

Role in aquifer management is to:

- develop broad understanding of occurrence of aquifers, aquifer/aquitard, surface water/groundwater relationships and groundwater quality
- Carry out studies which allow us to work toward an understanding of sustainable withdrawal of groundwater from aquifers
- Carry out broad-scale groundwater monitoring
- Develop mathematical models of aquifers including aquifer/aquitard interaction, pumping centers, surface water/groundwater interaction
- Provide sustainable groundwater development capacities of aquifers to Water Rights and provide support in evaluation of development impacts



Previous Studies of Sandilands Geology and Hydrogeology

- Installation of first monitoring well (1966)
- Teller and Fenton (1980)
- Regional test drilling as part of Groundwater Availability studies (1980, 1985)
- GSC/ITM Rotosonic drilling (1992)
- Test drilling and monitoring well installation in 1990's (WS)
- Development of 3-D geological model (ITM)
- Studies by GSC and others 2000's
 - M. Sc. thesis by A. Cherry
 - Ph. D. thesis by G. Ferguson
 - Installation of additional monitoring wells by GSC and province
 - Seismic reflection studies by GSC
 - PVWC studies and pumping test

Future Studies

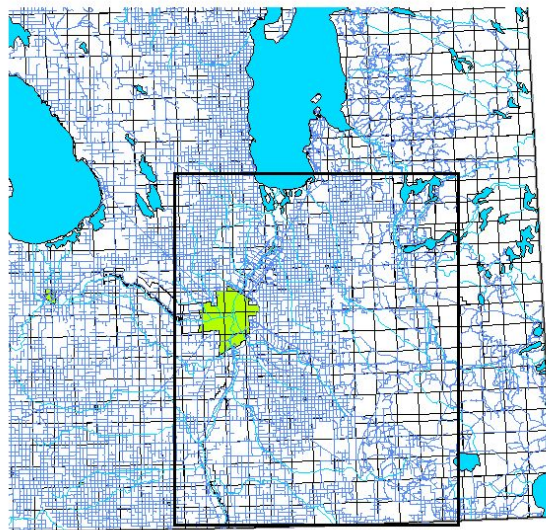
- Continuing work by GSC including reflection seismic
- Additional regional test drilling and monitoring well installations by WS
 - Including MW installations and monitoring in aquitards
- Improvements to geological model in cooperation with ITM
- Water quality sampling and analysis/age dating by WS
- Incorporation of Sandilands Region into 3-D digital model from Sandilands Region to Capital Region
- Monitoring results from PVWC development?

3-D Model

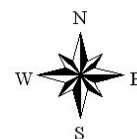


- Mathematical model into which we incorporate available information on
 - geology,
 - hydraulic properties of aquifers and aquitards
 - Recharge/discharge
 - Surface water bodies, drains, wetlands
 - Groundwater withdrawal
 - Groundwater quality boundaries

Groundwater Resource Evaluation Initiative Approximate Extent of Study Area



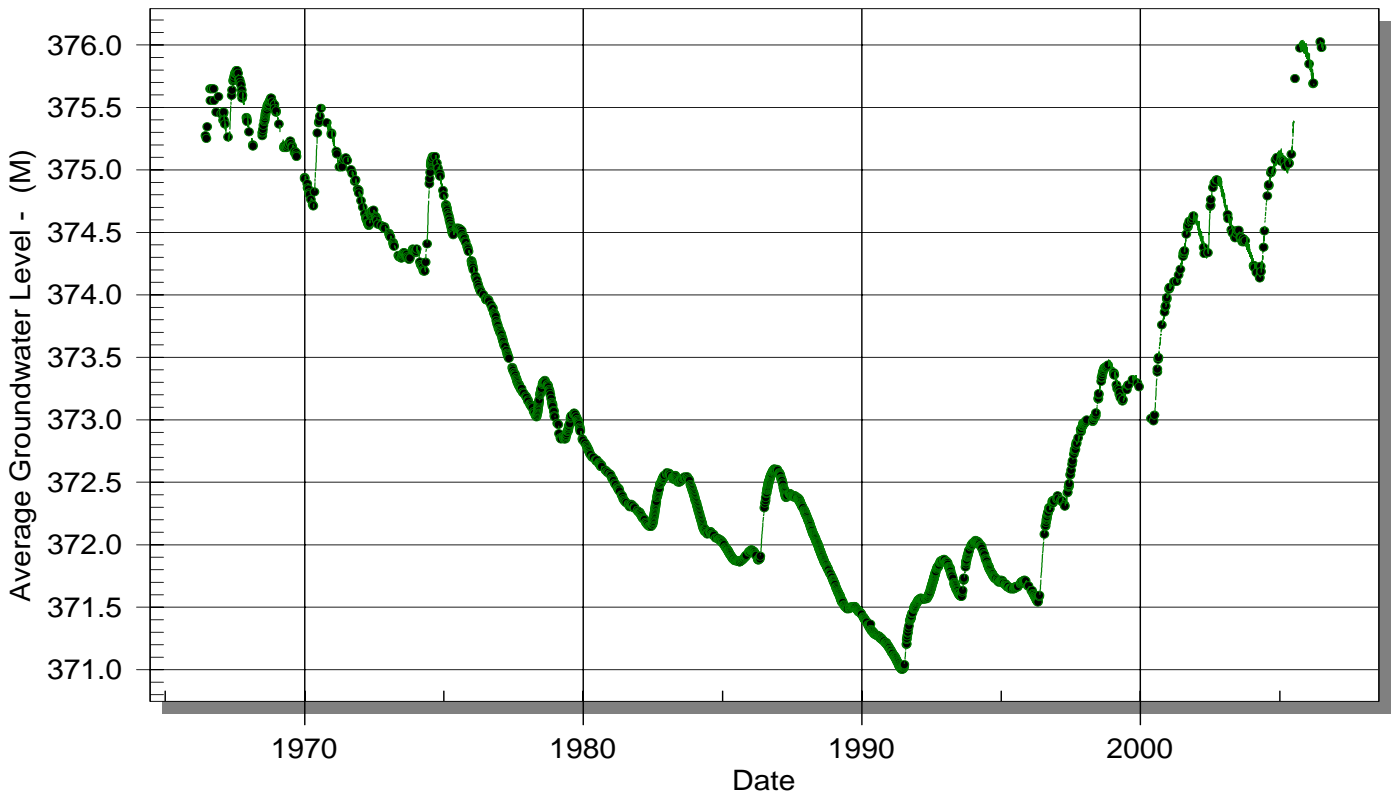
60 0 60 120 Miles



3-D Model

- Model is calibrated against known monitoring and pumping information
- Model is upgraded on a regular basis as additional information is collected
- Can “run” model to evaluate impacts of current and future development, interface with field programs to collect more data, estimate recharge and discharge rates and areas
- Model becomes the management tool for the aquifer systems
- Will be several years before we complete the model and are fully comfortable with applying it.

G05OE001 SANDILANDS #1 NE07-05-10E
GROUND LEVEL ELEVATION 383.484 METRES (1258.15 FEET)



G05OB004 WINKLER #2 SW04-03-04W
GROUND LEVEL ELEVATION 272.817 METRES 9895.07 FEET)

