

Submission to the Impact Assessment Agency of Canada

by the Elbow River Sustainability Alliance



**Greater Bragg Creek Area - Wildfire Hazards & Wildfire Management:
Prevention, Suppression, and Resiliency**

***Considerations with the Springbank (SR1) and McLean Creek (MC1)
Flood Protection Projects***

November 2019

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Greater Bragg Creek Area - Wildfire Hazards & Wildfire Management: Prevention, Suppression, and Resiliency Considerations with the Springbank (SR1) and McLean Creek (MC1) Flood Protection Projects

November 2019

Executive Summary

The May 2018 Champion Lake forest fire in Kananaskis Country (16 kilometers from the Hamlet of Bragg Creek), and resulting voluntary evacuation, state of local emergency order, and air quality advisory are pointed reminders that the lessons learned from the Fort McMurray (2016), Slave Lake (2011), Kelowna (2004), Kenow/Waterton (2017) and Chuckegg Creek (2019) wildfires need to be part of the lexicon with dealing with major infrastructure projects and climate change related impacts. Supporters of the McLean Creek (MC1) Dam recognize the many benefits that are obtained from an inclusive water management strategy and project design. These benefits are absent from a “flood-only” development with the Springbank Offsite Reservoir (SR1). This imperative was communicated on many occasions by concerned citizens during the course of open houses and information sessions with Government of Alberta (“GoA”) personnel and consultants.

The Elbow River Sustainability Alliance (“ERSA”) respectively submits that much has changed since the GoA first proposed the Springbank Offsite Reservoir in May 2016 as the solution for flood protection on the Elbow River following the 2013 disaster. Alberta has been facing another series of natural disasters with large wildfires at Fort McMurray (2016), Kenow/Waterton (2017) and Chuckegg Creek (2019). These wildfire disasters include loss of life and life altering changes, with damages in the billions of dollars and related fire suppression costs in the hundreds of millions.

The Champion Lake Fire underscores the Greater Bragg Creek Area is subject to future potential wildfires. This continuing threat (which includes potential adverse impacts to the Elbow River watershed and smoke related air quality concerns to the Calgary region) has not been appropriately factored into the analysis and decision process for the SR1 and MC1 flood protection projects. Experts suggest with climate change and aging forests, the wildfire hazards will increase over time. This submission discusses area wildfire hazards and suggested measures to mitigate risks, suppress fires, and add resiliency through the MC1 Dam - which provides significant, material and tangible benefits, with anticipated nominal changes to the overall MC1 capital costs.

Beneficiaries of incorporating enhanced wildfire protection alongside flood mitigation at McLean Creek include:

- Thousands of residents, workers, tourists, and recreational users in the Greater Bragg Creek Area
- Over 1,500 residential, commercial, community, and public structures on lands in Kananaskis Country, Rocky View County, Foothills County, and Tsuut’ina Nation (including the Hamlet of Bragg Creek and Town of Redwood Meadows)
- Three non-profit camps providing outdoor experiences for thousands of children and disabled persons
- The Tsuut’ina Pow-Wow & Rodeo Grounds which annually draws thousands of attendees for a keynote cultural event and gathering
- Related infrastructure including power, communication, water utilities, and roadways
- Commercial activities including tourism, ranching, service sector, lumber, and oil and gas
- Surrounding areas and communities affected by adverse impacts on the Elbow River water quality and reduced air quality from smoke

Dr. Flannigan, a professor of Wildfire Science in the Department of Renewable Resources at the University of Alberta, authored a column in the Calgary Herald dated May 5, 2018 noting **“Wildfire is a serious problem in Canada. Social and economic impacts are huge and growing. Trauma of losing your home to wildfire can be significant and long lasting.”**

Dr. Flannigan went on to highlight **“Bottom line: we can expect wildfire and society to continue to intersect, with disastrous results. However, there are things that we can do to make our communities more fire resilient and reduce the likelihood of a catastrophic fire.”**

The Elbow River Sustainability Alliance submits that the MC1 Dam provides a unique, cost effective opportunity for the GoA to take a leadership position to combine flood and fire protection into a legacy asset that provides ongoing and long term benefits. Failure to consider all these positive attributes represents a lost opportunity to enhance the safety of the Greater Bragg Creek Area at a time when the potential wildfire hazards are well established.

Simply put, time has shown that MC1 presents a better decision than SR1.



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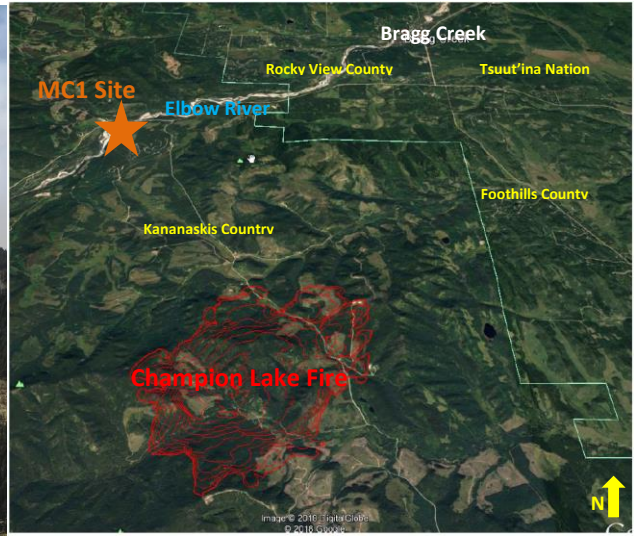
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Introduction

At this time, the GoA is seeking permission to construct a flood mitigation project on the Elbow River at the Springbank Offsite Reservoir (SR1). An application is before the Impact Assessment Agency of Canada to consider approval of this project. The McLean Creek (MC1) Dam was evaluated by the Province as an alternative project to the SR1 site. The MC1 Dam would be located on the Elbow River in the Greater Bragg Creek Area approximately 10 kilometers south-west of the Hamlet of Bragg Creek.



Kananaskis Country - Champion Lake Fire (2018)



Greater Bragg Creek Area Map - Champion Lake Fire (2018)

The Greater Bragg Creek Area is defined in this submission as areas located in general proximity to the Hamlet of Bragg Creek and Town of Redwood Meadows, comprised of Kananaskis Country Provincial Recreation Area (including Kananaskis Improvement District), Rocky View County, Foothills County and the Tsuut'ina Nation (collectively described herein as the "Greater Bragg Creek Area" or "GBCA"). The GBCA encompasses an area along the Alberta Foothills in southern Alberta, approximately 40 kilometers south-west of Calgary, with the Elbow River bisecting the area.

The GBCA has several thousand permanent residents, and as a popular tourism and recreation destination can see several thousand visitors daily. There are over 1,500 residential, commercial, community and public structures, including 3 non-profit camps that serve thousands of children and disabled persons. Located in Redwood Meadows is the Tsuut'ina Pow Wow & Rodeo, which every summer has several thousand attendees. A range of commercial activities occur in the area including tourism, ranching, service sector, lumber, and oil and gas.

In May 2018, a wildfire near Champion Lake in Kananaskis Country (16 kilometers south-west from Bragg Creek) served as a wake-up call that the well-established fire hazards in the Greater Bragg Creek Area present significant risks to persons and property in the wildland-urban interface. Fortunately, this fire was quickly contained but a reminder that a large wildfire could have significant, broad reaching, and long lasting impacts similar to other recent wildfires in Alberta.

Wildfires are a natural process of renewal on Alberta forested landscapes; however the reported effects of climate change include longer fire seasons along with drier and hotter conditions. These conditions in aging forests heighten the threats of extreme wildfire behavior and related potential damage and losses. The Bragg Creek-Kananaskis forests share many of these attributes.

The hard earned and costly lessons learned from wildfires at Fort McMurray (2016), Slave Lake (2011), Kelowna (2004), Kenow/Waterton (2017) and Chuckegg Creek (2019) are reflected in current wildfire management

practices of mitigation, suppression and resiliency. Proactive wildfire management measures come in many forms, and major infrastructure projects can provide another effective means of protection from potentially catastrophic flood and fires events.

In developing the rationale and decision process for selecting SR1 over MC1, there was apparently no consideration to the wildfire hazards in the Greater Bragg Creek Area and potential benefits that would arise from a reliable water storage reservoir on the Elbow River in Kananaskis Country. Many see this as a significant oversight given the expert reports and studies on wildfire hazards in the Bragg Creek-Kananaskis Country forests. The Champion Lake fire further confirms the accuracy and validity of these assessments.

This submission provides an overview of the Great Bragg Creek Area wildfire issues and discussion of potential measures to improve the key ingredients of wildfire management by enhanced mitigation, suppression and resiliency measures. The MC1 dam and reservoir provides substantial tangible benefits that improve the safety of the area which has significant “Values at Risk”, including the Elbow River watershed.

Wildfire Hazards Are Increasing



Fort McMurray Post Wildfire (2016) – Courtesy Tom Walker Photography

Fort McMurray Wildfire Findings

“It cannot be stressed enough that the threat of wildfires in Alberta only stands to grow, driven in part by a changing climate and increasingly mature forest complexes. As more human economic development occurs in wildland areas, more numerous and diverse values on the landscape will be placed at risk of wildfire. It will take vision and a long-term commitment by all decision-makers, along with strong relationships between governments, communities and industries to protect these values and guard against future wildfire threats.” (1)

This is one of the findings of the two independent expert reports commissioned by the Alberta Government examining the May 2016 Fort McMurray wildfire disaster (indirect cause of 2 deaths; evacuation of 88,000 people; loss of 1,900+ structures; estimated damages exceeding \$9 Billion).

In its findings from the Fort McMurray wildfire, MNP LLP made this statement to the Alberta Government: ***“A review of historical data and trends indicates that the fire season in Alberta is becoming longer, is starting earlier and is featuring more frequent periods of extreme wildfire hazard. Historical data indicates that Alberta now experiences the most wildfires in May and more forest area is burned in May than any other month”.*** (1)

Climate Change Factors Leading to an Increase in Wildfires

An expert in wildfire science, Dr. Mike Flannigan (Director of Western Partnership for Wildland Fire Science at the University of Alberta) in separate interviews with CBC News on June 9, 2019 offered ***“...we are seeing climate***

change in action" (2) and on July 29, 2019 noted *"...what we are seeing with climate change is we're seeing much more fire on the landscape."* (3) In a Calgary Herald article from August 18, 2018, according to Marc-Andre Parisien, research scientist with Natural Resources Canada, climate change isn't new and isn't going away. *"There's been a pretty significant increase in the mean average temperature in Alberta over the last 50 years,"* said Parisien. (4)

Other climate change effects include the expansion of the Mountain Pine Beetle range into the Eastern Slopes of the Rockies and accompanying attack and destruction of pine forests. (5) As an example, a Mountain Pine Beetle epidemic has affected nearly half of the Jasper National Park's pine forest and continues to spread eastward. The hazards with a Mountain Pine Beetle infested forest were described by Greg Van Tighem, fire chief for the Town of Jasper as, *"The risk of a hotter, faster more dangerous forest fire is higher when those dead trees remain standing with dry needles attached"*. (6) The Banff and Canmore areas are fighting the Mountain Pine Beetle, which present a future threat to elevating the fire risks in the Bragg Creek-Kananaskis forests.

Greater Bragg Creek Area Persons and Property are at Risk from Wildfires

Several thousand people permanently reside in the GCBA, in a combination of urban (Hamlet of Bragg Creek and Town of Redwood Meadows) and acreage style developments and farms/ranches - all in a wildland-urban-interface in Rocky View County, Foothills County and the Tsuut'ina Nation. The area has over 1,500 residential, commercial, community and public structures. Key community/public facilities include the Banded Peak School at Bragg Creek, Community Centers at Redwood Meadows and Bragg Creek, and a Snowbird Lodge in Bragg Creek. Accompanying infrastructure includes power, communication, water utilities, and roadways. The area hosts commercial activities that include tourism, ranching, service sector, lumber, and oil and gas.

The GBCA provides many recreational opportunities and renewable tourism activities that benefit both the local and surrounding areas, and would be adversely affected by a large wildfire. This area includes portions of Elbow Valley which in 2015 was noted as *"one of the most heavily used recreational areas in Kananaskis Country with an estimated half a million visitors annually"*. Usage continues to increase by both Albertans and tourists. (7) K-Country provides a wide range of outdoor recreational activities and an extensive infrastructure has been developed by the Province.

The Tsuut'ina Pow-Wow & Rodeo Grounds are located in Redwood Meadows. There the Tsuut'ina Nation annually holds its Pow-Wow which includes dancing, singing, and drumming competitions. The Rodeo draws professional and amateur entries from across North America. The festivities are a keynote cultural event and gathering for the Nation, with several thousand attendees.

The GBCA includes also includes three camps for children and persons with disabilities. The Easter Seals Camp Horizon in K-Country camp provides recreational and outdoor opportunities for children as well as persons with disabilities. There is also a large summer camp for children at Our Lady of Peace Ranch near Bragg Creek offers a range of outdoor activities. The most active and reachable for Calgary schools is Kamp Kiwanis, located at the proposed intake for SR1. Unfortunately, if SR1 proceeds it will be significantly impacted. This camp relies on its close access to Calgary, and its waterfront on the Elbow River, to provide year round activities for thousands of children. During the summer there are week-long camps and leadership training. In the school year, children are bused from Calgary and area schools for outdoor activities.

GBCA Wildfire Hazard Assessments Find High or Extreme Wildfire Risk

Many parts of the Alberta Rocky Mountains and Foothills are rated by forestry and wildfire experts as having high to extreme FireSmart hazard ratings for potential wildfires. The GBCA has not had a major forest fire for over 100 years. As a result of the maturing, coniferous montane forest, along with fuels accumulating on the landscape, contribute to the potential wildfire hazards. A 2016 article mentioned specific to the GBCA forests: *"Adding to the existing risk at the WUI ("Wildland-Urban Interface"), conditions of higher fire intensities and resulting fire*

severities are amplified by a warming climate and extended fire season as per recent conflagrations in Fort McMurray (2016) and Slave Lake (2011)." (8)

As noted, over 1,500 residential, commercial, community, and government structures are estimated to be located in the Wildland-Urban Interface in the GBCA. The Greater Bragg Creek Wildfire Mitigation Strategy (January 2012) undertook a FireSmart hazard assessment on developments and adjacent fuel types and found the **"FireSmart Hazard is High/Extreme for several development areas and the threat of multiple structure losses to wildfire is significant"** and the **"risk of wildfire in this area is significant and frequently occurs in areas accessible to the recreating public and residents"**. (9) The GBC Strategy contains recommendations that focus on **"mitigation options at the structure, community and landscape levels with the intent of reducing wildfire intensity and the rate of spread as wildfire approaches development and improving structure survival as the wildfire enters the community."** (9) Dr. Flannigan with the University of Alberta in a July 8, 2017 Calgary Herald article made specific reference to the current and ongoing hazards in the GBCA, including the statements **"These forests are primed to burn, places like Kananaskis County and Bragg Creek"** and **"fire management has been exceedingly successful, but that could change."** (10)

In 2019, a preliminary FireSmart Wildfire Exposure Assessment for the GBCA by Dr. Jen Beverly (University of Alberta, Department of Sustainable Resources) determined that many structures and developments are highly susceptible to ignition by radiant heat along with short-range and long-range airborne embers. Embers were a leading cause of structure losses in the Slave Lake and Fort McMurray wildfires. (11, 12) A companion Pathway Assessment found there were several routes for wildfires to enter the Bragg Creek community. (11)

A risk management planning process in 2016 undertaken on wildfire hazards in the Calgary Forest Area (which covers the Provincial lands from Waterton National Park to near Sundre) by Alberta Wildfire (department of the Alberta Agriculture and Forestry Ministry) highlighted the wildfire hazards and risks in the Elbow River Valley in K-Country. (13) Existing structures and infrastructure were rated in this process at **"Highest Values Impact"** with an associated **"Likely"** to **"Highest Burn Probability"**. (13) The associated **"Cumulative Wildfire Risk"** in this process translated into **"Risk Reduction"** to **"Intolerable Risk"** ratings, which indicated the landscapes require treatments that range from **"measures generally required"** or **"should be treated"**. (13)

The Alberta Wildfire planning process for K-Country is consistent with the findings in the Greater Bragg Creek FireSmart Mitigation Strategy, which identified the FireSmart hazard rating in many areas of the GBCA to be high or extreme. (9) These reports and assessments confirm there are significant "Values at Risk" located in the GBCA that are exposed to potential loss or damage from wildfires.

Notably, portions of the Hamlet of Bragg Creek have high or extreme FireSmart hazard ratings. This suggests a potential fire (and related smoke) in the Hamlet could adversely impact the lone evacuation route across the Balsam Avenue Bridge serving the West Bragg Creek area. The bridge serves over 700 residences and up to 1,500 visitors daily to K-Country. Evacuation of the GBCA is an ongoing community concern.

Wildfire Costs are a Significant Expense

The forests in the front ranges of Southern Alberta are an active area for both fire prevention and suppression by Alberta Wildfire. Statistics available on the Calgary Forest Area, indicate that Alberta Wildfire responded to between 206 to over 408 fires annually during the period of 2006 to 2017. The role of Alberta Wildfire is highlighted by Dr. Flannigan in the July 8, 2017 Calgary Herald article **"they are very efficient at what they do, 90% of the fires are put out the same day, when they are small"**. (7)

The cost of wildfire prevention and suppression to the Province is a significant expense. An article in the Edmonton Journal dated June 12, 2019 noted **"the Ministry of Agriculture and Forestry asked for \$193 million for wildfire management" beyond the \$101 million approved in the 2018-19 fiscal budget."** In the same article some historical reference was provided with the statement **"In 2015-16, wildfire expenditures were higher than ever, totalling approximately \$514 million, said the province"**. (14)

It appears wildfires will continue to be a significant expense for the Province, and an area where mitigation efforts may assist with reducing the long term costs.



Fort McMurray Post Wildfire (2016) – Courtesy Tom Walker Photography



Cameron Falls, Waterton - Post Kenow Wildfire (2018)

Wildfires Negatively Impact the Elbow River Watershed

Wildfires in the Elbow River watershed could affect the potable drinking water of over 400,000 Albertans. The May 2018 Champion Lake (K-Country) fire was less than 7 kilometers from the Elbow River. A 2011 study on climate change effects commissioned by the City of Calgary noted **“A large fire could have a profound effect on raw water quality (especially in the small Elbow River water shed) and the effect could last for years.”** (15)

The study mentions **“Water quality would be impacted with increased sediments, high levels of organic carbon, nutrients and heavy metals, from debris and increased soil erosion”** and **“would have a significant impact on water treatment process”**. (15) The released heavy metals often include mercury and present unique challenges to producing potable water. The study concluded **“Additional treatment processes may be required to address the change in water quality to meet drinking water standards.”** (15)

Other potable water treatment systems on the Elbow River (Bragg Creek, Redwood Meadows, and Springbank) would face similar concerns. The impacts of wildfires on water supplies are widely documented (including Fort McMurray) and can involve significant improvements and costs.

Health Issues from Smoke and Poor Air Quality

The effects of wildfire smoke and poor air quality on human health is a subject of ongoing study and research. A range of fine particulate materials (including soot), chemicals, and gases (including carbon monoxide) are found in wildfire smoke that can lead to range of health issues. (16, 17)

Health agencies suggest wildfire smoke effects include eye and throat irritation, headaches, and allergic reactions, and are of concern to individuals with pre-existing respiratory ailments and heart and circulation conditions. Infants, children, pregnant women, seniors, and individuals with chronic lung and heart disease are at the highest risk of health effects. Impacts can range from temporary discomfort, treatment with medication, and in severe cases include emergency care. Avoiding the smoke, including relocation, are referenced protective measures.

Health services in Bragg Creek are provided by a single daytime medical clinic. Emergency first responders in the GBCA include firefighters at Redwood Meadows, Priddis and Rocky View County. Other nearby health and emergency care facilities are located in Cochrane, Black Diamond, and Calgary.

Potential GBCA Wildfire Losses

The potential losses from a catastrophic wildfire event in the GBCA, based on information from the Fort McMurray and Slave Lake disasters, would be significant. Some context is provided by the 2011 Slave Lake disaster, which caused about \$700 Million in estimated losses (433 structures lost; 89 structures damaged; 732 persons homeless) and resulted in a helicopter pilot losing his life during fire operations.

Wildfire damage to the K-Country recreational and tourism infrastructure would have compounding effects. The losses include replacement and repair of GoA and private assets, with an accompanying decrease in related tourism and service sector revenues in Bragg Creek and the surrounding area (including Calgary) during reconstruction and rehabilitation. Commercial activities including ranching, lumber, and oil and gas could also be adversely affected by a wildfire in the GBCA.

Additional cost exposure from a GBCA wildfire includes new potable water treatment facilities for systems drawing raw water from the Elbow River in Bragg Creek, Redwood Meadows, Springbank and the City of Calgary. Increased health care requirements from smoke related poor air quality are another cost factor with a wildfire.

Wildfire Management – Prevention, Suppression & Resiliency

Background

“Wildfires are, unfortunately, a common occurrence in Alberta’s forest ecosystem and are actively managed through Alberta Agriculture and Forestry’s wildfire management program. When wildfires enter the wildland-urban interface the potential risk to property and life is significant. This risk is compounded by the increasing encroachment of communities into wildland areas, resulting in the need for continued investment in wildfire prevention and preparedness programs.” KPMG LLP provided this finding in its independent expert report prepared for the Alberta Government following the 2016 Fort McMurray wildfire. (18)



Champion Lake Wildfire, K-Country (2018)



Bragg Creek Homeowner Vegetation Management – FireSmart Chipper Day (2018)

“Certain experiences and lessons should be valuable to leaders of governments and industry and with members of the general public following such an experience. Not only do we need to be world class at wildfire suppression, but we must manage our communities and our landscapes to become more wildfire resilient or we can expect similar or worse outcomes on a more frequent basis. This is not just an Alberta problem, but one that

is well documented around the globe. The public and their leaders should no longer expect wildfire management agencies to manage the problem alone. Preparing for wildfire in the boreal forest, preventing wildfires, and mitigating damage requires the collective will and long-term commitment by all parties, from the homeowner to industry and through all levels of government.” MNP LLP made this statement in its report to the Alberta Government on the Fort McMurray wildfire. (1)

Champion Lake Wildfire was a Close Call

On Sunday, May 27, 2018, the Champion Lake (K-Country) wildfire (16 kilometers from the Hamlet of Bragg Creek) led the Municipal District of Foothills to issue a voluntary evacuation order to residents near the fire, followed by a state of local emergency order and air quality advisory. Rocky View County issued an advisory that noted ***“Bragg Creek area residents were placed on precautionary evacuation standby through the Safe & Sound system and the Calgary media.”*** (19, 20, 21)

GBCA residents responded by making evacuation preparations including: last minute fire protection measures to their homes and properties; relocating livestock and animals; repositioning vehicles and trailers from the area; and packing personal effects and papers. During this incident, regular updates were provided by the municipalities and media on the status of the fire and a potential evacuation of the area, along with health concerns from smoke exposure and poor air quality. (19, 20, 21)

The combination of effective, early response by Alberta Wildfire and favorable weather conditions limited the fire to about 60 hectares. The fire was successfully extinguished several days later - and fortunately no structures were damaged or injuries reported. Many residents after the wildfire reported trauma and stress symptoms, similar to those arising subsequent to the 2013 Elbow River flood. (19, 20, 21)

GBCA Wildfire Management

A combination of wildfire management strategies are actively underway in the Greater Bragg Creek Area. Examples include mitigation through vegetation management programs, Alberta Wildfire employing quick response suppression activities, and resiliency awareness through education and information. Both Rocky View County and Foothills County have active provincially funded FireSmart Canada programs overseen by their Fire and Emergency Services departments. The programs follow the 7 FireSmart disciplines and include a range of activities from education, vegetation treatment, emergency planning and cross training. Following the Champion Lake fire there is a greater community awareness of the FireSmart programs and more preventative measures undertaken by property owners in the GBCA.

Rocky View County recently announced a partnership with the Canadian Red Cross to introduce Home Flood and FireSmart Protection Assessments and corresponding grants Rocky View residents to reduce the threats from fire and floods. The partnership is a first in Alberta to build both flood and fire resiliency into a community.

The Champion Lake wildfire demonstrated the effectiveness of the current wildfire suppression programs - however, the Fort McMurray (2016), Slave Lake (2011), Kelowna (2004), Kenow/Waterton (2017) and Chuckegg Creek (2019) wildfires are all examples of the challenges with extreme wildfire behavior. The independent experts assessing the Fort McMurray wildfire pointed out a need to focus on proactive wildfire prevention and preparedness at the homeowner, industry, community, and landscape levels – as part of a comprehensive wildfire management strategy.

The Fort McMurray independent expert reports discuss the leadership role of the Provincial Government in enacting the recommendations of the reports to protect Albertans. (1, 18) This leadership function should also extend to major infrastructure projects and assessing climate change related impacts of fire and flood. Supporters of the McLean Creek Dam recognize the benefits that are obtained from an inclusive water management strategy and project design (including wildfire mitigation techniques, reliable water storage for fire suppression, improved resiliency to structures and nearby lands, drought management, watershed protection, and renewable tourism/recreation opportunities) - that are absent from a “flood-only” development with the Springbank Offsite

Reservoir. The location of the Champion Lake wildfire in K-Country (less than 7 kilometers from the Elbow River and 16 kilometers from Bragg Creek) spells out the continuing wildfire hazards and risks in the GBCA, along with the potential impacts and damages from a significant wildfire. Many see the Champion Lake fire as an early warning sign that should not be dismissed or ignored.

Citizens communicated concerns about wildfire hazards during the course of open houses and information sessions with Alberta Government personnel and consultants. Notably, the Springbank open houses occurred while the May 2016 Fort McMurray wildfire disaster was unfolding. (22, 23) It was apparent at that time there was no consideration of addressing the GBCA wildfire hazards and potential wildfire risk mitigation in the flood protection decision process - and weighting in the cost/benefit analysis of the various options.

Planning for the Future

Preventative measures are a core element of the Department of Agriculture and Forestry wildfire management strategy. The MC1 project would assist with these objectives, which are consistent with the recommendations contained in the independent expert reviews of the Fort McMurray disaster. The MC1 Dam will provide enhanced fire prevention, suppression, and improved resiliency with a legacy asset benefiting Provincial, First Nations, and private lands and structures, along with related infrastructure. Failure to consider all these benefits represents a lost opportunity to enhance the safety of the Greater Bragg Creek Area which has significant “Values at Risk”, at a time when wildfire hazards are well established.

The McLean Creek Dam offers the following benefits that are not available with the SR1 Option:

1. **Suppression:** The McLean Creek Dam and permanent reservoir provides a **reliable, stable source of water for fire suppression** to serve the GBCA. Experts have a range of views on the impacts of climate change, with variability in water supplies being one of the anticipated effects. The dam reservoir would provide benefits during low flow and/or drought conditions (which commonly occur coincidentally with high/extreme wildfire conditions).
2. **Prevention:** The **relocated K-Country camping and outdoor facilities should be designed to employ leading FireSmart techniques as a proactive measure to reduce the overall wildfire hazard in K-Country.** An investigation of the potential use of the **MC1 Dam reservoir as a firebreak and assisting with developing defensible fire positions** in K-Country to limit the fire risk should be performed.
3. **Resiliency:** Reduction of the wildfire hazard in the vicinity of the McLean Creek Dam would also lower the overall hazard in the K-Country Elbow River Valley. The adjoining lands in **Rocky View County, MD of Foothills, and Tsuut’ina Nation would be beneficiaries of reductions in the fire hazards in K-Country** and improve their resiliency to wildfires. These benefits would assist with **protecting the Elbow River watershed**, which provides potable water to over 400,000 Albertans. (15) In addition, the **reduced potential for wildfire smoke** would minimize associated health concerns with air quality in the Calgary region.
4. **Cost Effective:** There are **expected to be nominal incremental costs in the McLean Creek dam to provide the described wildfire mitigation, suppression and resiliency benefits.** The resulting benefits from improved wildfire protection would further increase the advantages in a MC1 Dam cost/benefits analysis over SR1. The reservoir would also enhance tourism and recreation opportunities that provide renewable economic benefits.

Impact Assessment Agency of Canada (IAAC) Action

We respectfully request that the IAAC review the points raised in this submission with the Applicant. The issues of regional wildfire hazards, mitigation, suppression and resiliency have not been factored into the decision process surrounding the SR1 and MC1 flood mitigation projects. While it may be difficult to directly quantify the benefits of MC1 that are outlined above for wildfire issues, the losses incurred at Fort McMurray and Slave Lake disasters provide some guidance to the benefits. It is expected the costs for including wildfire protection are for the most part already included in the estimates of the MC1 Dam, and present nominal incremental expenses.

Dr. Flannigan, a professor of Wildfire Science in the Department of Renewable Resources at the University of Alberta, authored a column in the Calgary Herald dated May 5, 2018 that described the need for additional research funding on wildfire sciences in Canada, and mentioned **“Wildfire is a serious problem in Canada. Social and economic impacts are huge and growing. Trauma of losing your home to wildfire can be significant and long lasting.”** (24)

Dr. Flannigan went on to say: **“Bottom line: we can expect wildfire and society to continue to intersect, with disastrous results. However, there are things that we can do to make our communities more fire resilient and reduce the likelihood of a catastrophic fire.”** (24)

The Elbow River Sustainability Alliance submits that the MC1 Dam provides a unique, cost effective opportunity for the GoA to take a leadership position to combine flood and fire protection into a legacy asset. The MC1 dam provides benefits that cannot be achieved with the SR1 project - improving the resiliency of our forests and adjoining lands, protecting the Elbow River watershed, and enhancing the safety of Albertans to fire and flood threats. Potential beneficiaries of incorporating enhanced wildfire protection alongside flood mitigation at McLean Creek include:

- Thousands of residents, workers, tourists, and recreational users in the Greater Bragg Creek Area
- Over 1,500 residential, commercial, community, and public structures on lands in Kananaskis Country, Rocky View County, Foothills County, and Tsuut’ina Nation (including the Hamlet of Bragg Creek and Town of Redwood Meadows)
- Three outdoor non-profit camps providing outdoor experiences for thousands of children and disabled persons
- The Tsuut’ina Pow-Wow & Rodeo Grounds which annually draws thousands of attendees for a keynote cultural event and gathering
- Related infrastructure including power, communication, water utilities, and roadways
- Commercial activities including tourism, ranching, service sector, lumber, and oil and gas
- Surrounding areas and communities affected by adverse impacts on the Elbow River water quality and reduced air quality from smoke

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