

Wasteways

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Good Advice from 1987:

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- Terminal wasteways required if initial $Q > 0.7 \text{ m}^3/\text{s}$

- Wasteway capacity must be equal to 15% of the initial Q or the canal capacity immediately above the wasteway.

- Consider intermediate emergency wasteways if canals are $> 10 \text{ km}$ long.

Terminal Wasteway (Ronallane)



What's New since 1987 ?

Pivots (B.R.I.D):

1988

56,650 acres

33%

2009

172,064 acres

80%

What's New since 1987 ?

Power (B.R.I.D.) :

2004

118,000 acres
electric

2008

136,000 acres
electric

What's New since 1987 ?

Pipelines : (B.R.I.D)

2001

230 km

2008

364 km

34.8 %

What's New since 1987 ?

Automation (B.R.I.D.):

1987

None

2010

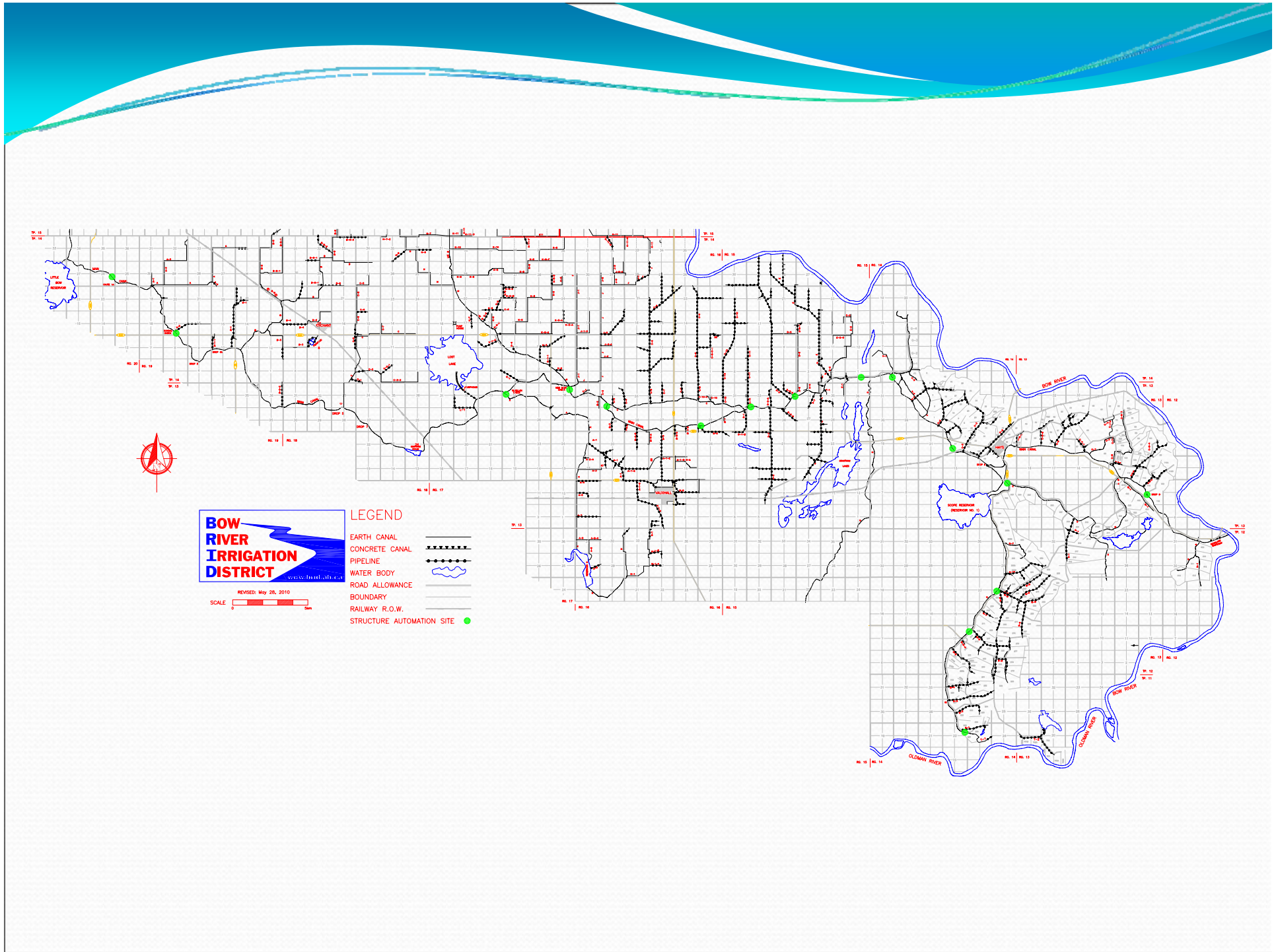
>20 structures

C-6 Pipeline Inlet : $Q > 100$ cfs



Automated Check – level control





**BOW
RIVER
IRRIGATION
DISTRICT**
www.brid.ab.ca

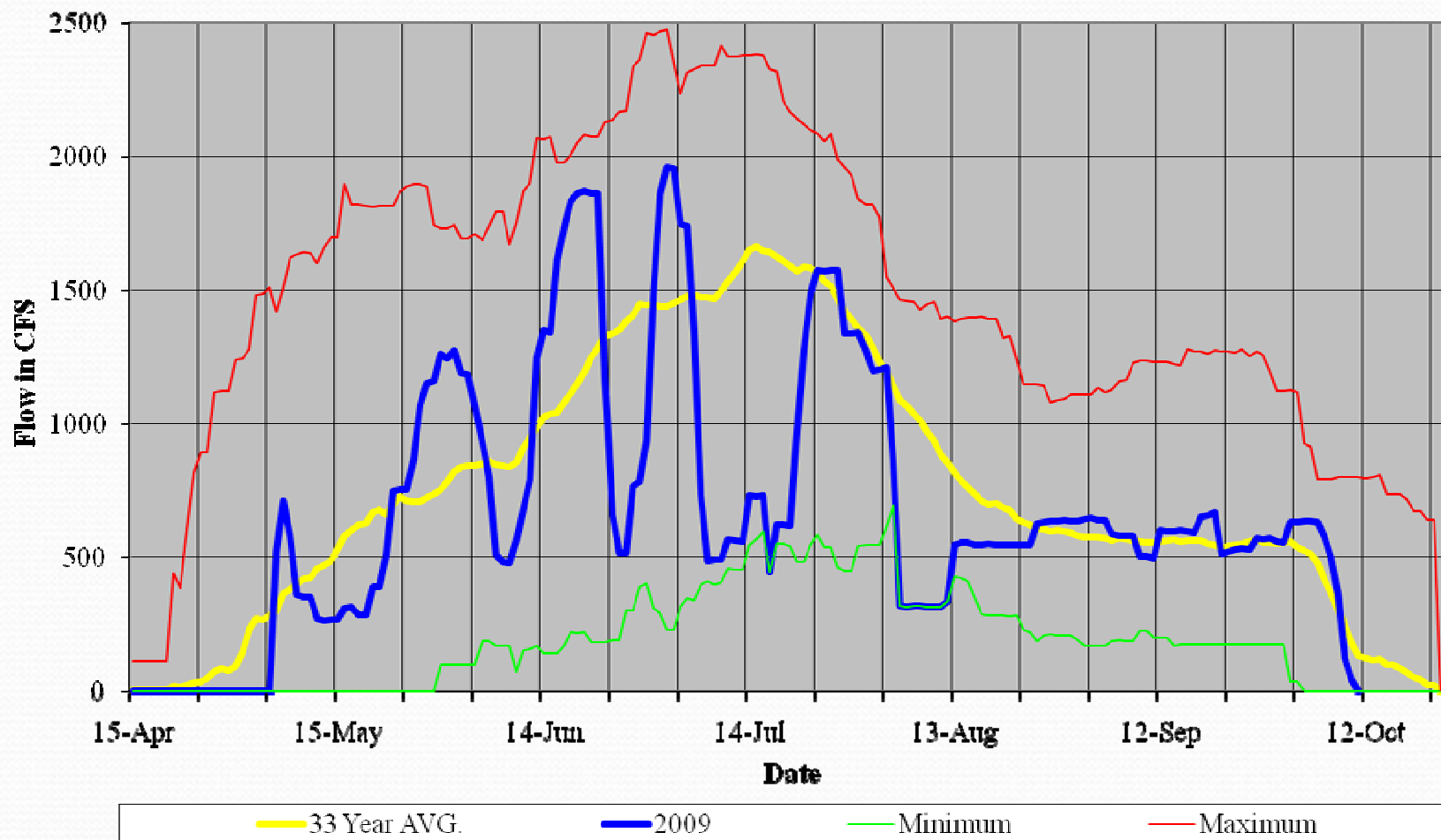
REVISED: May 28, 2010

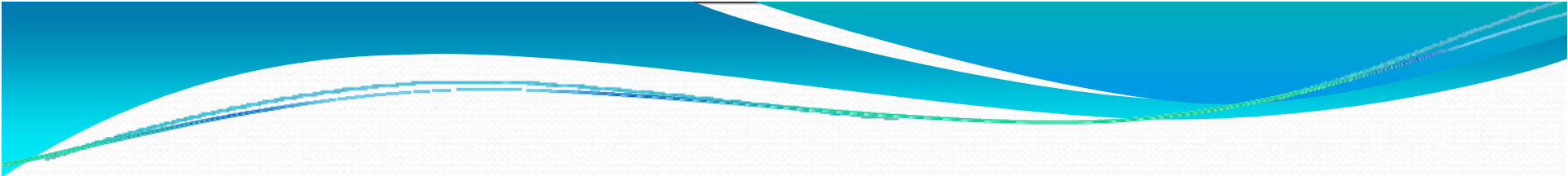
SCALE 0 5 km

LEGEND

- | | |
|---------------------------|-----------|
| EARTH CANAL | ——— |
| CONCRETE CANAL | - - - - - |
| PIPELINE | - x - x - |
| WATER BODY | ~~~~~ |
| ROAD ALLOWANCE | ===== |
| BOUNDARY | ===== |
| RAILWAY R.O.W. | ===== |
| STRUCTURE AUTOMATION SITE | ● |

The Result: Little Bow Diversion



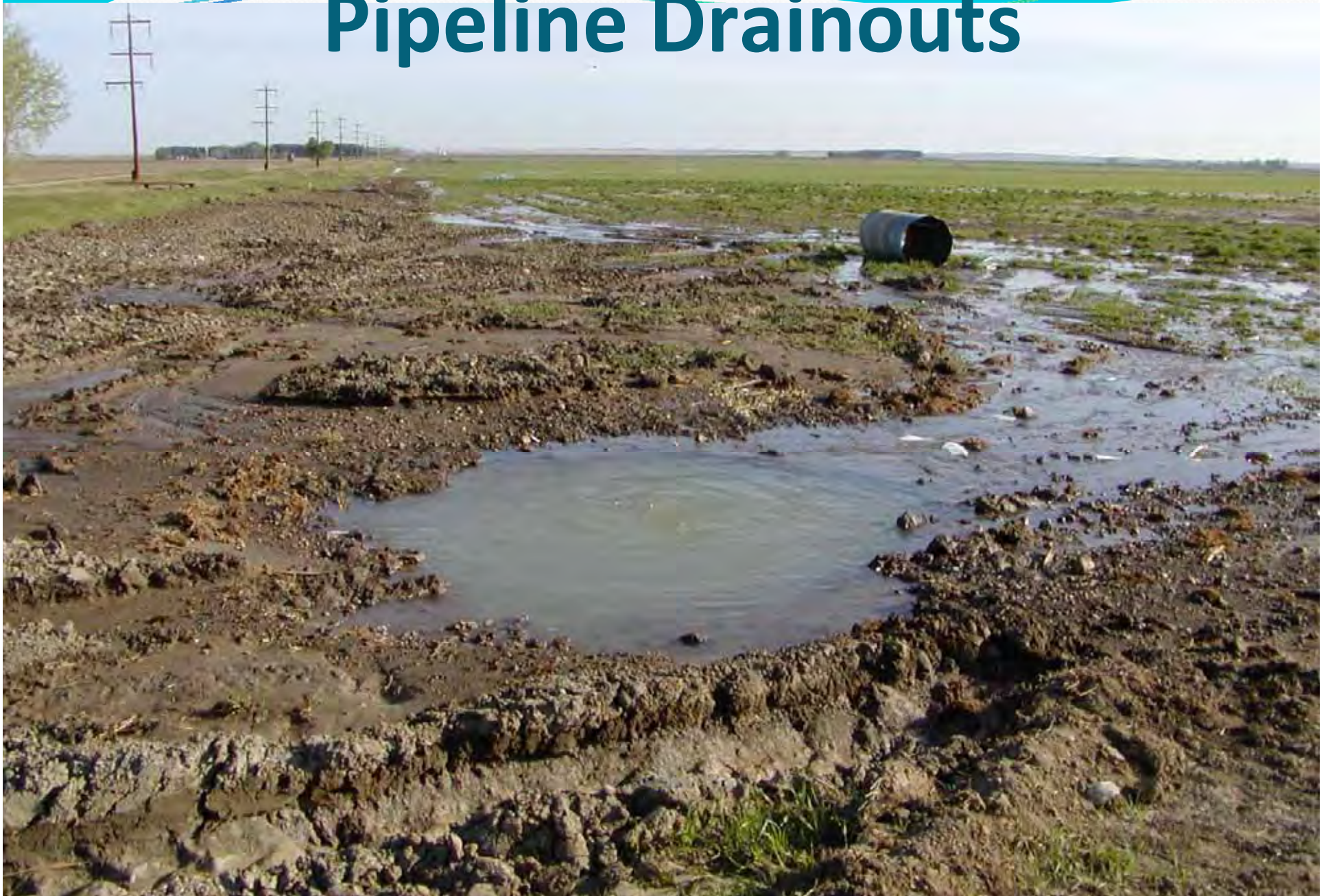


Possible Solutions:

Wasteways (Expanse Coulee)



Pipeline Drainouts



Automation



Procedures:

FLOOD MANAGEMENT PROCEDURES FOR MAIN CANAL OPERATIONS DURING HIGH FLOWS

The main canal capacity upstream of Scope Reservoir is 820 cfs. It is important that we avoid surcharging the canal above this capacity. When flows into the main canal past the Lomond headgates exceed 1000 cfs; the following actions need to be taken when widespread heavy rain and/or extensive power outages cause a sudden large drop in irrigation demand. These all need to happen; they are not in sequential order.

1. Reduce flow out of Little Bow Reservoir as soon as it is apparent that a significant drop in irrigation demand is occurring. It will take roughly 24 hours for the cut in flow to be noticed at the Scope inlet.
2. Shut off the Lost Lake pumps, if they are operating.
3. Irrigators need to be encouraged to continue to irrigate until flows in the canals can be reduced.
4. Flow needs to be maintained in the open laterals off the main canal without any reductions until the cut in the main canal flow is obvious at the lateral headgates. The only exception is if maintaining flow will cause overtopping of the lateral.
5. Open drainouts on pipelines to spill as much water as possible out of the main canal (including Lateral C) if main canal flows appear too high (above FSL with check gates down). Each ditchrider is responsible to make this evaluation and decision in their area. Critical points to check include the road crossing downstream of the D-5 inlet, the Expanse Coulee check/drop, and the canal at Drop 8. These are all in Stan's area, and if he sees a problem the upstream ditchriders need to spill as much as possible. If the canal is too high at Drop 8 (within 8 inches of the top of the armour), open the bypass gates to pass approximately 200 cfs down Drop 8. Checks between Drop 8 and Ronalane will need to be adjusted to pass higher flows. Maximum flow at Ronalane is 400 cfs. Once the cut in main canal flow is obvious at the pipeline inlets, close the drainouts.
6. If the level of Scope Reservoir reaches 2581.2 ft, spill as much as can be safely managed through the main canal and Lateral R, until the level is lowered to 2580.5 ft.



Conclusion

We need to re-think our approach to wasteways due to a number of factors, of which the replacement of lateral canals with closed pipelines is the most significant.