Water, Agriculture and the Environment Conference – April 16-17, 2013 Lethbridge, Alberta

Irrigation Development in Saskatchewan

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Outline

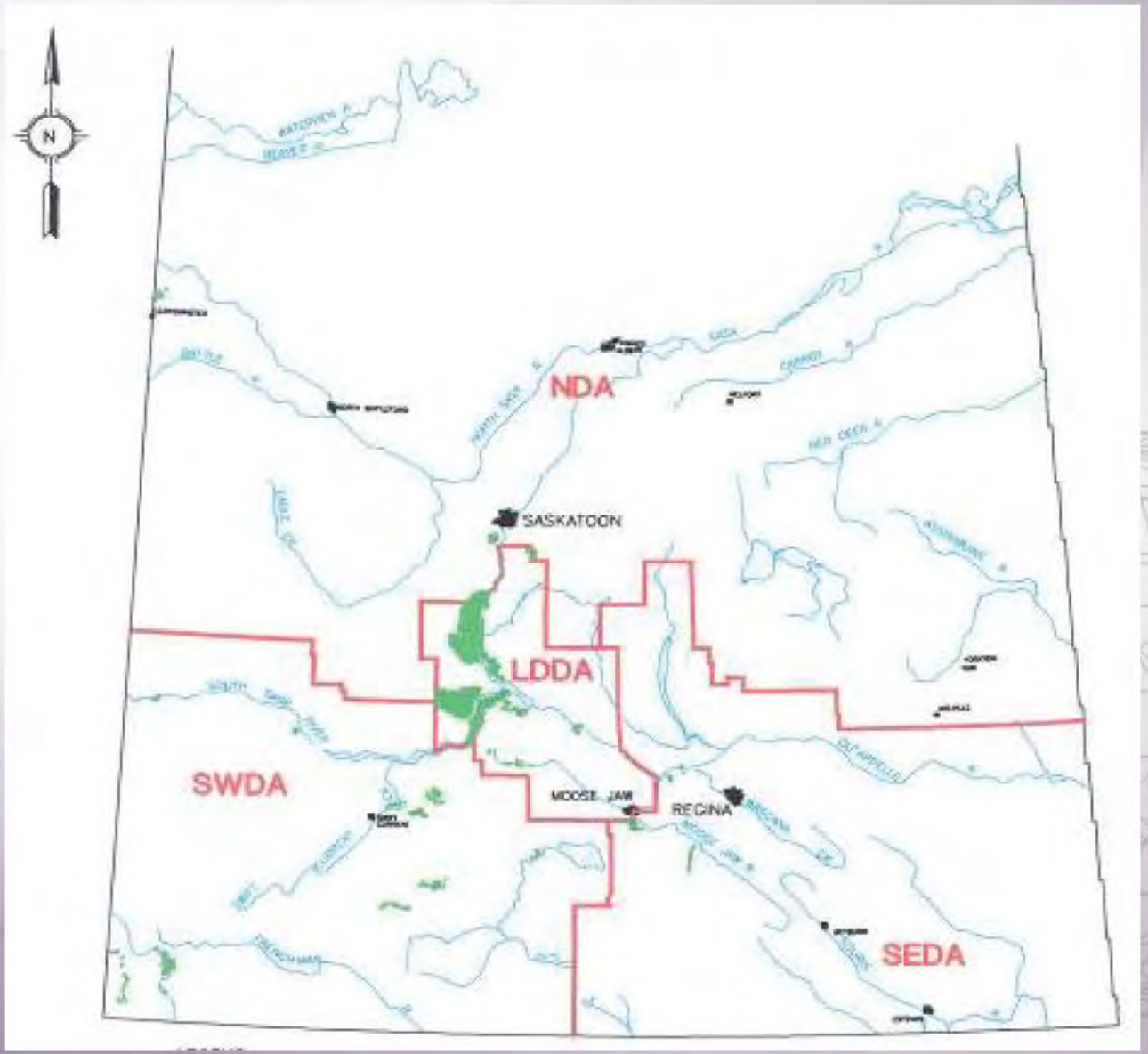
- SIPA
- Brief History of Irrigation in Saskatchewan
- Irrigation Today
- Irrigation Potential in Saskatchewan
- Status Today April 2013
  - Lake Diefenbaker’s Unfinished Business

SIPA

- Mandate
  - Represent the interests of irrigation membership in Saskatchewan and to provide a common voice for issues concerning irrigators
- Four Goals
  - Advocate for irrigation projects
  - Develop and implement a strategy to promote the benefits of irrigation development
  - Provide input to Government on policies impacting irrigation
  - Assist in the expansion of irrigation

SIPA –Board Representation

1 – NDA
2 – SEDA
3 – SWDA
4 – LDDA



Brief History of Irrigation in Saskatchewan

- Phase 1
  - Cypress Hills – Maple Creek area
  - 1880's
  - By 1905
    - 110 irrigators
    - 190 miles of canals
    - 6000 acres
  - In 1920 – 10,920 acres licensed

Brief History of Irrigation in Saskatchewan

- Phase II
  - 1935 PFRA – Prairie Farm Rehabilitation Administration
  - Beginning 1936
    - 26 storage reservoirs
    - 6 irrigation projects
    - 23,000 acres
  - Provincial Government
    - Additional 9 irrigation projects
    - 40,000 acres depending on water levels in PFRA reservoirs

Brief History of Irrigation in Saskatchewan

Phase III

- A dream first envisioned in 1880 became a reality in 1967 with the completion of the Qu'Appelle and Gardiner Dams forming Lake Diefenbaker

SASKATCHEWAN RIVERS DEVELOPMENT ASSOCIATION

ROYAL COMMISSION
on the proposed
SOUTH SASKATCHEWAN RIVER PROJECT

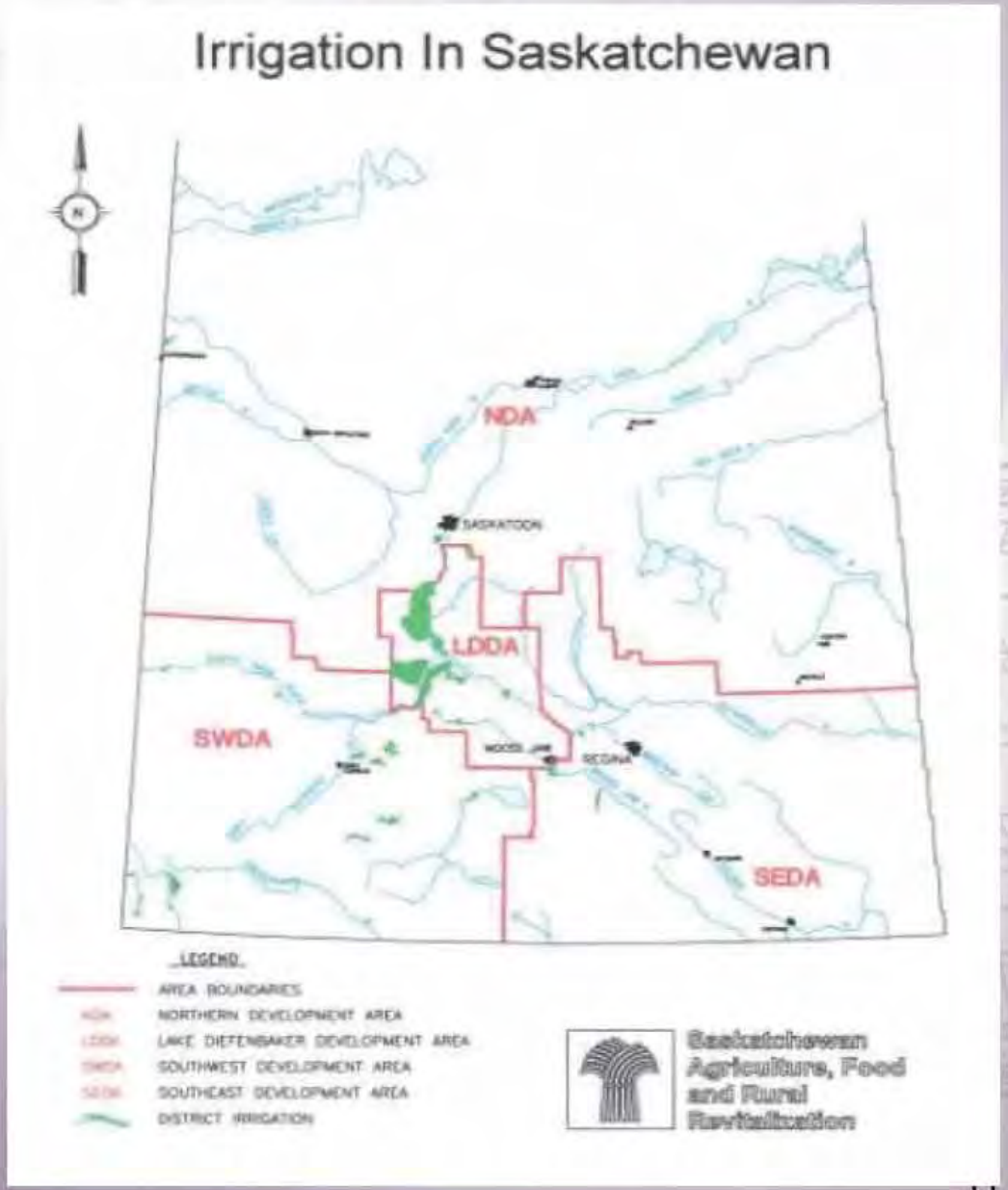


This lake, now a major geographic feature in south-central Saskatchewan, was named Diefenbaker Lake in honour of the Right Honourable John G. Diefenbaker, who, as Prime Minister of Canada, officially inaugurated this project on the 27th of May, 1959.

Irrigation Development Today

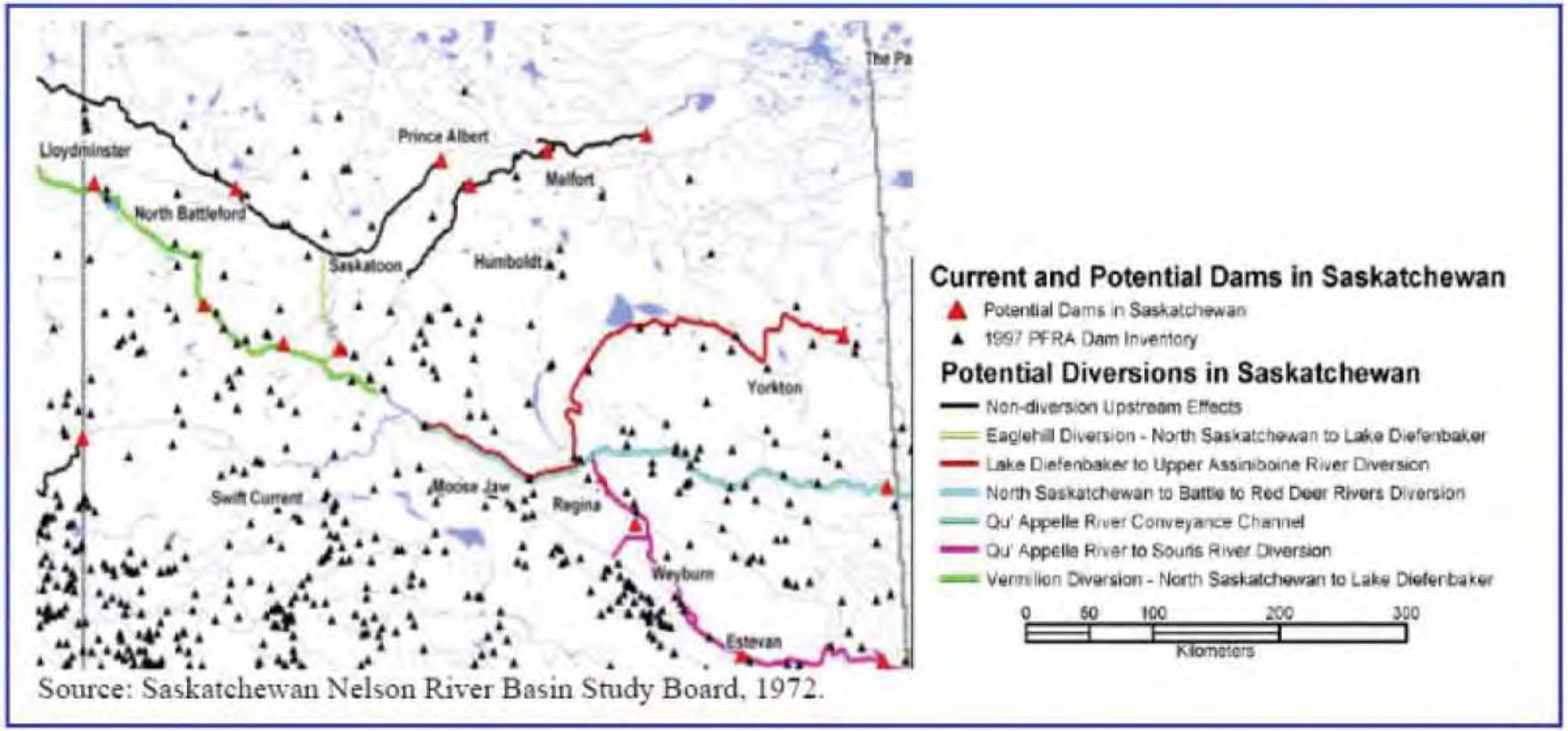
- SW
  - 145,000 acres
- SE
  - 41,000 acres
- LDDA
  - 101,000 acres
- North
  - 47,000 acres
- Total 334,000 acres

- over half acres are private
- no accurate numbers on acres



Irrigation Potential

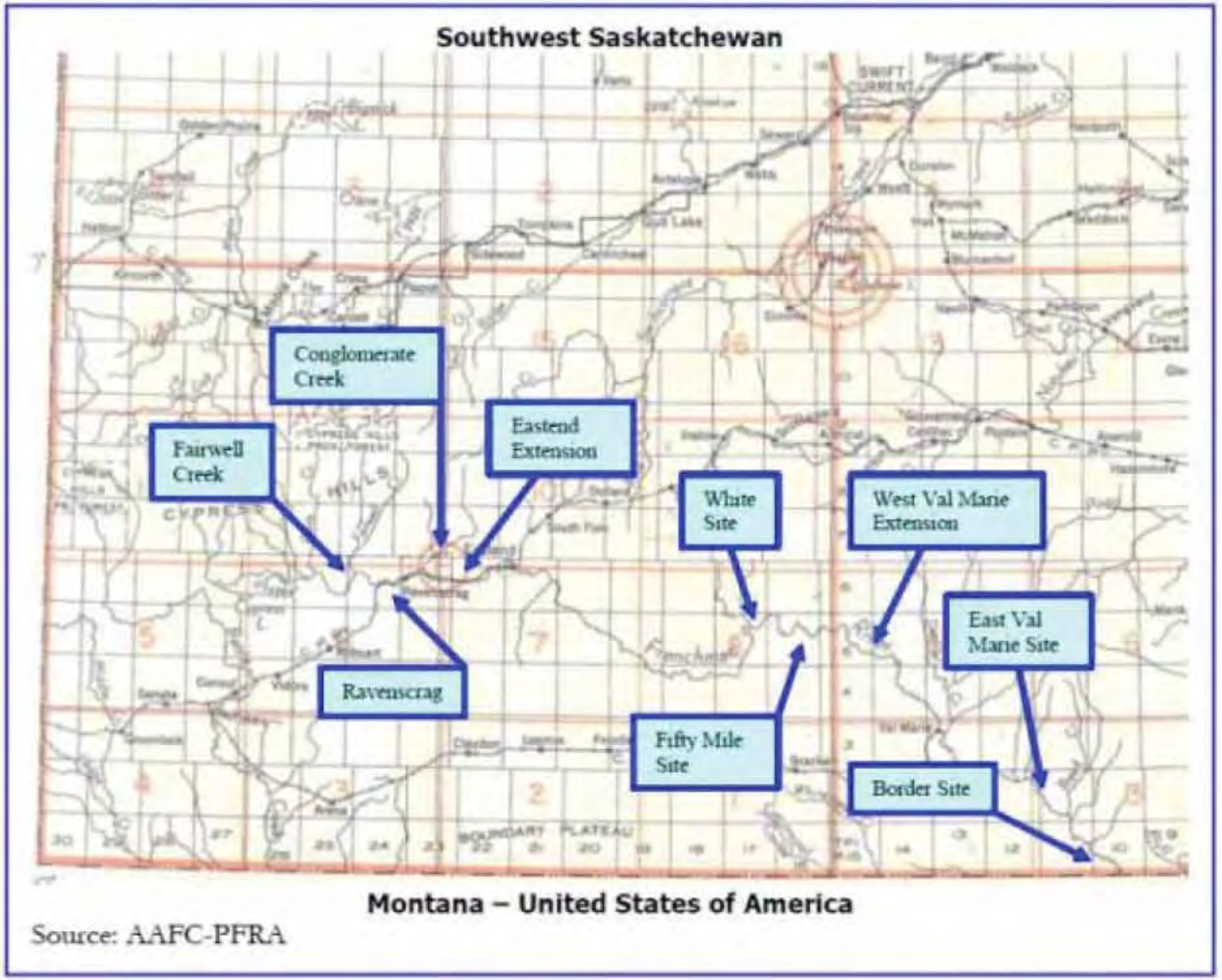
Map 15 Water Storage and Diversion Opportunities in Saskatchewan Identified by the Saskatchewan Nelson River Basin Study, 1972



Source: Saskatchewan Nelson River Basin Study Board, 1972.

Irrigation Potential

Map 17 Saskatchewan Montana Border Water Storage Options on the Frenchman River and Battle Creek

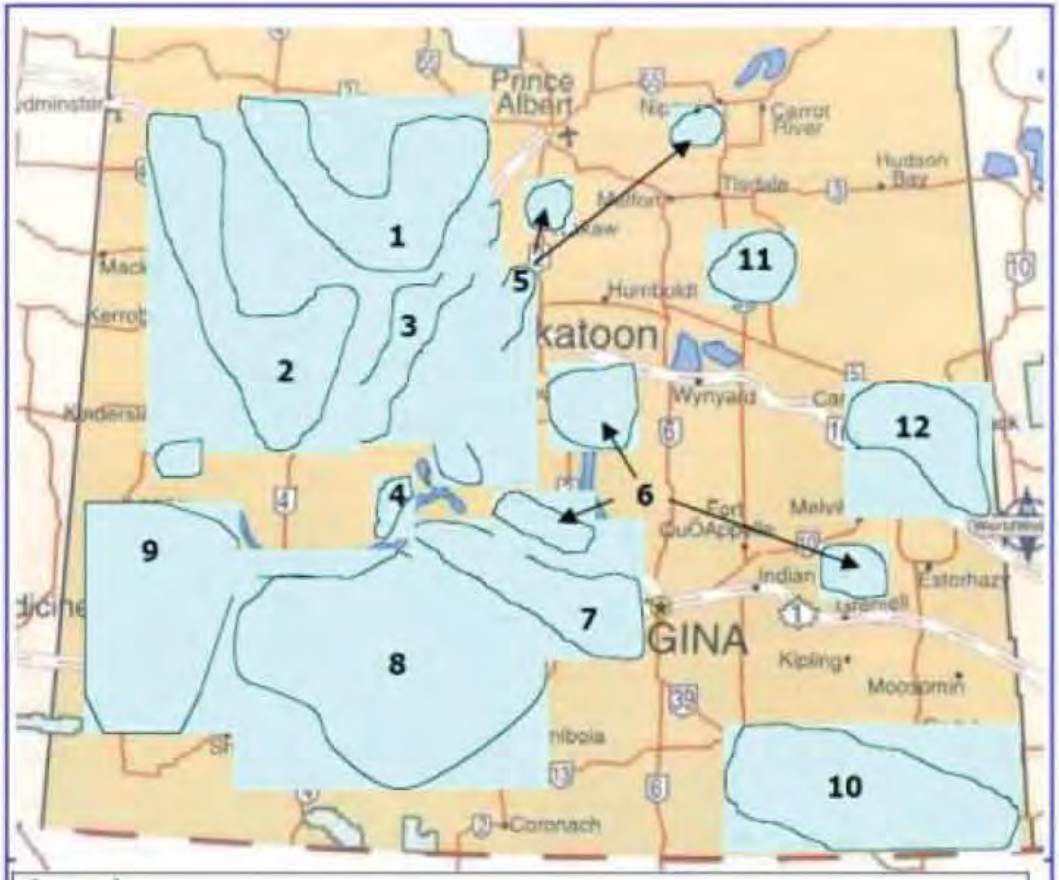


Source: AAFC-PFRA

Irrigation Potential

- 3,750,000 acres (Abrahamson and Ireland, 1985)

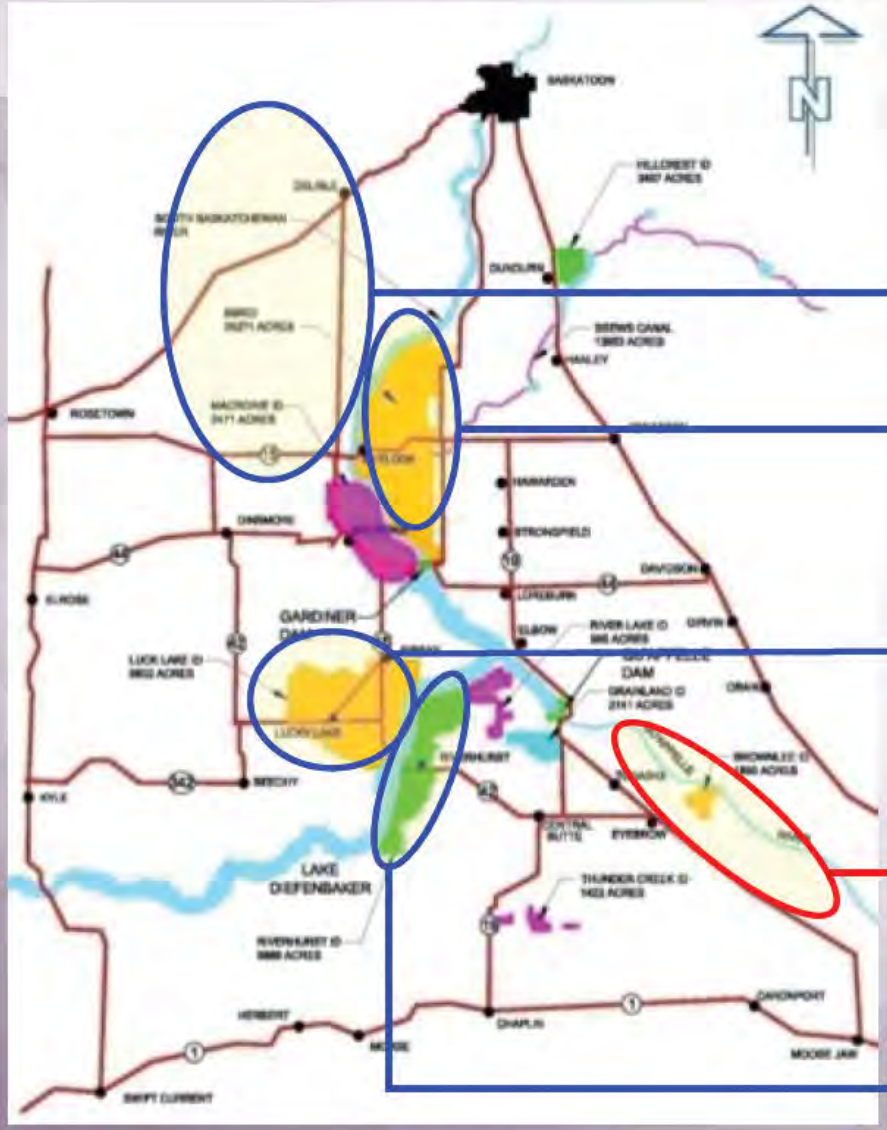
Map 16 - Areas in Saskatchewan with Potential for Irrigation Expansion, 1985



Legend			
River Basin			
North Saskatchewan	South Saskatchewan		Other
1. North Block	3. West Side	7. Riverhurst Blocks	11. Red Deer River
2. South Block	4. Lake Diefenbaker	8. Swift Current	12. Assiniboine
	5. East Side	9. Maple Creek	
	6. Qu'Appelle Blocks	10. Souris	

Source: Derived from Ireland and Abrahamson. 1985

The Potential – Lake Diefenbaker's Unfinished Business



Westside Irrigation Project

332,000 Ac

SSRID Infill and Expansion

28,350 Ac

Luck Lake Irrigation District Infill and Expansion – 9,400 Ac

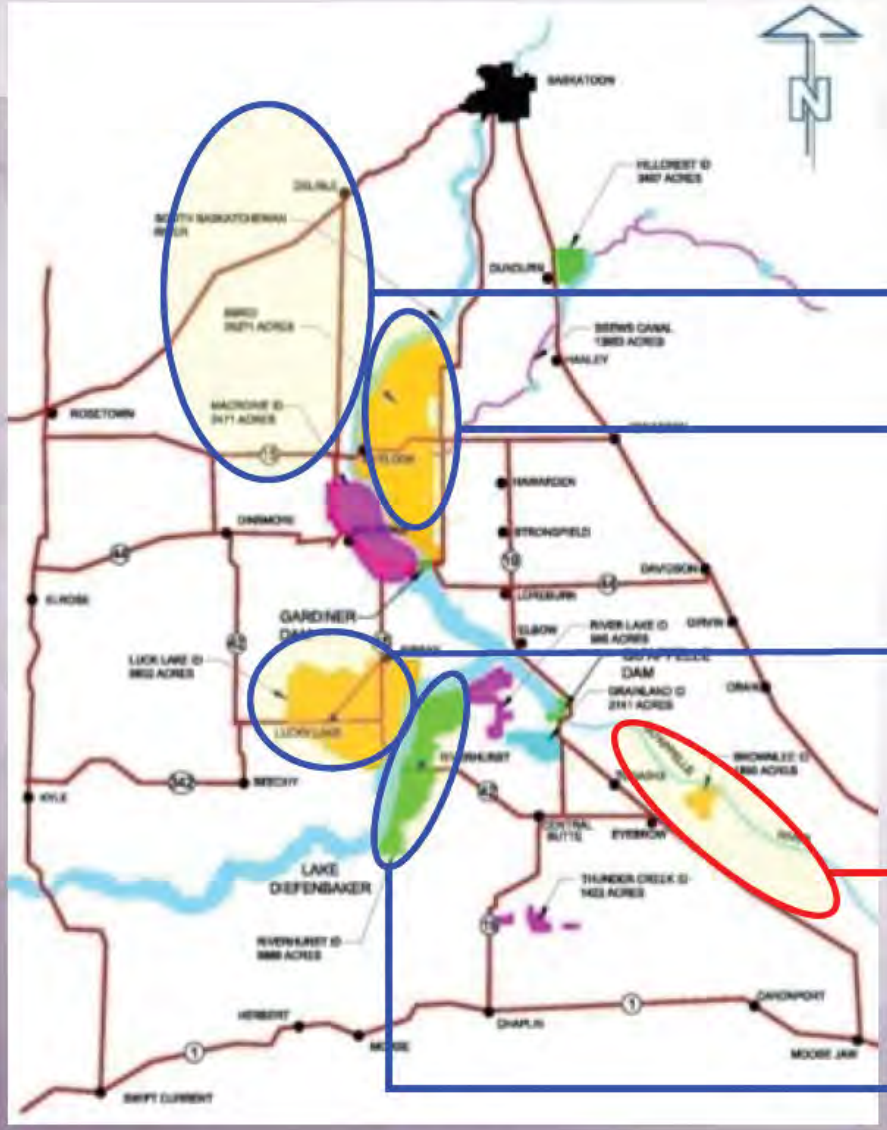
Qu'Appelle South Irrigation Project (AECOM-June/07 – 113,000 Ac)

Riverhurst Irrigation System Expansion – 10,900 Ac

Summary

1. Current irrigation development from Lake Diefenbaker – 101,000 acres.
2. Potential expansion and infill of existing projects could add about 55,000 acres.
3. Complete Westside Project – 332,000 acres (lake portion).
4. Qu'Appelle South – 113,000 acres.
5. Total development could be 600,000 acres.

The Potential – Lake Diefenbaker's Unfinished Business



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Irrigation Development in Saskatchewan – Overview of the Upper Qu'Appelle Water Supply System

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What is the "Upper Qu'Appelle Water Supply System"

1. A solution to meeting the projected future water demands from Buffalo Pound Lake and the lower Qu'Appelle River System, and

2. An opportunity to add 125,000 to 150,000 acres of irrigated agriculture to the provincial total.

Buffalo Pound Lake

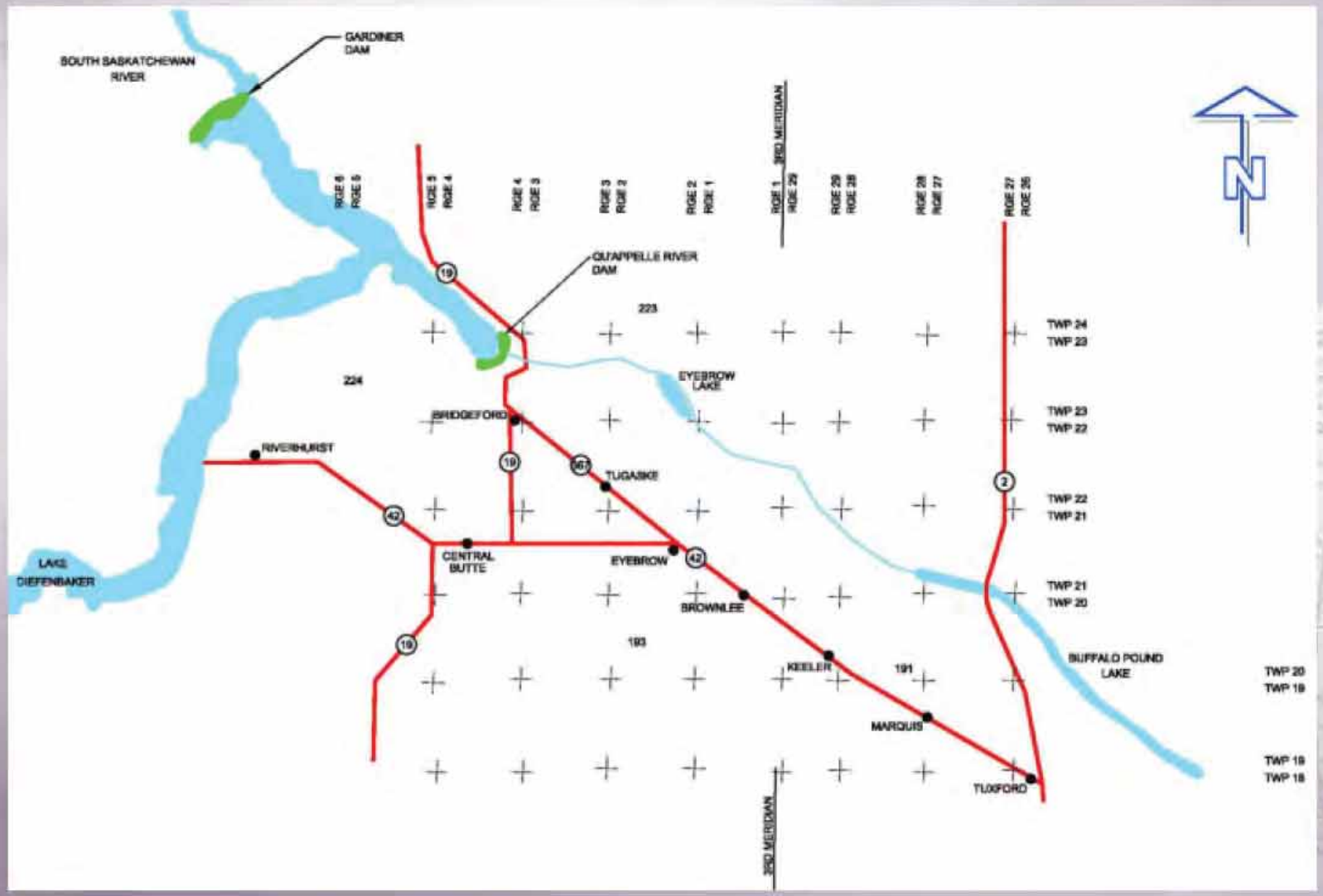
- Principal water source and storage for approximately 25% of Saskatchewan's population, including the cities of Regina and Moose Jaw
- Source for several industries and proposed new development in the "Moose Jaw – Regina Industrial Corridor"
- Flanked by Buffalo Pound Provincial Park and is the heart of a flourishing recreational area.

Buffalo Pound Source

The primary source of supply to Buffalo Pound Lake is from Lake Diefenbaker through the Upper Qu'Appelle River System

- Total length approximately 95 km
- Upstream 32 km of Upper Qu'Appelle River from Qu'Appelle River Dam Outlet was channelized as part of South Saskatchewan River Project (1960's)
- Remainder – natural channel

Irrigation Development in Saskatchewan – An Overview of the Upper Qu'Appelle Water Supply System



Irrigation Development in Saskatchewan – An Overview of the Upper Qu'Appelle Water Supply System

The Problem

Design capacity is 14 m^3/s but due to weed growth, sloughing and siltation, its capacity in late summer is often reduced to 6 m^3/s

Current water demands will soon exceed capacity

Studies has predicted that the demand will increase by 38.5% by year 2060.

The Solution

A study done in 2009 looked at various conveyance options including enlarging and channelizing the existing Upper Qu'Appelle River System.

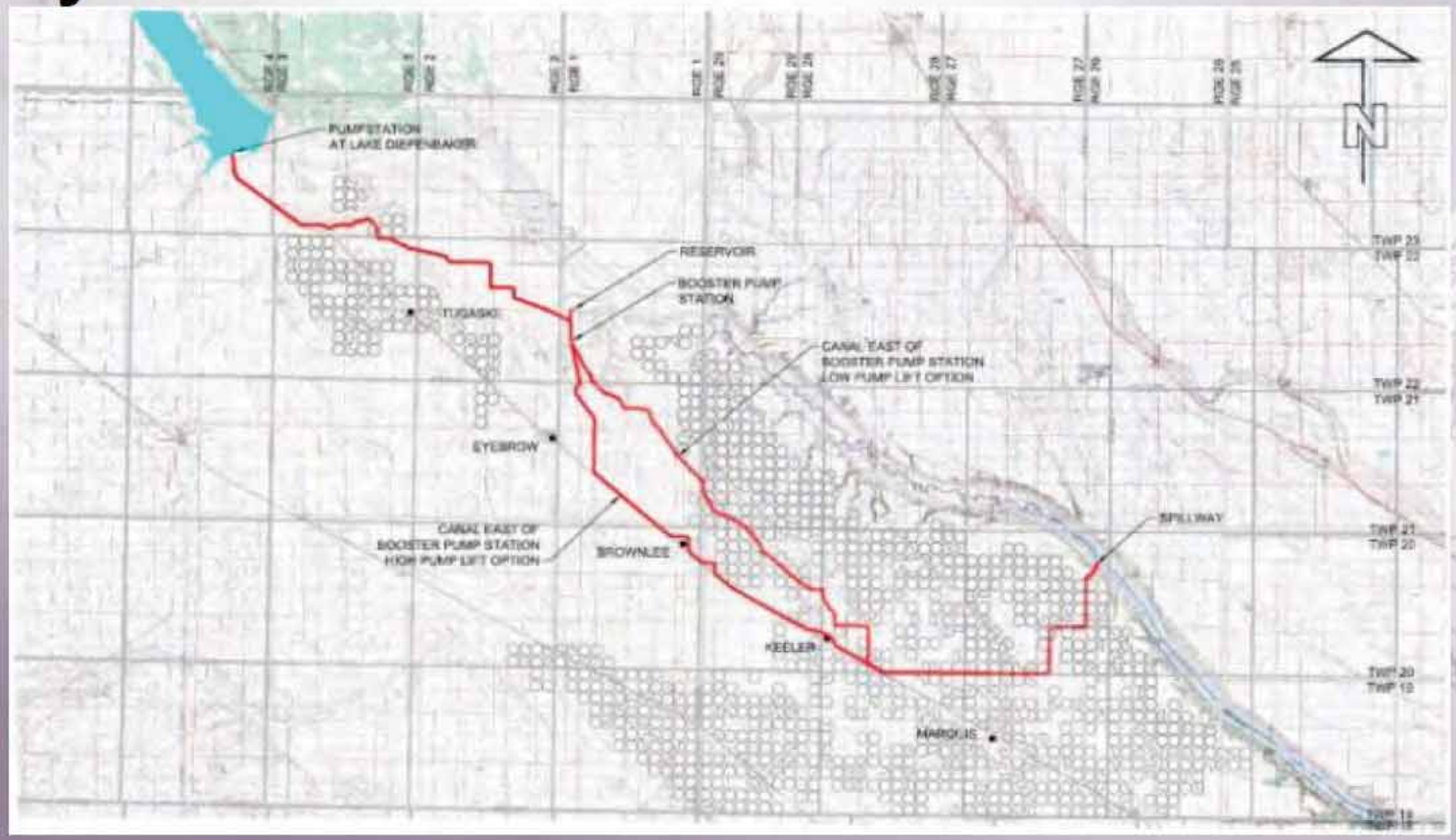
It concluded that:

"*In comparing the pros and cons of all the alternatives, the province would be best served in the long run by building a conveyance channel to the south of the valley sourced from a pump station on Lake Diefenbaker. The design and capacity should consider the additional benefits to* ***irrigation*** *and other interests."*

The existing conveyance channel flows would be retained to handle base flow needs (including winter flows) estimated at 4 m^3/s

The result:

The proposed **Upper Qu'Appelle Water Supply System**



Irrigation Development in Saskatchewan – An Overview of the Upper Qu'Appelle Water Supply System

Components:

- Pump Station on Lake Diefenbaker
  - 21 m^3/s – projected future municipal and industrial demands including Moose Jaw – Regina industrial corridor
  - 49 m^3/s – for 125,000 to 150,000 acres Irrigation, also supply for rural domestic, stock watering, parks, villages, hamlets, recreation, etc.
  - Total – 70 m^3/s

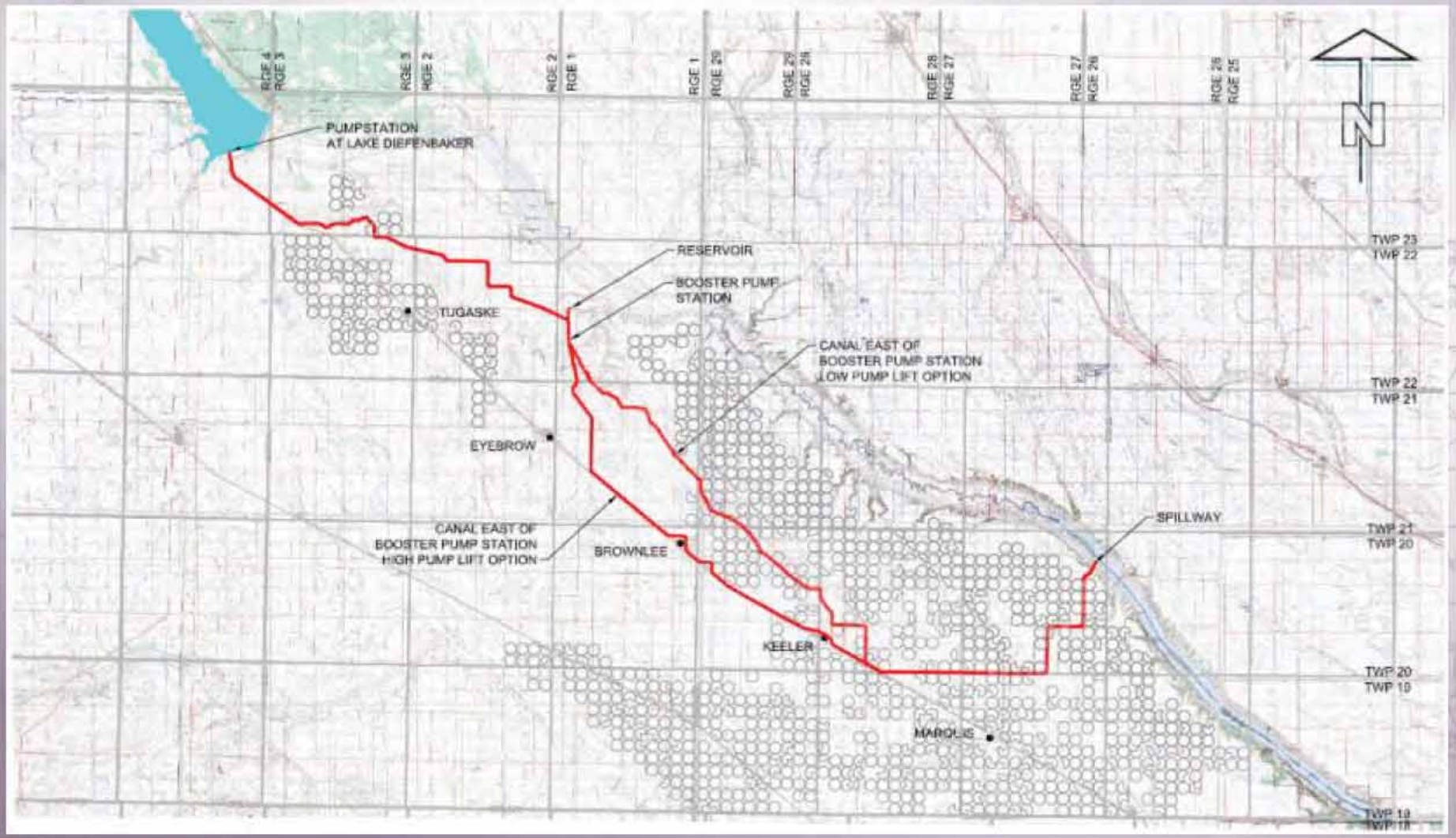
Pump Station

- *Minimum Lake Level – EL 549.50m*
- *Maximum Lake Level – EL 556.87m*
- *Discharge Canal Level – El 580.50m*
- *Fish screens (138) on 4 conduits*
- *Wet Well – 70m X 30m*
- *9-5000 HP Pumps (one back-up)*
- *Discharge – twin 3650 mm dia. pipe*

Main Canal

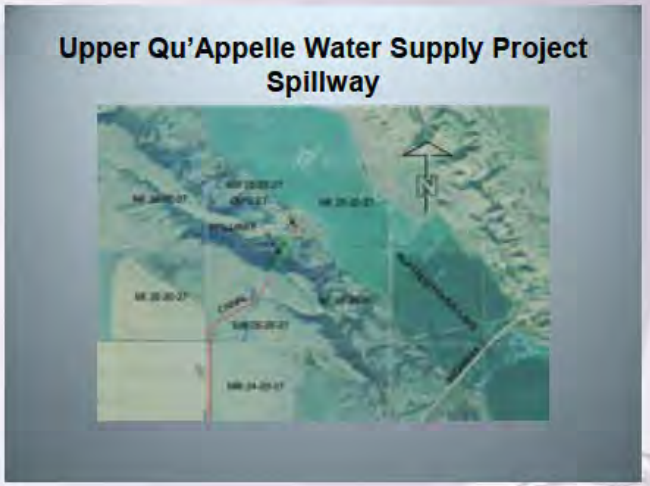
- *Two routes being considered: capital and operating costs versus land severance*
- *Includes small reservoir and booster pump station to re-lift additional 20-30 m (depends on option)*
- *Several checks, drops, drains, road crossings, wasteways, etc.*
- *Irrigation supply – series of pump stations into pressurized pipe distribution systems directly to pivot centers.*

Upper Qu'Appelle Water Supply System – Main Canal



Spillway

- *Into Buffalo Pound Lake*
- *70.9 m drop*
- *70* m^3/s *capacity (ability to handle system emergencies*
- *Capacity to incorporate future power generation facility*



Cost

Approximate Cost

$ 1.5 Billion

Economics

(Clifton Associates, Regina)

- *Benefits over its first 50 year period far exceeds costs*
  - *Benefit cost ratio ranging from 1.5 to 2.7 to 1*
  - *Increase in gross domestic product of $130 billion*
  - *$29 billion of new personal income*
  - *Fiscal returns to Governments of $36 billion*

Economics

Equally important as the measured economic and financial effects are the benefits it will create for rural communities, water quality and management, water and investment security and the formation of the large food processing industry for distribution through the Global Transportation Hub.

Why should project proceed?

> *Economic Benefits*

> *Societal Benefits*

> *Environmental Benefits*

> *Water Security*

> *Others*

Why will project proceed?

> *It will be a Political Decision*

"Politics Trumps Everything"

Status

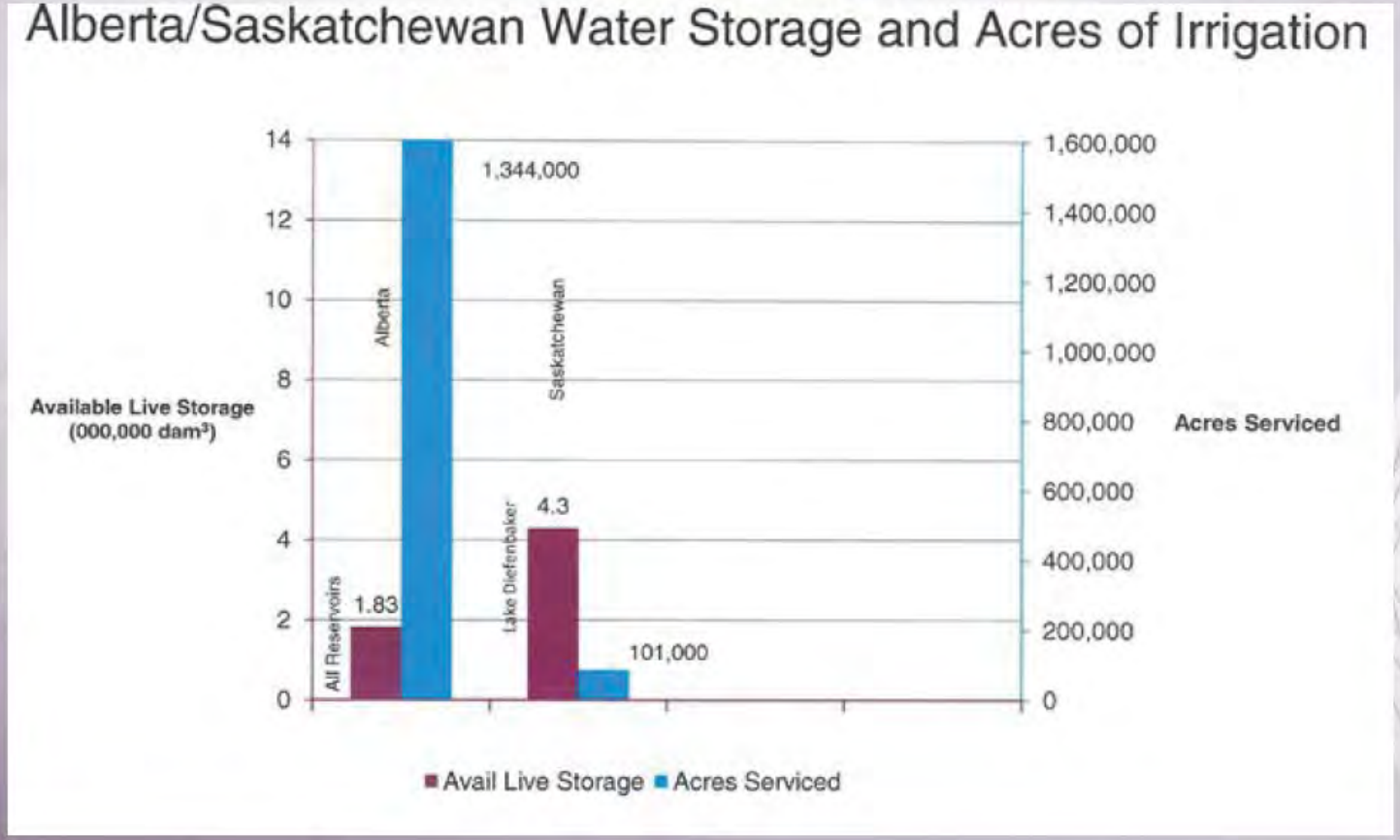
- Adequate engineering and economic studies done to confirm feasibility and economic viability of project
- Presentations have been made to appropriate Government Ministries on benefits
- Qu'Appelle South Irrigation District has been formed
- A water allocation from Lake Diefenbaker has been requested

But…

In spite of the conclusion of the 2009 study, the Water Security Agency is undertaking another study of conveyance options available, scheduled for completion in June 2014.

Irrigation Development in Saskatchewan – An Overview of the Upper Qu'Appelle Water Supply System

This tells it all?



Questions?

2013 Grey Cup Champions