

From: [REDACTED]
To: [Laura Friend](#)
Subject: Submission regarding serious safety issues with the proposed SR1 project
Date: Saturday, May 16, 2020 12:46:32 AM
Attachments: [Impact Assessment Agency of Canada IAAC \(CEAA\).pdf](#)

Dear Jennifer and Laura,

On behalf of the Flood & Water Management Council (FWMC), please accept the attached submission, it is ok to post to the Agency's registry website.

This submission covers serious safety issues with the proposed SR1 project, supported by scientific information and evidence.

The experts stated that with the climate change, "Extreme Floods May Be the New Normal".

The current flood in Fort McMurray, Alberta:

The mayor of Fort McMurray, Don Scott said, he has talked to elders who are more than 80 years old who have said they have never seen the river this high. Premier Kenney described it as, very significant in terms of damages. The message is clear, nature is sending more powerful floods.

Brian Jean (former leader of the Wildrose Party) who lives in Fort McMurray and his house was burned to the ground-level in the 2016 Fort McMurray wildfire; this month of April, the 2020 flood has destroyed the house he's rebuilding. He said, "this is not a natural flood, this is something else, something I've never seen in my lifetime".

Yet, the SR1 design criterion meets only the lowest permissible dam safety level (as illustrated in the attached submission). Therefore, Albertans should never allow a proposed project such as the Springbank dry dam (SR1) to be built close to highly populated areas. Other alternative options must be examined professionally by credible and non-biased firms.

Building a dam with specifications that is not taking in account the new reality of "Extreme Floods" and using specification even below the 2013 flood, under the pretext of "we didn't have enough funds", or "it is better than nothing" are unwise, extremely dangerous and inexcusable justification.

The federal agency (CEAA) stated in one of its environmental assessment of the SR1 that the province "does not describe in sufficient detail the potential environmental effects of accidents and malfunctions for worst case scenarios such as off-stream dam failure or breach, and diversion structure failure or breach".

We request that the proponent provides information on how these highly critical concerns were addressed.

Respectfully yours,

Dr. Emile Gabriel, on behalf:

Flood & Water Management Council (FWMC)

<<...>>

Flood & Water Management Council (FWMC)

**Submission to IAAC and NRCB by Flood & Water Management Council (FWMC)
Concerning Grave Safety Issues with the SR1 and the Lack of a Credible Study on
Alternative Options**

Springbank Dry Reservoir (SR1)

&

**Tri-River Joint Reservoir of Alberta (TRJR)
An Advanced Flood/Drought Control and Water Management System**

May 1, 2020

Tri-River Joint Reservoir of Alberta



Table of Contents

1.1 Serious environmental issues with the SR1 and the urgent need for a credible alternative.....	1
1.1.1 Learning from recent and historical events	1
1.1.2 Technical facts explaining the inadequacy of the SR1 design	1
1.2 Serious problems with estimating the SR1 Safe Project Probable Maximum Flood	3
1.3 Problems with estimating the proper and safe reservoir size for the SR1	4
1.3.1 Members of the expert panel	4
1.3.2 Troubling indecision and uncertainty in reference to the SR1 required reservoir size	4
1.4 The Fatal Flaw	6
1.4.1 The crucial importance of the safety factor	6
1.5 Disturbing inconsistency in the consultant report on “TRJR” leading to questioning its credibility	7
1.6 Extreme weather is on the rise	9
1.6.1 Extreme Floods May Be the New Normal	9
1.6.2 A blatant conflict of interest	9
1.7 The current urgent need in our province that should never be overlooked	9
1.8 It is time for action.....	11
1.8.1 The future Eyremore dam.....	12
1.8.2 More benefits.....	12
1.8.3 Important remark relevant to the matter under discussion	12
1.9 The crux and the seriousness of the problem, and the main points in this document	13

List of Figures and Illustrations

Figure 1: Dam breach: 65% of the recorded cases involved earth dams	vi
Figure 2: The expert panel of 2014.....	4
Figure 3: Volume Of 2013 flood-100M m ³ (June 2014)	4
Figure 4: Volume that will be stored by SR1 (provided by Alberta Transportation)	5
Figure 5: Costly flood in Alberta, Quebec and Ontario.....	7
Figure 6: Existing dams and reservoirs in K-Country	14
Figure 7: Short Presentation to Calgary City Council (FWMC member): https://youtu.be/23KODLqbGdU	14

On behalf of the Flood & Water Management Council (FWMC), please accept our submission to the IAAC (CEAA) and NRCB regarding the Springbank Off-Stream Reservoir Project (SR1)

Executive Summary

Historically, there are four rivers (Bow, Elbow, Sheep and Highwood) capable of causing a devastating flood in our province.

Our council comprises a group of experts and volunteers who have freely devoted their time, resources and efforts to work on behalf of all communities affected by flooding in southern Alberta caused by four rivers, not just by the Elbow River.

We have been working to provide the required alternatives for flood mitigation, water conservation and environment protection for most (if not all) of our affected river communities from another disaster such as the 2013 flood.

The public have been continually told that the Springbank Off-Stream Reservoir project was chosen by the ‘experts’ in three different governments. However, our research has failed to find any evidence of this. The first major study conducted by the Flood Recovery Task Force, comprised of fifty experts across the Bow River Basin, who worked for a year before providing their report at the Water Collaborative Meeting on September 17, 2015 stated (page 117/127):

“Dry dams are a massive and expensive undertaking with many complexities: full safety standards, possibly gated spillways and culvert operations, debris management, ongoing maintenance and management, and river function impacts. There was little support by participants for dry dams.

The many environmental, social and economic factors and RISKS associated with dry dams need to be understood and assessed in a detailed and comparative cost-benefit analysis”.

(Clearly, this does not assert a strong recommendation for SR1).

The Report (page 2) summarized:

“A prudent approach requires comparative assessments of EVERY option, and an evaluation of the effects of the options in combination prior to committing significant resources to something that could prove counterproductive and perhaps more damaging than doing nothing in some cases”.

Key issues:

- Four rivers cause dangerous floods in southern Alberta;
- Dam safety concerns (particularly when a dam is located only 15 km. from a major city (Calgary));
- A dry reservoir (SR1) has to remain empty and available at a moment's notice to accommodate flood water. As such, it cannot be used to deal with wildfires, drought conditions or to generate electricity;
- It is now more than five years since the SR1 was selected and an official stamped, signed Initial Design Concept (IDC) has not yet been provided;
- Government of Alberta paid National Research Council of Canada \$800,000 to build a Model for testing SR1. It appears the Model was dismantled before a final SR1 design was approved;
- During a flood, polluting material and debris will be transported to the SR1 Diversion Canal and into the Off-Stream Reservoir, where contaminants can accumulate and incubate until after the flood resides;
- Many communities that were affected by floods are still opposing the SR1 and thousands of Albertans expressed their desire in different ways including signing a petition asking that the proposed alternative TRJR receive a proper, professional and non-biased feasibility study;
- CEAA requested, in August 2018, that the Tri-River Joint Reservoir of Alberta (TRJR) and the Micro-Watershed Impounding (MWI) proposals receive further study (Alternative Solutions);
- The Prime Minister's Office and the Minister of Public Safety and Emergency Preparedness recommendations that TRJR be submitted for Federal Funding grants was ignored by Alberta government officials.

Dams Failure

Dam failure or levee breaches can occur with **little warning** potentially devastating **large** populations.

The cause of these failures can be due to natural or man made events, such as **earthquakes** and **heavy rains** or engineering design **defects** and **poor** maintenance practices.



Figure 1: Dam breach: 65% of the recorded cases involved earth dams

1.1 Serious environmental issues with the SR1 and the urgent need for a credible alternative

The following information and the content in the body of this document provide evidence supported by scientific facts.

The federal agency (CEAA) stated in its environmental assessment of SR1 that the province *“does not describe in sufficient detail the potential environmental effects of accidents and malfunctions for worst case scenarios such as off-stream dam failure or breach, and diversion structure failure or breach”*.

Normal engineering practices requires that dams be designed to protect against “worst case scenario”. The design of the SR1 was based on the 1:100 prediction; presumably to protect against floods similar to 2013. However, the life time for most of the dams in Alberta has exceeded 50 years and some are reaching 100 years.

It is against basic engineering practices to assume that during the 100 years period after building the SR1 our province wouldn't experience a flood bigger than that of 2013. Most scientists and experts predict next floods could be worse than previous ones.

1.1.1 Learning from recent and historical events

After witnessing nature's mayhem and the human tragedies in Quebec and Ontario last year, in addition to the fact that records show that there have been two floods 30% larger than the 2013 event since 1878, the option of SR1 is, therefore, extremely risky.

“The federal environmental review of the proposed Springbank off-site reservoir wants more information from the provincial government, including additional details on what would happen in a worst-case scenario accident or malfunction.”

1.1.2 Technical facts explaining the inadequacy of the SR1 design

1. One of the shocking facts is that the flow rate measuring gauges, which were placed in the river to be used in determining the volume of water coming to the city, were destroyed during the 2013 flood. Accordingly, the presumed design capacity of the SR1 is more of a guess than a solid science.
2. The Amec consultant firm performed flood frequency analysis for the Bow and Elbow Rivers at Calgary using a record length of 1879 to 2012 incorporating the historic data. Incorporating historic flood records increases the magnitude of the 100-year to 1000-year flood peaks by 26% to 34%.
3. Flood and Volumetric frequency analyses were performed for the Elbow River near Glenmore Reservoir using a combined hydrometric record of 1908 to 2013. Several large historically observed floods occurred in 1879, 1897 and 1902 on the Bow and Elbow

- Rivers prior to the beginning of systematic hydrometric monitoring. Estimates of those historical flood peaks are available for the Bow River BUT NOT for the Elbow River.i
4. The world-renowned Dutch consultant Deltares firm (a consultant commissioned by Alberta Government) warned:
 “Temporary storage of water in detention areas is not a very robust measure...The Springbank dry-dam could be overcome in some flood circumstances.” When (the project) is overcharged, its effect is reduced to Nil.”ii
 5. City of Calgary announced:
 “Now that we have more data from the province's work, our experts and their experts are working together to see if we still believe two out of three are required”
 6. The city’s flood panel concluded that any two of the three proposed upstream mitigation projects would do the job. (Mar. 17, 2015).
 “It's pretty clear that we believe that one is not enough” (City of Calgary mayor).iii”
 7. The expert panel of 2014 recommended a volume of a minimum 100 million cubic meter reservoir to just withstand a flood equivalent to the 2013
 8. Francois Bouchart, the city's manager of Infrastructure Planning and Water Resources declared:
 “The City of Calgary is not able to flood proof a community. There is always the risk that we will get a larger event than the event that we had in June of 2013.”iv
 9. In May 2017, the City of Calgary released the Flood Mitigation Options Assessment Report, prepared by the IBI Group and Golder Associates. The report mentioned:
 “Sophisticated modelling data used and the results clearly suggested that SR1 was not a “triplebottom-line” ... assessment that would include environmental and social costs alongside economic costs.”
 10. In case of an event such as “back-to-back” floods, SR1 would not protect the populated area surrounding the dam, or the City of Calgary. According to the city of Calgary website, “A flood could happen again in the following year or even twice or more in any given year”.
 11. What would happen if the proposed dry dam on the Elbow were to fail catastrophically? About 78,000,000 m³ of water would be released in a matter of minutes. A rushing tidal wave of debris and a deluge of contaminated water descending on surrounding areas.
 12. The location of the SR1 project is 15km. west of the city, in case of a breach or a failure, it would take a few minutes for the overflowing polluted water loaded with destructive debris to cause tremendous destruction to the City of Calgary as well as the area surrounding the dam, including main highways, residential, industrial and utility installations.

13. In case of SR1 dam’s failure, which is a real possibility, the old Glenmore dam would be the first casualty, resulting in a disastrous event affecting the entire City of Calgary.

1.2 Serious problems with estimating the SR1 Safe Project Probable Maximum Flood

In a letter from Alberta Transportation to Ms. Jennifer Howe enclosing:


- (a) Springbank Off-Stream Reservoir Project Hydrology Flood Frequency Analysis. Memo, Rev. 1.0, Dec. 14, 2015.
- (b) Springbank Off-Stream Reservoir Project Probable Maximum Flood Analysis. Memo Aug. 7, 2015.^v

In Part (a) Flood Frequency Analysis:

2.4 Conclusions. (Page 11/196)

*“The review of past studies identified **gaps** in available information required for the **design** of SR1. None of the above referenced studies provided comprehensive analyses for both flood peak and flood volume for the Elbow River at Glenmore and at Bragg Creek AS REQUIRED TO ESTIMATE FLOOD RECURRENCE INTERVALS AND CHARACTERISTICS OF THE SR1 DIVERSION SITE.”*

Based on the size of the population at risk, a Hazard Classification of “Extreme” is justified for the Off-stream Storage Dam. See table below.

 **Classification Ratings**
Operations Infrastructure

Canadian Dam Association (CDA) Consequence Classification Ratings for Dams

Consequence Classification	Population at Risk	Consequences of Failure		
		Loss of Life	Environmental and Cultural Values	Infrastructure and Economics
Low	None ¹	There is no possibility of loss of life other than through unforeseeable misadventure	Minimal short-term loss or deterioration and no long-term loss or deterioration of: a) Fisheries or wildlife habitats b) Rare or endangered species, or c) Unique landscapes or sites of cultural significance	Minimal economic losses mostly limited to the dam owner's property, with virtually no pre-existing potential for development within the dam inundation zone.
Significant	Temporary only ²	Low potential for multiple loss of life	No significant loss or deterioration of: a) Important fisheries or important wildlife habitats b) Rare or endangered species, or c) Unique landscapes or sites of cultural significance, and restoration or compensation in kind is highly possible.	Low economic losses affecting limited infrastructure and residential buildings, public transportation or services or commercial facilities, or some destruction of or damage to locations used occasionally and irregularly for temporary purposes.
High	Permanent ³	10 or fewer	Significant loss or deterioration of: a) Important fisheries or wildlife habitats b) Rare or endangered species, or c) Unique landscapes or sites of cultural significance, and restoration or compensation in kind is highly possible	High economic losses affecting infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to scattered residential buildings.
Very high	Permanent ³	100 or fewer	Significant loss or deterioration of: a) Critical fisheries or wildlife habitats b) Rare or endangered species, or c) Unique landscapes or sites of cultural significance, and restoration or compensation in kind is possible but impractical	Very high economic losses affecting important infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to residential areas.
Extreme	Permanent ³	More than 100	Major loss or deterioration of: a) Critical fisheries or wildlife habitats b) Rare or endangered species, or c) Unique landscapes or sites of cultural significance, and restoration or compensation in kind is impossible	Extremely high economic losses affecting critical infrastructure, public transportation or services or commercial facilities, or some destruction of or some damage to residential areas.

¹ There is no identifiable population at risk.
² People are only occasionally and irregularly in the dam breach inundation zone, for example stopping temporarily, passing through on transportation routes or participating in recreational activities.
³ The population at risk is ordinarily or regularly located in the dam breach inundation zone, whether to live, work or recreate.

Apr 2016 CDA Consequence Classification Ratings for Dams © 2016 Government of Alberta Page 1 of 1

1.3 Problems with estimating the proper and safe reservoir size for the SR1

An expert panel was assembled by the province of more than 50 members representing all kinds of disciplines has estimated the volume of 2013 flood to be **100M m³**.

1.3.1 Members of the expert panel



Figure 2: The expert panel of 2014

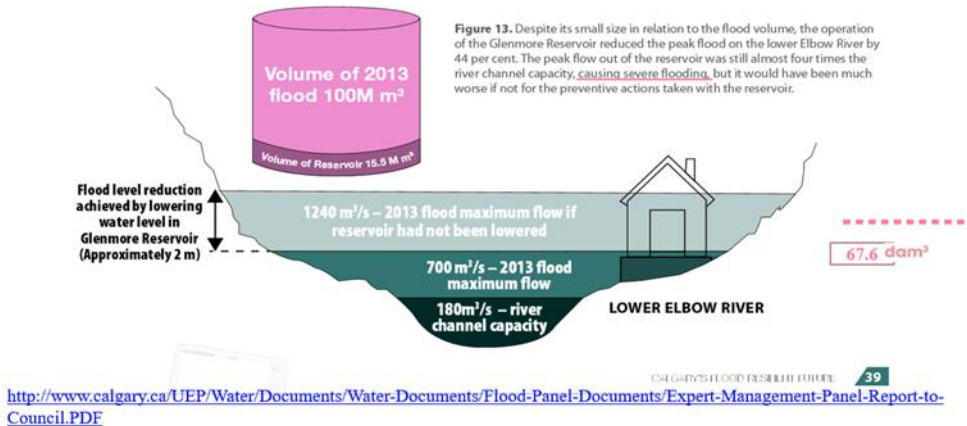


Figure 3: Volume Of 2013 flood-100M m³ (June 2014)

1.3.2 Troubling indecision and uncertainty in reference to the SRI required reservoir size

On March 17, 2015

According to Alberta Transportation, the volume that will be stored by SR1 was decided to be **67,000m³**



121

Figure 4: Volume that will be stored by SR1 (provided by Alberta Transportation)

On April 18, 2016

SPRINGBANK OFF-STREAM RESERVOIR PROJECT CANADA ENVIRONMENTAL
Report by Stantec: Project Information
Components of Proposed Development
ASSESSMENT ACT, 2012^{vi}

The design flood storage capacity was changed to: 70,200,000 m³ (p2.2, Table 2-1)^{vii}.

On March 2018

Springbank Off-stream Reservoir Project report
The Environmental Impact Assessment

In page 3.2, it was stated: *The off-stream reservoir holds 77,771,000 m³ of water as active flood storage. Flows more than the diversion capacity will pass the diversion structure and be stored within Glenmore Reservoir, up to its allocated flood storage capacity of 10,000,000 m³. The total storage capacity of 87,771,000 m³ provided by the system. (P3.2).^{viii}*

On July 28, 2018

In the report titled: RESPONSE TO NRCB AND AEP SUPPLEMENTAL INFORMATION
REQUEST 1, Appendix IR14-2^{ix}

Springbank Off-Stream Reservoir Project – Conceptual Design Update May 2019
Crest Elevation Required storage capacity **to meet the 2013** flood event criteria is 70,200 dam³.
Considering 10% storage loss due to sediment and debris accumulation, PMF routings and freeboard results in a dam crest elevation of 1213.5m.
The flood event criteria is now 70,200 dam³.

1.4 The Fatal Flaw

If the expert panel has estimated the volume of the 2013 flood as **100M m³**, and since the SR1 is classified as an “extreme”^x consequence dam, basic engineering design requires adding a margin of safety with an order of magnitude larger than 100M m³. In other words, the storing design capacity of the reservoir could range from 120 M m³ to 150 M m³.

Secondly, what could be the logical explanation of the uncertainty about the proper required capacity for the reservoir demonstrated by the continuous changing in the required volume?

Is it because the flow rate measuring gauges that are used in determining the volume of water coming to the city were destroyed during the 2013 flood?

1.4.1 The crucial importance of the safety factor

- The Director of Production and Maintenance with Hydro-Quebec, Simon Racicot, told reporters the dam at Chute Bell was built to withstand what he called a millennial flood. “That means a flood that happens every 1,000 years”, then added: “Hydroworkers discovered earlier in the day the millennial level of water had been reached. We are entering into an unknown zone right now, completely unknown”.
- The world-renowned Dutch consultant Deltares firm (a consultant commissioned by Alberta Government) warned, “*The Springbank dry-dam could be overcome in some flood circumstances.*”
- A senior hydraulic engineer in a meeting with the Dutch engineers (Deltares firm) said “*when they asked what we designed for-we said 100 years.*” *The Dutch engineers replied, “We design for a 1,000-year event”.* Accordingly, the Springbank Offstream Dry Dam is designed to the lowest permissible standard.

This SR1 design criterion meets only the lowest permissible dam safety level. Therefore, Albertans should never allow a proposed project such as the Springbank dry dam (SR1), to be built close to highly populated areas. Building a dam with specifications equal or below the 2013 flood, under the pretext of “we didn’t have enough funds”, or “it is better than nothing” are extremely unwise, dangerous and inexcusable justification.

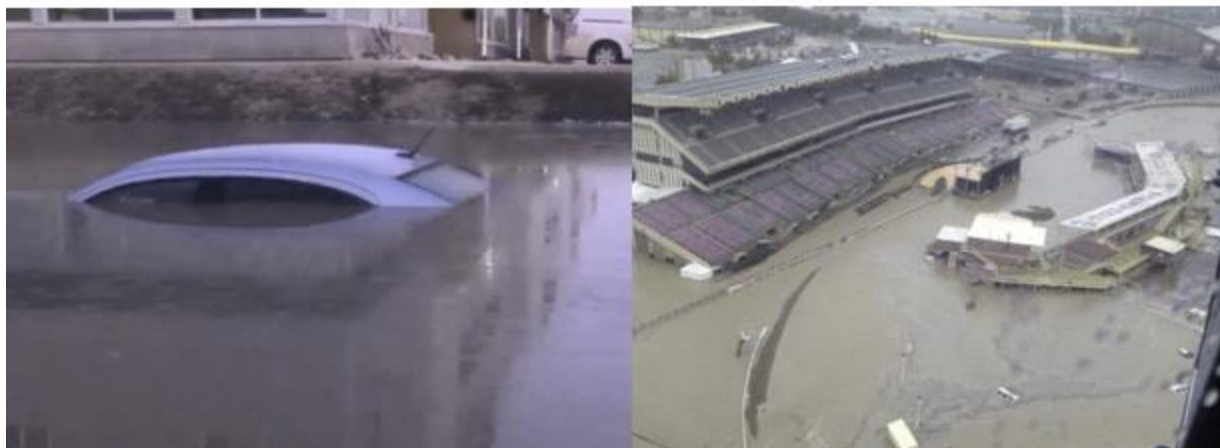


Figure 5: Costly flood in Alberta, Quebec and Ontario

1.5 Disturbing inconsistency in the consultant report on “TRJR” leading to questioning its credibility

On August 31, 2018, the Federal Environmental Review Agency (CEAA) requested the Alberta provincial government to evaluate the Tri-River Joint Reservoir of Alberta (TRJR). The consultant Stantec was given this task.

While Stantec sturdily presented their position in one of their reports stating “*any flood control reservoir, whether placed in-stream or off-stream, needs to be placed at a location in the watershed that is sufficiently downstream*”, their submission to the Canadian Environmental Assessment Agency (below) distinctly contradicts their assertion and affirms that the source of flood waters is actually in the mountain area. Thereby agreeing with information in our “Package 1” where we presented scientific information provided by different credible scientists stating that the major source of flood waters is located in the mountain area.

The following are the references of the contradictory submissions to the Canadian Environmental Assessment Agency:

SPRINGBANK OFF-STREAM RESERVOIR PROJECT

PROBABLE MAXIMUM FLOOD ANALYSIS

August 7, 2015, Hydrologic Model Calibration– P. 26^{xi}/Stantec

*“As can be seen in Table 17, most of the 2013 runoff in the Elbow River Basin was generated from the **mountainous part of the watershed** (W200, W350, W400, W450 and W500) **upstream of Bragg Creek**. The sub-basins downstream of Bragg Creek **contributed less runoff in comparison**. As with the 2005 calibration, this is attributed to two factors; first, **the heaviest rainfall in 2013 occurred in the upper watershed**, and, second, the rainfall losses are less in*

that portion of the watershed due to the high percent of rock outcrop. As opposed to the 2005 storm, the 2013 storm was centered further to the west and sub-basin W450 provided an even greater portion of the watershed runoff.”

August 31, 2018, ALBERTA TRANSPORTATION SPRINGBANK OFF-STREAM RESERVOIR PROJECT RESPONSE TO CEEA INFORMATION REQUEST PACKAGE 3, Alternative Means, May 2019 – P. 226^{xii}/Stantec

*“Any flood control reservoir, whether placed in-stream or off-stream, needs to be placed at a location in the watershed that is sufficiently **downstream** to ‘catch’ and hold the water draining from **upstream lands**. The farther downstream the reservoir is placed, the more catchment area it will have, and the more effective it will be in mitigating flooding from the upstream catchment area for the City of Calgary and downstream communities. The TRJR is proposed to be in the headwaters of the Sheep River watershed, which limits its effectiveness in meeting the Project’s primary goal of flood mitigation for the City of Calgary and downstream communities.” Stantec evaluation of the Tri-River Joint Reservoir, reference^{xiii}.*

In Table 17 (P.26), in the report by Stantec titled:

ALBERTA TRANSPORTATION SPRINGBANK OFF-STREAM RESERVOIR PROJECT RESPONSE TO NRCB AND AEP SUPPLEMENTAL INFORMATION REQUEST 1, JULY 28, 2018 Appendix IR520-1 Report, May 2019

Below this Table is the following statement:

*“As can be seen in Table 17, most of the 2013 runoff in the Elbow River Basin was generated from the mountainous part of watershed (W200, W350, W400, W450 and W500) upstream of Bragg Creek. The sub-basins downstream of Bragg Creek **contributed less runoff in comparison**. As with the 2005 calibration, this is attributed to two factors; first, **the heaviest rainfall in 2013 occurred in the upper watershed**, and, second the rainfall losses are less in that portion of the watershed due to the high percent of rock outcrop. As opposed to the 2005 storm, the 2013 storm was centered further to the west and sub-basin W450 **provided an even greater portion of the watershed runoff**”.*^{xiv}

The above contradicts the main argument that is given for the choice of the location of SR1 being so far downstream – supposedly to catch more run-off, on the other hand, it, again supports the scientific argument on behalf of the proposed TRJR.

These reports present a case of a clear contradiction which brings into question the reliability and professionalism of the reports.

1.6 Extreme weather is on the rise

“Extreme weather” is a relative term meaning especially intense or very severe compared to what normally occurs over a baseline period of time, such as the average for the 20th century.

Wildfires are considered “weather-related,” since they are not meteorological events themselves but are linked to weather extremes such as drought.

Extreme weather events include life-threatening heat waves. Heat waves are connected to periods of drought. Drought can lead to more wildfires which, with dust from dry soil, make it harder to breathe. A heat wave in Quebec killed as many as 70 people. A death toll on that scale is unusual in Canada. The impacts on health, ecosystems, agriculture, flooding and economy would grow significantly the longer these conditions persist.^{xv}

1.6.1 Extreme Floods May Be the New Normal *xvi*

More frequent events could defy traditional methods of planning for floods, like using 100 and 500-year floodplain maps to plan communities. It could also radically shift how engineers and architects design buildings.

In spite of these universal new changes and warnings, Alberta Transportation/Stantec went ahead and used 1:100 prediction and a Probable Maximum Flood Design of 1,240 m³/s. for the SR1 design, while it was already stated in their submission^{xvii} that the PMF is 2,770 m³/s.

The 2,770 m³/s. figure is more than twice that amount of 1,240 m³/s. This is not a slight difference that can be ignored, especially when they had already stated that SR1 fell into the “Extreme” dam hazard rating.

1.6.2 A blatant conflict of interest

The consultant Stantec was instructed to evaluate the TRJR and the MWI alternative options. Stantec is the firm that is designing the SR1 and possibly the firm that would build it. This creates a case of conflict of interest by expecting the firm to evaluate competing projects.

1.7 The current urgent need in our province that should never be overlooked

In light of the current world epidemic that has turned all conventional wisdom upside down, water is becoming our most vital resource not only for flood mitigation, but also for ongoing droughts, wildfires suppression, industry needs, recreation, and most importantly, securing drinking quality water and quantities for the present and the future generations.

“In the long-term, water shortages will become increasingly wide spread in North America.”

(Calgary City News).^{xviii}

“WE MUST HEED THIS SERIOUS WARNING BEFORE IT’ S TOO LATE”

The pre-COVID-19 mentality of different groups working against each other on such a vital issue of flood protection for all our river communities must end now. Selfishness and any proposed mitigation projects with no scientific, credible, non-biased and non-political supporting studies must stop as much as we would like to see this virus going away.

We at the FWMC say, when a proper professional and non-biased feasibility study is done on the TRJR, it would be found to fulfill the requirements of the Initial Priority of the Community Flood Mitigation Advisory Panel (CFMA).

During, and in the post COVID-19 era, a different environment in the public arena will take place. The residents of the province are having plenty of time to read, research and seek more information and knowledge. Accordingly, it would not be easy to “sneak in” or sell to the public unsubstantiated or manipulated information about potential projects.

The current proposed design for SR1 is a direct insult to basic dam’s design safety principles (as was explained earlier in the body of this document). No wonder, a simple earthen dam, with a 25m. height, is still yet to provide the final design approval after more than five years since the project was selected. The main problem lies in the overall concept.

The proposed TRJR project is designed to protect more than one community and more than one river. It would yield a significant diversification for our province. A White Paper on this proposal was submitted to the UNESCO-IHE (world renowned International Institute of Hydrology and Environmental Engineering). This organization recognized the promising potential and the tremendous possible benefits offered by this solution, describing it as an innovative option for flood mitigation and water management.

This project is vital to the SAFETY and the social and economic well-being of our province, especially the citizens who live in the Bow Basin river communities (approximately 32, including Calgary, Tsuu T’ina, and Siksika Nations).

Unprecedented circumstances require brave actions, creative solutions and thinking outside the box. The immediate need now is to commence with the proper feasibility study that was required by the Canadian Environmental Assessment Agency (CEAA) on the proposed Tri-River Joint Reservoir solution. This could be done very quickly due to the amount of research, studies and site investigation work done on the TRJR which started shortly after the 2013 flood and was submitted to Alberta Transportation in the form of technical information package designated as, “Package1”.

The TRJR project can be built in phases within a realistic budget providing incalculable social and economic benefits. In the absence of a proper feasibility study, an initial cost estimate was within the realm of affordability. The government could also consider a PPP type of project in order to share the costs with the private sector.

1.8 It is time for action

Now, putting a limited bureaucratic vision and all biased or selfish ideas aside, the TRJR option IS AN ECONOMIC RECOVERY CATALYST FOR ALBERTA AND CANADA. It is also the ONLY option that:

- Could manage three rivers (Elbow, Sheep and Highwood) from one central location and contribute to the management of the Bow River
- Protects the majority of river communities
- Is the safest option amongst all. The available water storage area is more than ten times that of the SR1’s dry reservoir. In addition, it is the only option that can contribute to the mitigation of the Bow River and generate a new source of electricity
- Is also the fastest to build and would be operative in a short time due to the fact that the main components of the project have already been provided by nature. We are also fortunate to have the advanced equipment and the needed skills available right here in our province
- Can be constructed in phases based on the availability of funds
- Mitigates water shortage conditions. Water can be stored or diverted as needed for our second most important industry (Agriculture), as well as supply the needs for industrial usages and water demands by a growing population
- Is the project that provides the highest benefit/cost ratio
- Could access, on submission of a feasible proposal, Federal Grants available from the “Investing in Canada” Fund or the “Disaster Mitigation Fund”, thus receiving a return of some of the Equalization Payments sent to Ottawa by hard-working Albertans;
- The TRJR option would also provide a better protection to the existing Bassano dam, and would be an essential step for building the proposed new dam at the heart of the Eastern Irrigation District (EID), the Eyremore dam.

1.8.1 The future Eyremore dam

The Eyremore dam is expected to be even bigger than Ghost Lake Dam, and will provide an additional source for storing up water and generating electricity, thereby serving both our growing agriculture and electricity needs.

1.8.2 More benefits

The benefits do not stop there, CBC News posted on Jan 24, 2020 this article:

“Restocking Alberta's lakes with walleye could promote economy”, says province. Environment and Parks have been holding consultations with anglers across Alberta on restocking Alberta's lakes with walleye which would benefit our economy. The geographic location of the TRJR, size and water quality can contribute to fulfilling this need for the walleye fish and other fish species.

1.8.3 Important remark relevant to the matter under discussion

In light of the unprecedented “Triple Whammy” Alberta is facing, convergence of pipeline delays, the latest plunge in oil prices and the economic fallout from the global coronavirus pandemic, more valuable time and taxpayer funds should not be wasted on proposals such as the MC1 since the results of a number of studies were done on it by different professional consultants led three consecutive government to eliminate this option.

A) The IBI GROUP consultant REPORT

Submitted to Government of Alberta - ESRD - Resilience and Mitigation, February 2015

6.2.1. MC1 (McLean Creek Flood Storage Project) and SR1 (Springbank Off-Stream Flood Storage Project)

Net benefits for MC1 and SR1 were computed on the basis that the projects will provide protection downstream of Glenmore Dam to the 1:100 and 1:200-year flood events.

When these events are exceeded, the damages will start to increase rapidly as the peak discharge passes through the flood hazard area within the City of Calgary.

Without additional hydrologic routing, it was assumed that ONCE the design event is exceeded, full damages are incurred. (P.7)^{xix}.

B) Submitted by AMEC Environment & Infrastructure, Calgary, Alberta, February 2015

The development of a new flood storage dam at McLean Creek would present several environmental and social challenges that would require in-depth study and a lengthy data collection period to address. Current users appear to place a high social value on the area in its present state and additional site-specific information would be required to characterize the current level of use and potential changes.

C) Government of Alberta official site/Flood mitigation studies:

The McLean Creek dry dam would have storage capacity of 49 million cubic metres.^{xx} This is far below the expert panel of 2014 recommended volume of a minimum 100 million cubic meter.

1.9 The crux and the seriousness of the problem, and the main points in this document

1. A major study conducted by the Flood Recovery Task Force, comprised of fifty experts across the Bow River Basin concluded, *“Dry dams are a massive and expensive undertaking with many complexities.”*
2. The federal agency (CEAA) stated in its environmental assessment of SR1 that the province *“does not describe in sufficient detail the potential environmental effects of accidents and malfunctions for worst case scenarios such as off-stream dam failure or breach, and diversion structure failure or breach”.*
3. An official stamped, signed Initial Design Concept (IDC) has not yet been provided for the SR1.
4. After witnessing nature’s mayhem and the human tragedies in Quebec and Ontario last year, in addition to the fact that records show that there have been two floods 30% larger than the 2013 event since 1878, the option of SR1 is extremely risky.
5. There are serious environmental issues with the SR1, consequently, there is an urgent need for a credible alternative. During and in the post COVID-19 era, a different environment in the public arena will take place. The residents of the province are having plenty of time to read, research and seek more information and knowledge. Accordingly, it would not be easy to “sneak in” or sell to the public unsubstantiated or manipulated information about potential projects.
6. As temperatures rise, an increased risk of forest fires, droughts and flooding is predicted by scientists. Water is becoming our most vital resource not only for flood mitigation, but also for economic diversification, ongoing droughts, forest fire suppression, industries’ need, recreation, and most importantly, securing drinking quality water and quantities for the present and the future generations.
7. In October 2013 the (CFMA) presented their report, *Initial Priority^{xxi}: To focus on Mitigation in the Elbow and Highwood and Sheep Basins, forming an initial segment of an OVERALL system.”* Also, *“Examine innovative solutions aimed at preventing future flood damage on a community wide basis.”*

Water is the new white gold and Nature has provided us with a ready-to-use tremendous reservoir, a gift that will be very useful in mitigating future floods, managing drought conditions, fighting wildfires, the opportunity to generate clean, recirculating renewable hydro-electricity, plus allowing for a state-of-the-art new and immense recreation area for present and future generations.

The (FWMC) have provided an innovative and comprehensive solution for flood mitigation, water conservation and environment protection for most (if not all) of our affected river communities in Southern Alberta from another disaster such as the 2013 flood in the form of the Tri-River Joint Reservoir of Alberta (TRJR) proposal, which would be located in a strategic, safe and suitable valley in the vicinity of the K-Country.

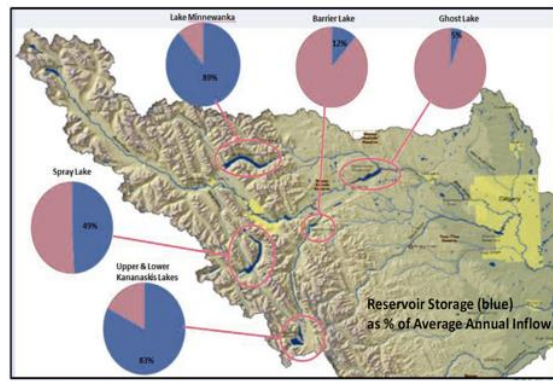


Figure 6: Existing dams and reservoirs in K-Country



Figure 7: Short Presentation to Calgary City Council (FWMC member): <https://youtu.be/23KODLqbGdU>

References:

1. i (Amec 2014-Page 8/196): 2.1 Preliminary Inflow Design Floods for Flood Control Dams on the Elbow and Bow Rivers.
2. ii <http://www.transportation.alberta.ca/documents/ReviewSpringbankMcLeanStorage-Oct2015.pdf>
3. iii Mayor N. Nenshi (Mar. 17, 2015).
4. iv <http://www.cbc.ca/news/canada/calgary/flood-mitigation-work-lacks-transparency-sunnyside-residents-complain-1.2602146>
5. v www.iaac-aeic.gc.ca/050/documents/p80123/124337E.pdf.
6. vi <https://iaac-aeic.gc.ca/050/documents/p80123/114316E.pdf>
7. vii <https://iaac-aeic.gc.ca/050/documents/p80123/114316E.pdf>
8. viii <https://iaac-aeic.gc.ca/050/documents/p80123/122347E.pdf>
9. ix https://open.alberta.ca/dataset/c7b52cd4-2adc-4f14-8a3e-02255afca154/resource/f5ab83b4-510c-4c1c-977e-9fd4c8a9bb8d/download/sr1_nrcb_aep_ir1_appendix_ir14-2.pdf
10. x Under Figure 4 – Table Excerpt from CDA Dam Safety Guidelines, 2007:
11. “The Off-stream Storage Dam breach analysis results identify thousands of residential and commercial properties within the inundation zone. Based on the size of the population at risk a Hazard Classification of “Extreme” is justified for the Off-stream Storage Dam.” See also Pages 26-32/3119.
12. xi https://www.nrcb.ca/download_document/2/83/9204/20190614-at-sir-to-nrcb-re-sir1-response-appendix-ir520-1
13. xii https://open.alberta.ca/dataset/c7b52cd4-2adc-4f14-8a3e-02255afca154/resource/ade44bc9-d627-4cf9-8049-b4eb2f4e76f0/download/sr1_ceaa_ir_package3.pdf
14. xiii (https://open.alberta.ca/dataset/c7b52cd4-2adc-4f14-8a3e-02255afca154/resource/ade44bc9-d627-4cf9-8049-b4eb2f4e76f0/download/sr1_ceaa_ir_package3.pdf)
15. xiv https://www.nrcb.ca/download_document/2/83/9204/20190614-at-sir-to-nrcb-re-sir1-response-appendix-ir520-1
16. xv <https://blogs.ei.columbia.edu/2019/08/19/persistent-heat-drought-rain-warming-world/>
17. xvi <https://www.scientificamerican.com/article/extreme-floods-may-be-the-new-normal/>
18. xvii www.iaac-aeic.gc.ca/050/documents/p80123/122410E.pdf.
19. xviii Calgary City News Blog, 2014a).
20. xix <http://aep.alberta.ca/water/programs-and-services/flood-mitigation/documents/springbank-benefit-cost.pdf>. P63/263
21. xx <http://alberta.ca/mclean-creek.cfm>
22. xxi <http://protectcalgary.com/wp-content/uploads/2013/10/v6.Community-Flood-Mitigation-PDF-Publication-copy.pdf>