THE Water Hauler's Bulletin

VOLUME 72, 2000

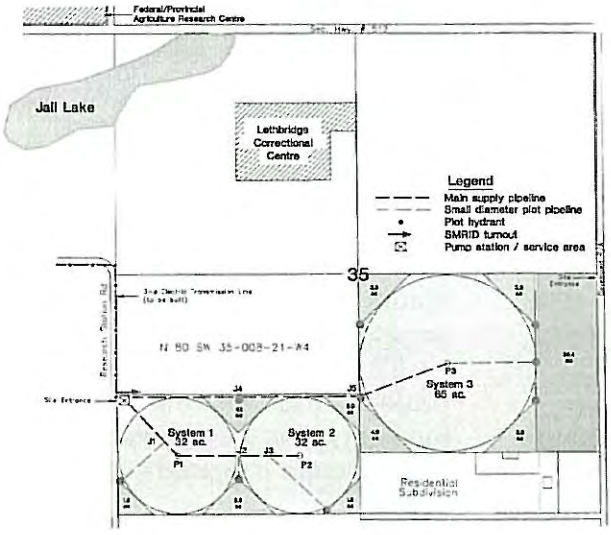
Canada-Alberta Crop Development Initiative Demo Farm

After a number of years of planning and evaluation, the concept of an irrigation demonstration and applied research farm has now become reality. The concept for establishing an irrigation based research and demonstration facility in southern Alberta was borne out of the need for taking plot size research and new technologies to field scale demonstrations. The irrigation industry also recognized a need for innovative approaches that would reduce the amount of time needed for new technologies to be presented and adopted by producers and industry. The demo farm will also be used to help remove the risk that producers take when a new crop or technology is tried. Reducing the adaption time of new technologies could result in huge savings for producers and the industry as a whole.

The day-to-day business of the farm will be to show practical demonstrations, but the overall guiding focus will be on technology transfer, showcasing new crops, new value added products and new management techniques.

The site, located just south of the Lethbridge Research Station, is made up of approximately 200 acres irrigated by three pivots, a wheel move, a small solid set and trickle irrigation system. These systems are state-of-the-art and include computer operation, water filtration, exact flow monitoring and the latest in sprinkler design available to the producer. The three pivots installed on the site will be used to show the economics and agronomic benefits and risks of growing new crops, adopting new technologies and operating advanced irrigation infrastructure.

As part of our commitment to diversification and intensification of irrigated farming, the pivot field corners



Location Plan

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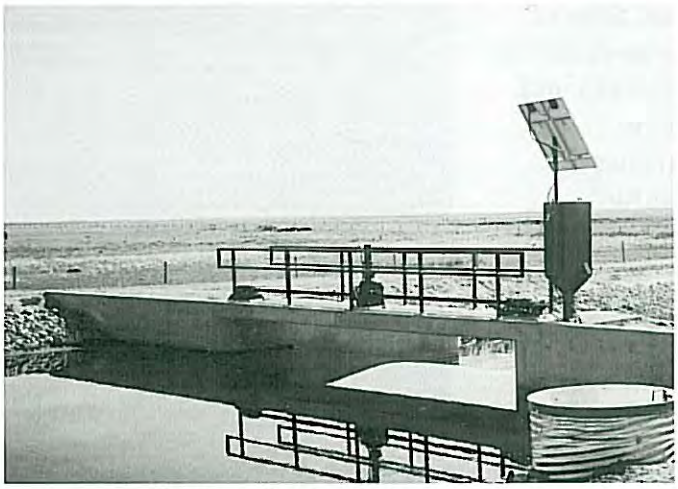
Alberta
AGRICULTURE, FOOD AND RURAL DEVELOPMENT

The Pro Controller

The Eastern Irrigation District (EID) has been involved in the automation and remote control of its major control structures for a number of years. These automated sites work well but require a substantial financial investment by the district. The EID was looking for a simple and relatively inexpensive method for maintaining upstream water levels at control structures. MPE Engineering Ltd. worked with the district to rehabilitate six check structures on the Lower Bow Slope Canal complete with upstream level control.



Pro Controller installed on structure

The solution that MPE Engineering Ltd. arrived at is called Pro Controller, a simple system of water level probes, relays and timers to control upstream water levels. The system consists of four water level probes. Two probes are used to set the operating band in the canal and the other two probes are used for high level and low level shutdown conditions. Water level information is monitored every fifteen minutes and then the gate is moved for seven seconds up and down to maintain the desired set point.

Water level set points are adjusted simply by moving the four probes up or down within the wet well. Increasing or decreasing the time on the manual timer controls the frequency and the amount of gate movement. This simplistic approach was used to eliminate the need for a computer on site, and allow for easy maintenance by district staff.

The Pro Controller was installed on six sites; all sites are solar powered and operate on either twelve or twenty-four volts. Armtec Construction Products and Aqua Systems 2000 Inc. supplied control gates complete with the Pro Controller; Charmar Enterprises Ltd. performed installation and structure rehabilitation.

To date the district staff has been very pleased with the operation of the Pro Controller. They have been able to maintain the desired water level in the canal regardless of changes in canal flow.

While this system is not intended to replace automation on control structures, where remote monitoring and remote controls are required, it does provide simple and effective automatic control suitable for many types of structures.

For more information please contact Ron Hust, P. Eng., MPE Engineering Ltd., phone: (403) 329-3442 or Jim Meador, Operations and Maintenance Superintendent, Eastern Irrigation District, phone: (403) 362-1400.

Demo Farm
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will be used to demonstrate ways of growing new crops, and developing micro-irrigation projects.

Some of the projects proposed for evaluation and demonstration at the site include: complete automation of a pivot system; waste water application and droplet drift determination; transfers; berry and alfalfa production under buried trickle irrigation systems; irrigation requirements and management of new crops.

Over the next few years it is hoped that this farm will provide a unique partnership between Alberta Agriculture, Food and Rural Development, Agriculture Food Canada, processing corporations, irrigation companies and specialty commodity and processing groups.

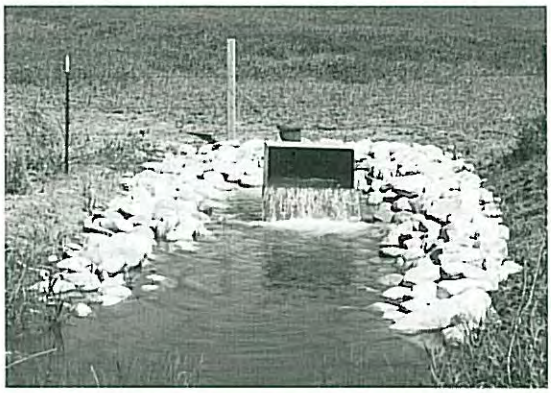
The guiding principles, for projects undertaken at the site, is industry/producer driven and leading-edge irrigated agriculture.

For more information, contact Roger Hohm at (403) 381-5152.

Pipeline Turnout Baffle Box

The Eastern Irrigation District (EID) has developed a turnout baffle box that is inexpensive and easy to install on gravity turnout risers coming off pipelines and existing manhole structures. Concrete manholes were previously used for flood ditch deliveries. They worked very well for energy dissipation, but we encountered many problems says Shoorlemmer, district engineer with the EID. The manhole structures were just too labor intensive to repair and were not conducive to conversion when changing from a flood irrigation delivery to a sprinkler delivery. Servicing of the valve in the manhole was frequent and difficult and a safety concern in deeper manholes. The new steel baffle structures are installed above ground, dissipate the energy, are very accessible and can be converted to gated pipe or pumps very easily. The EID first experimented with prototypes in the spring of 1999 and has approximately 100 structures installed to date. In some cases EID has adapted these structures for flow measurement. For more information contact Harry Shoorlemmer, EID district engineer, at (403) 362-1400.

High pressure at riser without baffle box



Pipeline turnout baffle box

Irrigation Water Used for Power Generation

The latest hydroelectric plant to utilize irrigation water to supply electrical power was constructed on the Taylor chute spillway near Jensen Reservoir. It was officially opened in September of this year. The Taylor plant, as it is called, is a 12.7 megawatt generating facility located south of Magrath. It is one of four generating stations that have been developed by Canadian Hydro Developers on the St. Mary irrigation system. The second station, the St. Mary hydroelectric plant is located at the base of the St. Mary Dam. This plant utilizes water flowing from the low level riparian outlet. The capacity of this plant is 2.5 megawatts. The third, the Waterton plant also uses riparian water released from the Waterton Reservoir. This plant capacity is 2.8 megawatts. The last station, the Belly River hydrometer plant is constructed adjacent to the Belly River inlet chute near Glenwood, Alberta. This plant was Canadian Hydro's first hydro project. The capacity of this plant is 3.0 megawatts. Generated electricity is sold to TransAlta Utilities under terms of a 20 year power purchase agreement.

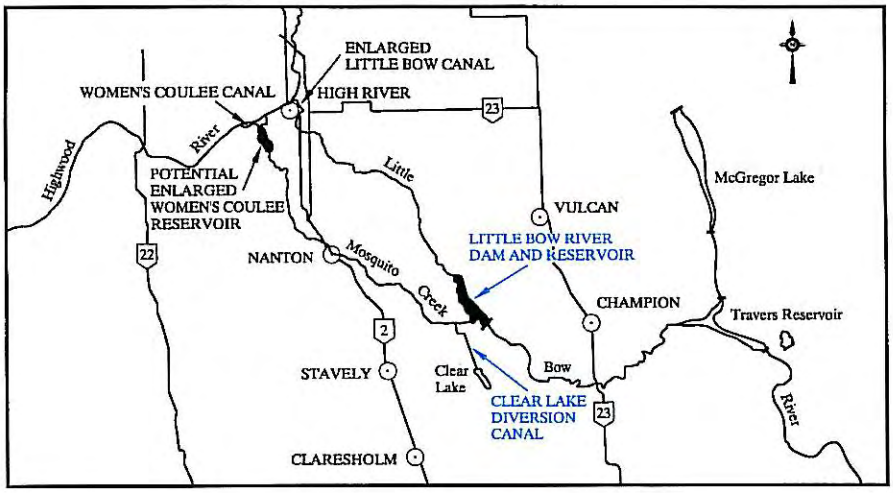
There are two other hydroelectric plants on the St. Mary irrigation system. They are the Chin Chute plant which is a 11.0 megawatt facility and the Raymond Reservoir plant which is a 20.5 megawatt plant. These two plants are owned by Irrican Power which is a partnership of the Raymond Irrigation District, St. Mary River Irrigation District and the Taber Irrigation District.

Clear Lake Stabilization Project

In 1985, Clear Lake, the only natural lake within the Municipal District of Willow Creek totally dried up and remained dry until 1994. Clear Lake is located about 17 kilometres east of the Town of Stavely. The Clear Lake stabilization project will restore Clear Lake to a functioning recreation and wildlife area.

The project proposes to construct a diversion structure on Mosquito Creek and a 10 kilometre canal to Clear Lake. The capacity of the canal would be 60 cfs. It would serve as a regional water source for livestock during drought years and allow the expansion of irrigated agriculture by up to an additional 3,500 acres. Some 1,000 acres of new wetland and wildlife habitat would also be restored along the canal and around the lake.

Alberta Infrastructure is responsible for the design and construction of the project and Alberta Environment would take over management of Clear Lake and the diversions once construction is completed.



Location Plan

November 19-21, 2000

The Alberta Irrigation Projects Association (AIPA) will be holding its annual conference at the Lethbridge Lodge Hotel. Conference chairman, Dr. Andrew Strand says this year's theme is, "Prosperity For Albertans - Just Add Water." For more information please contact conference coordinator/ registrar Verna Lees.
Telephone: (403) 328-3063,
Fax: (403) 327-1043,
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Website: http://www.aipa.org

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Notes

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 Brian Taylor by phone in Lethbridge at (403) 381-5542 or **E-mail *brian.taylor@gov.ab.ca***
Copies can be obtained on the internet from the Department of Agriculture's home page at ***http://www.agric.gov.ab.ca/irrigate/hauler/index.html.***
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