



## Bow River Water Management and the Impact on the Fishery

### Background:

Water management along the Bow River system is a complex process that involves TransAlta's electrical generation dam network upstream of Calgary, the Western, Bow and Eastern irrigation district headwater dams downstream, as well as water takeoff for Calgary and other municipalities and an allocation of several water use licenses issued under Canada's Water Act. The management of this water resource is governed by the terms of each water license with senior priority given to the oldest licenses that are the three irrigation districts. Weekly meetings of the various stakeholders take place to manage the release and takeoff of the Bow River water flows to manage maximum flows during spring runoff and minimum flows during the summer months to meet irrigation needs but also protect the ecosystem.

### Recent Developments:

The 2005 and 2013 flood brought about a heightened awareness of the devastating impact water can have on our communities. We have also seen the impact of low flows on the fishery in 2015 and again in 2017 even with a high snow pack in the mountains. Alberta Environment & Parks as the primary manager of the provincial water resource has recognized the need to modify the current operation model for the Bow River. In 2014 a pilot project to alleviate the risk of flooding was initiated with the cooperation of TransAlta by reducing water levels in Ghost Reservoir in the spring to allow catchment of mountain runoff. Although controversial, the project did demonstrate that this model has potential to reduce the risk of flooding in Calgary but without being modified can reduce flows in the summer if the snowpack is low. Subsequent to this project, the Bow River Water Management Project was announced in October 2015 by Alberta Environment and Parks. The project worked in conjunction with other water management initiatives to come up with the 2017 report, **Advice to the Government on Water Management in the Bow River Basin** <sup>(1)</sup>. The August 11, 2017 **Press Release from AEP Minister, Sharon Philips** <sup>(2)</sup> indicates that the short-term recommendations of the report will be acted upon as soon as possible. When implemented there will be increased storage capacity to the existing dam network, Quicker and more drawdowns of reservoirs preceding spring runoff and the potential of increased flows through the lower Bow River during the summer months.

### Current Operations:

Currently there is a series of **Water Conservation Objectives (WCO)** in place that were developed as a part of the 2005 Water Management Plan for the South Saskatchewan River Basin <sup>(3)</sup> under the *Water Act*. This plan reflects the Government of Alberta objectives to manage a balance of protecting the aquatic environment & riparian health, water diversion and consumption in southern Alberta. The following WCO's are in place on and below the Bow River Basin:

- Bow River - Bearspaw Dam minimum discharge – 74.5 cubic meters / sec (cms)
- Bow River - Carseland Dam minimum discharge – 45 cms
- Bow River - Bassano Dam to mouth - A flow of 17.1 cms
- South Saskatchewan River – A flow rate of 42.5 cms



To meet the Water Conservation Objective, there is a working relationship between:

- TransAlta, operating Ghost & Bearspaw Reservoir discharge.
- AEP who owns and operates Western Irrigation headwaters at Harvie Passage.
- AEP who owns and operates Bow River Irrigation headwaters diversion at Carsland;
- And the Eastern Irrigation diversion at the Bassano Dam.

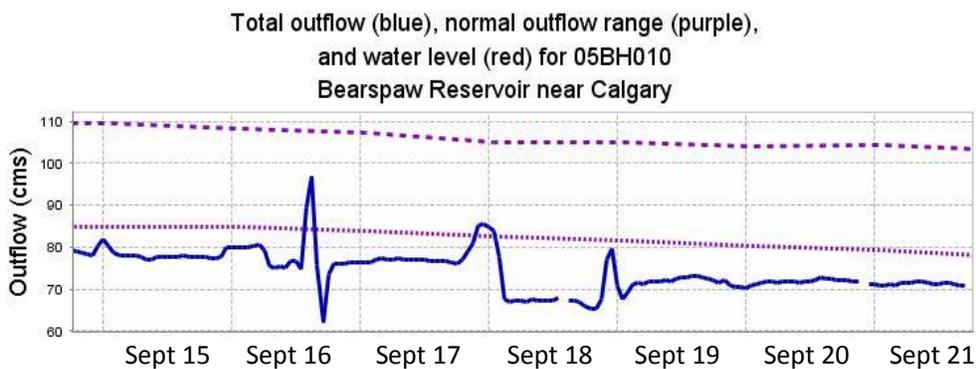
The weekly meetings between stakeholders discussed earlier set the flow forecasts received daily from TransAlta (Figure 1). Flow forecasts and real-time flows are, with a few exceptions of sudden spikes and drops, are reasonably close. But it is important to appreciate that rapid changes do take place due to electrical demand and/or operations maintenance.

**Further, flow rates at Calgary are 8 to 10 cms lower than recorded at Bearspaw due to water take-off between the two sites.**

Figure 1:

<u>Date</u>	<u>Ghost Flow cms</u>	<u>Bearspaw Flow cms</u>
Friday, August 18, 2017	81	71
Saturday, August 19, 2017	81	71
Sunday, August 20, 2017	81	71
Monday, August 21, 2017	81	71

Figure 2:



Downstream of Calgary, the Carsland Diversion has a maximum licensed capacity of 51 cms, prior to 2008 the capacity was 42 cms. AEP strives to leverage storage capacity in the Bow River Irrigation District’s reservoirs to pass a minimum of 40 cms flow in the Bow and meet the Eastern Irrigation District’s senior license priority is met at Bassano.



## Water Flows and the Bow River Fishery:

Management of the Bow River's river flows has an profound impact on the fishery. Rapid increases or decreases in flows affect the survival and ability to catch fish. The nature of the current flow management model for the Bow River is heavily weighted in favor of water supply management for the irrigation districts and flood control mitigation for the City of Calgary. Although the Water Conservation Objectives for the Bow River do aid in the protection of aquatic and riparian health, there is a place for improvement to enhance the fishery.

The drought conditions we are experiencing are unfortunate, considering the snow pack in the mountains this year. The combination of low flows and high water temperatures prompted AEP to issue a voluntary fishery closures, limiting fishing activity to between midnight and 2 PM. A full closure of the Bow River fishery took place during August of 2015, a repeat of which is justified if fish are at risk. Hopefully the short-term recommendations in the Bow River Water Management Report submitted to the Minister of AEP <sup>(1,2)</sup> will alleviate summer water shortages and reduce the risk of fishery closures.

The long-term recommendation in the report suggest that to enhance flood protection and water storage, a new dam be installed at either the Morley Indian Reserve or at the Glenbow Ranch Provincial Park just upstream of Bearspaw Reservoir. These sites were identified with little consideration of the Bow River fishery and shows a complete lack of knowledge of the importance of recreational fishing to the local economy. Moving forward, it is vital that the fishing community engage with the Government of Alberta to protect the interest of the angling community.

## Reference:

1. Advice to the Government on Water Management in the Bow River Basin, August, 2017.  
<http://aep.alberta.ca/water/programs-and-services/flood-mitigation/documents/AdviceWaterManagementBowRiver-May17-2017.pdf>
2. Press Release, Alberta Environment & Parks, August 2017  
<https://www.alberta.ca/release.cfm?xID=484023675F10C-D40A-061C-1011843031B0ECD4>
3. Water Management Plan for the South Saskatchewan River Basin in Alberta, 2005

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