

# Lake Winnipeg Research Consortium Annual Science Meeting

March 24, 2010



## Red-Assiniboine Project

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Canada 

Manitoba 



# Project Objectives

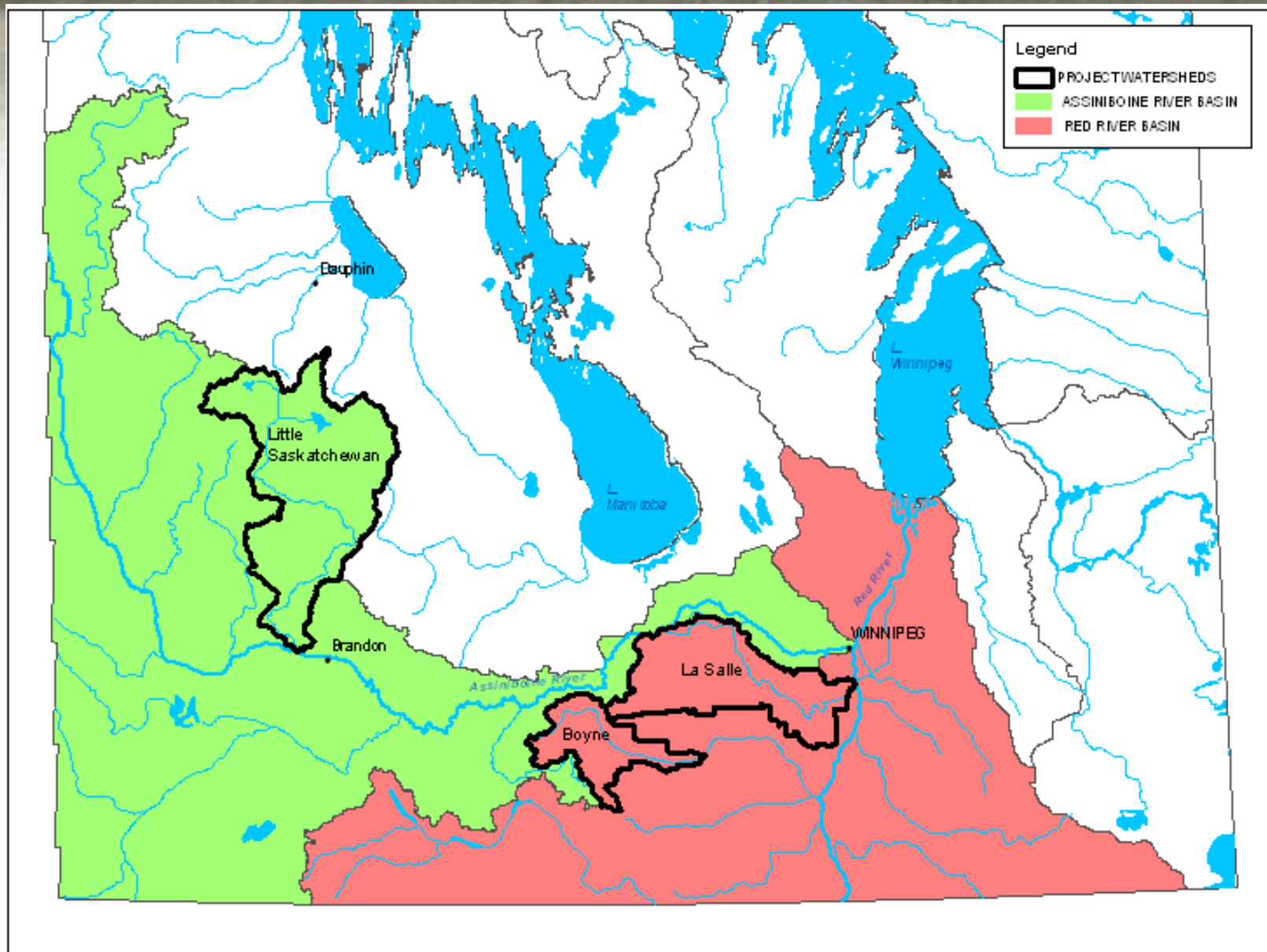
- To identify and evaluate the impacts of various land-use and land management scenarios
- To develop tools and approaches that can assist with watershed planning by identifying effective land use strategies and beneficial management practices (BMPs)
- To determine where in the watershed select BMPs may be most effective
- To assess transferability of methods from pilot watersheds to other watersheds and regions



# Project Partners

- Agriculture and Agri-Food Canada
- Environment Canada
- Manitoba Water Stewardship
- La Salle Redboine Conservation District
- Pembina Valley Conservation District
- Little Saskatchewan River Conservation District

# Pilot Watersheds





## Key Activities

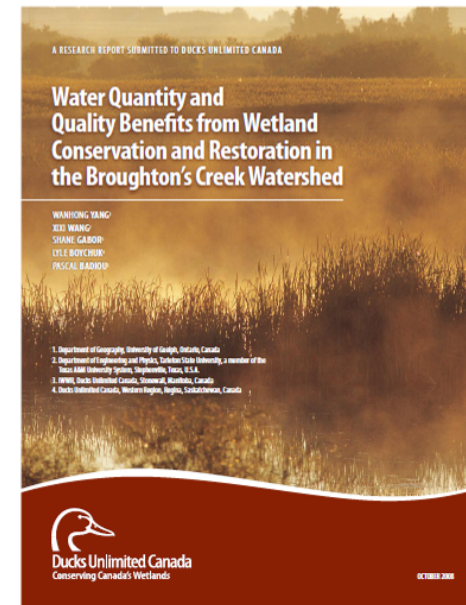
- Identifying key land-use and management strategies that address agri-environmental risks and simulate their effects on water quality (GIS, modeling, scenarios)
- Identifying BMPs that provide environmental and economic benefits and simulate how these practices can be effective in reducing risks to water quality (GIS, modeling, scenarios)
- Developing tools and approaches to assist with integrated watershed management planning
- Communicating and discussing approaches, tools, and results with stakeholders in the Lake Winnipeg Basin and other interested parties across Canada (including transferability of tools and approaches)

# Scenario development

- Define scenarios
  - How many different scenarios?
  - What will they be based on?
- Select effective BMPs and land use changes to include in the scenarios based on:
  - Science
  - Degree of expected impact
  - **Feasibility (economics, farming systems)**
  - Modeling capabilities
- Develop different land use scenarios based on potential future BMP adoption
- Gather feedback and adjust scenarios

# Landscape Based Modeling

- Evaluating two different models
  - Soil and Water Assessment Tool (SWAT)
    - DUC Broughton's Creek
    - South Tobacco Creek (WEBs)
  - A Landscape Cumulative Effects Simulator (ALCES)
    - Province of Alberta
- Simulating scenarios with a focus on:
  1. Water quality (nutrients and sediments)
  2. Economic benefits



# Landscape Based Modeling

- Need to ensure that models are calibrated
- Accurate data is important
  - Current and historical land use and management
  - Soils
  - Topography
    - for drainage patterns
    - sub-basin definition
  - Stream flow
  - Water quality data
  - Pollutant point sources

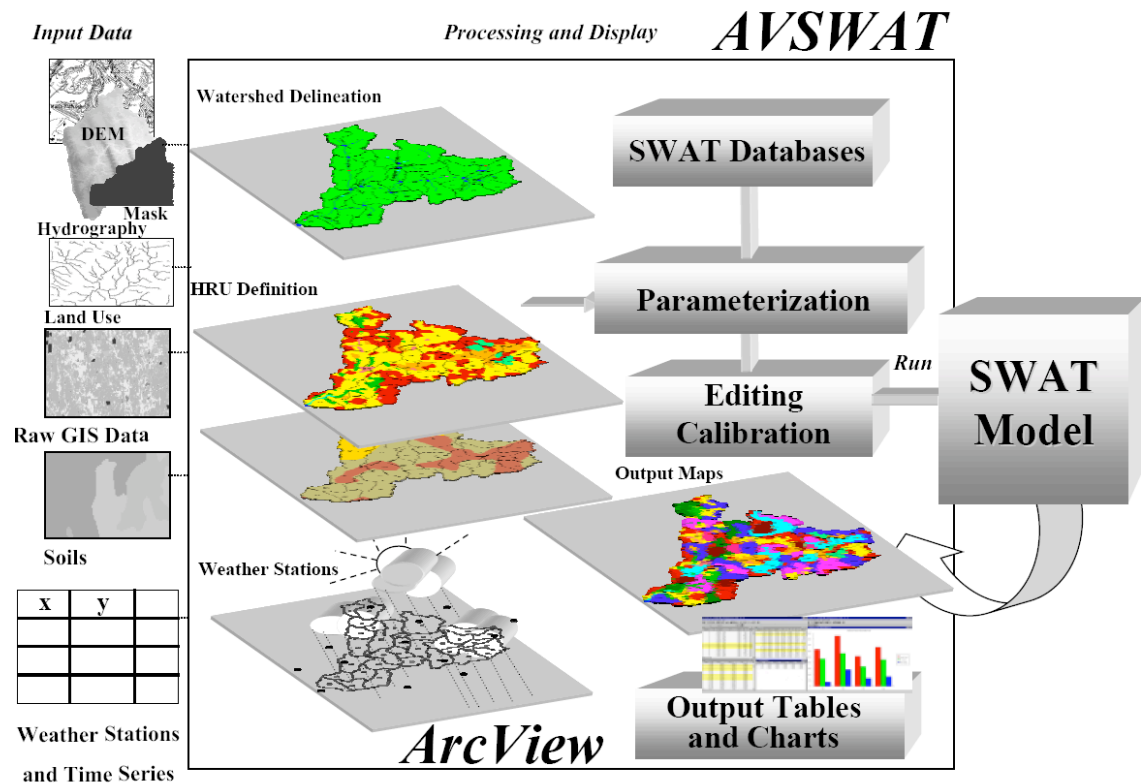


Figure 1.1

## Current Status

- Project management structure and technical teams have been established
- Models are being developed and calibrated using available data
- A number of scenarios are being developed and selected (status quo, optimization for environmental and economic benefits)
- Land use information and preliminary scenarios development approaches are currently being shared with watershed stakeholders
- Presentations to interested parties are ongoing. Additional partnership opportunities are being explored.



## Next Steps

- Technical workshop being planned for late spring/early summer 2010 to bring together expertise on modeling and landscape-based analysis
- Scenario refinement and ranking for water quality and economic benefits to be completed by 2012
- Findings to be shared with stakeholders and practitioners to assist with future watershed planning and management – includes demonstration of a decision support system prototype (anticipated completion by 2013)
- Transferability to other watersheds and regions to be determined (by 2013)



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