**Introduction**

Due to climate change, Kelowna’s precipitation increasingly deviates from monthly averages, with some months receiving much less than average, and others much more. Moreover, summer months are seeing higher than average temperatures more frequently. June-August 2021, for example, saw record-breaking heat, and unexpected dryness, while contrastingly, this June’s rainfall and melting snow pushed a large local creek, Mission Creek, approximately within a metre of overflowing.

**Statement of Problem**

Unexpected, dangerously hot and dry temperatures, and Mission Creek potentially overflowing create two dangers respectively: water scarcity, and damage to private properties. Water scarcity reduces living standards, threatens sufficient irrigation of wineries and other agriculture, and inhibits the city’s population expansion. These effects reduce the city’s desirability for prospective residents and businesses, diminish economic prosperity, and limit growing the city’s revenue, which could be used to create and upgrade infrastructure or amenities.

Meanwhile, Mission Creek flooding could potentially over-irrigate nearby farms, and flood nearby homes, while putting those who walk by the creek at higher risk of falling in and drowning from the fast, deep current. While walkways serving as dikes line most parts of the creek in city limits, and marshes attached to the creek lower its water level, these measures seem insufficient for mitigating a worst-case overflow scenario. Additionally, these measures do not take advantage of the creek as a water source when it is abnormally high, which is a shame considering Kelowna summers are frequently becoming hotter and dryer.

**Proposed Solution**

To determine the measures available for managing a high creek water level and droughts, I would compare the feasibility of heightening Mission Creek’s dikes with installing a series of water pumps. Heightening the dykes could prove an inexpensive solution, as it would only require dirt, gravel, trucks, and a construction crew to effectively spread and pack the dirt and gravel, while allowing for the creek to reach higher levels without causing flooding or endangering those who use the walkways. For further security, the dikes could be reinforced with concrete.

Contrastingly, installing one or more water pumping stations along the creek could be more expensive, but would allow using the creek as a water source, helping mitigate droughts while reducing the water level, as the city would have access to more water. The water pump could either only activate when the creek is exceedingly high, thus utilizing its excess water, or used more frequently on the advice of water conservation experts. The downside of this solution is it only works as long as the creek is not low or dry.

**Scope and Methods**

To compare the feasibility of these two solutions, I will answer the following:

**Scope and Methods (Cont’d)**

* Which event concerns citizens more?
* How expensive is each solution, including maintenance costs?
* Would the solution bring the desired outcome?
* Would citizens approve of either of these solutions?

To answer these questions, I would research the solutions’ costs, and effectiveness, while gathering citizens opinions through an online survey. The results of my research and survey would then be discussed in a formal comparative report, which would conclude with recommending the optimal solution based on my research and survey data.

**Qualifications**

I am a resident of Kelowna, however, my home is far enough away from Mission Creek that it is extremely unlikely to suffer damage from the river overflowing. This puts me in the right position to be engaged but still objective, as I am a member of the community, but not under immediate threat or pressure.

**Conclusion**

Drought and flooding exacerbated by climate change are concerning issues for Kelowna, but there are potential solutions to these problems whose cost-effectiveness, and popularity need to be researched. The water pump solution especially, if properly implemented, could maintain Kelowna's current living standards and economic activity concerning wineries and agriculture, despite increasing frequency of droughts in the area due to climate change. With approval, research into these solutions’ feasibility could begin immediately.