



REGIONAL ADAPTATION ENHANCEMENT PROGRAM | PROJECT SUMMARY

# Salinity Study Forecasts Future of Agricultural Water in Delta

**U**NDERSTANDING, AND ADAPTING TO, the potential impacts of climate change on salinity levels in the Fraser River is essential for the future of food production in Delta. A new study that models the effects of climate change and dredging on irrigation water helps to assess the risks and inform planning and decision-making for farmers and government alike.

Delta farmers are dependent on irrigation drawn from the Fraser River to grow their crops. This irrigation water is brought in through carefully managed intakes on the river, filling a network of irrigation ditches before being used on the fields. Salt water has always flowed up the river at high tide and the irrigation intakes are managed accordingly. However, climate change is expected to result in lower volumes of water flowing downstream during summer, as well as rising sea levels. This combination is anticipated to result in the “salt wedge” pushing further up river in the future, in turn posing a management challenge with the agricultural water supply and creating the risk of contamination from salt water.

PROJECT	<i>Fraser River Salinity Modeling and Monitoring</i>
LOCATION	<i>Delta</i>
COMPLETION	<i>2016</i>
PROJECT LEAD	<i>Delta Farmers’ Institute</i>
FUNDING PARTNERS	<i>Agriculture and Agri-Food Canada, BC Ministry of Agriculture, Corporation of Delta</i>

“Without good data, we would just be speculating that we think salinity is going to get worse with climate change and dredging,” says Bruce May, a cranberry farmer and Chair of the Delta Farmers’ Institute’s (DFI) Committee on Irrigation and Salinity. “If we have a model that can show us what is going to happen with different scenarios, we can adjust and maybe change our intake operations. It is always good to be able to anticipate problems.”

The Delta Farmers’ Institute and the Corporation of Delta partnered with the BC Agriculture & Food Climate Action

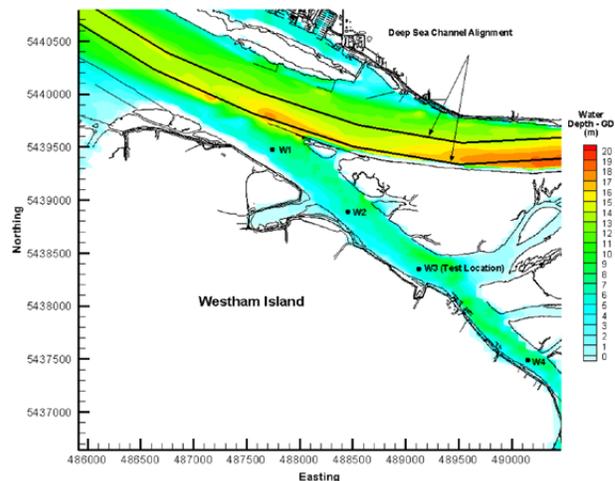
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Initiative (CAI) to commission a study on the potential impacts of climate change and dredging on salinity in the Fraser River. The study uses hydraulic modeling to predict and analyze salinity levels based on low river flow and sea level rise scenarios.

The study identifies long-term and near-term impacts on salinity by modeling the number of hours per day (24-hour period) that water would be of sufficiently low salinity that it could be used for irrigation. With the current intake at 80th Street, the daily water availability ranges between 24 hours, for normal and wet years, to four hours for a dry year.

Looking at near-term impacts over the next 10 to 25 years, the study projects that increasing sea level rise of 0.3 metres could reduce daily irrigation water availability under low river flows by up to 25 percent. During periods of more extreme low flows, sea level rise impacts are anticipated to further reduce irrigation water availability windows. Longer-term (50–100 years), the modeled impacts of the salt wedge become increasingly severe with respect to irrigation water availability. In all cases (near and long term) increased dredging levels are expected to have substantial effects on irrigation water availability.

“It is quite useful to see what the modeling brought out, particularly with regards to the potential adjustment to Fraser River flows and the points at which that becomes critical,” says Hugh Fraser, Deputy Director of Engineering at the Corporation of Delta, who manages the team responsible for monitoring and maintaining the irrigation system. “Long dry summers could be really problematic from an irrigation perspective, because there won’t be enough fresh water to keep the salt wedge out. With a 0.3 metre sea level rise, combined with dredging, the salt wedge would move quite a bit further upstream, and it would result in salinity becoming more persistent at the 80th Street irrigation intake.”



For Delta farmers, the study is a call to action and serves as a foundation upon which further work will be done.

“This is the future of farming. With this study, we now understand each of these issues and the sensitivity that the salt water wedge has to the different variables we are facing,” says May. “The next phase of work, increasing the monitoring of salinity levels in the River, will tell us under which circumstances we can expect to have a problem.”

Projects like this are part of the work being delivered by the BC Agriculture & Food Climate Action Initiative. CAI develops tools and resources to assist BC farmers and ranchers with adapting to impacts of climate change. CAI’s Regional Adaptation Enhancement Program provides up to \$300,000 to implement priority projects identified in each regional adaptation strategy.

[www.BCAGClimateAction.ca](http://www.BCAGClimateAction.ca)

*The BC Agriculture & Food Climate Action Initiative (CAI) was launched in 2008 by the BC Agriculture Council to enable a proactive and pan-agriculture approach to climate change issues. CAI is currently supported by the BC Agricultural Research & Development Corporation and the Investment Agriculture Foundation of BC, with funding provided by the Governments of Canada and British Columbia through Growing Forward 2, a federal-provincial-territorial initiative.*

