

Eastern Irrigation District
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IRRIGATION UPDATE

Eastern Irrigation District

Volume: 2017, Issue November 30

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District and Landowner Efficiencies Create Potential Expansion Opportunity

Plebiscite Required

In 2003 the District passed a plebiscite and bylaw to change our expansion limit from 286,000 acres to the present limit of 311,000 acres (25,000 acre increase). In order to do this, it was projected that 71,500 acres would convert to a more

efficient method of irrigation and with these efficiencies provide the ability to add 12,000 acres in intensification with the same amount of water. The expansion plan also permitted 10,000 additional acres below Crawling Valley (5,000 acres)

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and Lake Newell (5,000 acres), allowing those reservoirs to support these additional acres and 3,000 acres off return flow channels that are not fed.

Today, landowners have converted 98,500 acres to a more efficient method of irrigation, which is 27,000 acres more than projected in 2002. As of September 30th, 2017, our current assessment is 301,428 acres with an estimated 4,000 more acres to be added once the general assessment is completed, bringing the total to 305,000 irrigated acres. The total increase in acres from 2002 is 22,500; however, through the efficiency conversion calculations (EID is using conservative numbers when compared to Government studies) the District has added these acres and used no more water.

In the 2003 plebiscite, 10,000 acres were allotted downstream of Crawling Valley and Lake Newell. All acres added since that time have been done through efficiencies. The reservoirs have not been required to supply the additional water to support these acres; therefore, the 10,000 acres below reservoirs is still available to be used.

There is room for additional efficiencies with 46,500 acres estimated to convert over the next 10 years, which will allow an additional 9,000 acres to be added using no more water. With this estimate, the District would be approximately 85% pivot irrigation from the current 78% pivot, which is conservative, as many other Districts are already at 85%.

Additional District infrastructure upgrades (canal lining, pipelining, automation) and changes in less water intensive cropping trends, will continue to lower our average diversion per acre and will allow us to add an additional 10,000 acres. A clear comparison is 2001 (very dry) vs 2015. In 2015 there was less precipitation than in 2001, up to August 15th. In 2015, with more irrigated land on the assessment roll, the District diverted 481,000 acre-feet vs 695,000 acre-feet in 2001, a difference of -214,000 acre-feet. To put that in perspective, that is more than the live storage in Lake Newell Reservoir which is 150,000 acre-feet.

Thank you to the Water Users for your efforts in water efficiencies, and the District remains committed to infrastructure improvements.

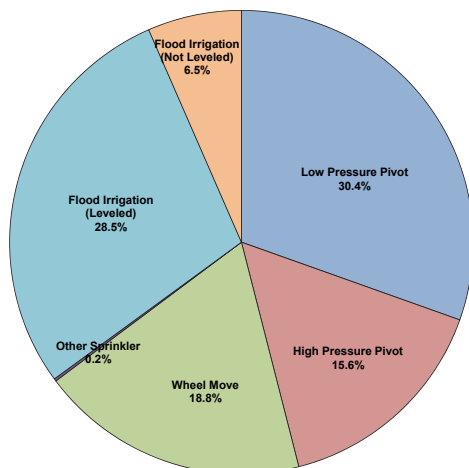
Summary of Proposed Expansion Acres Through:

Reservoir Support	10,000 ac.
Continued Efficiency Gains	9,000 ac.
Past and Future Infrastructure Upgrades	10,000 ac.
Total Additional Acres	29,000 ac.

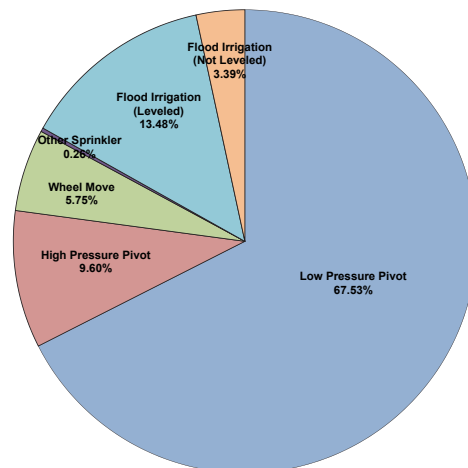
The District will be modelling with Government a 29,000 acre expansion plan. As this process moves forward, a plebiscite will be required to move the expansion limit to 340,000 acres from the current expansion limit of 311,000 acres.

This will be well advertised in further newsletters; information as well as public meetings are required prior to a potential plebiscite.

2002



2016



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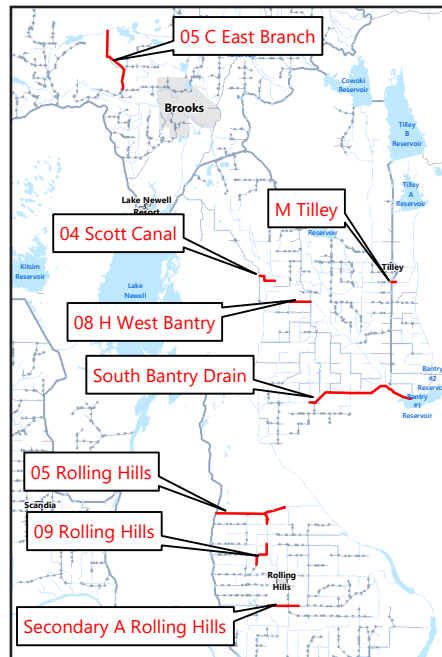
Irrigation Assessment Update

Prior to investigating the irrigation expansion limit and plebiscite, it was prudent for the District to account for all irrigation to provide the confidence that our information used in the modelling and expansion plans was as accurate as possible. It also helped us determine how close the District really is to our present irrigation expansion limit of 311,000 acres.

Through our review of the assessment it appears that there are 4,104 acres to be added to the water roll. The process of notifying landowners and working through the process of getting them on our assessment roll is well underway. On parcels where more than 5 acres are needed, all soils classification requirements as mandated by the *Irrigation Districts Act* (IDA) will be needed.

Our current assessment is

301,428 as of September 30, 2017. Assuming additional lands to be added through the general assessment and our approved annual irrigation applications pass the soils criteria, as well as any policy restrictions, it would bring the total to 307,758, leaving 3,242 acres for future expansion.



Map of 2017/2018 Rehabilitation Projects

2017/2018 Rehabilitation Projects

Project	Construction	Length	Location
Sec A Rolling Hills	gravel on liner	2.4 km	NW 30-14-13
South Bantry Drain	drain rehabilitation	8.0 km	NW 22-16-13
05-C East Branch	gravity pipeline	5.5 km	NE 11-19-15
09 Rolling Hills	gravity pipeline	2.4 km	NE 12-15-14
08-H West Bantry	gravity pipeline	1.8 km	NW 08-17-13
04 Scott Canal	gravity pipeline	1.6 km	SE 24-17-14
M Tilley	gravity pipeline	0.4 km	SE 19-17-12
05 Rolling Hills	gravity pipeline	6.5 km	SE 24-15-14

Irrigation Applications

The Board at the November 28th, 2017 Board meeting reviewed the new irrigation applications for the 2018 water season. Those meeting the necessary rating criteria and policies were approved or given conditional approval. Assuming all applications fulfill their conditions a total of 2,522 acres will be added by September 30, 2018.

The District will be nearing its expansion limit of 311,000 acres. Further discussions and monitoring of the general assessment review and the expansion plan progress will be required in determining the acceptance of irrigation applications for the 2019 water season.

IRRIGATION UPDATE

Potential Solar Projects on EID Lands

In recent years, the EID has been approached by several alternative energy companies requesting a purchase or long-term lease of lands for proposed projects. In evaluating these requests, the Board believes in taking a conservative but informed approach.

A consultant has been hired to assess the District's land base to determine which land locations have the ability or feasibility to build out solar projects that could tie into the power grid, and also to advise regarding the provincial and international solar industry, lease agreement negotiations, and on specific solar companies. Discussions have also been held with another irrigation district that has approved two projects, whereby their experience with the approvals process, negotiations, scale of project, length and terms of lease, land

stewardship, revenue, municipal tax, reclamation, etc. can be garnered.

With the trending decline in oil & gas revenue, land leases for solar projects provide an additional and diverse revenue source. The loss of grass for grazing may potentially be offset with new irrigated grazing, or a slight decrease (1-2 head/member deduction) in allocation. It is the intent of the District to not include parcels eligible for irrigation development within potential sites.

Following is a description of a proposed solar project that is being considered by the Board of Directors. The Board welcomes any comments or concerns; please contact your Director or Ivan Friesen, General Manager.

Proposed Solar Project

The EID proposes to lease land to Solar Krafte Utilities for a non-subsidized 450-megawatt solar photovoltaic facility (solar farm), and is reaching out to Water Users to gather input and address questions or concerns about the proposed project.

It is estimated the proposed project would occupy up to 5,000 acres (red area on map) of EID land that is currently used as community pasture. The intention is to evaluate a larger land base, approximately 15,000 acres (green area on map), than is required for the solar farm, to determine the optimum placement of the solar arrays in relation to Water User input, potential irrigation development, current and future energy infrastructure needs (oil and gas, electrical transmission) and sensitive wildlife and wetland habitat.

Features of the Proposed Project

Important features of the proposed project

include:

- Solar array layout flexibility to minimize and avoid disturbance of sensitivities (energy infrastructure, wildlife habitat)
- No grading or paving of the proposed site
- Virtually no sealing of the proposed site (less than one-half of one percent), resulting in virtually no impact to natural water flows
- No cement footings – hydraulic pile driven post substructure
- Construction and maintenance can be timed to avoid sensitive periods for wildlife
- Benign system – no pollution, noise, or need for water to operate
- Protected habitat for wildlife and plants

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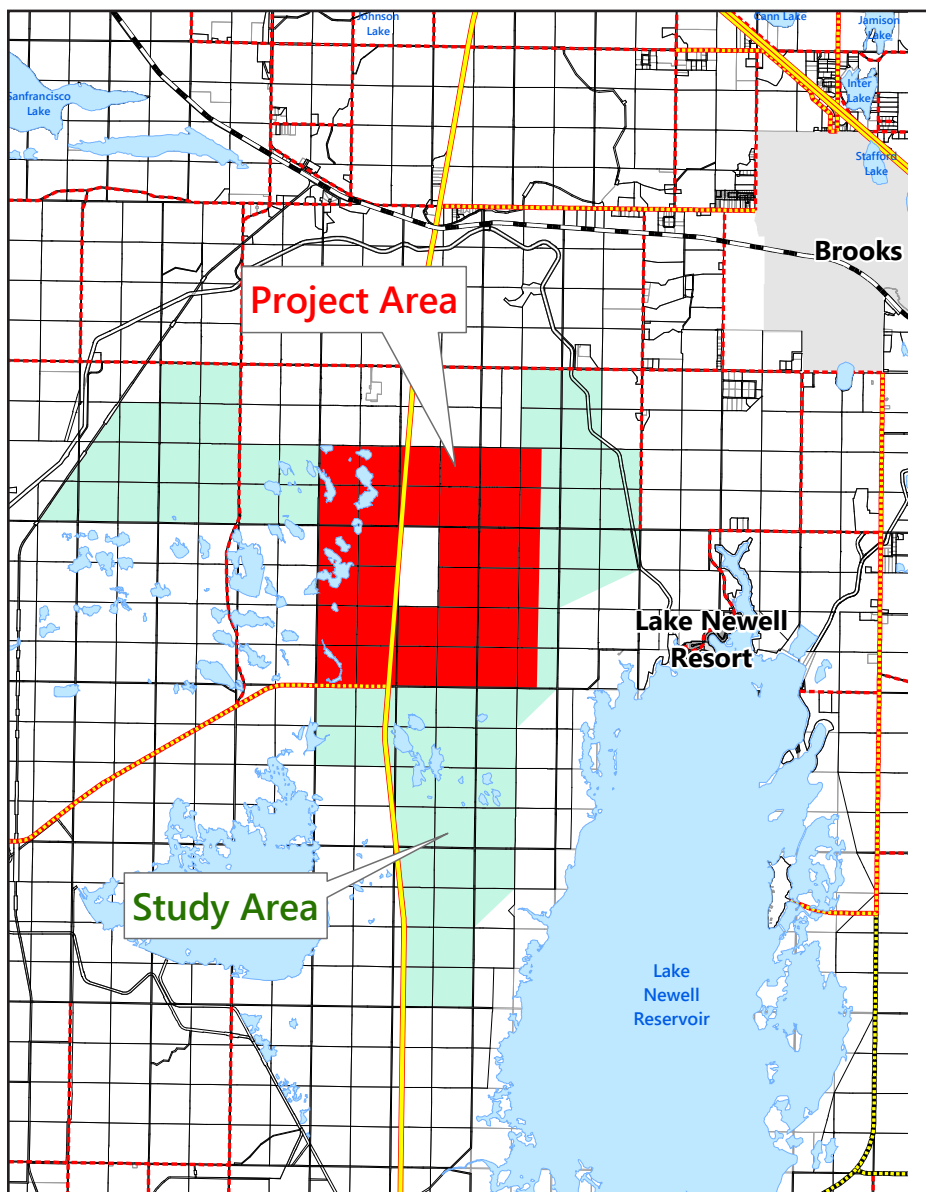
The proposed project is estimated to offset 200,000 tonnes of greenhouse gas emissions annually, generating enough electricity to power more than 115,000 Alberta homes.

The total capital cost of the proposed project is expected to exceed \$650 million, bringing an important source of direct and indirect economic activity

to the County of Newell and surrounding communities of Rainier, Cassils and Brooks.

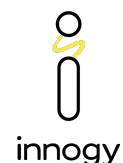
The proposed project is expected to be completed in one phase with commercial operations commencing in late 2020 and continuing over the next 35 years and beyond.

The proposed project would tie directly into the ATCO Newell Substation.



About Solar Krafte

Solar Krafte focuses solely on power generation in solar rich jurisdictions, where the price for power is not subsidized, delivering power to consumers at the best price, and without emissions or waste. Solar Krafte develops its projects in partnership with Germany's leading utility, innogy SE and innogy SE's wholly-owned subsidiary, Belectric GmbH, a global leader in solar power plant construction and operation.



IRRIGATION UPDATE

Bassano Dam Emergency Spillway Update

The first contract which involved excavating the existing earth dam down to the sill elevation of the spillway, constructing a cofferdam out front, installing 50' deep sheet piling around the site, and installing 8 dewatering wells and 4 depressurization wells was completed between October 2016 and April 2017 by Niitsitapi-Graham LP.

The second contract for the supply of gates, hoists and stop logs was awarded to Instream in February of this year, and is ongoing.

The third contract to excavate from where the first contract ended down to lower basin level (13 m), supply and install the filter gravels under the structure, install drain pipes under the spillway, install 180 35' screw piles, construct the concrete spillway (13,000 m³), install the gates and hoists, supply and install the bridge deck, and install electrical controls was awarded to Niitsitapi-Graham LP in June.

Work started on-site on August 1st and has continued 7 days a week to present.

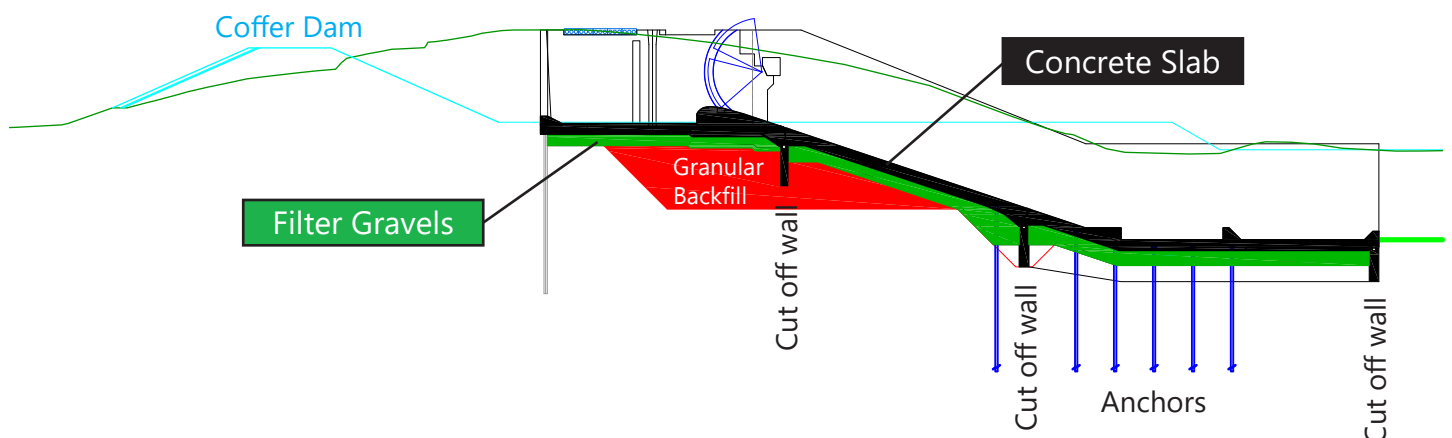
The excavation, installation of under slab drainage, installation of screw piles and installation of all filter gravels under the slab is complete. The 3 cutoff walls (downstream and sides of basin, upper end and lower end of chute) have been constructed with approximately 1,000 m³ of concrete.



Bassano Dam Emergency Spillway Construction Site (View S)



Bassano Dam Emergency Spillway Construction Site (View SE)



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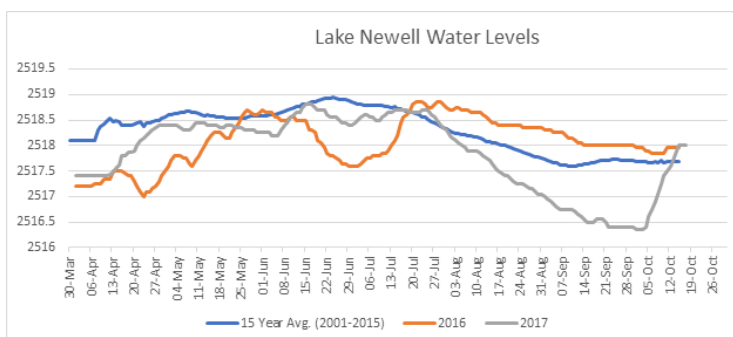
2017 Water Season Exception to the Norm

The conditions in the 2017 water season were hotter, drier and windier than normal increasing the demand for irrigation water in some areas of the District and for some crops. The District, through efficiency gains over the last many years, along with sufficient water being supplied from the Bow River, was able to meet irrigation water demands. This resulted in the ability for this year to supply additional water for irrigated crop production without materially increasing the risk of depleting the water supply for next year in the reservoirs. A temporary maximum was set at twenty-seven inches (27") **for 2017 only**, and **for crop production only**, with **no** water being supplied in excess of 24" for fall irrigation purposes.

This was a very fortunate year with above average snowpack this past winter/spring, providing for strong water supplies from the river through to the end of July; and should be used as a reminder and learning year of the hot dry weather conditions that can persist for consecutive years. If we had experienced average or below average snowpack

this year it would have resulted in a markedly different outcome with reservoirs depleted much more just to provide the 24". Efficient use of water and crop management every year should be a priority to minimize the chance of exceeding 24" while still providing adequate irrigation for crops. This year was an exception to the norm and in most years exceeding 24" will require the water user to shut-down regardless of crop stage and type.

It is important to communicate with your Water Operator for on/off requests of your irrigation systems, to determine flows and agree on flows early in the irrigation season to avoid disagreements, and to address any issues early in the year. If you have any concerns in this regard, please contact your Water Operator or Divisional Superintendent. For real time water usage information of your irrigation, access the District's free online tool "IRMA" (see sidebar).



Irrigation Recording and Management App (IRMA)

IRMA is a web mapping tool that has been developed in-house and is used to record the water usage information during the irrigation season. In 2012, the first version of IRMA called IDARS (Irrigation Data Recording System) was used to record water usage, irrigation method and crop types. This data was written in real time to the EID's STORM database. Since then, several enhancements to IRMA have been made and development continues to add features essential for the decision-making process.

Water Users are now able to access IRMA to view their water usage in real time (color coded by amount used) for the current water season on a smart phone, tablet, laptop or computer. Planned future enhancements to IRMA include smoother and more convenient usage on a smart phone, personal water consumption reports, map based water ordering, potential soil moisture estimation and the ability to send out District notifications to Water Users.

Other in-house advancements have improved field staff capabilities, communications and reporting, and plans are to integrate the District's infrastructure automation system. Call Mark Porter, Information Services Technologist, at (403) 362-1400 for any questions you may have and to get signed up for this useful app.

IRRIGATION UPDATE

EID Election Procedure Changes

EID elections are governed by the *Irrigation Districts Act* (IDA) and the *Local Authorities Election Act* (LAEA). Some LAEA provisions are available for use only by “elected authorities”. Recently, the EID was informed by the Irrigation Secretariat that irrigation districts are not included in the definition of elected authorities and therefore irrigation districts cannot use any of the provisions that are limited to elected authorities. These provisions include advance voting, special ballots, voting subdivisions and list of electors, among others. In order to comply

with the LAEA, upcoming EID elections and other votes will not include advance voting or special ballots and there will be only one voting station in each electoral division. All voting must take place at the voting station on Election Day. We recognize these changes reduce opportunities for irrigators to vote. The EID Board is reviewing this matter and may request that the legislation be amended. If you have any questions, comments or suggestions, please feel free to contact an EID Board Member or Kevin Bridges, Assistant General Manager.

EID Contact Information

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Aquatic Invasive Species (AIS)

The District continued its partnership with Alberta Agriculture on the initiative of using potassium chloride (potash) in pipelines to control mussels. A field trial was successfully completed last year within our District which undertook research to develop potash injection procedures for pipelines. This year an additional 2 trials were completed in the Gem area on more complex pipelines, as well as 2 further field trials in St. Mary's and Taber Irrigation Districts.

The District's major reservoirs continue to be monitored and tested for mussels by Alberta Agriculture and Alberta Environment & Parks; as well, District staff are monitoring downstream within our canal systems for evidence of mussels. Thankfully nothing has been found to date.

We have recently received a Strategic Pest Management Plan and Cost Estimate draft

report, with recommendations for preventing the introduction of mussels in irrigation water supply reservoirs, and options for the control and eradication of mussels if they should infest irrigation water supply canals, pipelines, and on-farm irrigation systems. Cost estimates for the districts were also provided for the use of potash to eradicate mussels annually in underground pipelines.

Alberta Environment & Parks continues to pursue being the registrant of potash as a control agent for mussels through the Pest Management Regulatory Agency (PMRA). While it is still relatively early in the submission and registration process, approval through the PMRA is essential for districts to be able to use potash as a control agent, as currently there are no other chemical control measures for use in irrigation infrastructure.