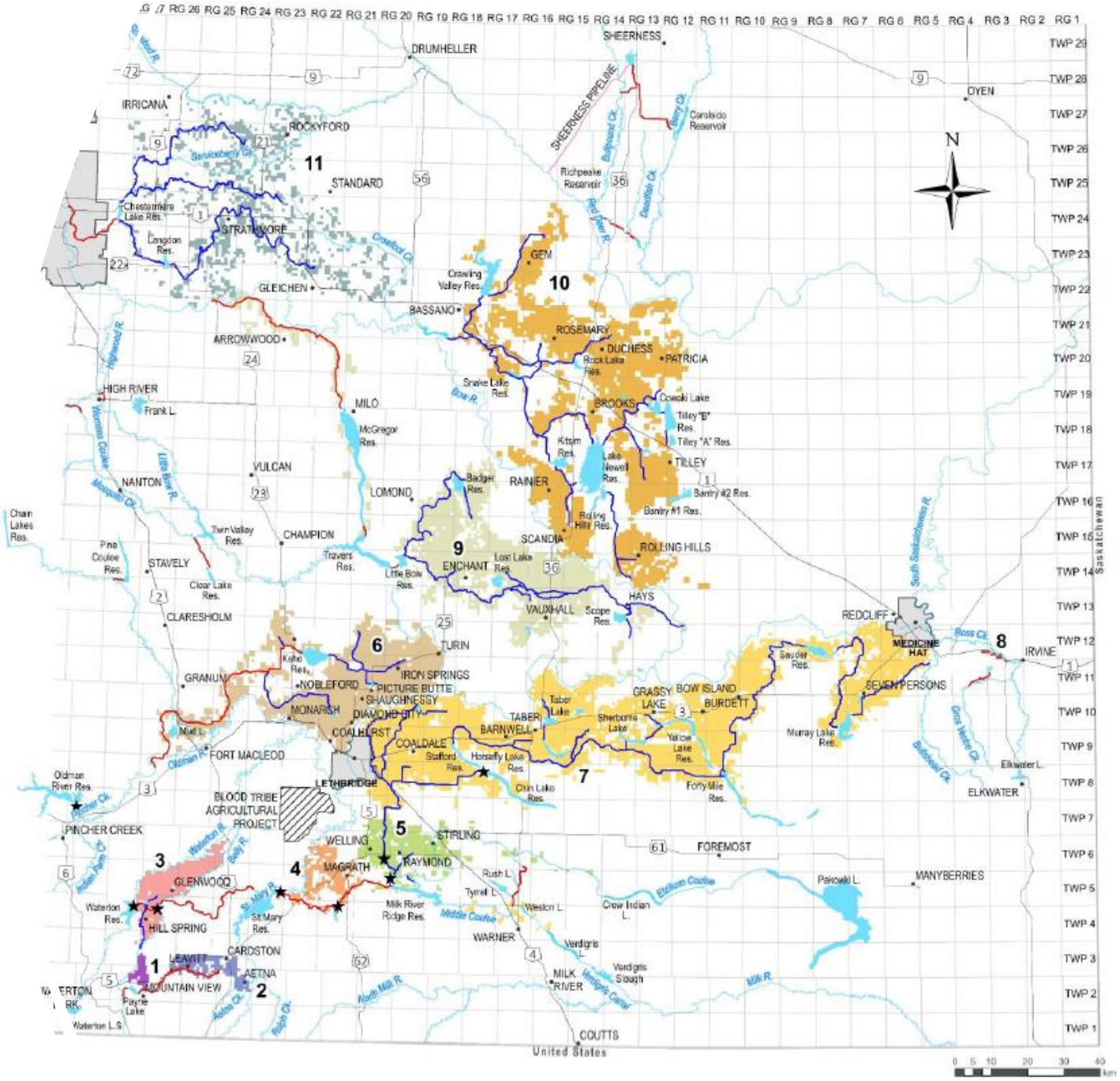
Alberta's Irrigation Districts
Managing Infrastructure for Regional Water Resilience

Irrigation districts are Provincially **legislated not-for profit** corporations that **convey and deliver water** to water users, under the **terms and conditions of** their **water licences.** Districts **construct, operate and maintain irrigation works** to **maintain and promote** the **economic viability** of the district.

South Saskatchewan River Basin (SSRB)
Ag Irrigation Capital of Canada

- >70% of Canada's Irrigation
  - 1.6 million irrigated acres =4.4% of AB cultivated area
- Consistent, high quality & diversified crop production
  - 30% of AB primary Ag product
  - 27% of AB Agri-food GDP
- Surface water conveyance supports Agriculture sector and all other users
- Water Security-Food Security-Jobs



Linear Infrastructure

- 96% owned and operated by IDs
- Replacement value =$4.78 Billion
- Gravity delivery system

1. **Canals**
   - 2,798 km
   - 170 major control structures
2. **Pipelines**
   - 5,118 km
3. **Drains**
   - 5,076 km

Reservoir Storage Infrastructure

- **52 supporting storage reservoirs**
  - Store water diverted during high flow for later use
  - Assist in flood and drought mitigation
  - 41 District owned and operated
    - Live storage = 851,000 acre-feet
    - Assist in providing efficient delivery to all water users
  - 11 AGI owned and operated
    - Live storage = 1,501,120 acre-feet
    - Assist in meeting Provincial apportionment requirements

Water Resilience

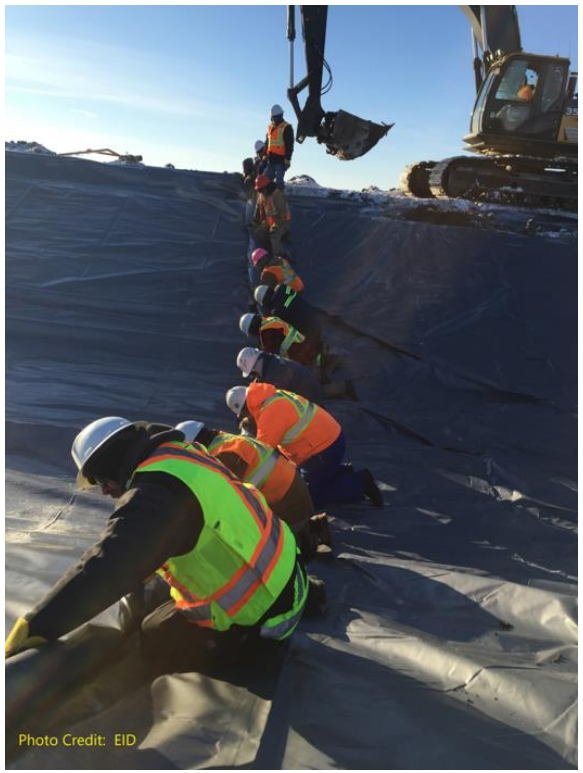
Secure, quality water supplies available for multiple purposes

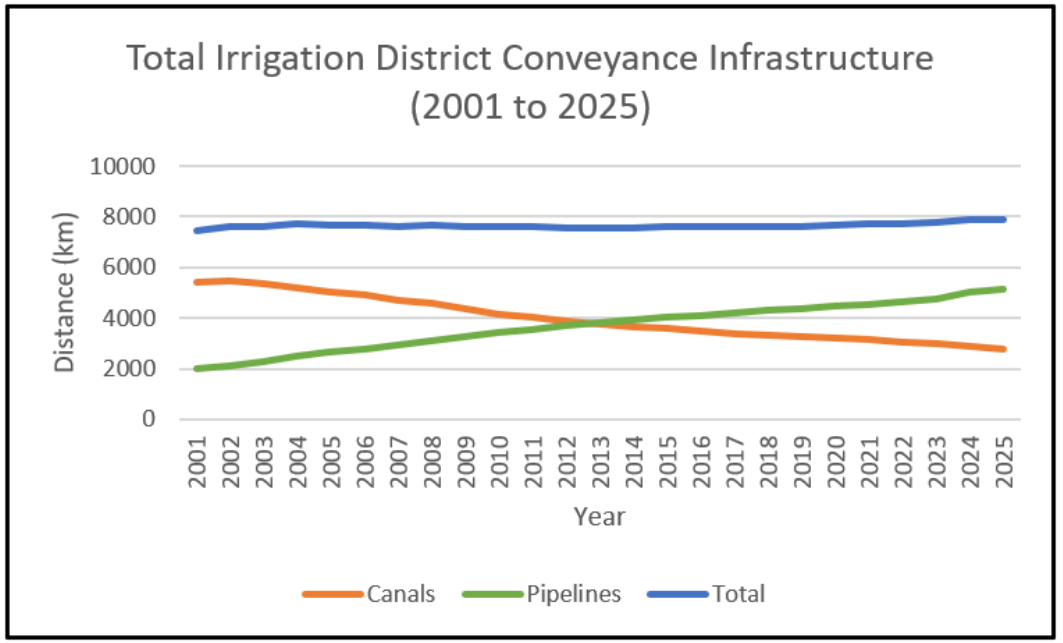
Infrastructure Rehabilitation/Modernization

Replacing Canals with Pipelines

Canal Rehabilitation

- Poly liner
- Re-engineering
- Structure automation





On-farm Irrigation Infrastructure

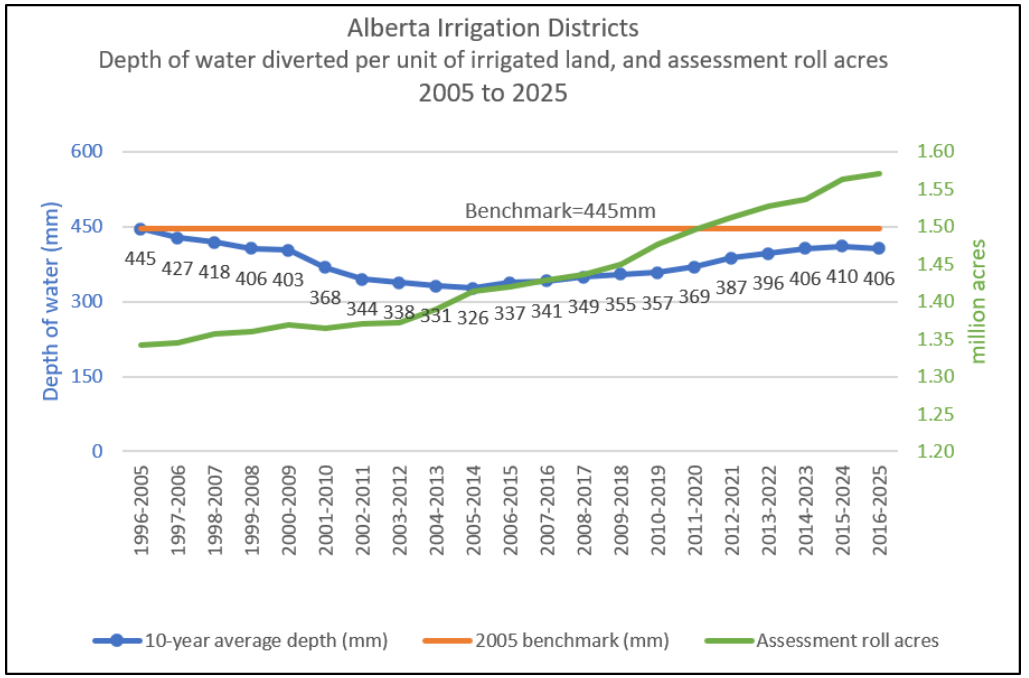
- 87% of irrigated land irrigated with low pressure drop tube pivot systems
  - Application efficiencies >85%
  - No runoff

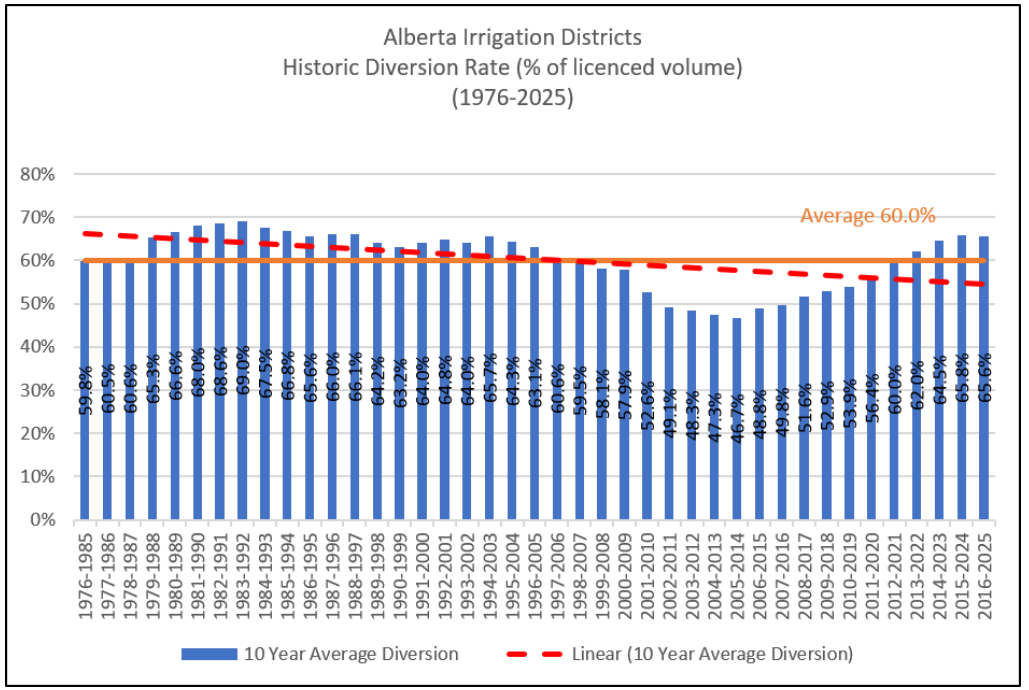
- 0.02% subsurface or micro drip irrigation

Benefits of Infrastructure Modernization

- Water efficiency gains
  - Reductions in
    - Seepage
    - Evaporation
    - Water lost as return flow and flow-by
    - Better matching supply with demand
  - More crop per drop of water diverted
  - Improved water quality – reduced runoff

- Expansion possibilities
- Freeing up water for other uses





Irrigation District Water Supply Planning

- Water supply is variable
- Planning and predicting supply is necessary and occurs annually, weekly, daily…
  - Snow water forecasting - AEPA
  - Reservoir storage levels – AEPA and district
  - Irrigation Water Supply Forecast Tool - AGI
  - Potential demand from irrigators, other districts and other users – challenging
    - Unknown crop mix
    - Localized or regional precipitation
    - Other influences
      - IOs/WCOs
      - Transboundary apportionment
      - Flood mitigation
      - Managing for other purposes – functional flows for cottonwood recruitment

Classification: Protected A

Irrigation District Water Supply Planning

- Differ between districts
  - Geography, composition of on-farm application systems, crop mix, history
- District bylaws and policies
  - On-farm allocation limit (amount of water received)
  - set prior to water turn
    - Allows farmers to plan for the water they will receive – crop choices, allocation transfers
    - Different years = different allocations
  - Water delivery bylaws and policies
    - On-farm water allocation
    - Water ordering procedure
    - Stoppage of water delivery

Classification: Protected A

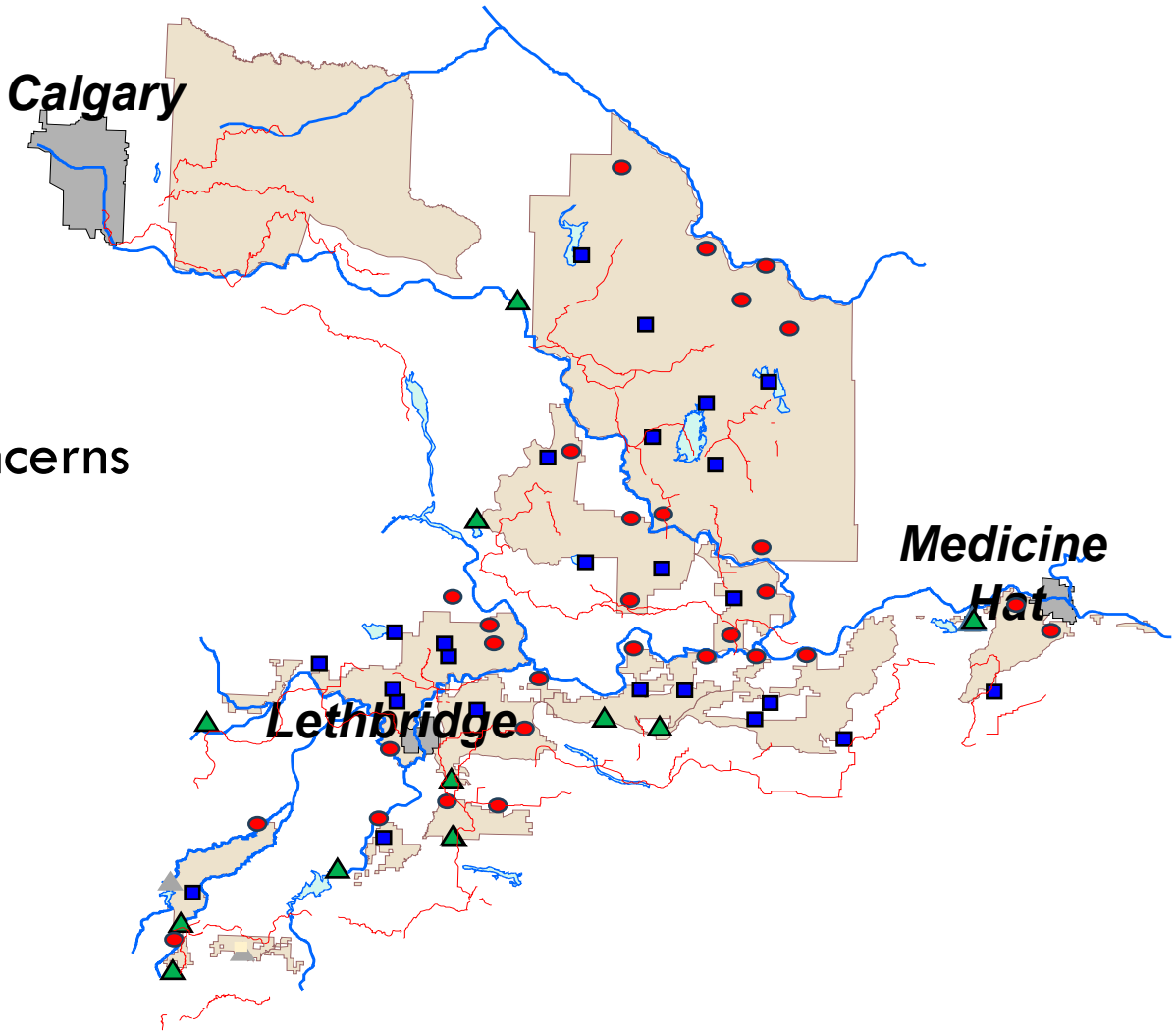
Irrigation District Water Quality (IDWQ)program

Commenced in 2006

4 times per season

Goals

- Maintain or improve irrigation water quality
- Enable proactivity to address water quality concerns
- Demonstrate stewardship of water resources



- Primary: source water,11 sites
- Secondary: mid-district water, 27 sites
- Return: unused irrigation water, 30 sites

Currently 68 sites

IDWQ

Water Quality Data and Information

Data

- Irrigation Water Quality Guideline exceedances
- Annual Water Quality Index
- Long Term Trend Analysis

Actions

- Identification of parameters of concern
- Identification of locations or practices of concern
- Allows proactive stewardship of water resources
- Builds public trust – particularly to food export markets

WQ data and reports and conclusions available at www.idwq.ca

Regional Drainage Collaborations

Horsefly Regional Emergency Spillway Project

- Districts covey raw water and stormwater for local municipalities
- Infrastructure is sometimes called upon to receive overland flood water

Maintaining Water Quality & protecting conveyance infrastructure is critical

- Collaboration = financial and technical efficiency
  - Horsefly Regional Spillway Project
  - EID-County of Newell Drainage Program

Aquatic Invasive Species Prevention

- Education & Outreach
- Local Boating Programs
- Veliger/eDNA sampling in ID infrastructure
- Advocating for increased Federal and Provincial resources to prevent spread

Questions?

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