

# Pressures on the Irrigation Sector from Increased Development

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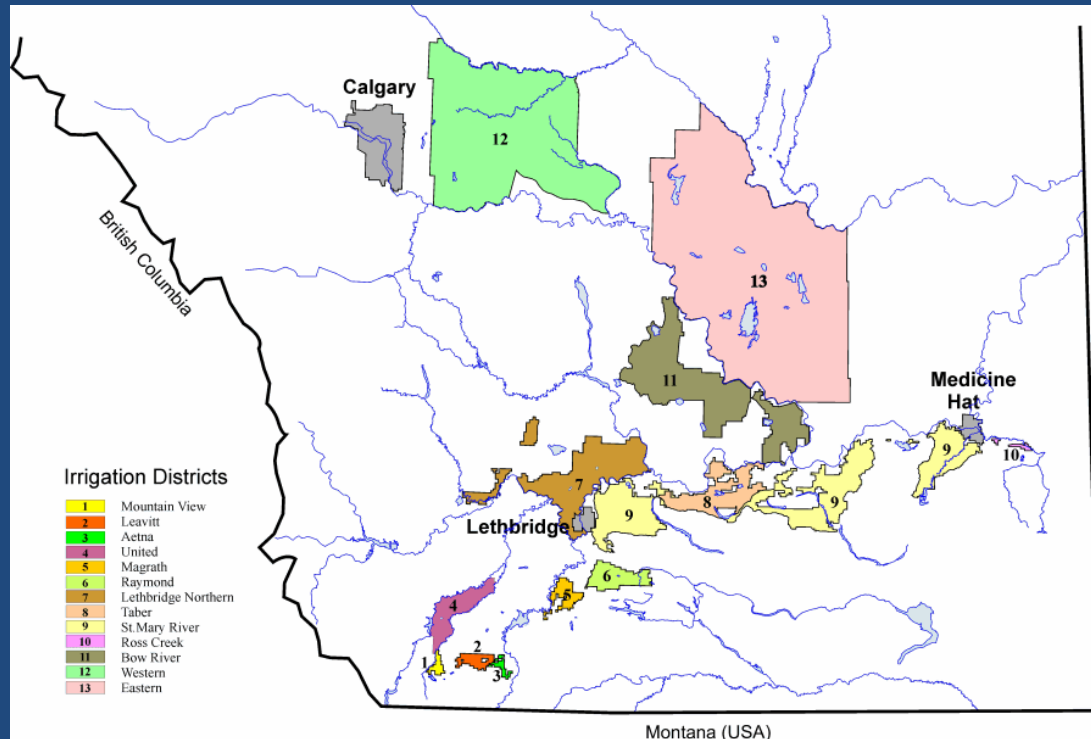
**Presentation at LANDUSE 2016**  
**Alberta Land Institute**

May 4, 2016



# Background

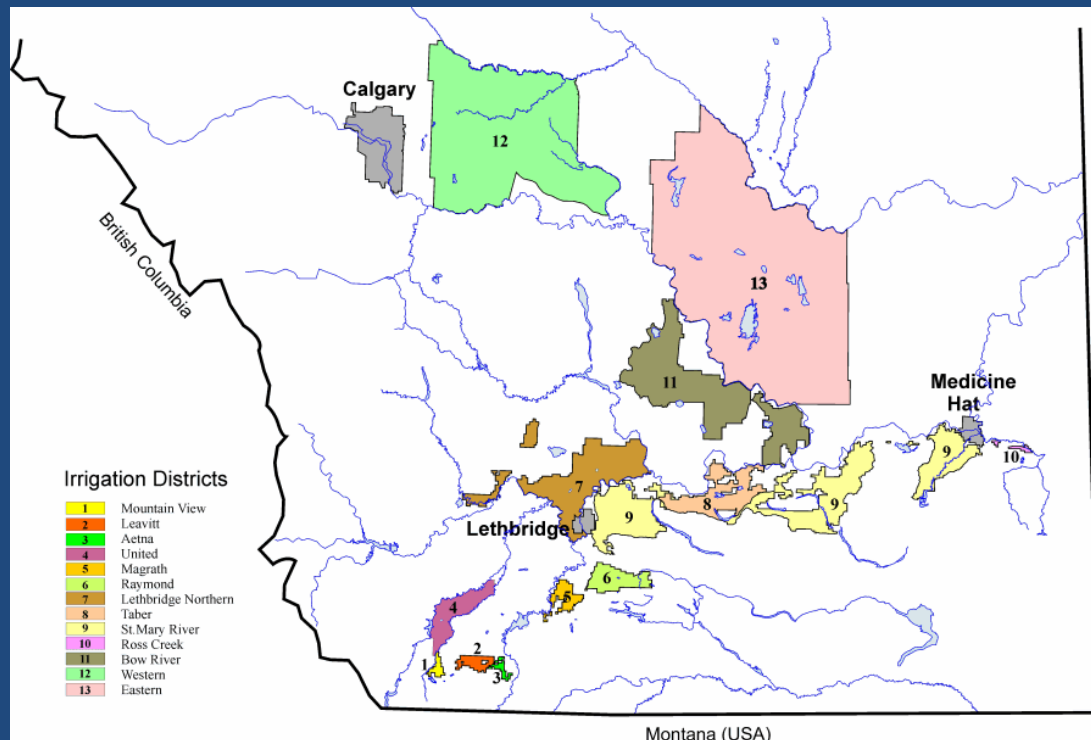
- 688,000 ha of Alberta's agricultural landbase is irrigated
- 567,000 ha within irrigation districts





# Background

- District water licences total 3.45 Bm<sup>3</sup> of diversion
- 1976-2014 mean diversion of districts collectively was 2.04 Bm<sup>3</sup>





## Question of the day

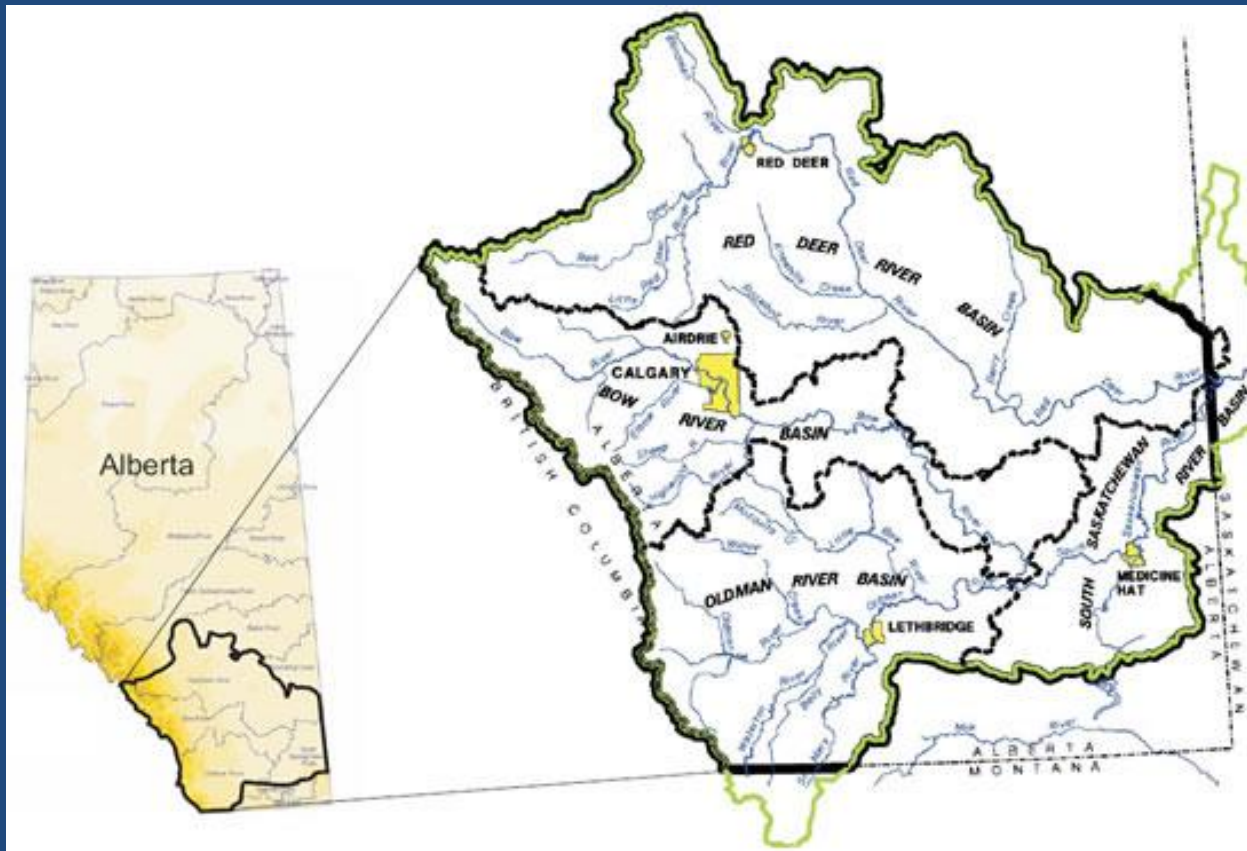
- As urban Alberta spreads, what is the impact on irrigated land and water?





# Background

- 2006 Closure of the South Saskatchewan River Basin (Bow and Oldman sub-basins) to new water licence applications







# Background

- Growth of urban area requires water – in a closed basin
- Which organizations hold the largest water licences?
- How does a community access water from a licensee?
- Transfers and Amended Licence vs New Customer





# Water Quantity

## Licence Transfers to Date

- *Western Irrigation District to the MD of Rockyview (2000 ac-ft, of which 10% holdback)*
- *Eastern Irrigation District to the County of Newell (1000 ac-ft with 10% holdback)*
- *And three transfers from the United Irrigation District to the Village of Hillspring, the Village of Glenwood and the Southern Alberta Water Co-op amounting to some 1750 ac-ft of water involved.*





# Water Quantity

## *Licence Amendments*

- *Interim policy from AEP:  
1,000 ac-ft plus 2% of licence*
- *Total volume of licence amendments 54.5 Mm<sup>3</sup>  
(Bennett, D. R., et al, in press) 44,200 ac-ft*





# Water Quantity

## *Licence Amendments*

*An example of one district's water use agreements for alternate uses: 951 household, 194 agricultural (usually livestock operations), 3 habitat, 7 industrial, 64 municipal*



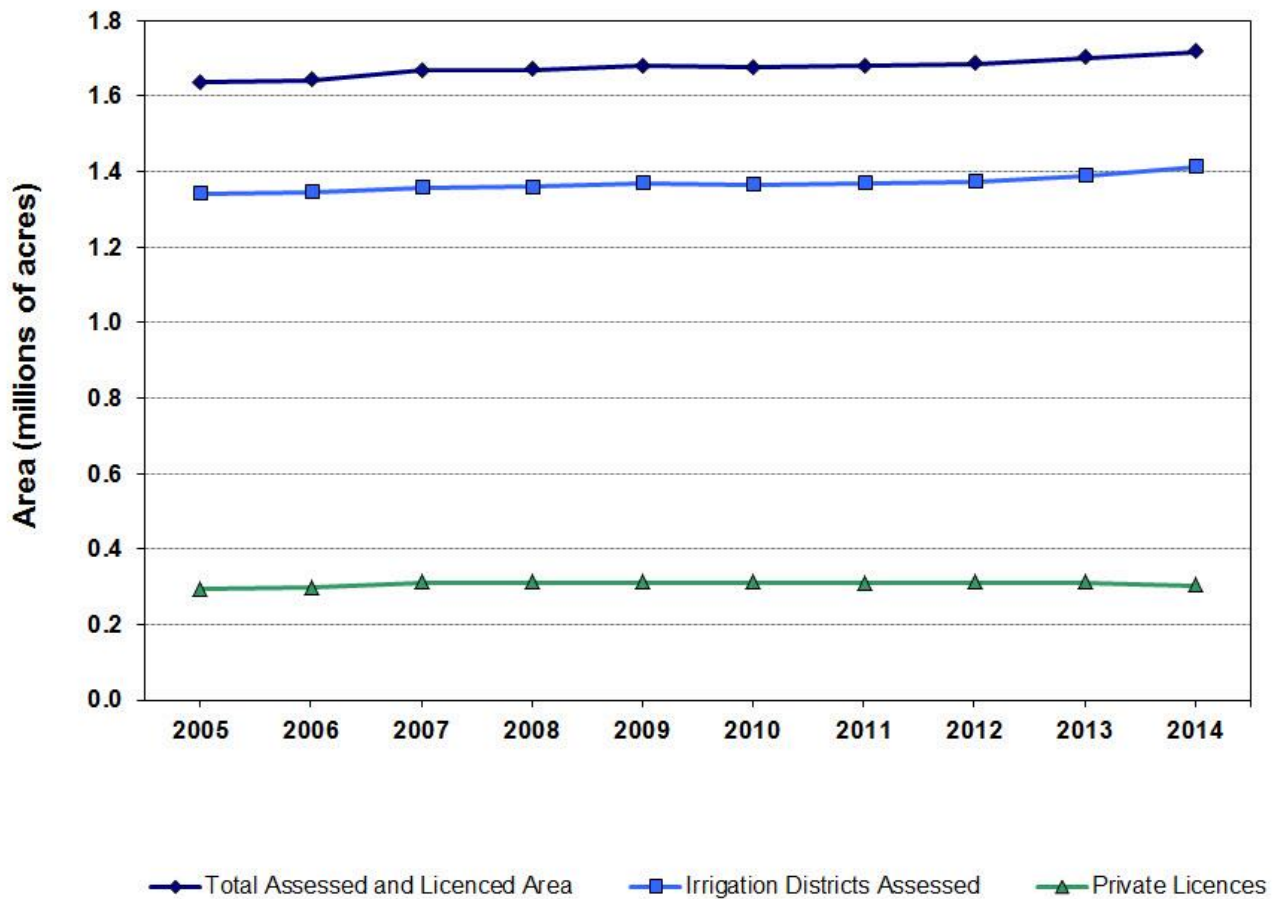


# Water Quantity

- Expansion Limits of Districts
- Any expansion is voted on by water users (irrigators)
- Risk to water users is the determinate factor
- In order to expand, a district must save water first

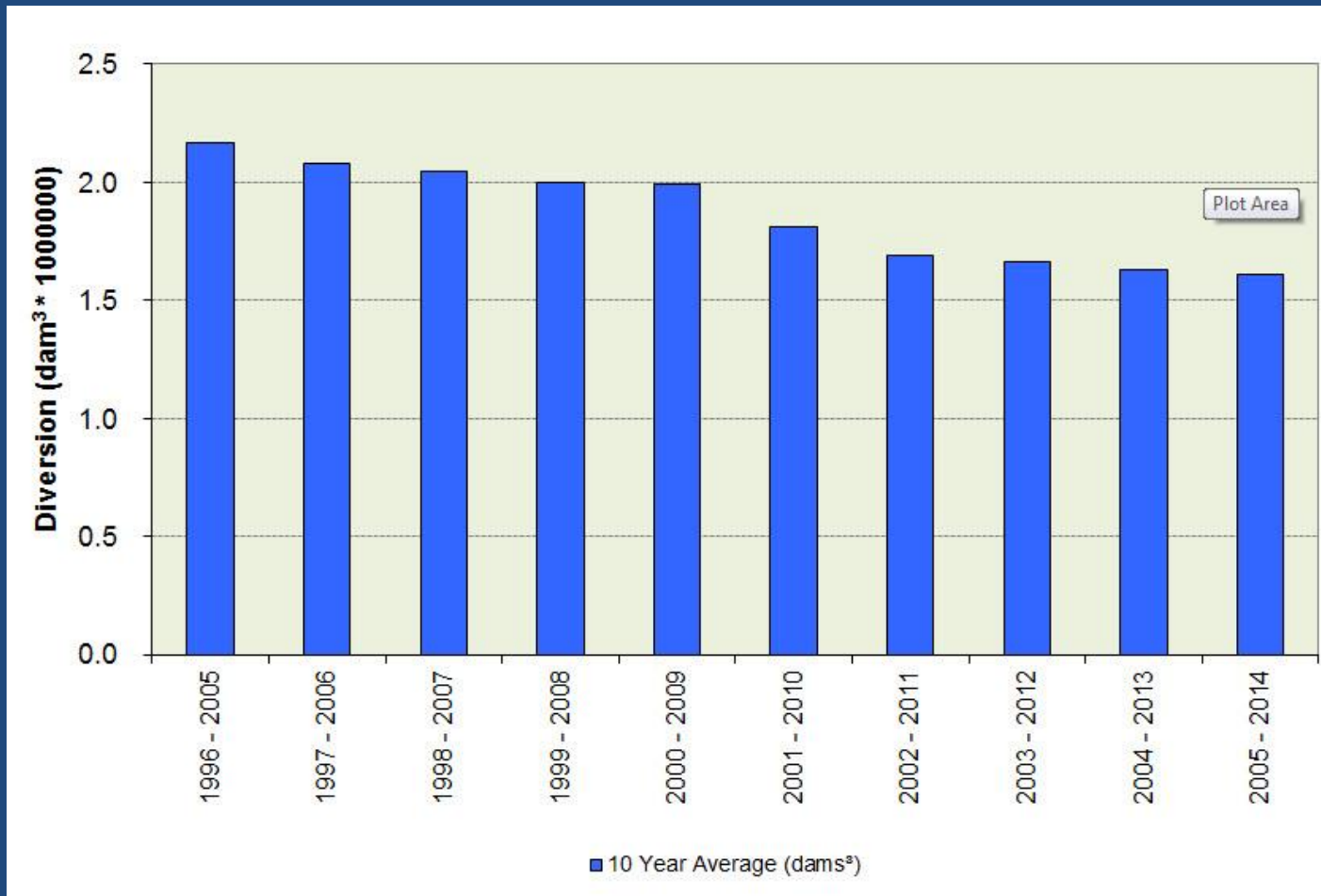


# Water Quantity



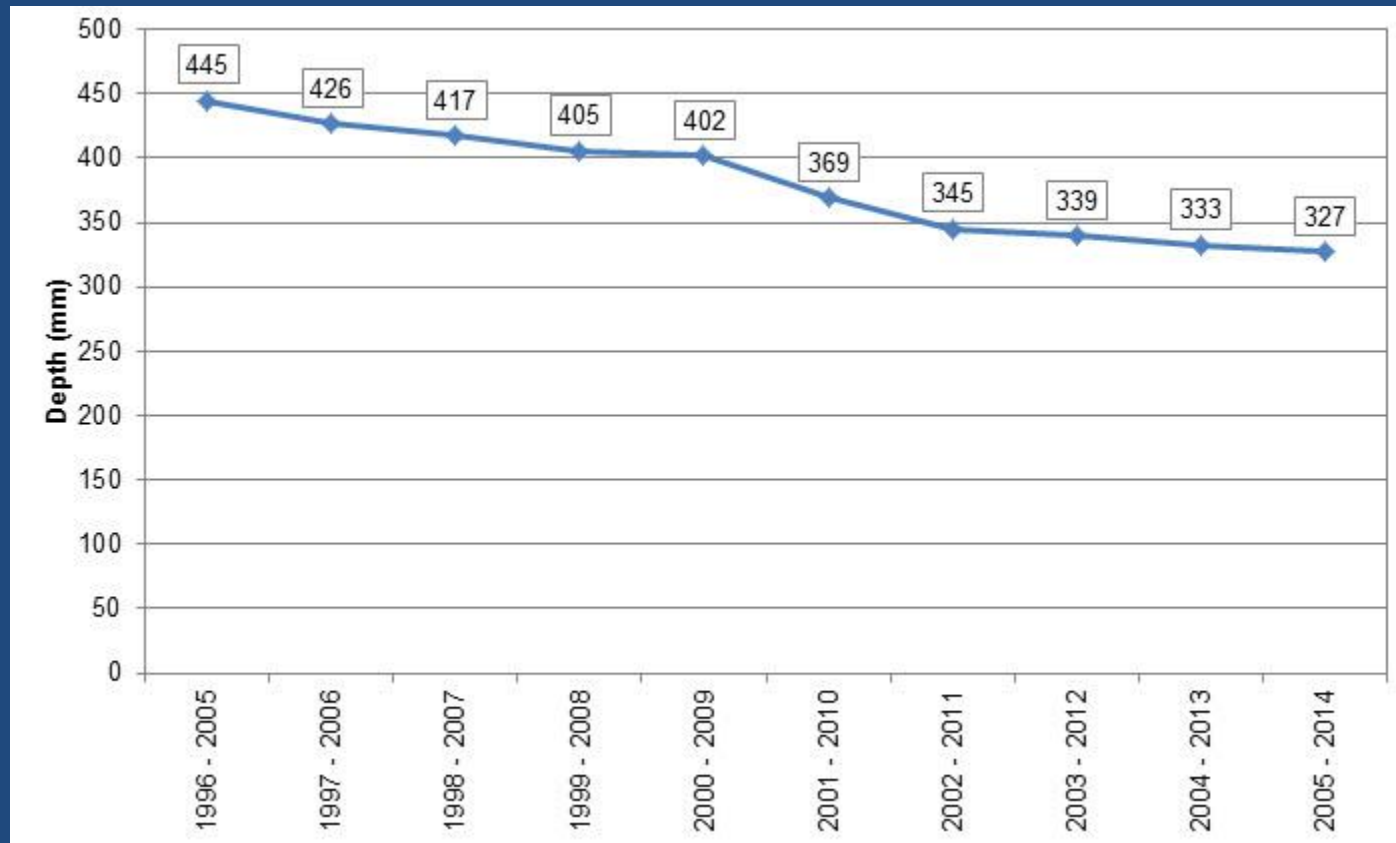


# Water Quantity





# Water Quantity







# Water Quantity





# Water Quantity





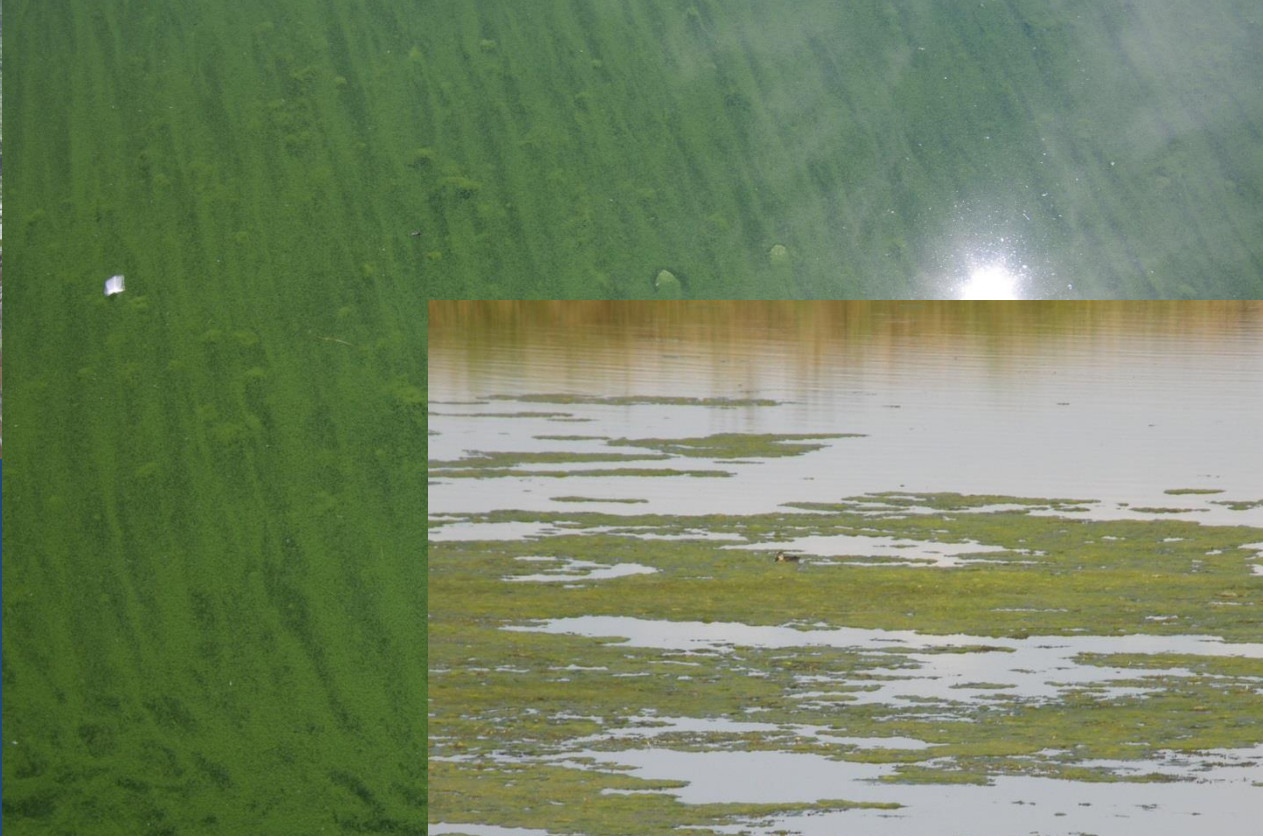


# Water Quantity





# Water Quality







# Water Quality

- Story of the Shephard wetlands project, a major investment by the City of Calgary in dealing with stormwater
- Western Irrigation District's main canal







# Water Quality

- Forest Lawn a hamlet
- Calgary kept growing, annexed Forest Lawn
- More volume of stormwater, flow to outfalls in canals
- 32 outfalls into WID main canal
- Mediated settlement between City of Calgary and WID
- Meet quarterly to discuss water quality, management
- Water quality testing, Shephard wetland to hold and treat stormwater, diversion to take stormwater from canal in off-season rainfall events, stormwater drain under canal into wetland









## Shared Geography

- WID and growing municipalities share drainage in area
- Irrigation water from Bow River diversion high quality
- Quality degrades along canals from urban and rural runoff
  - Phosphorous, salinity, coliforms, TSS.
  - Weeds plug intakes, reduce canal capacity, increase O&M
- Alberta Environment and Sustainable Resource Development (ESRD) stormwater guidelines don't meet irrigation quality
- Municipalities need a solution. WID needs a solution. Shared geography means a shared solution.

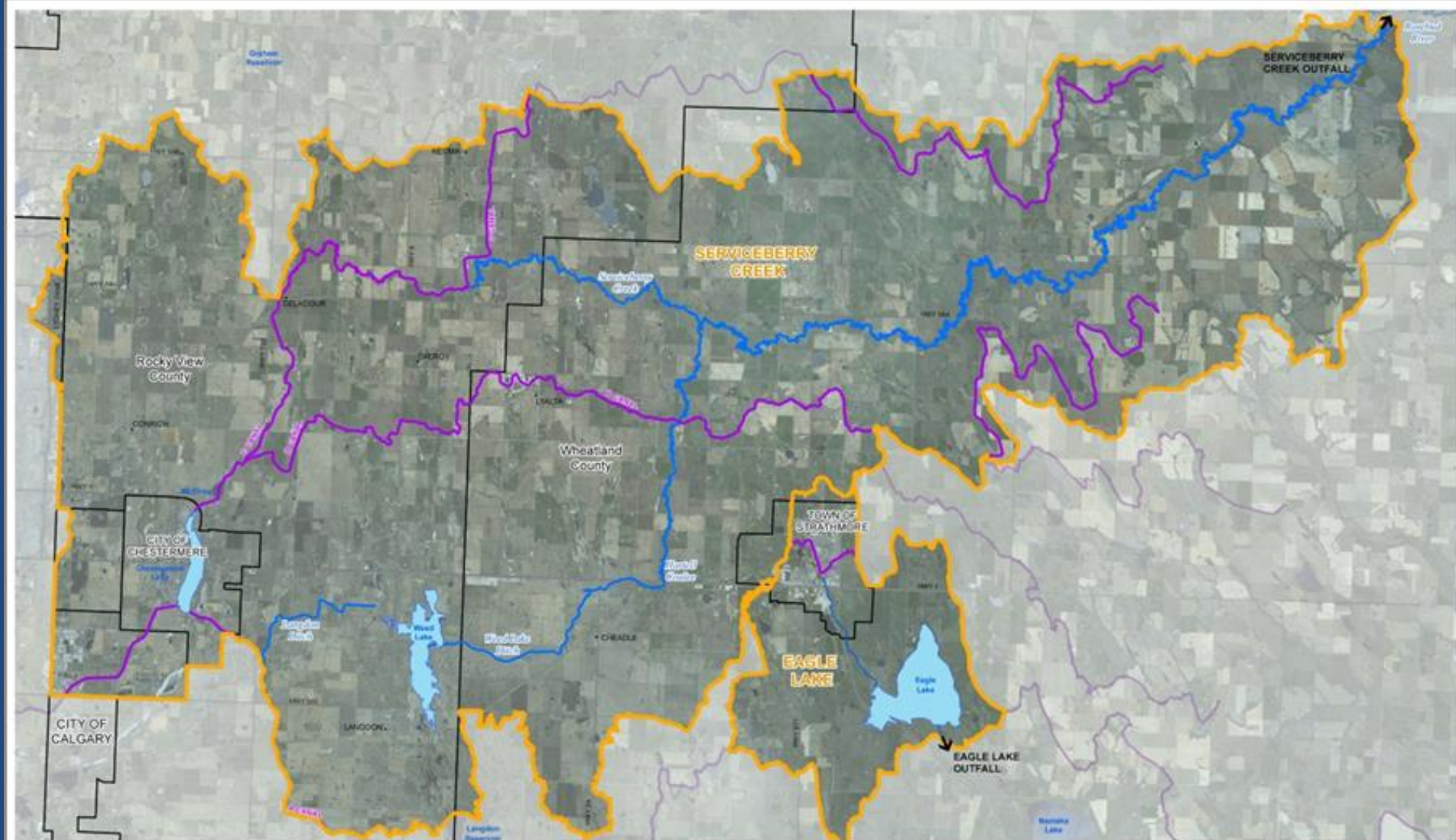
***In June 2012, the Co-operative Stormwater Management Initiative (CSMI) table was formed***



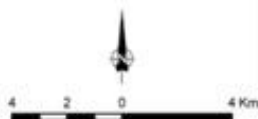
# Water Quality

- Now, collaborative stormwater initiative
- Regional stormwater solution
- Limits on flow and release rates
- Dedicated stormwater channels
- Treatment facilities





- Water Bodies
- Main Canal
- River and Creeks
- Study Areas



CSMI

WATER BALANCE ANALYSIS  
STUDY AREAS

SCALE: 1:175,000

DATE: SEPTEMBER 2015

JOB: 29159-002

FIGURE: 1



# CSMI Participants

- **Partners**
  - City of Calgary
  - Rocky View County
  - Town of Chestermere
  - Town of Strathmore
  - Western Irrigation District
  - Wheatland County



# CSMI Benefits and Objectives

- Key benefits to partners
  - Certainty of costs, growth, and timing in municipalities
  - Long-term sustainability of irrigation and agri-business
- Meeting the interests of the parties
  - Meet ESRD and irrigation stormwater quality
  - Provide capacity for municipal growth



## Water Quantity

# Chestermere

- Chestermere was a reservoir surrounded by pasture









## Water Quantity

### Chestermere

- Fluctuation now 2 inches instead of 2 metres
- Compensation
- Partnering in stormwater initiative, AIS, etc.
- Development around many reservoirs putting similar pressures on a number of Irrigation Districts and their water management



# Freedom to Operate

## LIABILITY

- Walking dogs on canal banks
- Snowmobiles under bridges and on side slopes
- Risk to farm producer's equipment; danger to persons
- Potential drownings

## MAINTAINING CANALS

- Lot owners permanent plantings right up to canal
- Subdivisions try to use canal right-of-way
- Land sales persons pushing canal as an amenity
- Ducks/weeds in canal NOT habitat





## Summary

Meeting challenges presented to irrigation districts by urban growth requires:

- Collaborative understanding and action
- Education of public
- Continued effort to find new ways to use water efficiently and grow more crop with less water



