



A production of Alberta Agriculture and Rural Development's Water Resources Branch

Special points of interest:

- 2010 Alberta Irrigation Stats publication is now available

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Performance of Gabion Wall Infiltration Systems

During the fall of 2009/winter 2010, the SMRID installed a number of gabion wall infiltration systems.

All of the sites involved the retrofit of a gabion wall infiltration system upstream of an existing pipeline or pump inlet for the purpose of excluding macrophytic aquatic weeds and filamentous algae mats.

The aquatic weeds and algae are intended to be retained in the upstream pond/bay while filtered irrigation water flows through/around the mass, through the pore spaces of gabion rock and into the inlet structure. Periodic removal of excessive build-up with a hydraulic excavator can be done during the irrigation season if operation of the system is affected. Residual organics are expected to be decomposed during the off-season.

The 2010 monitoring involved site inspection at various times during and following the irrigation season to determine whether this technology is meeting the intended purpose of aquatic weed and algae exclusion, to assess hydraulic performance, to evaluate suitability of the structural components of the system and to identify lessons learned and oppor-

tunities for improvement or refinement of the design. Additionally,

Water Coordinators were asked to consult their irrigators with respect to their observations following installation of the gabion wall infiltration system.

Conclusions and Recommendations for Future Use

Initial monitoring of the Gabion Wall Infiltration System has shown that where appropriately sized and aligned for the specific site conditions, this technology is able to successfully exclude macrophytic aquatic weeds and filamentous algae mats with negligible hydraulic effects.

Some exclusion of short algal filaments occurs when a sufficient build-up of upstream debris is present. The welded wire

gabion system is suitable for this application where the foundation and base is solid, uniform and level, the unsupported wall length is limited to eight metres, stiffeners are located and installed properly and baskets are joined with spirals and pulled tight.

SMRID recommends continued use of this system with improvements where appropriate.

A link to the complete pdf report is [available here](#).



For more information, contact: Chris Gallagher, Design Engineer, SMRID, at 403-328-4401 or e-mail at cgallagher@smrid.ab.ca

The Story of Water Management on the Bow River

The irrigation districts of the Bow River which include the Western, Eastern, and Bow River Irrigation Districts, have joined together to produce a series of high quality videos on the story of water management on the Bow River.



The series currently contains ten episodes.

Episode One: [The Bow River](#)

The expanse of the Bow River and its uses by cities, agriculture and for power generation.

Episode Two: [Settlers Wanted, Just Add Water](#)

The history of irrigation on the Bow, from its 1869 beginnings as a way to settle the west, to the present day modern and sophisticated system.

Episode Three: [Western Irrigation District](#)

How urban Albertans in Calgary interact with agriculture through the Western Irrigation District.

Episode Four: [Eastern Irrigation District](#)

How the Eastern Irrigation District became the largest private landowner in Alberta and created new opportunities for the rural economy to expand.

Episode Five: [Bow River Irrigation District](#)

How the Bow River Irrigation District conserves water to create more agricultural and recreational opportunities and how irrigation created a sugar industry in the province.

Episode Six: [Water Management](#)

Why the same amount of water in the Bow River does way more than it used to – and will do even more in the future.

Episode Seven: [Irrigation and Food](#)

Proof that fresh food for urban and rural residents alike does not come on a truck from California.

Episode Eight: [Irrigation and Ecology](#)

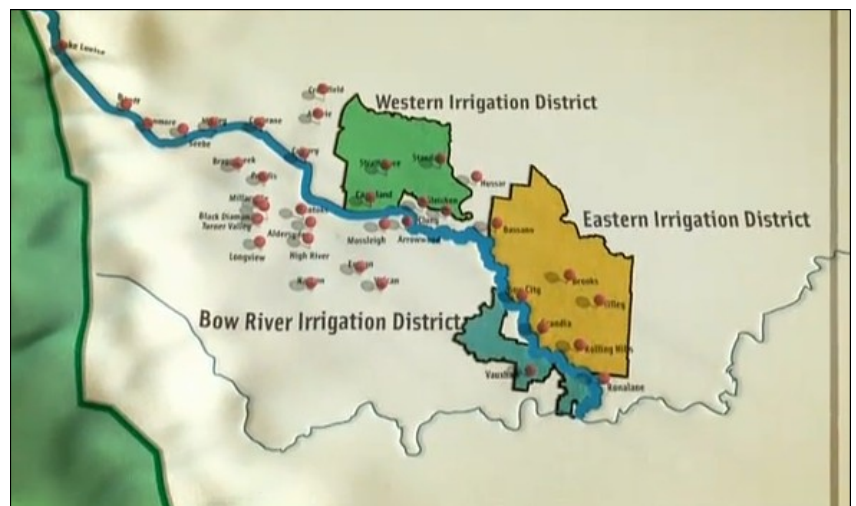
Stewardship protects and enhances the ecology of southern Alberta.

Episode Nine: [Irrigation and Recreation](#)

Why (and how) Bow River irrigators are in the recreation business.

Episode Ten: [Future of Irrigation on the Bow River](#)

That there is enough water in the Bow for all its present users, and that irrigation, required to feed the population, will continue as long as the river runs.



Adjustable Side Sweep Cleaner – A-2 Pipeline Inlet

The A-2 pipeline inlet is located near the upstream end of B.R.I.D main canal. The depth at this site is controlled by a fixed weir on a drop structure, approximately 2 miles downstream. The depth can fluctuate as much as five feet from low to high flows.

The pipeline capacity is 20 cfs, and it was converted from a fairly short open pipeline feeding a canal to a closed pipeline last winter. A new inlet screen and automatic cleaner were installed as part of the conversion.



The screen is a 4.7 metre long x 1.6 metre wide stainless steel plate with ¼" round holes, with an open area of 40%. The smooth surface and small holes on the screen minimize the amount of debris caught on the screen, and make it relatively easy to clean.

The cleaner is a side sweep system from Aqua Systems 2000, which is the B.R.I.D's preferred model. The first one was developed for the B.R.I.D in 2000, and most B.R.I.D pipelines with a capacity over 15 cfs are equipped with one. The majority, including A-2, are solar powered. There are two 180 watt solar panels charging four deep cycle batteries, with a ½ HP motor, and this system is capable of operating at a five minute cycle. A unique feature of the A-2 inlet is that the cleaner is mounted on rails, so it can be raised or lowered as required, using a geared hand crank, to follow the water level in the canal.

This is the first time this has been tried, and it appears to be a good solution where the water level is highly variable. Otherwise, a side sweep cleaner would not be feasible. The total cost of the screen and cleaner was nearly \$40,000.



For more information, contact: Richard Phillips, Manager, BRID, at 403-654-2111 or e-mail at richard@brid.ca

Alberta Irrigation Information 2010

The 2010 version of this annual report is now available for viewing online on Alberta Agriculture's "[Ropin' The Web](#)" website. You will find a link to this publication under the Facts and Figures section.

Here are some interesting 2010 statistics:

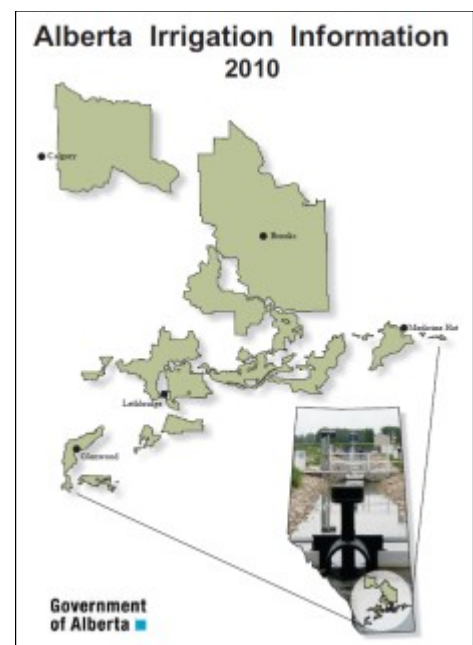
- Close to 160,000 fewer acres were actually irrigated compared to the previous year
- The gross annual diversion to the irrigation districts averaged just 28.7% of their water licence allocation, a reduction of 50% compared to 2009
- In the irrigation districts, there are 12,200 kilometers of irrigation district infrastructure, including conveyance and drainage works, and 170 major structures, worth a combined replacement cost close to 3.45 billion dollars
- As part of the total irrigation district water licensed volume, nearly 78,000 acres are allocated for other purposes which include non-irrigation uses such as municipal, rural water supply, agricultural, commercial, industrial, rural residential, management of fish/wildlife, habitat enhancement and recreation
- There are 43 irrigation district owned and operated reservoirs with a combined live storage of nearly 954,000 acre-feet; in addition there are 15 provincially owned and operated reservoirs with a combined live storage of nearly 1,485,000 acre-feet

- There are 8 hydroelectric plants associated with water distribution works in southern Alberta with a combined total capacity of 94 megawatts
- Outside of the irrigation districts, there are a total of 2,924 private licenses irrigating nearly 310,000 acres
- Seasonal rainfall was well above normal with the Lethbridge area receiving nearly 170% of normal; the Bow Island area received close to 150% of normal; the Brooks area received about 120% of normal
- Electricity powers approximately 49% of irrigation system in the irrigation districts, followed by natural gas at about 31%, with gravity systems accounting for about 14% of the area
- Low pressure centre pivot systems are used to irrigate about 61% of the total irrigated land in the thirteen irrigation districts in southern Alberta

We encourage you to take a look at the website where you will find more irrigation related information.



For more information, contact: Bob Winter, Data Management Coordinator, Alberta Agriculture and Rural Development, at 403-382-4424 or e-mail at bob.winter@gov.ab.ca

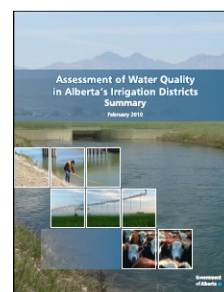
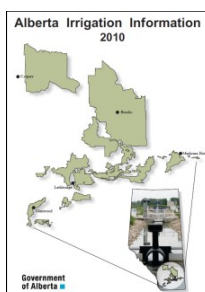
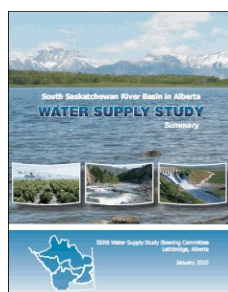


Completed Reports

Links to completed reports available on Alberta Agriculture's website [Ropin' The Web](#).



- [2010 Alberta Irrigation Information Booklet](#)
- [Alberta Soil Phosphorus Limits Project](#)
- [Aquatic Weed and Algae Control in Irrigation Canals](#)
- [Assessment of Environmental Sustainability in Alberta's Agricultural Watersheds](#)
- [Assessment of Water Quality in Alberta's Irrigation Districts](#)
- [Buffer Zones for a Healthy Watershed](#)
- [Crop Water Use and Requirements](#)
- [Crowfoot Creek Watershed Study](#)
- [Irrigation in Alberta—A Statistical Overview—2009](#)
- [Irrigation Rehabilitation Program 2009/2010 Status Report](#)
- [Irrigation Rehabilitation Program 2006 to 2010 Status Reports](#)
- [Irrigating to Enhance Quality and Yield](#)
- [Nutrient Beneficial Management Practices Evaluation Project](#)
- [South Saskatchewan River Basin \(SSRB\): Irrigation in the 21st Century](#)
- [South Saskatchewan River Basin in Alberta Water Supply Study](#)



Aquatic Weed and Algae Control

Aquatic weed and algae growth in irrigation district canals is a prevalent, ongoing problem. The application of chemicals for treatment of the steadily increasing issue has become less feasible both in terms of logistics and cost.

Mechanical screen cleaners have been used for several years as a common method for weed control at pipeline inlets by most of the irrigation districts with many different designs in use.

The St. Mary River Irrigation District (SMRID) is testing alternatives to chemicals and screen cleaners for controlling weeds and algae to ensure the conveyance of a reliable water delivery system. One alternative previously presented in the Water Haulers Bulletin was the gabion wall infiltration system complete with a performance and evaluation report prepared by the district. Since this time, the SMRID has implemented three different methods of

weed control and is evaluating their performance.

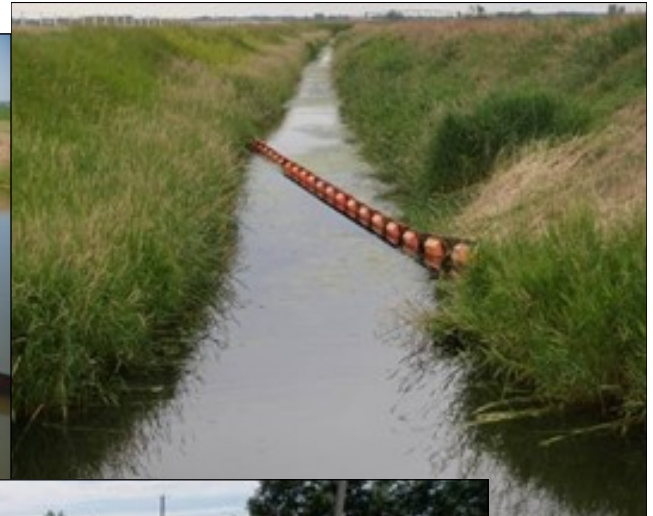
They are:

- Floating Net Boom
- Floating Dock Weed Deflector
- Infiltration Gallery



Floating Net Boom

Commercially available, this technology is a permanent installation for protection of water intakes from a wide variety of debris. It is a heavy duty boom with high buoyancy floats, pvc-polyester belting, and a diamond cut nylon netting with chain ballast suspended below. The net is custom tapered to the channel cross-section. The net is anchored on the shorelines and angled to direct debris to a single collection point. Intermediate shore anchors are used to minimize drift sag or surround intakes where required. The SMRID has four of these booms in pipeline settling ponds and one in a drain channel.



Aquatic Weed and Algae Control (continued)

Floating Dock Weed Deflector

The weed deflector system installed by the SMRID involves of a fine V-wire mesh screen mounted to a floating dock. The screen consists of eight panels having an approximate depth of 1m with a total length of 6.5m. The docks are moored by steel cables to both sides of the canal, allowing for adjustment of the position and angle of the deflector. Floating and upper-suspended aquatics are deflected past lateral turnouts with the main flow-through component of the canal carrying the weeds downstream.



Infiltration Gallery

The infiltration gallery is a buried network of highly permeable pipe within a gravel envelope installed in the bed or bank of a canal or settling pond. The gallery is used primarily as an intake for pipeline systems and provides complete or partial conveyance to the inlet structure. Inflow bypasses the primary trash rack ensuring water will continue to be supplied to the pipeline should the trash rack become obstructed. An inline backwash system removes accumulated silt.



For more information, contact: Chris Gallagher, Design Engineer, SMRID, at 403-328-4401 or e-mail at cgallagher@smrid.ab.ca

Events

Irrigation Technical Conference was held on June 9 at the Lethbridge Lodge.

[The conference presentations are now available.](#)

Topics included: Water Use Reporting Systems, Fiberglass Reinforcement for Concrete, Remote Monitoring, Advances in SCADA, Fiberglass Reinforcement for Concrete, Remote Camera Benefits, PVC Installation Techniques, Air/Vac Study Results, Increasing Weir Length, Inexpensive Wasteway, Hydrovac Daylighting, Water Measurement Sites, Modeling Irrigation Expansion, Irrigation Water Quality, and Canal Sloughing.

Take a look at the [agenda](#).



Water, Agriculture and the Environment Conference was held on May 31 and June 1 at the Lethbridge Lodge.

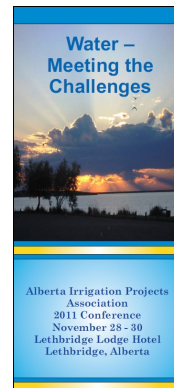
[The conference presentations are now available.](#)

Take a look at the [agenda](#).



2011 AIPA Conference took place on November 28–30 in Lethbridge.

[Detailed program](#) information is available.



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This bulletin is intended to provide Alberta's irrigation industry with items of interest in irrigation. If you would like to submit articles or provide us with input, feel free to contact Don Gross by phone in Lethbridge at (403) 381-5872 or E-mail don.gross@gov.ab.ca.

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