

Production Sustainability Stewardship & Conservation

By: Richard Phillips, P. Eng.

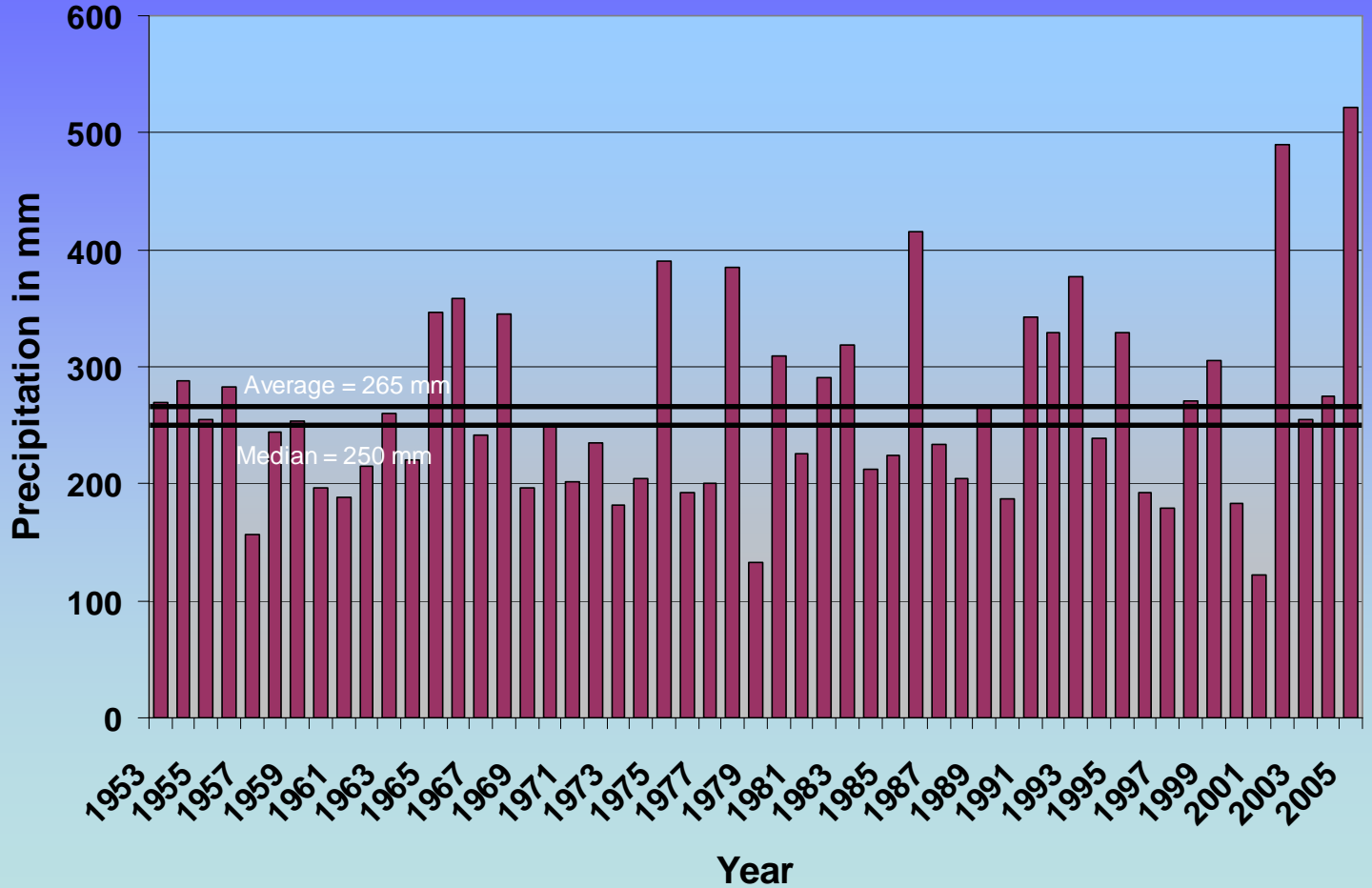
General Manager

Bow River Irrigation District

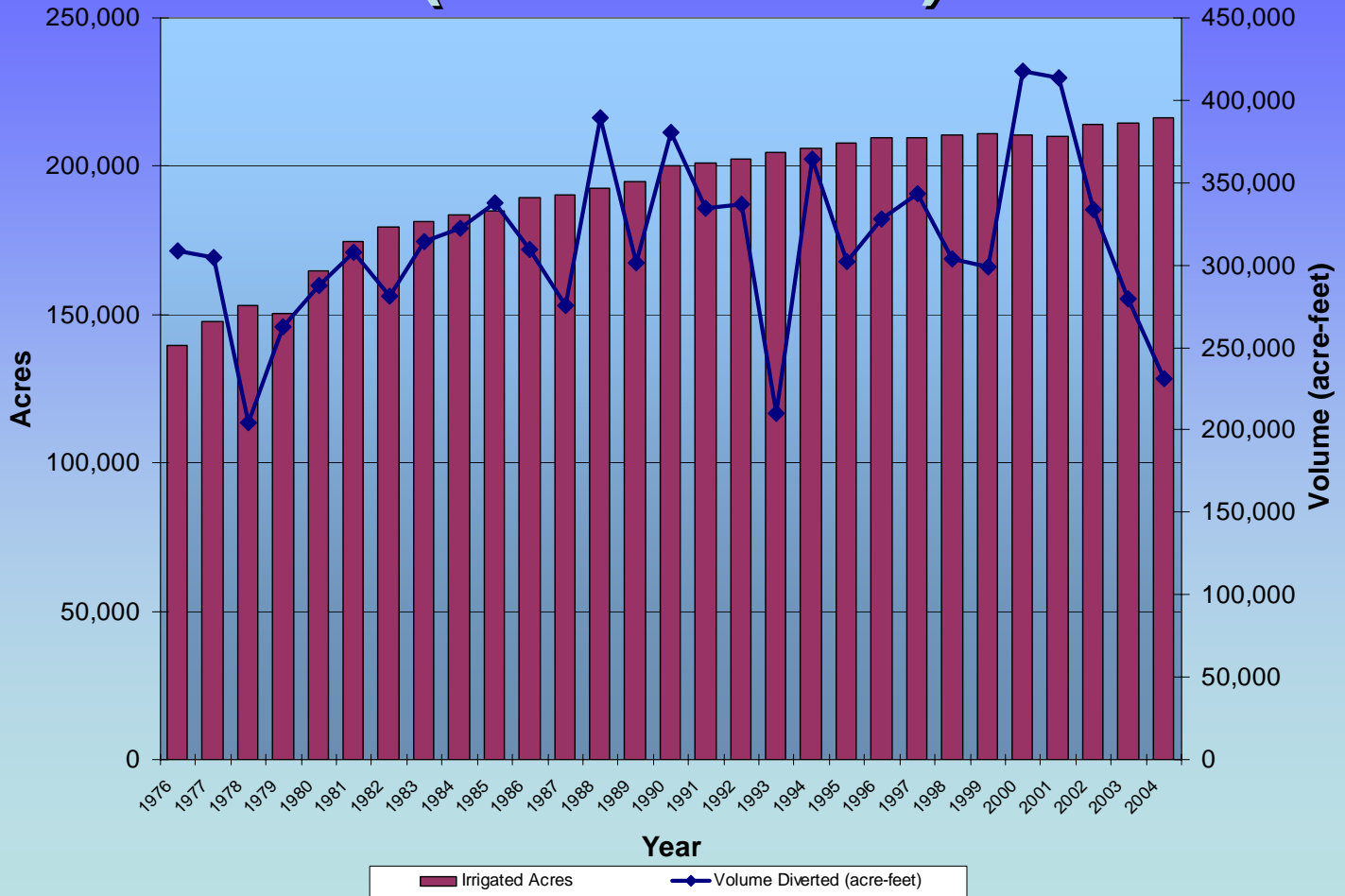
Irrigation in Alberta

- [Link to Map of Alberta Irrigation Districts](#)
- [Link to Bow River Irrigation District Map](#)

April 1 to October 31 Precipitation Vauxhall Research Sub-Station

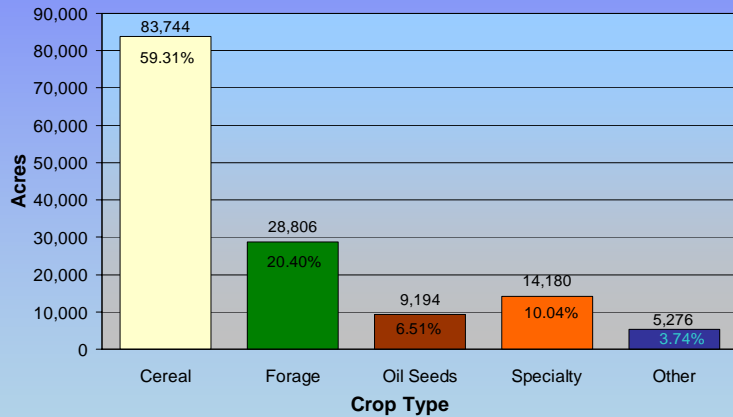


Irrigated Acres & Diversion by BRID (1976 to 2004)

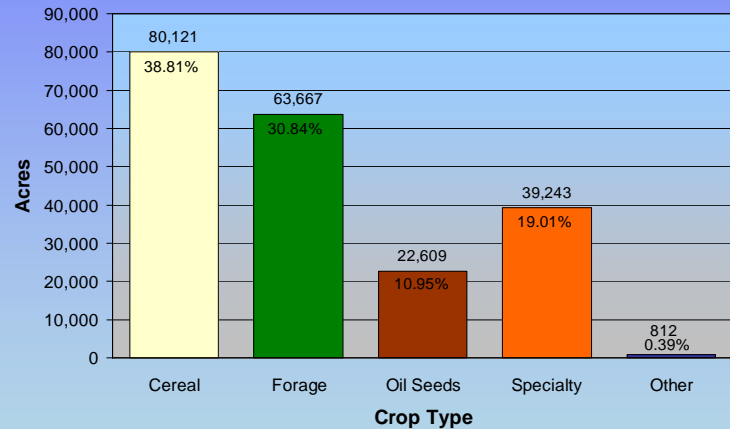


Crop History

1980 Crop Type
Total Acres: 141,200



2005 Crop Type
Total Acres: 206,452



Production Sustainability

The Producer's Perspective

- Adequate financial return
- Maintain soil productivity
- Adequate water supply
- Growth potential

The Irrigation District's Role

- Adequate water supply
- Growth Potential

The BRID Expansion Proposal

- Expand from 211,000 acres to 232,000 acres over a four year period (2004 to 2007)

Why Expand?

- Demand from irrigators
- Financially attractive to BRID
- Adequate water supply = low risk

The BRID Expansion Proposal

Existing Storage

Water Supply Factors Favoring Expansion:

- Existing Storage
- Headworks Improvements
- Conservation

Total Storage

= 25.7" per acre @ 211,000 acres

= 23.4" per acre @ 232,000 acres

Headworks Improvements

- Link to [Map of Headworks Improvements in BRID](#)

McGregor Outlet Construction



Conservation

- On-farm Irrigation Practices
- Policy & Communication
- Canal Automation
- Pipelines

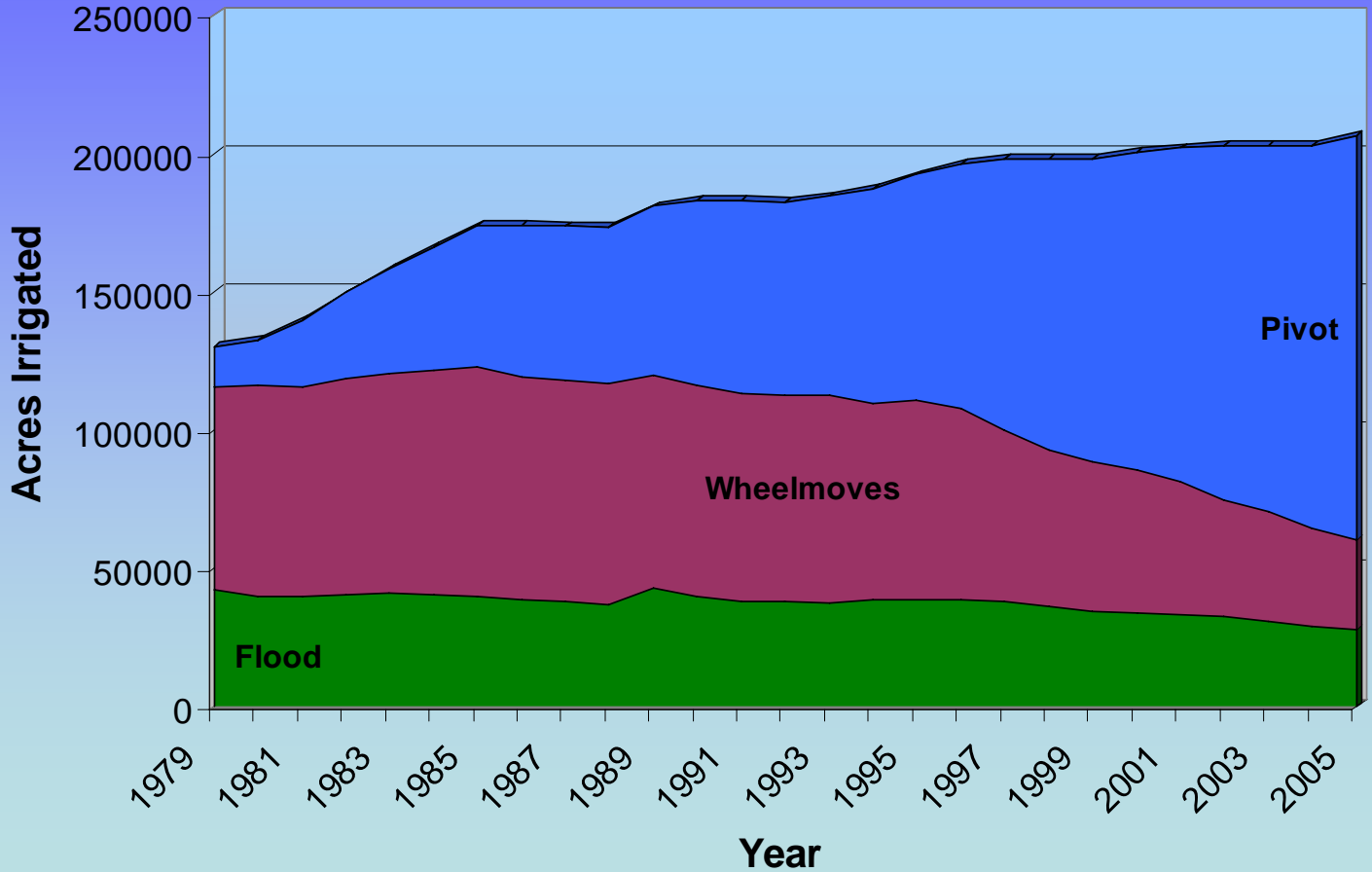
On Farm Efficiencies Irrigation Methods

BRID:	Pivots	Wheelmoves	Flood
1991	38 %	41 %	21 %
2004	68 %	18 %	14 %

Annual Water savings: >10,000 ac.ft
(12 billion litres)

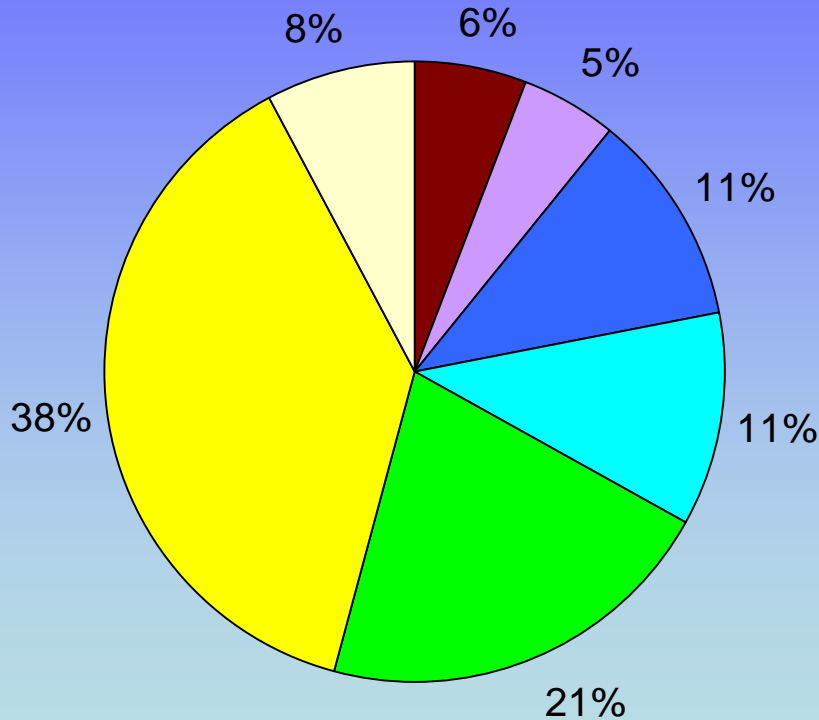


Irrigation Method Comparison

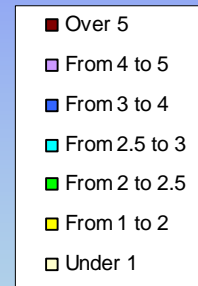


Policy

2001 Water Use



% of Parcels with water use:



Acre Feet per Acre

The Result: Maximum water use policy.

Canal Automation

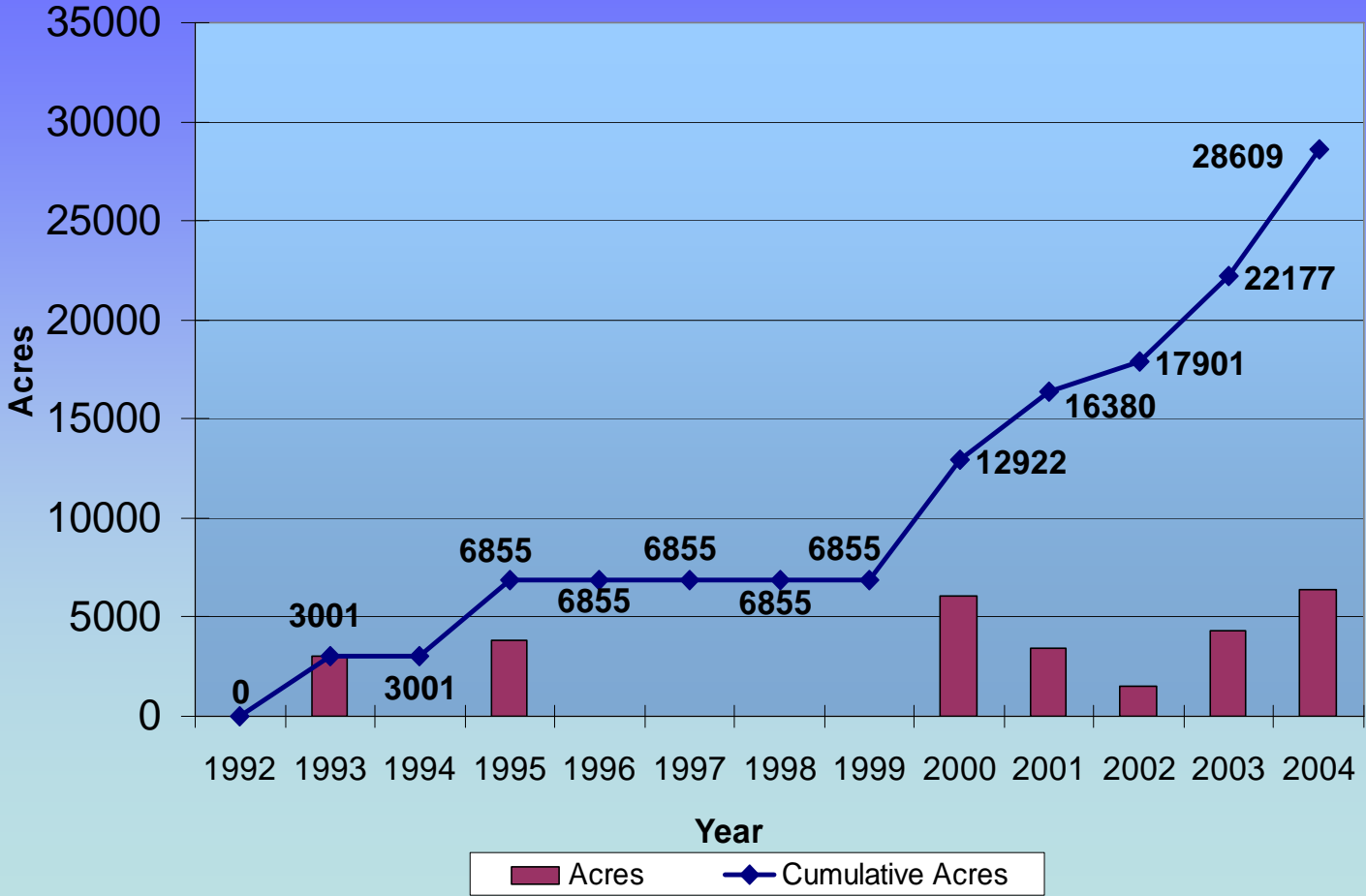
Ten main canal check structures have been automated.



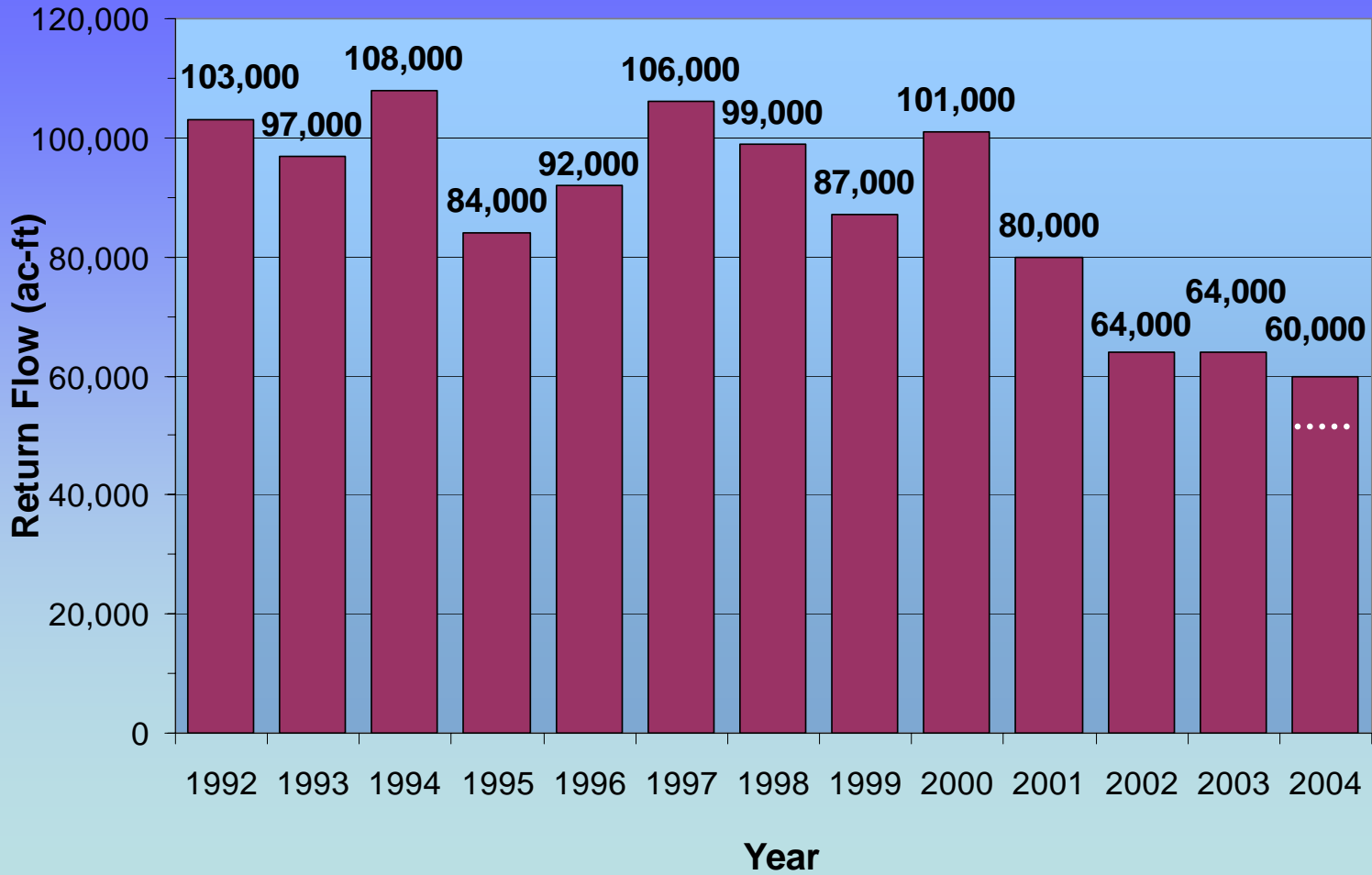
Pipelines



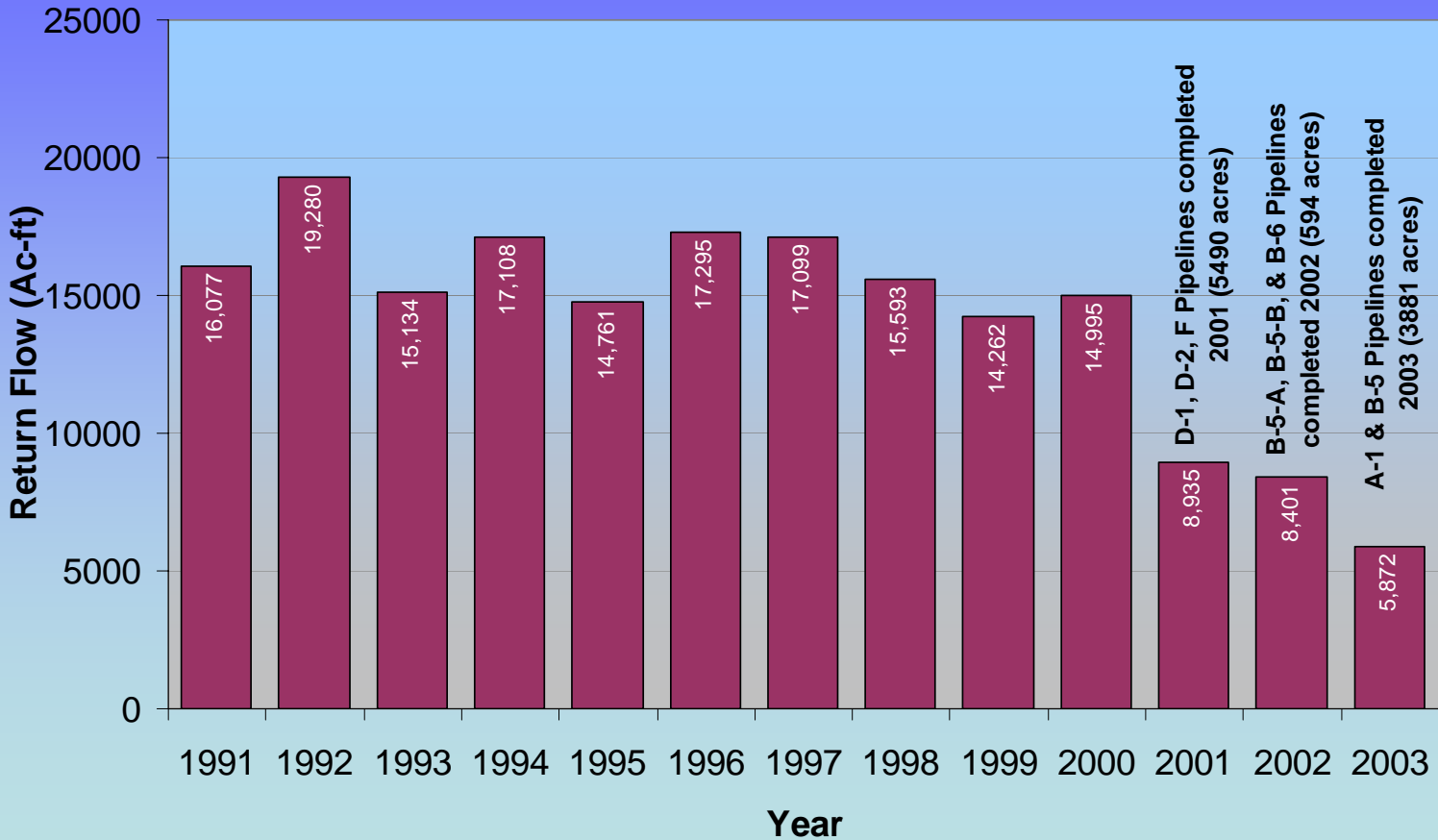
Area Served in BRID by Closed Pipelines Which Eliminate Return Flow



BRID Return Flow



Return Flows for Expanse Coulee



The Value of Pipelines

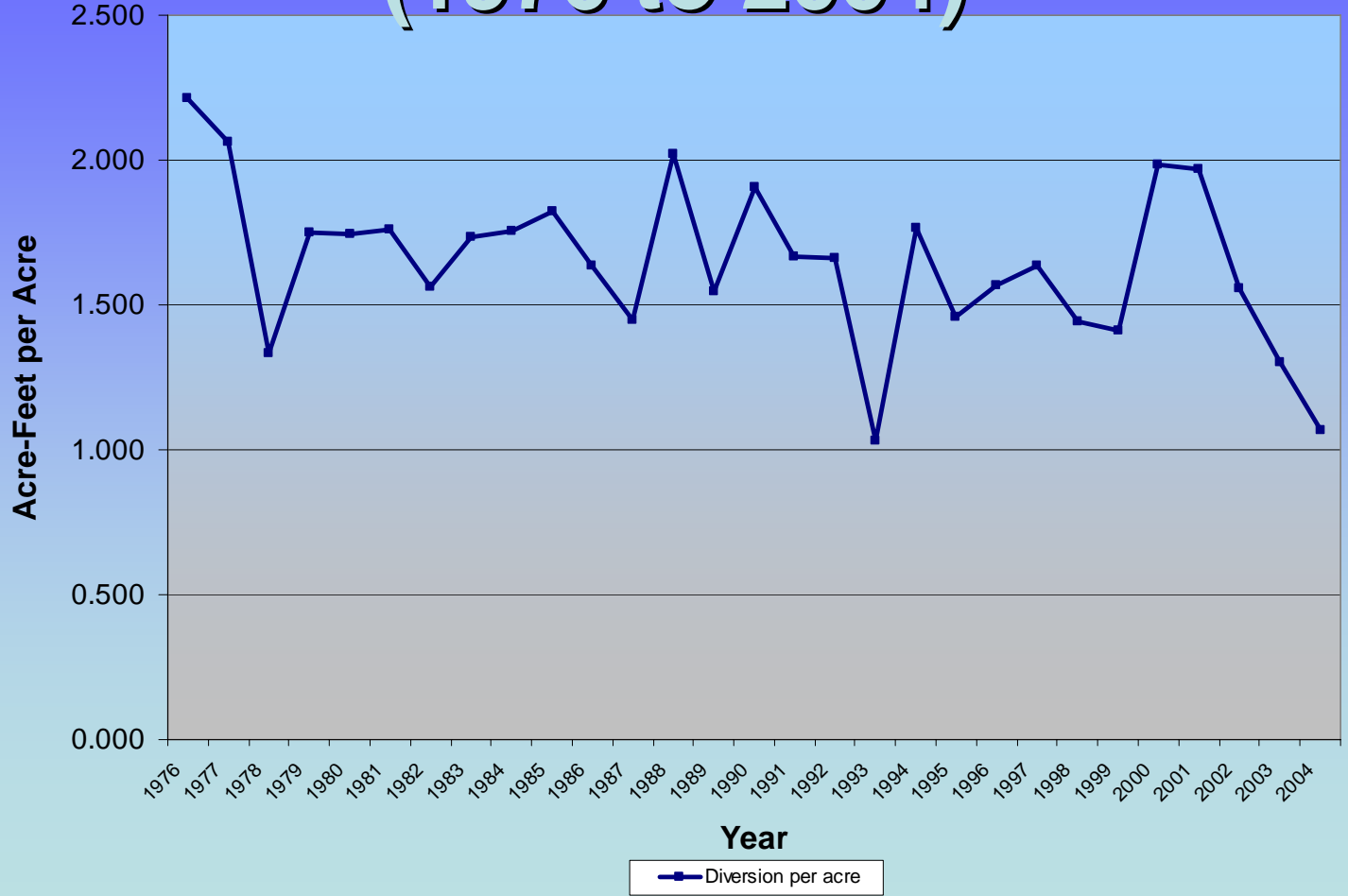
Typical Pipeline Cost: \$500 to \$1000 per acre served.

Typical water savings on pipelines with inlets upstream of reservoirs: 0.5 acre feet to 1 acre foot per acre served.

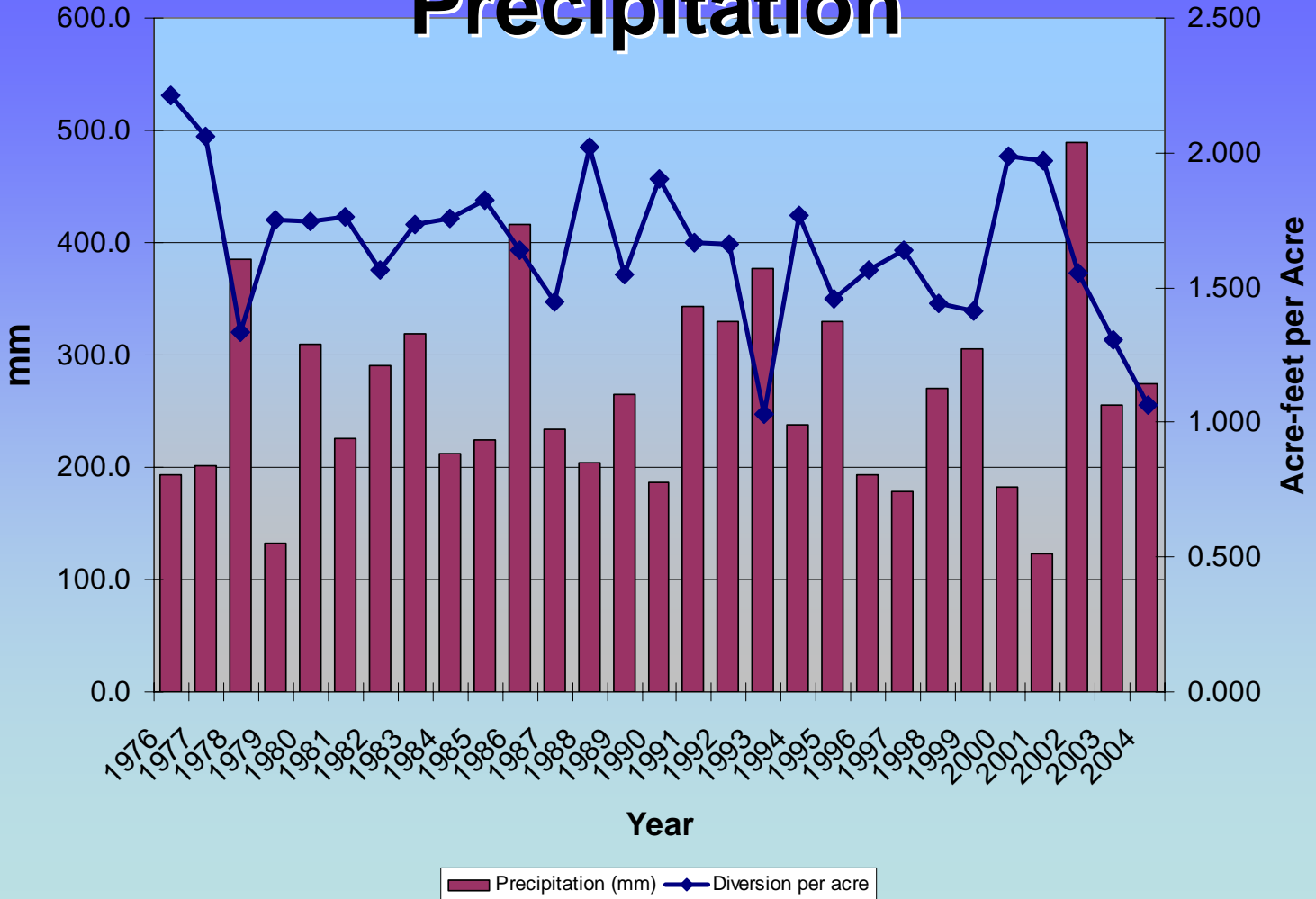
Typical cost to save one acre foot of water annually using pipelines: \$1000.

Typical cost to create storage for one acre foot of water: \$1000.

Diversion per Acre by BRID (1976 to 2004)



Diversion per Acre vs Precipitation



Stewardship in the BRID

- The Wildlife/Habitat Angle
 - Duck Unlimited Partnership



Shay Project

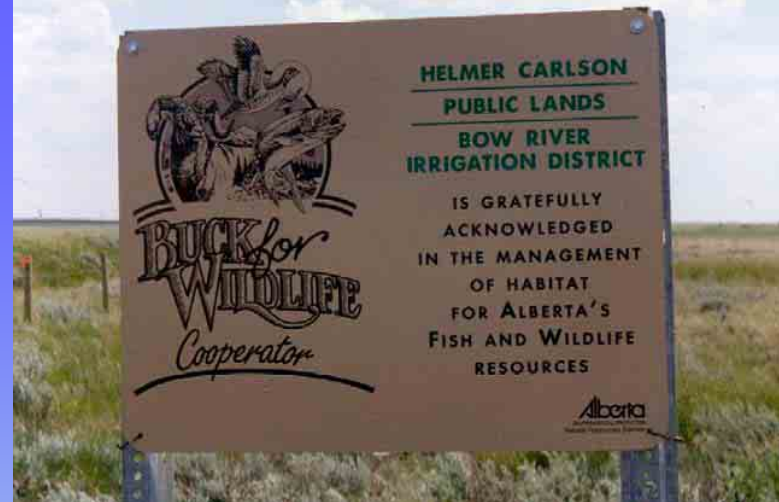
Wetlands, Waterfowl, etc.




PHD Projects



Alberta Conservation Association




Education




BOW RIVER IRRIGATION DISTRICT

BADGER RESERVOIR

THE RESERVOIR'S PRIMARY USE—PROVIDING WATER FOR IRRIGATION REQUIREMENTS




In the summer of 1980, the Ministers of Environment and Agriculture announced a program, funded from the Alberta Heritage Savings and Trust Fund, for the development of offstream reservoirs within the irrigation districts supplied from the Bow River. Construction of this reservoir began in 1984 and was completed on schedule and under budget in 1985. Filling of the reservoir began in the spring of 1985, and water from this reservoir was also used in 1985 for irrigation purposes.



MANY BIRD SPECIES BENEFIT FROM BADGER RESERVOIR


The main embankment along the south boundary of the reservoir is 825.6 meters (2,708.6 feet) in elevation, with a crest length of 2,700.0 meters (8,860.0 feet). The total storage is 5,378,000 cubic meters or 43,600 acre feet. The maximum depth is 10.0 meters (32.8 feet). A shoreline length of 17.7 kilometers (11.0 miles) surrounds a flooded area of 890.0 hectares (2,200.0 acres).




VIEW OF EARTH DAM WITH EDGE OF FILLING RESERVOIR

Badger Reservoir captures and stores the flow of water which was previously returned, unused, to the Bow River. The irrigation of an additional 1,000 acres was made possible within the District due to the construction of Badger Reservoir.


The reservoir provides good fish and waterfowl habitat and a pleasant location for recreational activities such as sport fishing, boating, and sailing. Permanent waterfowl nesting islands have been constructed within the reservoir and a marshland has been created to support and encourage the presence of waterfowl in the area.




AERIAL VIEW OF RESERVOIR



RESERVOIR CONSTRUCTION STEEL REINFORCEMENT



RESERVOIR REPLACEMENT ON EARTHEN DAM



ONE OF THE BENEFITS PROVIDED BY IRRIGATION RESERVOIRS

GREAT OUTDOORS

Garry Allison EDITOR 328-4411

IN PRAISE OF IRRIGATION

Fishing holes in southern Alberta just one of the benefits of irrigation

Anglers reaping benefits

By GARRY ALLISON

Lethbridge Herald

VAUXHALL — "Take away the canals and irrigation reservoirs they feed, and how many lake fishing opportunities would you have in southern Alberta?" asks Richard Phillips.

Without irrigation the fact is there wouldn't be much in the way of fishing, the Bow River Irrigation District's district engineer says.

Phillips says all rainbow trout are stocked fish in southern Alberta waters, as are brown trout.

Species of concern, like native bull trout, are not impacted by the BRID or most of the other canals, with only one rescued this year and one the year before from the BRID.

In earlier times reservoirs were stocked with lake whitefish and they are so thick now that virtually ever major reservoir has a commercial fishery for lake white-

Anglers need to realize the positive impact irrigation has on fishing and recreation in southern Alberta, says Rolf Schwabe.

This avid pike fly fisherman and employee of the Bow River Irrigation District says more than a quarter of the 89 irrigation-created reservoirs in