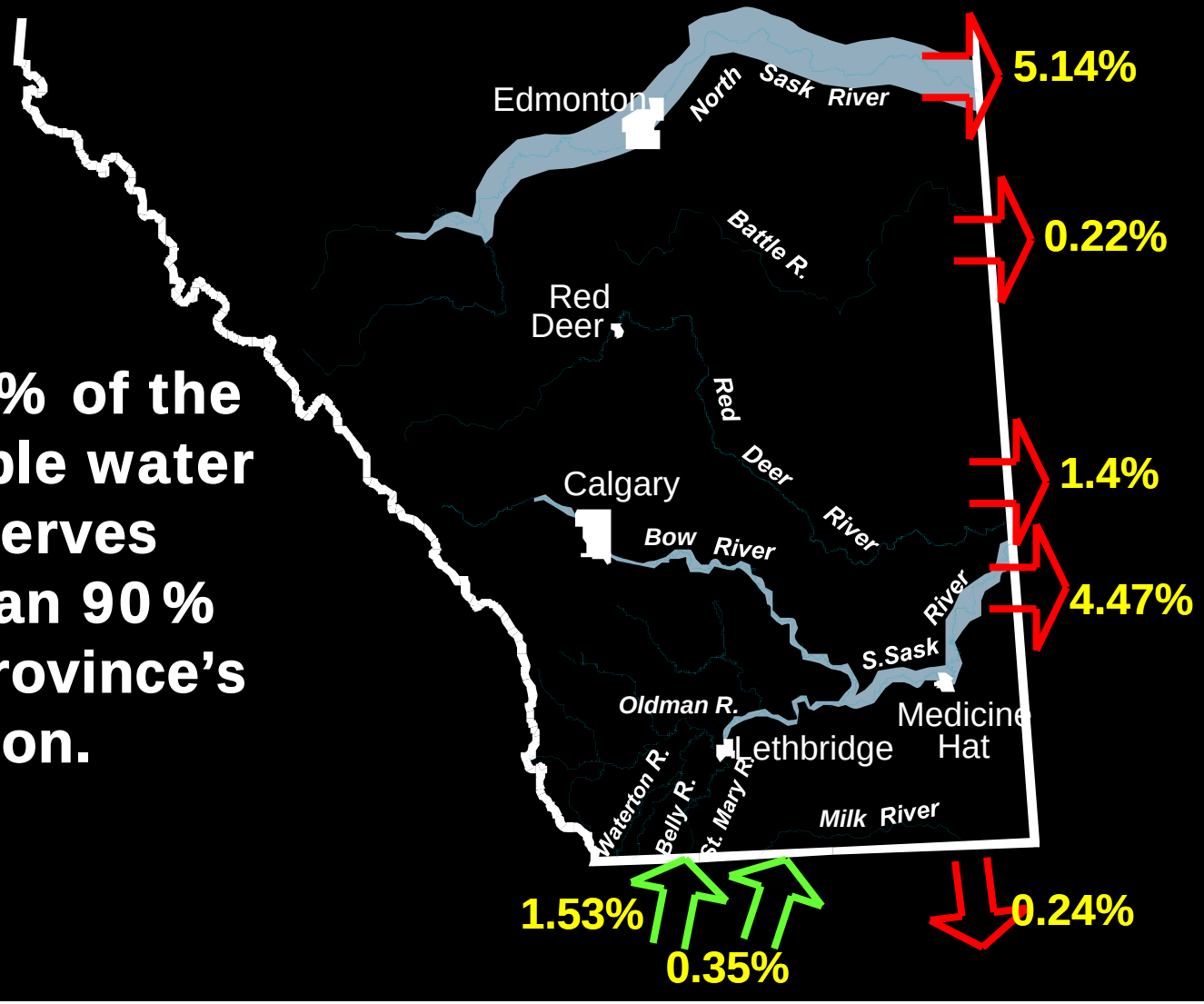
Alberta's Water Supply

- **As a province, Alberta has an abundant supply of water.**

Alberta's Water Supply

- **Alberta has an abundant supply of water.**
- **However, water supplies aren't always in the right place, and at the right time.**

Mean Annual River Discharges



Only 10 % of the renewable water supply serves more than 90 % of the province's population.

Safe Water for Rural Albertans

Water for Life Outcome:

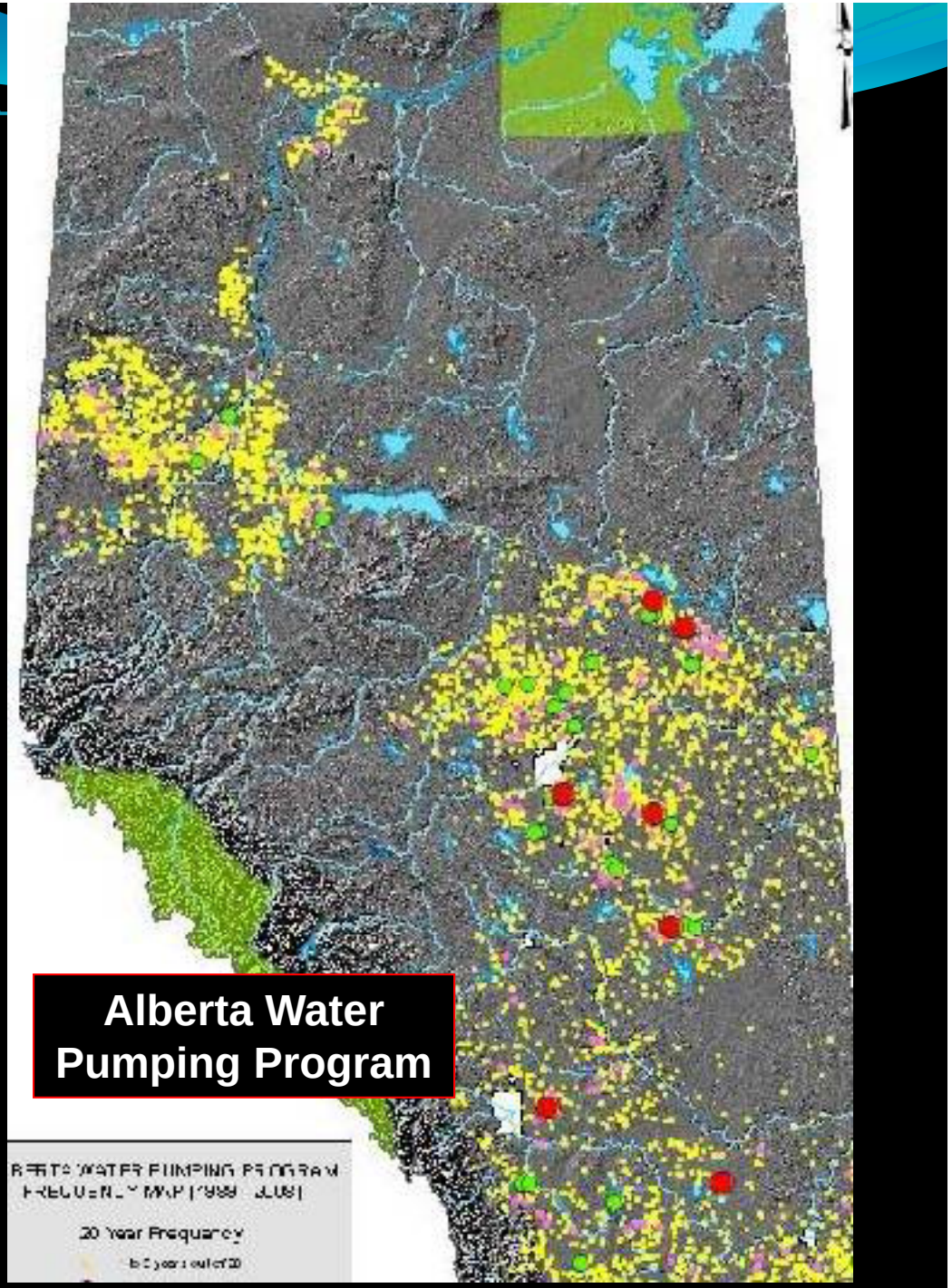
Safe drinking water for all Albertans.

About 500,000 Albertans depend on un-regulated drinking water.

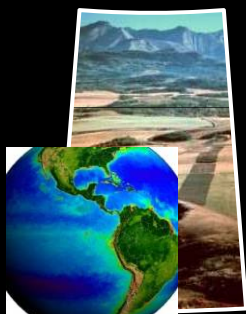
- **Groundwater wells**
- **Streams and rivers**
- **Farm dugouts**

Water Availability

Many areas of the province are chronically short of water.

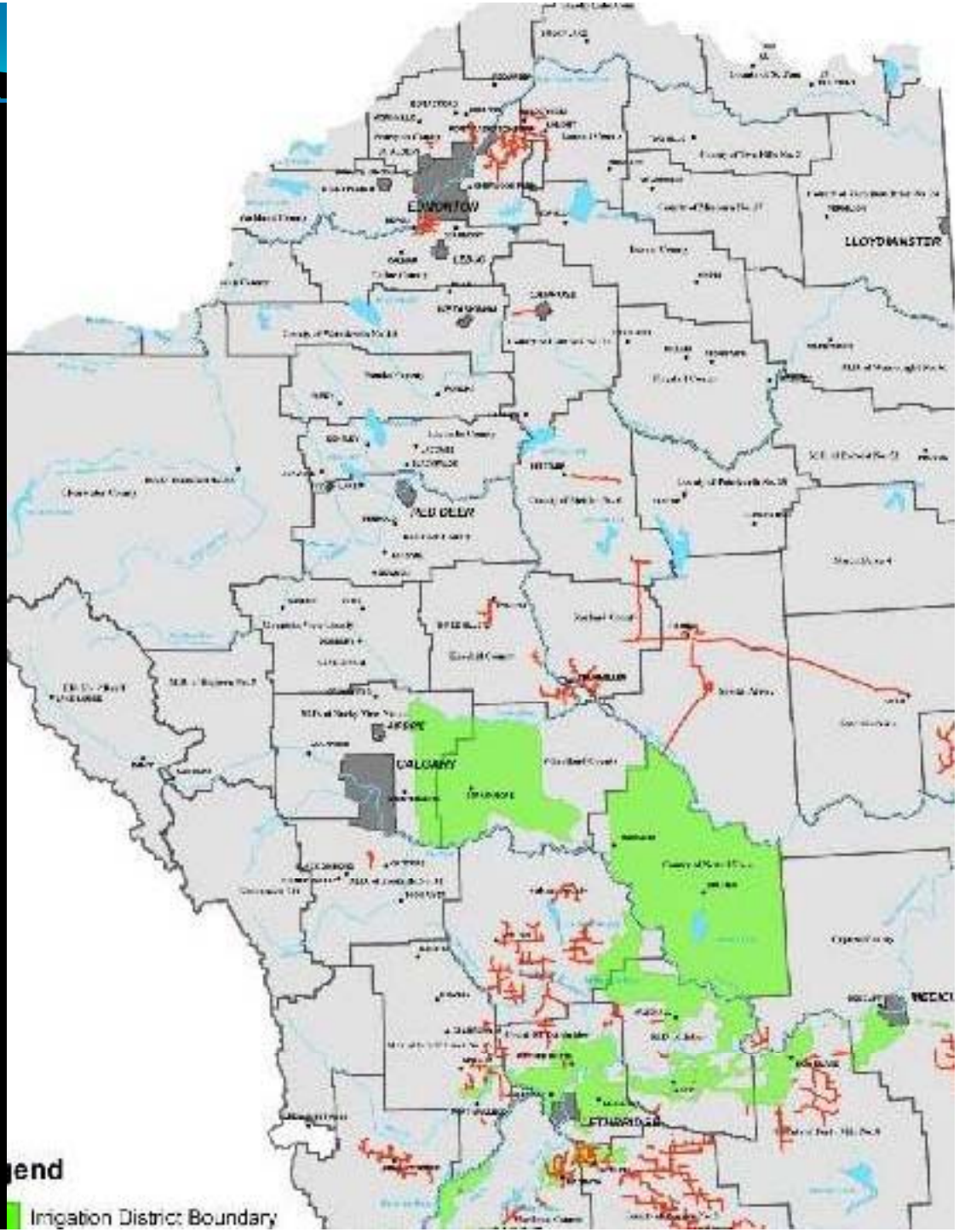


Managing the Challenges



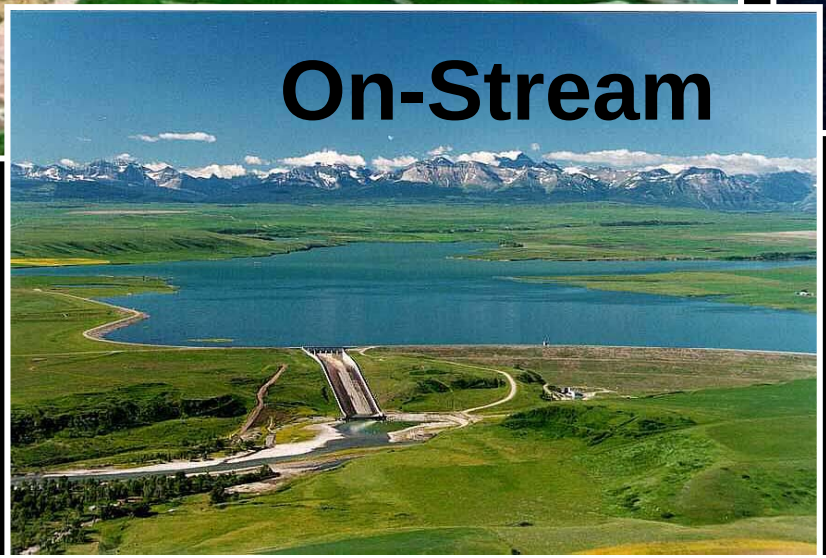
Rural Water Supply

- Permanent regional water supply pipelines would provide an assured supply of water to producers and rural residents in water-short areas.



Water Storage Reservoirs

Are critical to an assured water supply during the irrigation season.



On-stream Reservoirs = 5
Off-stream Reservoirs = 50

Total Storage ~ 2.5 M ac-ft.

SSRB Water Supply Study

- New Storage Reservoirs
  - Additional on-stream storage of >800,000 acre-feet may be possible in the SSRB.
  - On-stream storage is preferable to off-stream storage in order to capture winter runoff that may occur with climate change.

Planning to construction of a new on-stream reservoir will require 15-20 years.

Irrigation Conveyance Systems

Conveyance Works
>8000 km
57% Open channel
43% Buried pipeline

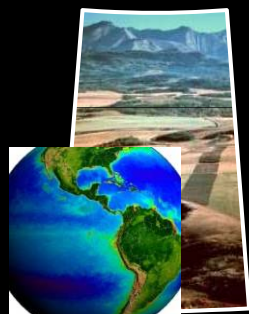
Conveyance System Improvements

From this . . .

. . . to this!


Irrigation Efficiency
The irrigation industry currently uses 30% less water to grow a crop than 25 years ago.

Climate Change



Climate Change

- The agricultural industry has always adapted to changing climatic conditions on the prairies.
- However, accelerated changes in our climate will require faster adaptation than ever before.

Climate Change and Crop Water Demands

- **Based on current climate change predictions, additional water needs will be most pronounced in forages and root crops.**

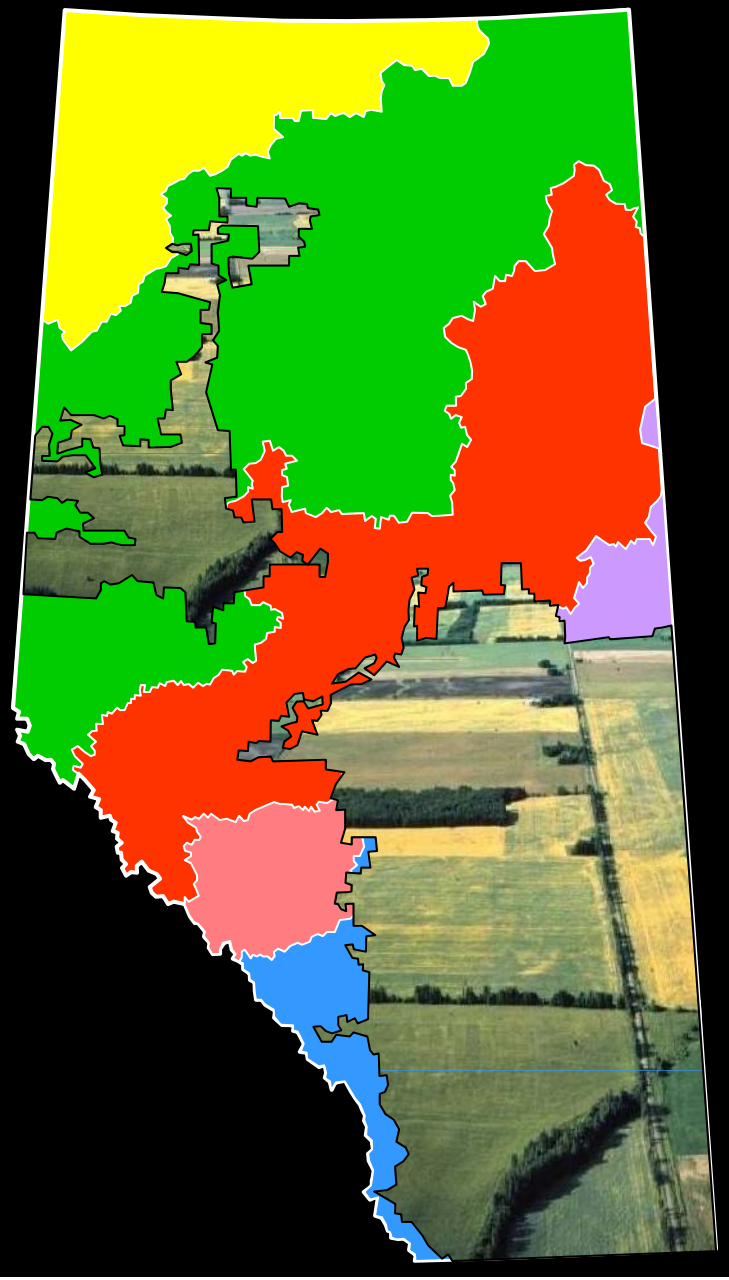

Alfalfa


Potatoes

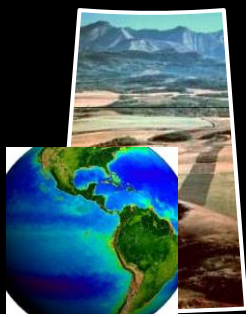
Climate Change and Crop Water Demand

- A 2º C increase will require 28% more water for alfalfa.
- A 4º C increase in temperature will require 63% more water.
- An additional 425,000 acre-feet of irrigation water will be required within the irrigation districts (~20% more water than is currently diverted).

Harms – ARD, 2010



Water Quality

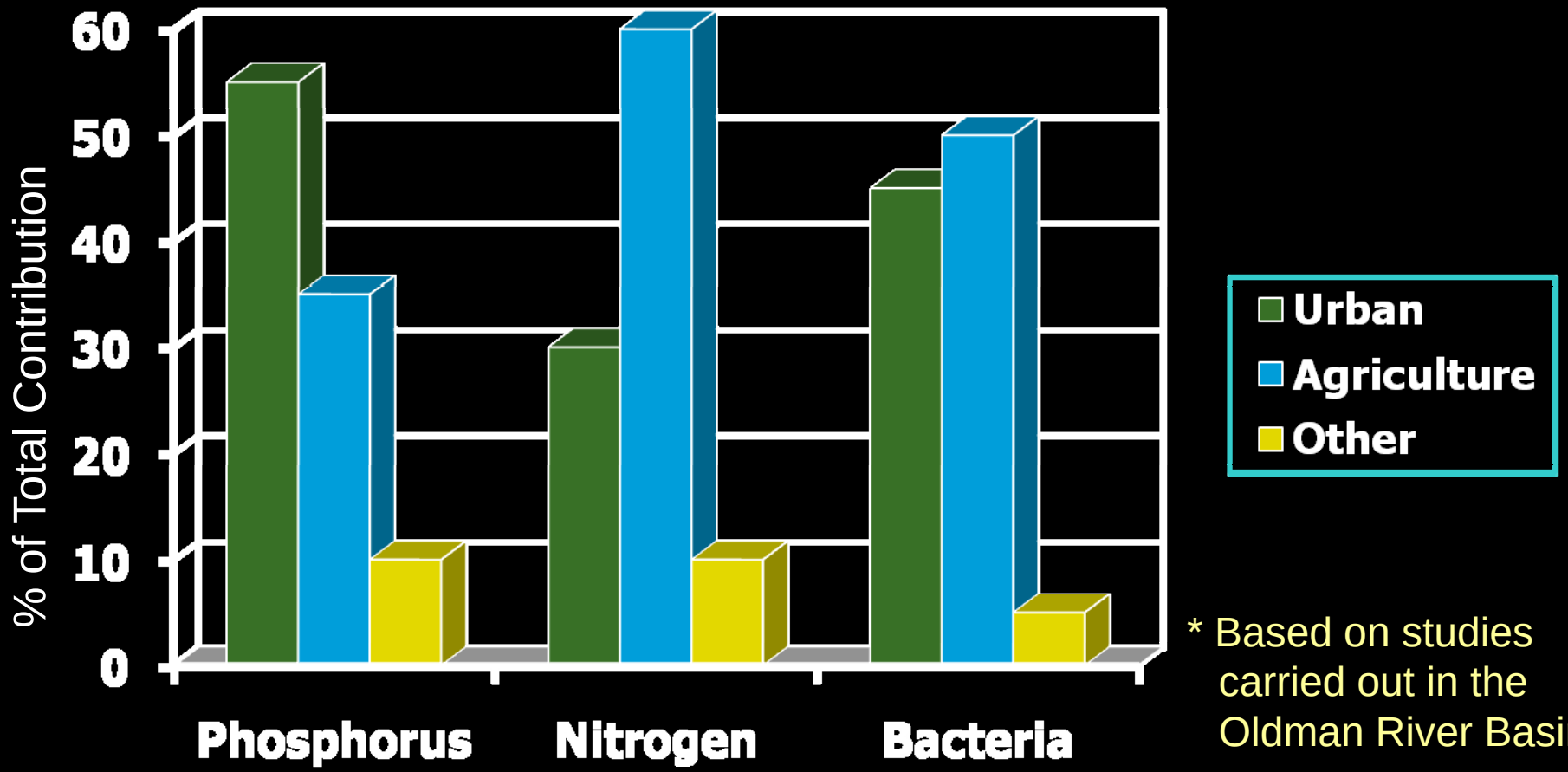



Environment
Economic Drivers
Societal Values

Water Quality - Agriculture's Impact

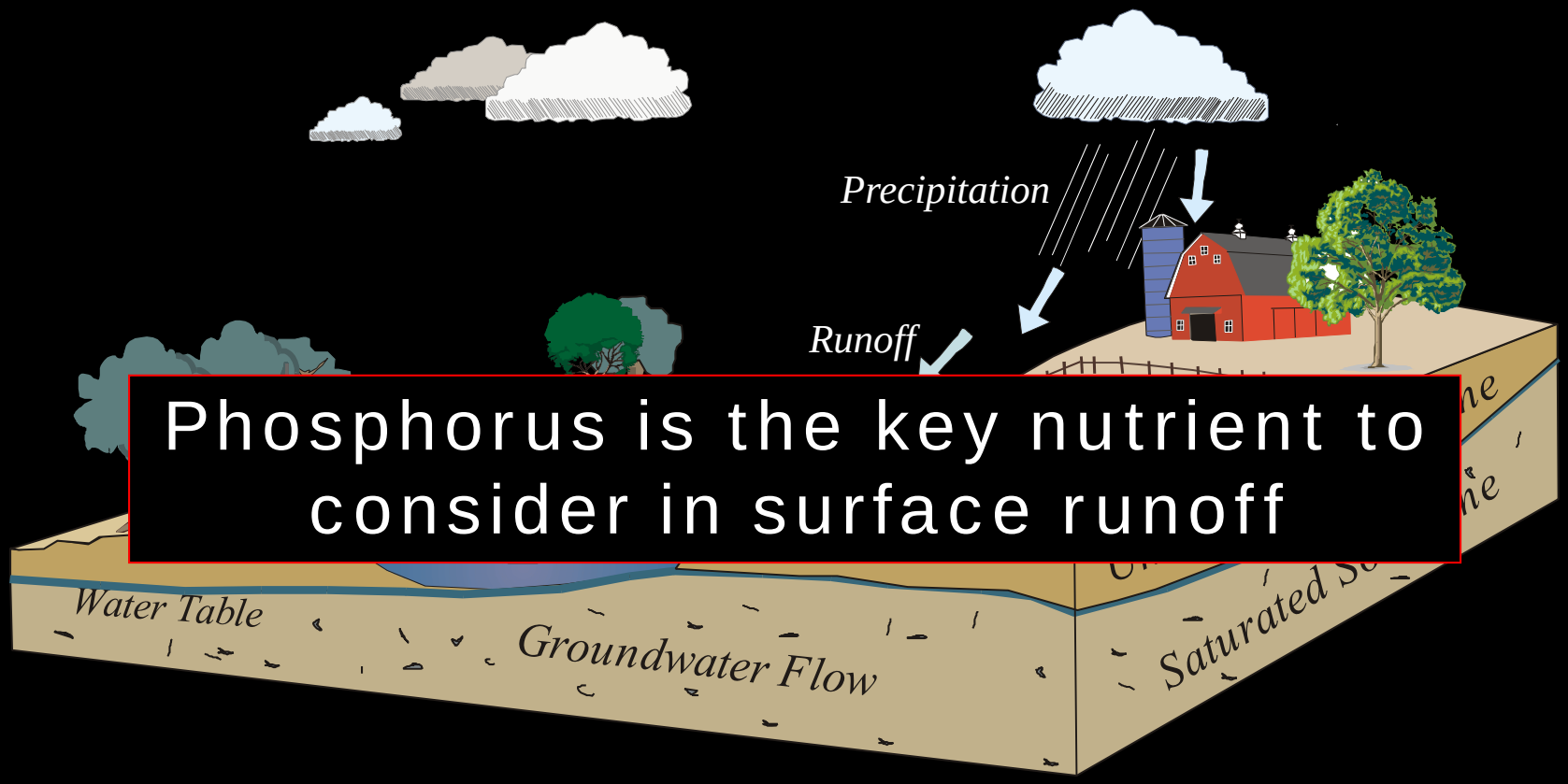
- **Agriculture is a significant contributor to water quality degradation in Alberta.**
- **Livestock manure is considered to be the main agricultural contributor to water quality degradation.**

Sources of Key Water Quality Contaminants*



* Based on studies carried out in the Oldman River Basin.

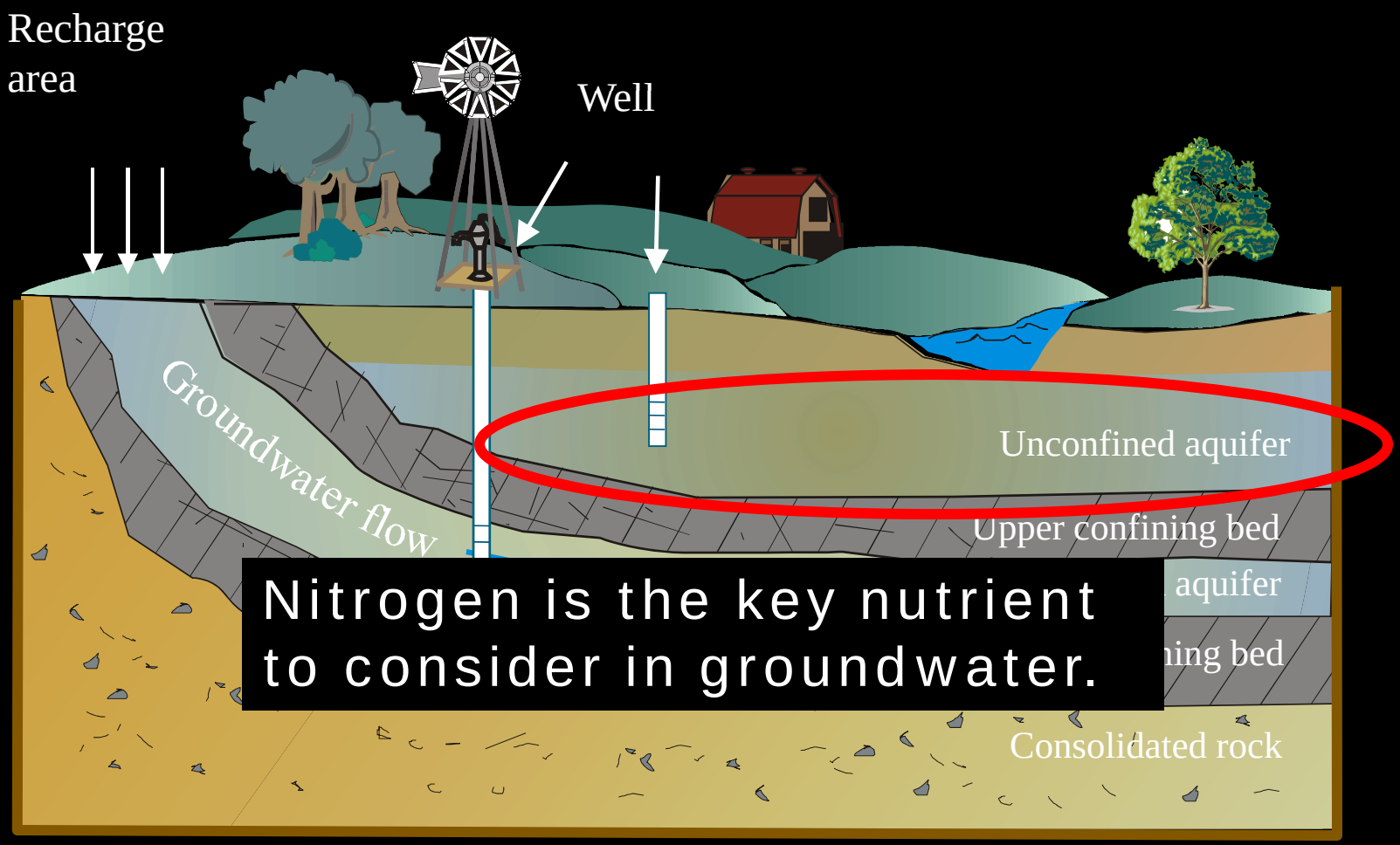
Surface Runoff



Phosphorus is the key nutrient to consider in surface runoff

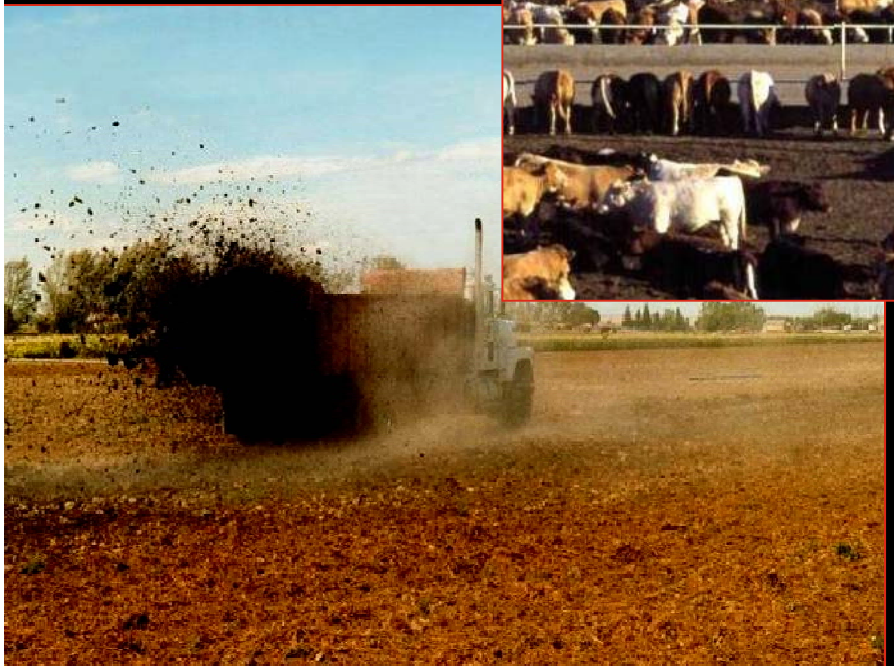
Nutrient Losses

Impacts on Groundwater Quality



Nitrogen is the key nutrient to consider in groundwater.

Study to Assess Impact of Confined Feeding Operations and Manure Spreading on Groundwater Quality



Finding Solutions

- **Both government and industry have been working together to resolve this issue.**

- **Our current focus is testing solutions that are practical – and will resolve the problem in all agricultural regions of the province.**

Summary

- Future water shortages will force many countries to import increasing amounts of raw and processed food products.
- Canada and Alberta, with relatively abundant water supplies, can become “agricultural powerhouses” - with good water management leadership.
- Ensuring rural Albertan’s access to good quality water is a priority.
- Adapting to future climate change impacts on water supply must be a priority.
- Agricultural practices that minimize environmental impacts not only improves industry’s social license in Alberta, but may increase market access to the world.
- Continued industry leadership to improve water use efficiency, increase productivity, and mitigate environmental impacts is required.