MINUTES
NATIONAL WORKSHOP ON GROUNDWATER

Hosted by Geological Survey of Canada- Quebec Division
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June 15 and 16, 2000, Quebec City

This document is composed of an extended executive summary and two appendixes. Appendix 1 includes the detailed agenda, the results of the breakout groups the list of participants, and a list of references. Appendix 2 was provided during the workshop and includes the speakers presentations.

EXTENDED EXECUTIVE SUMMARY

Introduction

The Geological Survey of Canada *National Workshop on Groundwater* took place June 15 and 16, 2000 at the GSC-Quebec Division offices in Quebec City.
The workshop was attended by representatives from all provincial and territorial departments responsible for groundwater management (except Manitoba), as well as representatives from Environment Canada, Agriculture and Agri-Food Canada, DIAND, and Health Canada. Academia was represented by universities and research institutes from across Canada.

This was a timely event in the history of groundwater studies in Canada. People from across the country gathered in one place to discuss one single issue, the groundwater in Canada. The workshop identified issues linked to Canada's groundwater, and explored various means for addressing them. This was the first event of this type in Canada.

The workshop objectives were:

1. To assess the current knowledge of the aquifers of the main regions of Canada;
2. To evaluate the state of those aquifers by identifying issues and stresses to which they are exposed;
3. To identify, on a broad perspective, problems common to different aquifers as well as specific regional problems; and
4. To initiate a dialogue among provinces and federal agencies .

Format

Day one of the workshop focused on *sharing information* about the state of groundwater of the Canadian provinces and territories.

Day two of the workshop focused on identifying and addressing four major groundwater issues (the topics of these groups were based on the presentation of the previous day) with break-out groups: 1) collaboration, cooperation and partnership; 2) aquifer systems mapping and data management; 3) aquifer knowledge and understanding; and 4) aquifer (watershed) management and protection. A presentation/breakout group format allowed workshop participants to debate on these issues. Plenary discussions were used to share the results of these breakout groups with the entire conference participants.

This executive summary highlights the key issues, challenges and recommendations, from a national perspective, to lessen the knowledge gap of groundwater resources in Canada, both in terms of quantity and of quality. The reminder of this report summarizes the speakers presentations and the main recommendations of the workshop.

Raison d'être

In the last years, concerns on the quantity and quality of Canada's groundwater has been growing around the nation. The importance of groundwater quantity for water management has in many instances been largely ignored in the past. Knowledge of groundwater quantity; in particular, understanding the geological settings of significant aquifers, groundwater recharge, the amount of water available in these aquifers and regional groundwater flow characteristics, is equally important to groundwater quality for the wise management and protection of this resource.

Groundwater is an integral part of the hydrological cycle and ecosystems, and hence, the effects of diminished discharge or degraded groundwater quality on riparian systems, lakes and rivers and the plants and wild life inhabiting these areas are major concerns. An additional growing concern is the ignorance of the current groundwater capacity in Canada and how this might be affected by climate change in the coming decades. Furthermore, because of the growing interest of other countries demanding the export of Canadian water, it is imperative to quantify the complete integrated hydrological cycle (surface and groundwater) of this precious Canadian resource.

It is recognized that there is a knowledge gap related to the delineation, characterization and dynamics of our nation's main aquifers. The aquifers may either be under stress or could be at the limits of the natural cycle of replenishment. This Workshop would significantly contribute to our gaining a better understanding of the knowledge gaps in Canada.

Thus, the workshop main goal was to identify the key groundwater issues that Canada must address in the coming years. The results of the meeting will be used to define orientations and identify priorities of groundwater research and form a basis to establishing a Canadian strategy and eventual partnerships to address knowledge gaps.

General conclusions

- Participants stressed the importance for Canada of understanding its groundwater quantity and quality, and expressed the need for a better coordination and collaboration at the federal level and between federal and provincial agencies. The creation of an advisory or coordinating committee that would include federal and provincial agencies was suggested. The idea of an Memorandum of Understanding, concerning federal research on groundwater resources, between Natural Resources Canada and Environment Canada also emerged from the meeting.

- Concerns were expressed regarding the lack of adequate funding dedicated to research, monitoring and reporting as well as concerns about the lack of complete, accurate, and updated data and general information on Canadian's groundwater that is openly available to the public.

- Several issues were identified and potential collaboration among provinces and federal agencies were discussed during the event. The reactivation of the national steering committee for groundwater was proposed as a possible mechanism for coordination. The creation of an advisory or coordinating committee that would include federal agencies and provinces was explored.

Recommendations

Five main recommendations emerged from the workshop; these are listed below together with the items that were discussed and that led to the final recommendations. See appendix 1 for details on the breakout groups reports.

1. A **National Inventory** is needed

- National Synthesis
- National vision
- State of the groundwater resource
- Committee
- GSC in collaboration with provinces/territories
- Advocate
- What will this be useful for?
- Policy; generalization
- Broad framework for setting priorities
- Barriers: formatting, interpretation. Water well census

2. **Groundwater Steering Committee —** reactivate or create

- Advocate
- Strong national leadership is needed
- Accountability
- NRCan Water Res. Group
- One person
- Possibility of a Department of water
- Water has been recognized as a priority

- 11 Federal Departments and ministries
- Independent Agency? Reactivate existing committee?
- Advisory
- Coordinating
- Communication vehicle
- Policy framework
- Climate changes on GW
- National synthesis
- A champion is needed
- A politician is needed
- Lobbying
- Leader vs. coordination vs. coach (spokesperson)

3. National GW monitoring network — create in close cooperation with provinces

- Collaboration Federal-provinces-Territories
- State of GW at a given time (Quantity time series)
- Regional GW quality surveys
- This is a provincial activity
- The state of GW monitoring
- Recharge; Climate changes
- Build on existing data
- Integrative process

4. Main groundwater **Research** needs

- Fractured rock characterization
- Pathogen transport and fate
- Arsenic
- Surface water-Groundwater-Climate integration
- Water quality
- Integrated approach
- Natural groundwater contamination
- Recharge – techniques and tools to measure
- Role of aquitards
- Improve validation of well-head protection areas
- Improve estimation of hydraulic parameters
- Generic conceptual models
- Switch of emphasis from point source contamination/remediation to groundwater management at a reasonable /regional scale: a change in fundamental philosophy! (management strategy to adopt an integrated set of measures that work together to reduce and prevent the creation of contaminants. It requires a mix of clear regulation, voluntary action and economic incentives)
- Development of SW-GW modelling tools – "integrated approach"
- Geophysics and geostatistics as tools, or approaches, to estimate physical parameters at appropriate scale

5. Finances-Resources — how to approach

- Take a broad approach and ask directly to the Finance Minister ("Paul's money"?) as the mining did: they obtained 15M$ over 3 years
- Lobbying – committee spokesperson
- Water value
- NSERC
- Hooks for promoting groundwater

– NCE Clean Water

– Climate Change Action Fund

– CRESTech

– Health

– AAFC

It was recommended to have a similar national workshop every year or two.

Appendix 1 Agenda, results of the breakout groups, and attendees

Appendix 2 Presentations from provinces and federal departments