



Dufferin
Headwaters Source
Protection Pilot
Project

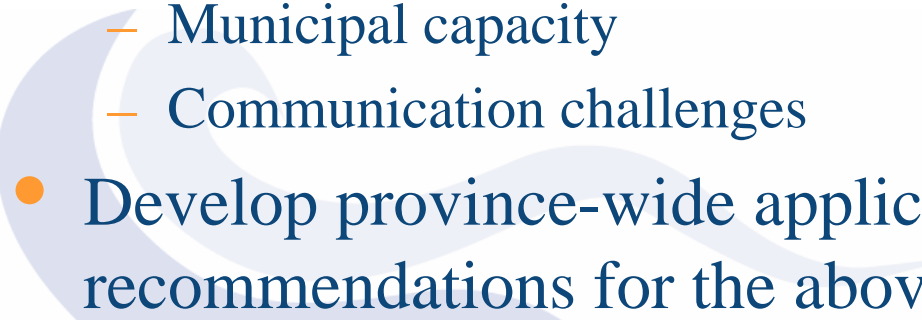
Overview: Dufferin Headwaters Pilot Project

CTC SPC

Black Creek Pioneer Village

January 29, 2008

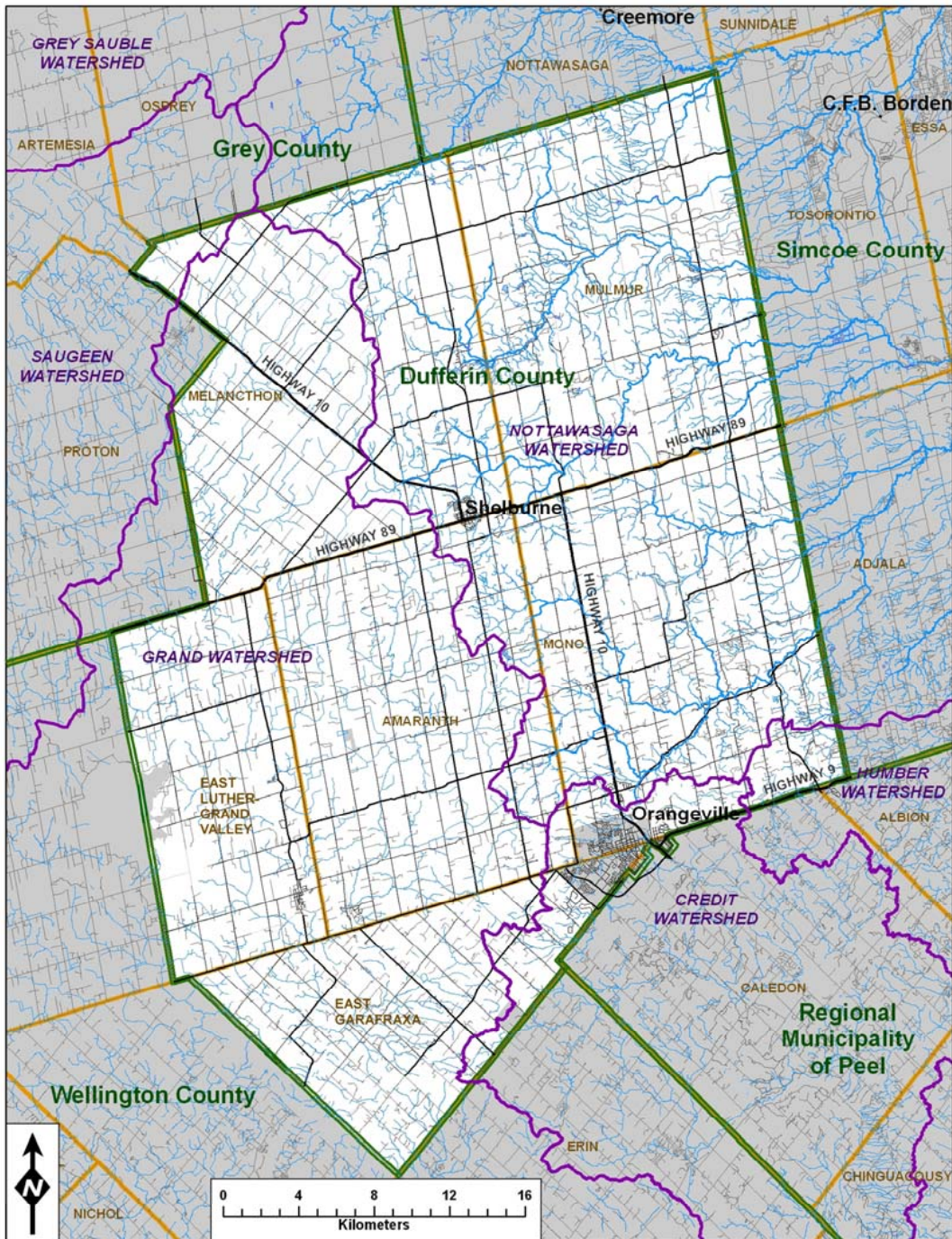
Pilot study objectives

- Aid the implementation of multiple source protection plans within a single municipality by addressing:
 - Boundary mapping issues
 - Groundwater fluxes (water budget)
 - Municipal capacity
 - Communication challenges
 - Develop province-wide applicable tools and recommendations for the above objectives
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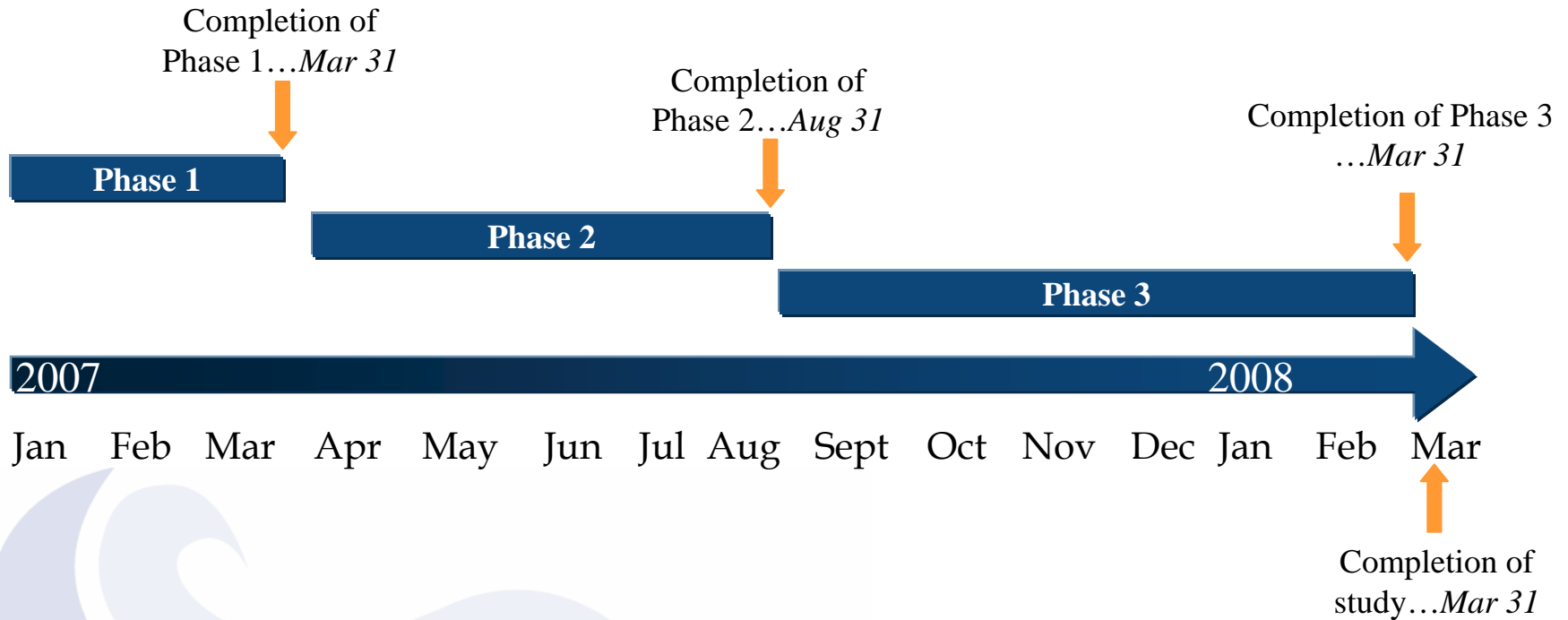
Pilot study overview

- Dufferin County contains headwaters of:
 - Grand River
 - Nottawasaga River
 - Credit River

<ul style="list-style-type: none"> • Town of Orangeville • Town of Shelburne • Town of Mono • Town of Erin • Townships of: East Garafraxa and Amaranth • East Luther–Grand Valley • Melancthon • Mulmur 	<ul style="list-style-type: none"> • Ministry of the Environment • Ministry of Municipal Affairs and Housing • Ministry of Natural Resources 	<ul style="list-style-type: none"> • Conservation Ontario • Lake Erie • South Georgian Bay–Lake Simcoe • Credit-Toronto–Central Lake Ontario
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Pilot study work plan

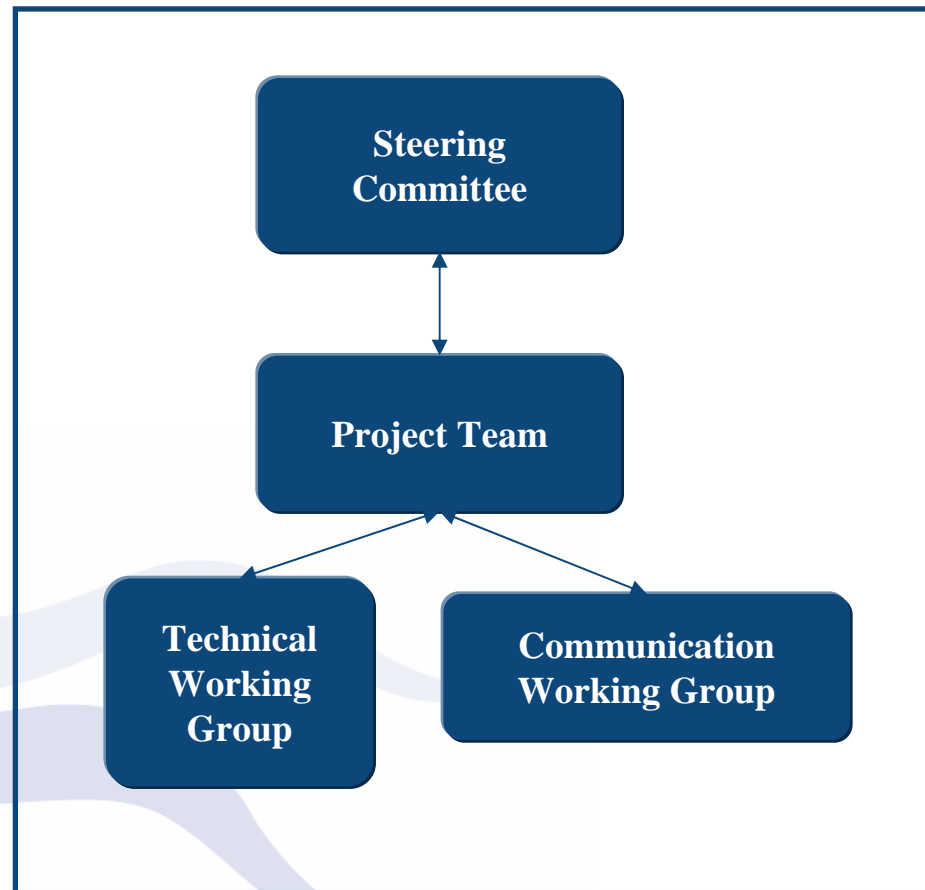


- Phase 1 – Issue identification
- Phase 2 – Information gathering
- Phase 3 – Deliverables

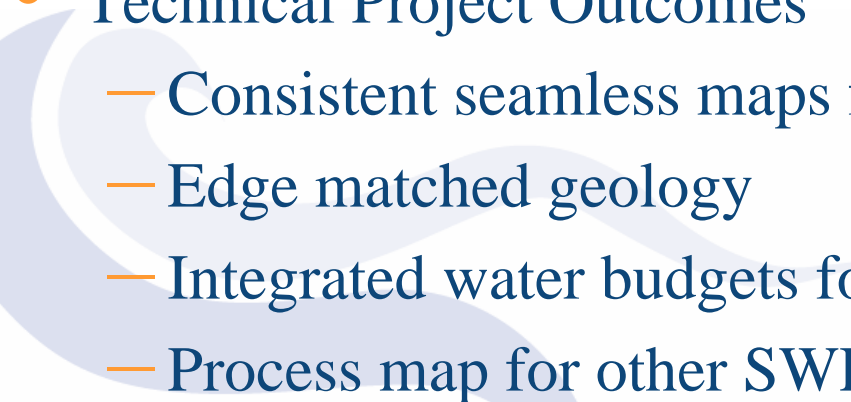
Pilot study deliverables/ outcomes

1. Selected integrated **maps** for each municipality.
 2. **Report:** Geological cross-sections and delineation of groundwater divides across source protection boundaries.
 3. **Report:** Cross-boundary technical issues and recommendations.
 4. **Report:** Municipal capacity building needs and related communication challenges and solutions.
 5. **Presentation:** Project summary and recommendations.
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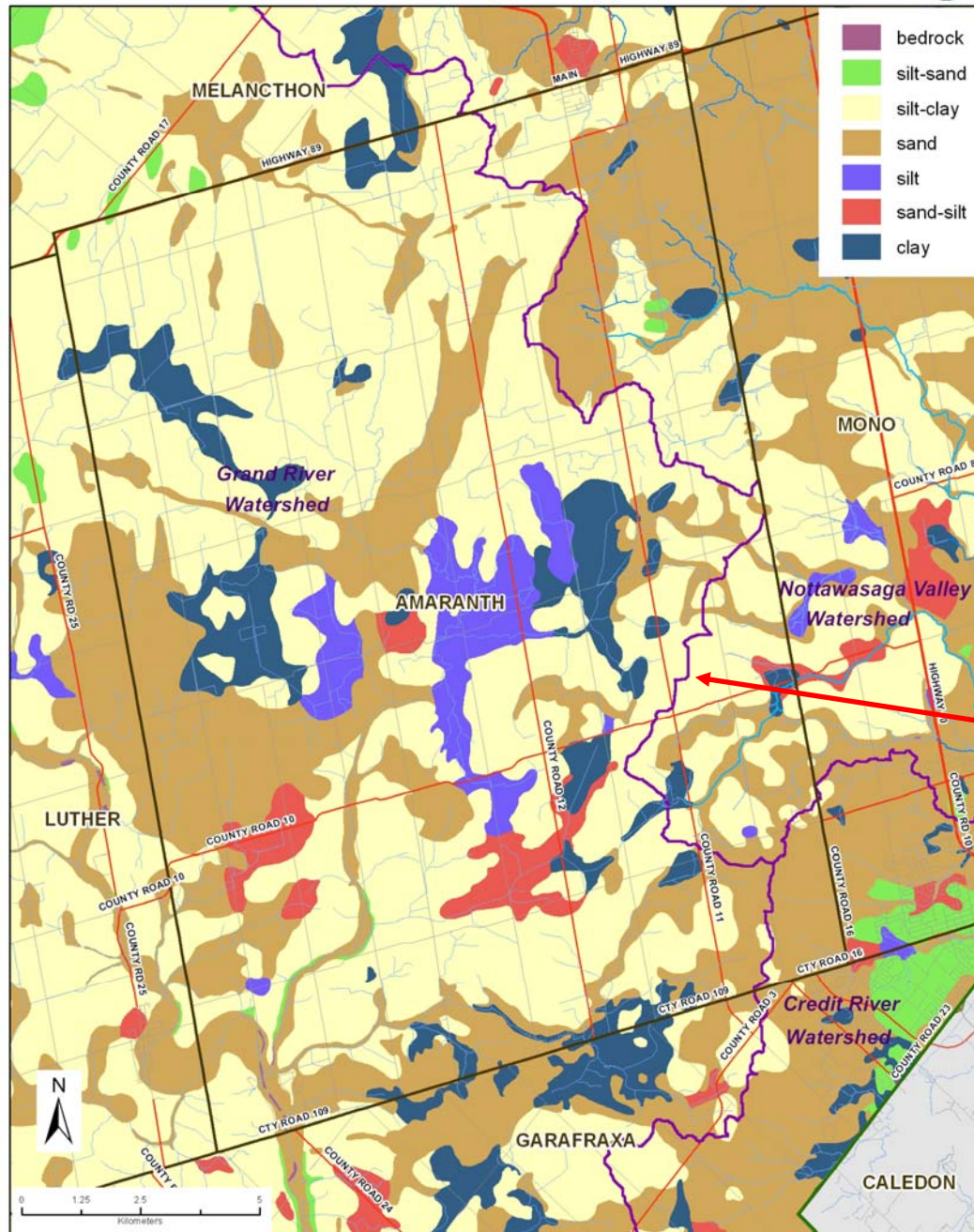
Pilot study governance



Technical component overview

- 3 components:
 - Edge matched maps for municipalities
 - Edge matched geological cross-sections
 - Flux calculations for consistent water budgets
 - Technical Project Outcomes
 - Consistent seamless maps for municipalities
 - Edge matched geology
 - Integrated water budgets for SWP
 - Process map for other SWP regions to use
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Dufferin Headwaters Project: Amaranth
Quaternary Geology

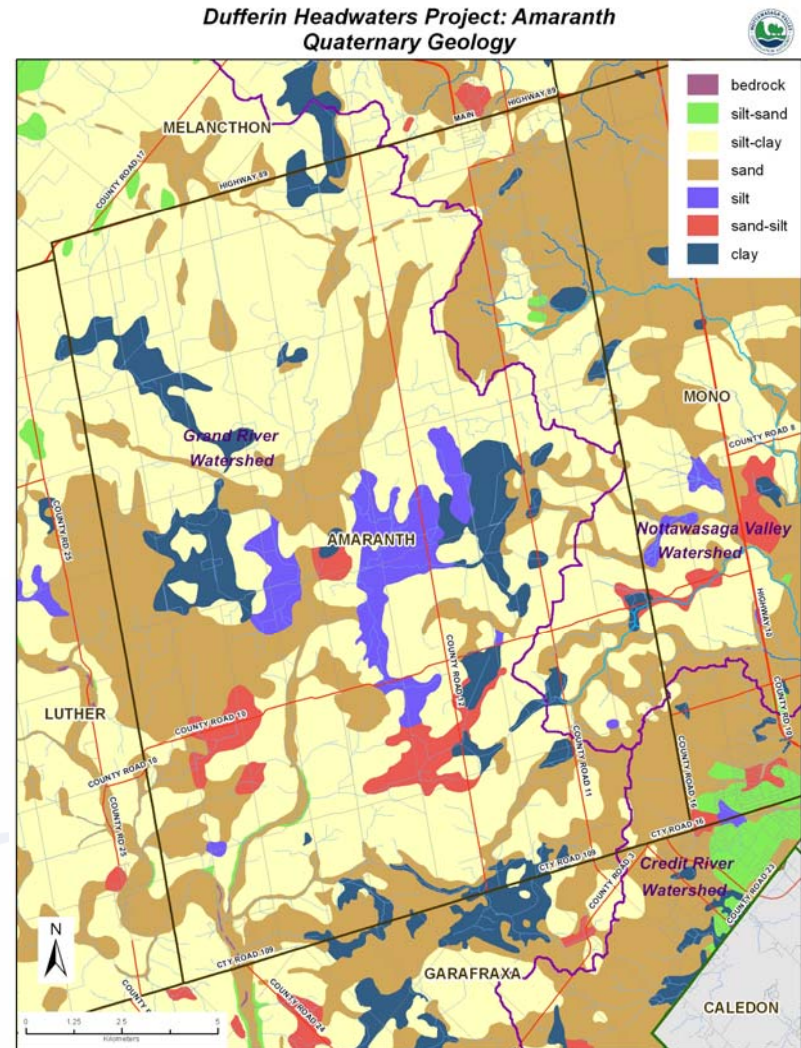


Edge matched maps

- Illustrates Quaternary Geology
- An example of **proper** edge-matching
- Notice that data matches on either side of the watershed boundary

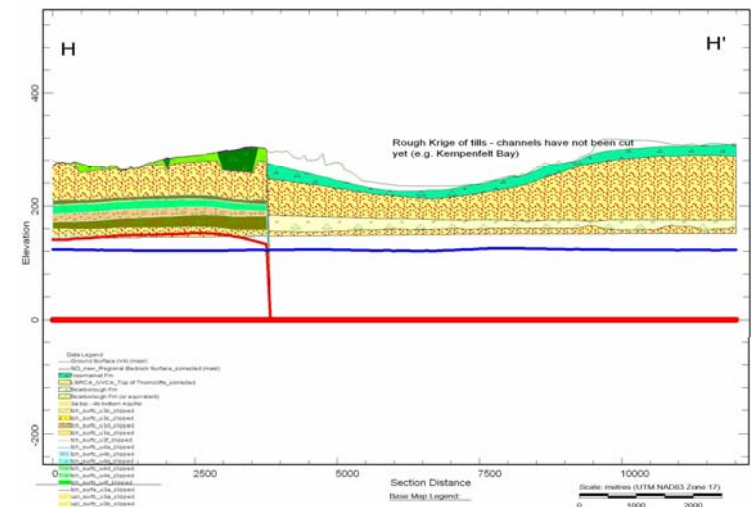
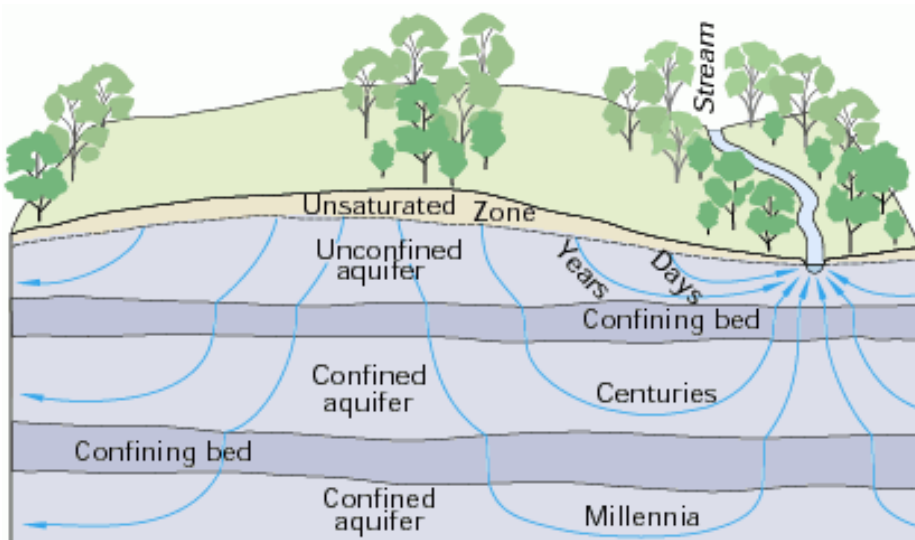
Maps: Where we are at and next steps

- Data solicitation
- Creation of draft maps
- Issues identification and recommendation
- Vulnerable Aquifers
- Significant Recharge areas
- To be completed by March 31, 2008



Geological Cross-Sections

- **Geology controls ground-water recharge, flow, discharge and availability**
- **Edge Matching-** Ensure 3-D geological consistency across watershed boundaries
- **Benefit-** SWP water budget modeling exercise



Flux calculations

Water Budget: $\text{Input} = \text{Output} \pm \Delta \text{ Storage}$

Topographic Divides constitute Drainage Basin Divides for SW
Topographic Divides may or may not be GW Divides

Flux calculations- delineation of water gained or lose to neighbouring watersheds

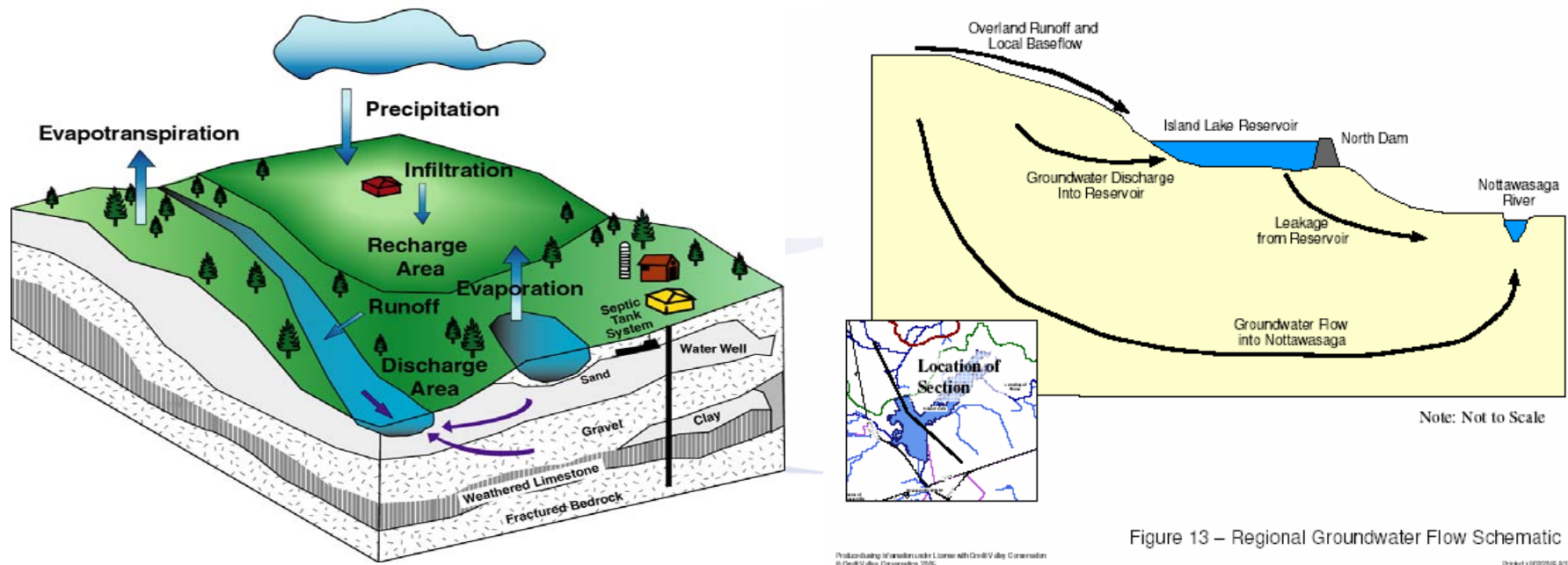
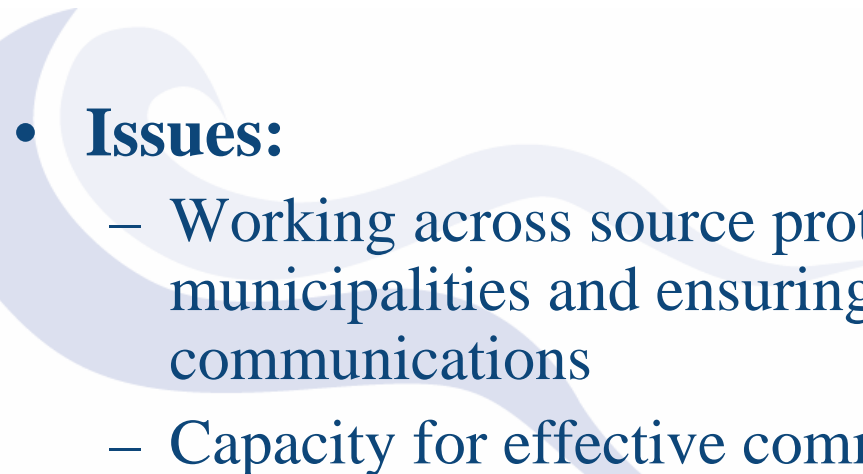


Figure 13 – Regional Groundwater Flow Schematic

Communications

- **Outcomes:**
 - Identify the issues and develop tools and recommendations to aid source protection areas and municipalities to address boundary communication issues
 - **Issues:**
 - Working across source protection regions, areas, and municipalities and ensuring collaborative communications
 - Capacity for effective communications
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Communications- recommendations

- **Results and recommendations:**

Resolving x-boundary issues through consultation and communication

- Have SP PM and project staff set up informal discussions with neighboring SPRs require the SPC to outline x-bound. Comm. protocols with neighboring SPCs following consultation in the ToR
- Promote the development of x-boundary comm. protocols
- Require the SPC to discuss x-boundary issues with affected SPA
- Funding made available to the municipalities and SPR to facilitate the comm. needed to deal with x. boundary issues
- Municipalities allocate and identify staff empowered to deal with x. boundary comm.
- CO play a role in facilitating comm. among SPA/SPRs and supporting the production of comm. tools/techniques that be employed across Ontario.

Remaining steps

- **Technical:**
 - Complete seamless map productions
 - Complete seamless geological cross-sections
 - Complete flux calculations
 - **Communications:**
 - Complete newspaper insert
 - Complete report
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Thank you

Questions

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