neighbourhoods, we developed a Tertiary Sampling Program that targeted neighbourhoods surrounding abandoned and existing industrial sites (i.e. gas stations and auto wrecking yards).

H₂O Chelsea encourages municipalities to respect the *precautionary principle* in regards to water resource management. Take the necessary steps to reduce water consumption and protect water quality before problems develop.

With respect to water quantity the questionnaire asked residents to indicate the date and frequency of any well-water shortages they had experienced in the last three years. This allowed H₂O Chelsea's researchers to create a map of areas (Figure. 1) which had experienced a higher incidence of well-water shortages as compared to the average for the entire community.

We ask residents to fill out the water questionnaire annually because water quality and quantity concerns will vary from year to year. For example, the construction of new homes could lead to changes in water table levels in local wells. Further, an aquifer's water levels and consumption patterns by residents are strongly related to fluctuations in temperature and precipitation.

³ H₂O Chelsea Adopt our Programs Initiative
http://www.h2ochelsea.ca/adopt_programs.htm

However, several important questions relating to water quantity could not be answered by the questionnaire data, for example:

- ✓ Are water shortages random incidents caused by problematic wells (e.g. sedimentation of the veins feeding the well), or, are some shortages the result of lowering water tables in the local aquifer?
- ✓ Does the rate of household water-use impact on the likelihood of experiencing a well-water shortage?

This lack of information led to the creation of H₂O Chelsea's Static Level⁴ and Water Census⁵ programs that collect additional data regarding the wells that had experienced water shortages.

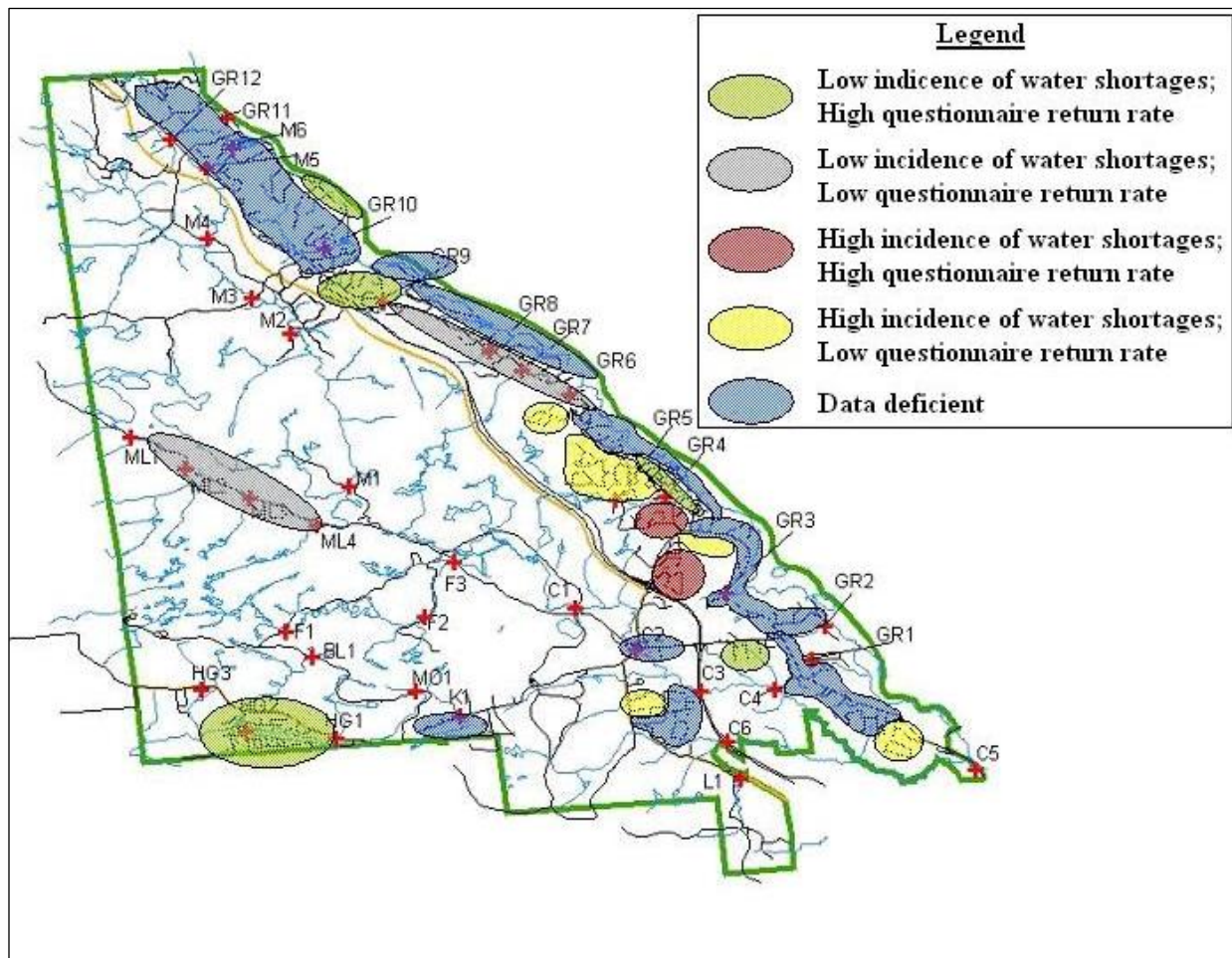


Figure 1. Map of aggregated water quantity shortages in Chelsea for 2004⁶.

⁴ H₂O Chelsea Static Level Implementation Manual

www.h2ochelsea.ca/adopt_programs.htm

⁵ H₂O Chelsea Census Implementation Manual

www.h2ochelsea.ca/adopt_programs.htm

⁶ Source: Findlay, C.S., and Stowe, N., (2004) *H₂O Chelsea Year 2 (2004): Summary of Water Monitoring Results*, Institute of the Environment - University of Ottawa

<http://www.h2ochelsea.ca/PDFs/H2O%20Chelsea%20year%20report-%20Jan%202026.pdf>

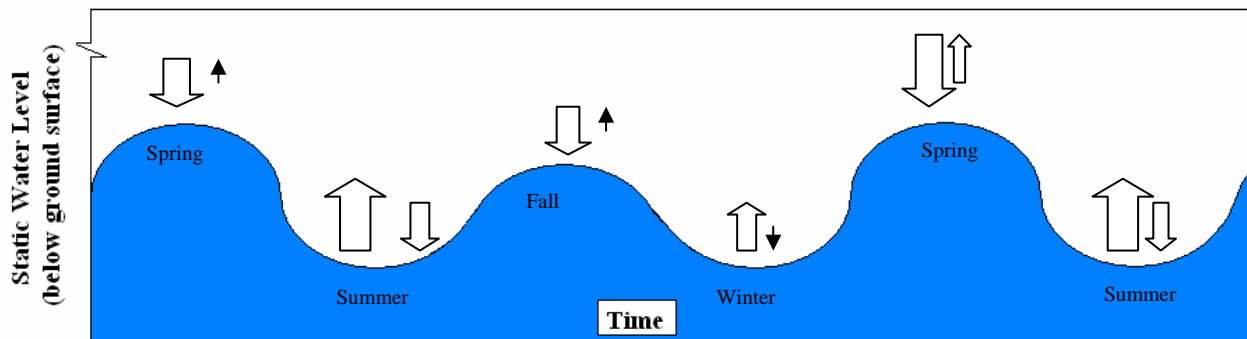


Figure 2. Illustration of normal annual fluctuations of water level due to aquifer discharge (↑) and recharge (↓)

To gain a better understanding of the research potential of the questionnaire, please see the results of our 2003 and 2004 Water Questionnaire initiatives, discussed in the *H₂O Chelsea Year 2 (2004): Summary of Water Monitoring Results*⁷ report.

Impact on Municipal Decision Making

Water quality concerns highlighted by the questionnaire may ultimately be the result of municipal development policies (e.g. the elimination of wetlands that filter out pollution from residential and industrial run-off). Further studies, changes to policies and appropriate remedial measures by the municipal government are recommended.

With respect to quantity (the reporting of well-water shortages), the information obtained from the questionnaire over several years can help municipal planners understand the effects of climate and water consumption patterns on local groundwater levels. Trends can be identified and potential water shortages could be avoided by taking appropriate action (e.g. impose a lawn watering bylaw in certain neighbourhoods during dry periods of the year).

A wide variety of options to better manage groundwater resources are available to municipal governments. For example, in areas that are known to be prone to water shortages, the municipality might choose to:

- ✓ Implement lawn watering by-laws in late summer months
- ✓ Develop regulations requiring a minimum well depth to ensure that new wells in these areas are accessing the more water abundant regional aquifers
- ✓ Minimize the density of homes to be built on lands surrounding 'water-shortage prone' areas
- ✓ Develop a subsidized program to encourage the retrofitting of homes with water-efficient devices (low flush toilets, low flow shower heads etc.).

⁷ Stow, N. Findlay, S. (2004) *H₂O Chelsea Year 2 (2004): Summary of Water Monitoring Results*.
<http://www.h2ochelsea.ca/PDFs/H2O%20Chelsea%20year%20%20report-%20Jan%202026.pdf>

Each municipality will have a unique set of options available to them, based on economic, environmental and political factors.

H₂O Chelsea, with funding from the Walter and Duncan Gordon Foundation has developed a resource manual titled *Municipal Approaches to Groundwater Quantity Monitoring and Management*⁸, a comprehensive account of groundwater monitoring options, education initiatives, and municipal regulations and by-laws developed to conserve groundwater resources in Chelsea and other communities across North America.

Educational Value

The Questionnaire is not only a scientific monitoring tool but an awareness and educational tool as well. Your community can insert relevant water-resource education material to the questionnaire. To complement this learning process, H₂O Chelsea simultaneously distributes a variety of educational and communication tools⁹ detailing ways that residents can reduce their domestic water consumption and minimize the contamination of groundwater by household practices (e.g. minimizing the disposal of dangerous products such as paint into septic systems).

Most people want to make water-friendly decisions but are unaware of their options. To change personal behaviour, people must be given practical water-conservation strategies and be educated about the financial and environmental advantages of making these changes in their households.

Adopt our Program and Resources

In 2007, H₂O Chelsea will be working to publicize and transfer our research, monitoring and education resources (including the Water Questionnaire) as part of our *Water Monitoring Kits Initiative*¹⁰. All resources will be made available for adoption by interested communities, free-of-charge. Please consult our website to learn more about how you can develop a successful community-based monitoring and education program in your community. We look forward to working with you!

Contact us:
H₂O Chelsea
100, chemin Old
Chelsea
Chelsea (Québec)
J9B 1C1
(819) 827-1124 X227
h2o@chelsea.ca

⁸ Municipal Approaches to Groundwater Quantity Monitoring and Management
http://www.h2ochelsea.ca/PDFs/Quantity_Manual_Oct25_3.pdf

⁹ Such as: 1) Environment Canada's *Wise Use of Water Brochures*
http://www.ec.gc.ca/water/en/info/pubs/brochure/e_broch.htm

2) H₂O Chelsea's *How Well is your Well*
<http://www.h2ochelsea.ca/PDFs/How%20Well%20Booklet.pdf>

¹⁰ H₂O Chelsea Water Monitoring Kits Initiative
www.h2ochelsea.ca/adopt_programs.htm

Appendix 1: List of Water Questionnaire Resources

The following resources are available on the H₂O Chelsea website at:

www.h2ochelsea.ca/adopt_programs.htm

1) Water Questionnaire

Hard copy: Please see following page of this document.

Online-form format: http://chelsea.ca/english/environment/h2o_chelsea.asp

Adobe PDF formats.

http://www.h2ochelsea.ca/PDFs/WDGF%20PDFs/questionnaire_hardcopy.pdf

Please contact us to access a copy of the Water Questionnaire in Microsoft Word format.

2) Online form version of the Water Questionnaire and associated Microsoft Access database

The online form and associated Microsoft Access database can be modified to suit your research needs. Please contact us if you would like to receive a CD of the files.

Please contact us if you have any questions about the structure of the database or the online form; please visit the Microsoft Office website <http://office.microsoft.com/en-us/assistance/CH790018001033.aspx> for help using Microsoft Access.



H₂O CHELSEA

QUESTIONNAIRE 2004

(English)



H₂O Chelsea is a community water monitoring programme developed by the Municipality of Chelsea, Action Chelsea for the Respect of the Environment (ACRE) and the University of Ottawa's Institute of the Environment. The programme seeks to gain a better understanding of Chelsea's ground and surface water resources. To learn more about H₂O Chelsea and how you can become involved, please refer to the Municipal website's Sustainable Development pages at www.chelsea.ca or telephone or email us at (819) 827-1124, h2o@chelsea.ca. We look forward to hearing from you!

Note: Please complete the survey even if you filled out the 2003 water survey. Your updated information is critical to our assessment of water resources in Chelsea!

Please complete one questionnaire per water source per property

1. Since what date have you lived at this address?

Tenant _____
(mm/yy), e.g. 09/88 (Sept. 1988)

Owner _____
(mm/yy)

**2. How many water sources do you use
(e.g. two wells = two water sources)**

- One
- Two
- Three
- More than three

**3. Did you have your drinking water tested as part
of the H₂O Chelsea programme in 2003?**

- Yes
- No

4. Before 2003, did you ever have your water tested?

- Yes
- No

If yes, what parameters were usually analysed?

- Total coliforms
- Faecal coliforms
- E.Coli (Escherichia coli)
- Nitrates
- Metals
- Petroleum products
- I don't know
- Other (Please specify) _____

**5. Before 2003, on average how often would you
have had your drinking water tested?**

- Once per year
- Twice per year
- Occasionally
- Rarely or never

**6. In 2003, how often did you have your drinking
water tested?**

- Once
- Twice
- 3 times or more
- I did not test it.

**If more than once, was this because you wanted to
check a result that showed higher than recommended
levels of bacteria or chemicals?**

- Yes
- No

**7. Do you know of any sources of either ground or
surface water contamination in your neighbourhood?**

- Yes
- No

If yes, please specify

**8. Did you experience any water shortages during
2003? (water shortage = a lack of water for a
period of at least 24 hours following normal use)**

- Yes
- No
- Don't Know

If yes, during which season(s)? (please circle)

If possible, please send us a copy of any test results.

Spring Winter Fall Summer

9. Did you experience any water shortages during 2002?

- Yes
- No
- Don't Know

If yes, during what season? (please circle)

Spring Winter Fall Summer

10. Do you recall any water shortage(s) before 2002?

- Often
- Once or twice a year
- Never
- I don't know

11. Have you ever installed an additional permanent water source (e.g. drilled a second well) because of:

(a) poor water quality in the original source;

- Yes
- No

(b) insufficient water from the original source

- Yes
- No

12. Where does your drinking water come from?

- Deep/Drilled well
- Surface/Dug well

Surface water

- river
- lake
- stream

Other

- Bottled water
- Don't know

13. How would you like to participate in this programme?

- by having my well water quality analysed (E.coli, nitrates etc.)
- by having my water quantity analysed (static level of my well)
- volunteer with surface sampling (lake, river, stream, etc.)
- volunteer with water level monitoring (static level of wells)
- volunteer for other components of H2O Chelsea (e.g. data entry, events, public education, database design, web design, technical assistance)
- I do not wish to participate

Surname : _____ Given name(s) : _____

E-mail : _____ Telephone : _____

Street No : _____ Street : _____ Postal Code : _____

➤ Please mail your completed Questionnaire to: H2O Chelsea, Municipality of Chelsea, 100 Old Chelsea Rd, Chelsea.QC. J9B 1C1
➤ Or, drop it off at one of the following locations: Farm Point, Hollow Glen or Chelsea Libraries or Chelsea Town Hall (deposit box)



Well Hotline: 827-1124

Please call us if you experience a water shortage. Your call is confidential and the information will be used solely for purposes of the H2O Chelsea programme.

Water Quality Testing: 827-1124

We continue to offer water quality analysis at subsidized rates. Over 800 homes have tested with us in the last year. Drop by Town Hall to purchase your sample kits.