

# Bow Basin Water Management Options

## Conceptual Assessment Information Session

### Background:

Following the devastating impact of the 2013 Bow River Flood to the City of Calgary and surrounding communities, the Government of Alberta commissioned the Bow River Water Management Project in 2015 to review existing water management policy and deliver proposals for enhancement of flood and drought control within the Bow River Basin. The Bow River Water Management Project recommendations “Advice to Government on Water Management in the Bow River Basin”<sup>(1)</sup> were presented to the AEP Minister in 2017. A review of the report “The Impact of Water Management Policy and Proposed Mitigation Initiatives on the Bow River Basin Fishery”<sup>(2)</sup> prepared by Bow River Trout Foundation was also sent to the AEP Minister Shannon Philips. The report suggested the short-term recommendations of the report could to some degree mitigate floods and water shortage within the Bow River Basin under drought conditions such as experienced in 2017. But what was the long-term impact of new dams within the Bow River Basin on an economically important sports fishery? These questions were not addressed in any of the referenced documents and needs to be answered before any dams are built.

Alberta Environment & Parks moved forward on the recommendations with the release of the “Bow Basin Water Management Options Conceptual Assessment”<sup>(3)</sup> in 2018. A series of public information sessions were conducted in September and October in 2019 where participants were asked to give feedback on the dam proposals. The following feedback is based on my own opinions and may not reflect the position of local river user groups and organizations.

### Feedback: Do you have any outstanding concerns about the Conceptual Assessment?

What has been troubling is the continued commitment on the part of the Government of Alberta to move forward with new dams on the upper Bow River to aid in flood and drought control without a full environmental assessment and consultation process to address the impact of such developments on the social and economic impact to the river and its water use and the long term health of the river’s environment. It is clear that the scope of the Bow River Water Management Project and its recommendations to the Government of Alberta<sup>(1)</sup> was flawed as the principal objective was to address solely the hydrological impact of water management for the primary stakeholders within the Bow River Basin. The fishery and the health of the river was never considered within the terms of reference for the project. There was reference within the report for a need to optimize water management within the current operation mandates, but to my knowledge this has not been done. I was therefore surprised to see the next step in future dam development was made on September 25, 2018 with the release of a tender for Bow River Water Management Options<sup>(3)</sup>.

Nevertheless, one of three dam options will be prioritized from what has been presented in the conceptual assessment. In my opinion both the Morley Option and Glenbow East Option will have a far greater environmental impact than the Ghost Relocation Dam Option. They will also face considerable opposition from the public. Therefore, the Ghost Dam Option should be given priority if a new dam can be justified.

The total Bow River hydroelectric dam storage upstream of Calgary of approximately 700,00 dam<sup>3</sup> represents 25% of a highly variable, but average annual runoff volume of 3 million dam<sup>3</sup>. Each of the three dam proposals would add approximately 120,000 dam<sup>3</sup> that will have little impact on the prevention of downstream flooding without modification to catchment and release of water across the entire Bow River Basin water storage. Although it is recognized that the hydroelectric dam system across the Bow River Basin has allowed for a year-round supply of water that support Calgary and downstream needs, the highly variable daily peak demand power generation protocols have devastated fish populations downstream of each dam. Therefore, if a new

Ghost dam is built, peak demand power generation should be replaced with run-of-the-river hydroelectric power generation or eliminated altogether.

**Feedback: Do you have additional comments?**

For more than 30 years the Bow River downstream of Calgary has been recognized as a world class trout fishery principally as a result of the regulated flows from TransAlta's hydroelectric power plants upstream of Calgary whereby a constant flow of cold water allows for growth of naturalized rainbow and brown trout populations. Up until 2003 the fishery was sustainable with adequate regulatory constraints. More recently dramatic declines

in the Bow River fishery have been documented. This 15-year fish decline corresponds with spring floods, low summer flows, high water temperatures, anthropogenic changes in nutrient inputs, increased fishing pressure, whirling disease and changes to hydrological regulatory regimes. The reasons for the decline in fish numbers have not been studied or documented, but are likely the result of the complex nature of the Bow River's highly managed water supply, extreme environmental and climate events, watershed-wide habitat degradation, mortality from natural predators and angling pressure, and human caused changes to water quality, compound the complex cumulative effect of a basin-wide managed river. It is also becoming increasingly evident that the impact of the revised Bow River water management protocols put in place each spring and early summer to aid in flood control may well contribute significantly to the trout population declines, as well as the entire river aquatic eco-system.

A recent report "The Impact of Bow River Water Management on Fish Populations" <sup>(4)</sup> addresses the impact of the Bow River water management on the lower Bow River's declining trout population. There is need to recognize that the impact of TransAlta's hydropeaking electric generations has an enormous influence on more than 50 Km of the Kananaskis River and an equal amount of the Bow River between Ghost and Bearspaw reservoirs. There is also the impact of flow diversion from the Ghost River into Lake Minnewanka that also supports hydroelectric power generation. All these water bodies have historically supported native trout species. Hydropeaking has made these rivers devoid of critically endangered fish and in some cases eliminated the river's sports fishery altogether. With less than 5% of TransAlta total Alberta power generation capacity derived from the Bow River hydro plants, an alternate peak demand power generation source should be considered.

Decommissioning the Bow River Basin's hydropeaking facilities or modifying their operation protocols would not only enhance the rivers ecosystem and assist with the sustainability of threatened and endangered species, but also allow for the dam storage to be used exclusively to manage the impact of flood and drought events. This should be the first choice before new dams are built to augment flood and drought control.

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## References:

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