

# The Water Management Framework for the Industrial Heartland and Capital Region

*WaterTech 2009*

# Outline

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- Background
- Water Concerns
- Developing the Framework
- Objectives and Principles
- Future Vision and Phasing
- Current Status

# The Industrial Heartland and the Capital Region

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- The amount of development planned for the Industrial Heartland (IH) demanded a change in the approach for review of the environmental impacts in a region such as this
- It was essential to anticipate impacts on the North Saskatchewan River (NSR) considering both water supply and discharge impacts for the upgraders against the backdrop of increasing urban population

# Quality Impacts on the North Saskatchewan River

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- Volume of flow in the river is not currently stressed and it has been established that there is capacity for net withdrawals to support growth
- However, it is important to forecast growth to ensure that total demand does not exceed the capacity of the river

# Quality Impacts on the North Saskatchewan River

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- Water quality has been negatively impacted; Nutrient levels (phosphates & nitrogen nutrients) and the non-fish biotic health index have approached threshold levels downstream of Edmonton
- Water quality is seen as the most critical issue to manage as urban and industrial demands on the river grow

# Water Management Framework

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- The Water Management Framework was created by a multi-stakeholder committee and announced by Minister Renner December 2007
- This Water Management Framework is one component of the province's broad strategy to manage cumulative effects
- It provides for environmental, economic and social sustainability in the Devon to Pakan reach of the North Saskatchewan River

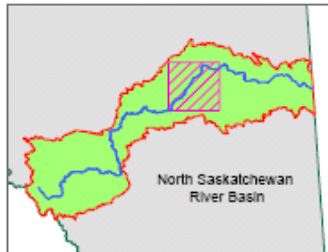
# Strategic Objectives

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- Make Alberta a world leader in water and water reclamation technology
- Minimize the impact or “footprint” on the North Saskatchewan River by improving the quality of the water and ensuring water conservation practices are in effect
- Implement the framework using distinct phasing
- Offer a regional perspective that can be used as a model for other regional frameworks in the province

# Map of Water Management Area

## Industrial Heartland and Capital Region Water Management Area



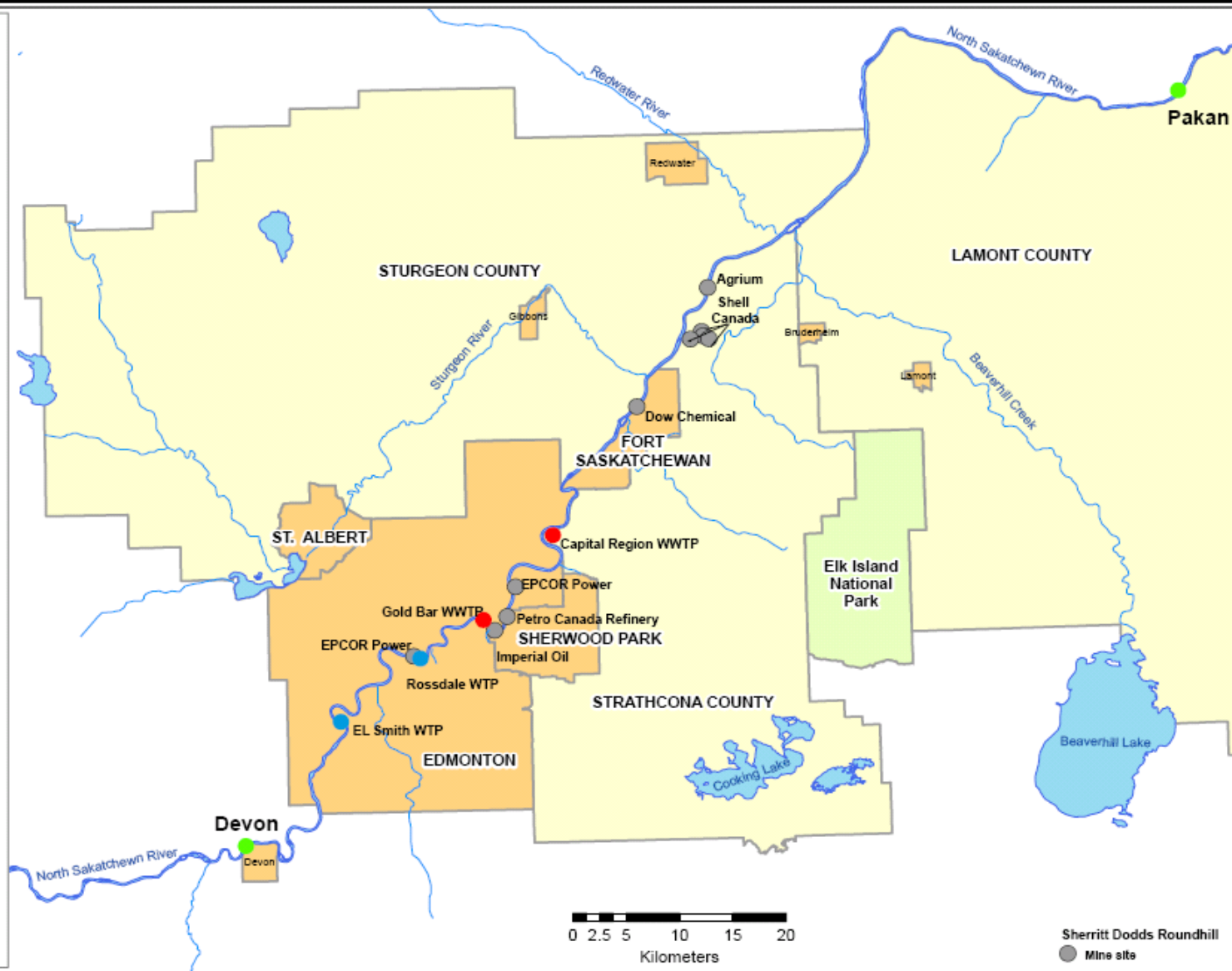
- River Monitoring Site
- Wastewater Treatment Plant (WWTP)
- Water Treatment Plant (WTP)
- Examples of Industrial Facilities

**Alberta**  
Environment

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# Principles

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- Regional approach that:
  - is integrated – addresses supply/ withdrawal, treatment/ reuse and discharge
  - is cumulative effects driven and considers the economic, social, and environmental impacts
  - has the ability to serve all municipal and industry users from Devon to Paken
  - builds on existing commitments to use reclaimed water from return flows

# Principles

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- Phased approach to development and implementation that:
  - uses BATEA and provides the opportunity to move to more efficient, environmentally sound processes as science-based work indicates the need
  - encourages and recognizes solutions that limit the number of impacts and make effective use of existing capital infrastructure
  - allows existing industry to be integrated into the Framework

# Principles

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- Meets the criteria for the framework, describing a way to:
  - improve the quality of the North Saskatchewan River and meet existing and announced water quantity and quality targets
  - manage water quantity to ensure that sufficient water remains in the river to maintain aquatic life and support current and proposed industrial development

# Principles

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- Enables sustainable growth by:
  - ensuring certainty and an economically viable, secure supply
  - managing the impact of collective development in a sustainable manner
  - signaling a change for the future and demonstrating ways it is future-oriented

# Future Vision of the Framework

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- Promotes a water conservation ethic for all users
- Advocates for a greater use of reclaimed water for non-potable water demands
- Moves toward a minimal-loading discharge policy
- Uses an integrated approach to the management of solids and wastes

# Future Vision of the Framework

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- Maximizes value by evaluating options based on environmental, full-cycle economics and social impacts
- Ensures a secure, reliable supply of water
- Optimizes the supply of raw river water for industrial process uses by utilizing and upgrading existing intakes
- Uses existing infrastructure for the short term growth demands

# Future Vision of the Framework

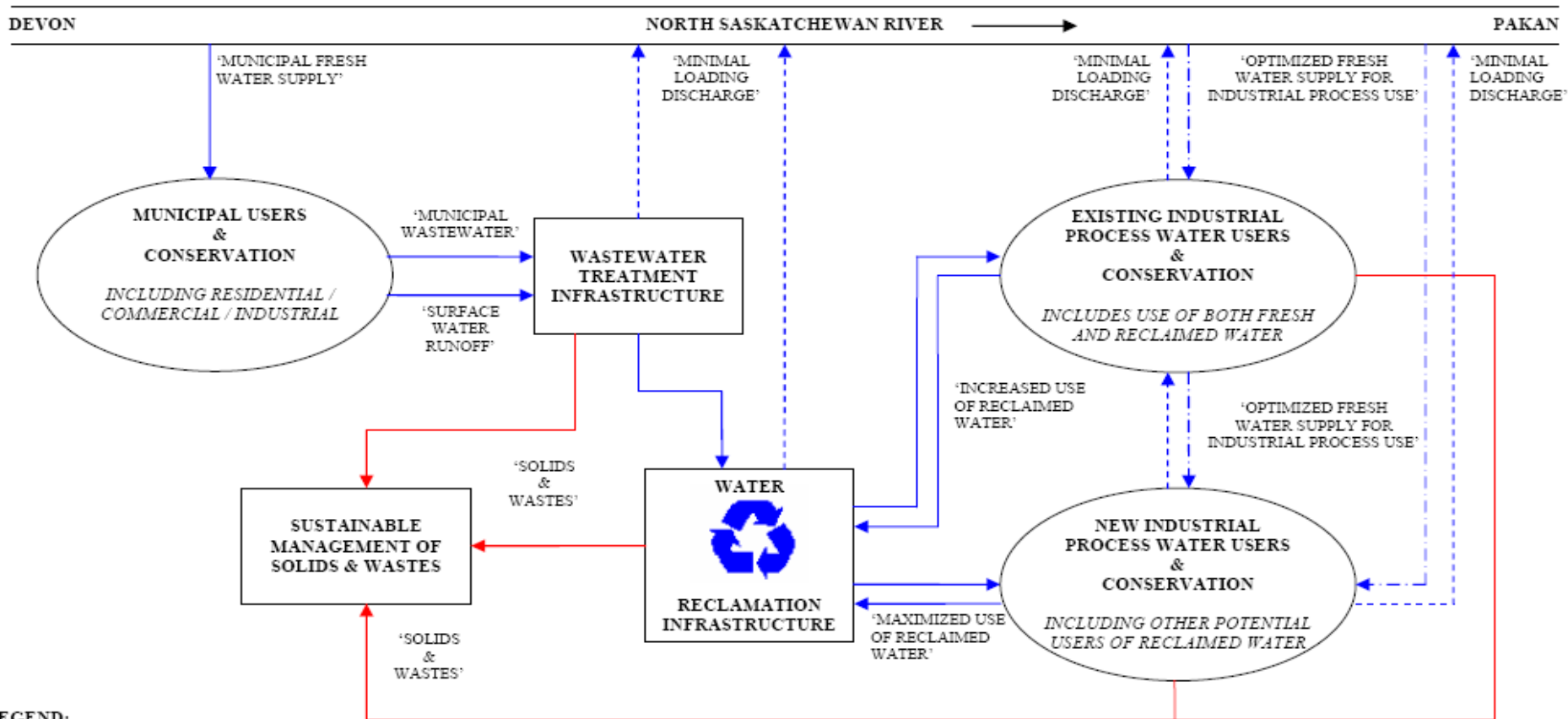
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- The Water Management Framework will manage cumulative effects in the North Saskatchewan River, supporting the goals of Alberta's Water for Life Strategy
- The end result will be a system that protects the aquatic environment, provides incentives to improve environmental quality, and is flexible to the unique demands of the Industrial Heartland and Capital Region

# Conceptual Network

## SUSTAINABLE REGIONAL WATER MANAGEMENT NETWORK CONCEPT TO 2041

### North Saskatchewan River - Devon to Pakan





# Phase One (Current)

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## “Enabling Current Developments”

- build toward the regional system
- establish a baseline on current NSR conditions
- strive for optimum use of existing infrastructure
- supply current industry needs
- no new physical intakes on the NSR

# Phase Two (2009-2012)

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## “Foundation Building for Long Term Sustainability”

- enabling industry to make the transition to the new regional system(s)
- existing withdrawals are upgraded to become a part of the supply network, or phased out as they reach the end of their service life

# Phase Three (2012-2041)

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## “Sustainability”

- integration of existing facilities into the framework, making an integrated supply network
- world class integrated water management system within the North Saskatchewan River
- sustainably support the environment, and social and economic development

# Implementation Governance

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## **Multi-stakeholder Steering Committee comprised of representatives from:**

- Alberta Environment
- Alberta Finance and Enterprise
- Alberta Capital Region Wastewater Commission
- North Saskatchewan Watershed Alliance
- Existing and Proposed Industry
- The City of Edmonton
- Strathcona County
- Sturgeon County

# Implementation Sub-Committees

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- Sub-Committees of this Steering Committee are in place and focused on implementation activities related to:
  - Baseline Science
  - Engineering Studies
  - Governance and Management of Assets
  - Communication and Education.

# Baseline Science

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- Water Quality
  - assuring the outcome of improving water quality
  - tool to determine proportion of point source versus non-point source loading under various scenarios
- Water Quantity
  - assist in defining and managing instream flow requirements and targets
  - tools to understand future management of water licenses

# Engineering

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- Evaluate alternative technologies and facilities for:
    - industrial wastewater reclamation
    - freshwater withdrawal optimization
    - effluent loading minimization
- as defined in the Framework

# Future Certainty

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- Opportunity to provide the regulatory certainty and clarity required to support sustainable water use in the region over time
- Ensure that credible, science-based decisions can be made, resulting in better information to assist organizations in future planning and investment decisions



# Questions/Comments?

<http://environment.alberta.ca/1933.html>

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