

To: Regional and Corporate Services Committee  
From: Lance Lilley, Manager of Environmental Services

Date: 2020-12-08  
File No: 2320-83-001

**Subject: Nuisance Mosquito Control Program 2020 Year End Report**

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### INTENT

This report is intended to advise the Regional and Corporate Services Committee of information pertaining to 2020 mosquito control season. Staff is not looking for a recommendation and has forwarded this information should members want more clarification to discuss the item further.

### STRATEGIC AREA(S) OF FOCUS

Support Environmental Stewardship  
Support Healthy & Sustainable Community

### PRIORITIES

Priority #3 Flood Protection & Management

### BACKGROUND

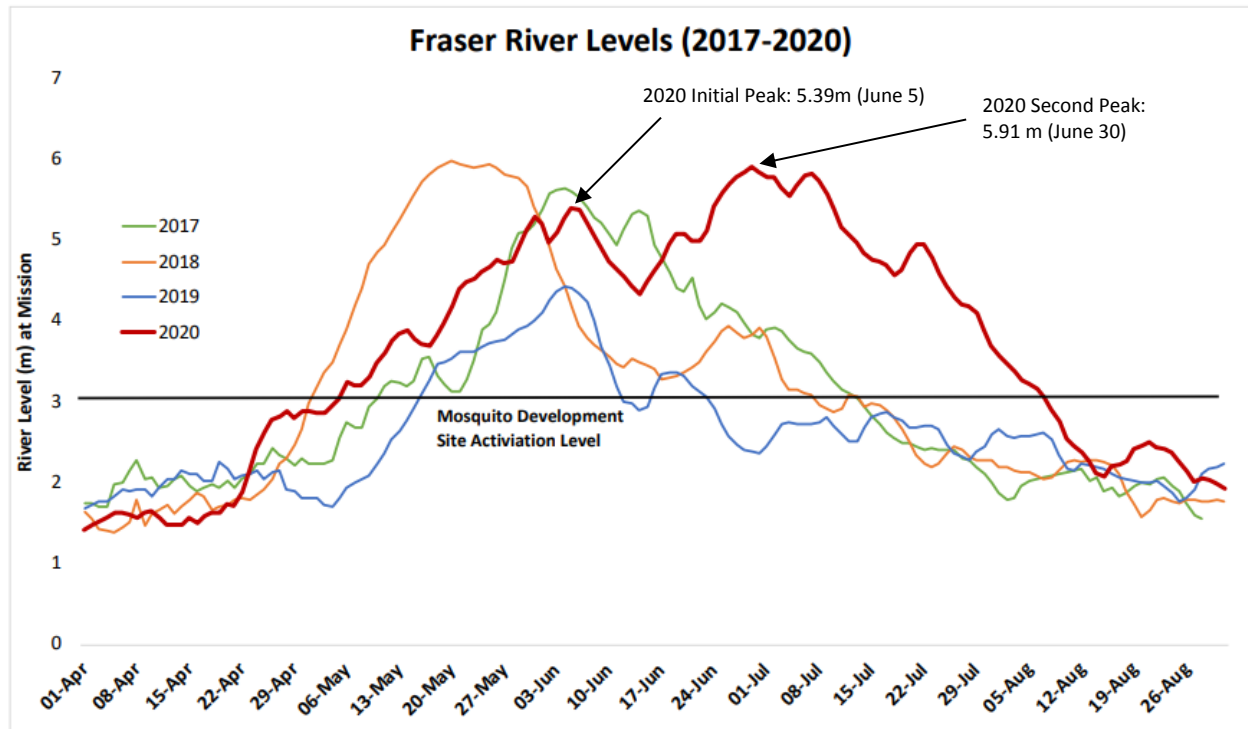
As part of the Fraser Valley Regional District (FVRD) Floodwater Mosquito Control Program, the FVRD conducts thorough monitoring and larval treatments each spring and summer. The FVRD's contractor for this service, Morrow BioScience Ltd., has submitted a year-end report summarizing its efforts during the 2020 mosquito season.

### DISCUSSION

2020 provided challenges for mosquito control all across the Province where floodwater mosquitoes are an annual problem, including in the Fraser Valley. The large amount of late-season snow in the upper portions of the Fraser River watershed and the local precipitation experienced in May and June contributed to a Fraser River freshet in the Fraser Valley that peaked higher than normal, peaked later than normal, and remained at elevated levels for a significantly prolonged period of time. This continued high water level as the days became warmer created ideal mosquito breeding conditions, especially when combined with a second peak of the river that flooded more mosquito breeding habitat than the first peak.

In 2020, the Fraser River peaked initially on June 5th at 5.39m. This is approximately normal for both timing and river level, and if river levels declined following this peak it would have resulted in relatively typical mosquito larvae activity levels. The slow and continual melt of snow in the upper river basins that accumulated in April, May, and June this year kept Fraser River levels elevated though, and rather

than dropping, instead caused a second river peak to occur on June 30<sup>th</sup> (5.91m). These conditions necessitated repeated and wide-spread larval treatments.



**Figure 1.** Fiver River levels (m) recorded at the Fraser River (Mission gauge, 08MH024) as reported by the River Forecast Centre: 2017-2020. Mosquito larvae typically start to become active when river levels exceed 3m (i.e., when above the black horizontal line).

Monitoring for larvae activity began at the end of April and the first larvae treatments occurred in early May. Treatments were then repeated, both by ground and by helicopter, up until August 17<sup>th</sup>, much later than treatments are usually required. As comparison, the final treatment in 2019 was conducted two months earlier, on June 21. The final treatment that was needed in 2018, a year that reached a comparable peak river level, was almost six weeks earlier. The lateness of the hatch meant that the adult mosquitoes unfortunately persisted throughout the summer, whereas usually they begin to decline in abundance in early July, if not sooner.

In total, 19,935 kg of granular *Bacillus thuringiensis israelensis* (Bti) as well as 70,000 ml of liquid Bti was applied in 2020. 2,446 hectares of mosquito breeding habitat was treated. This was the largest amount of area treated, and the most Bti required, since prior to 2009. During 2012, another bad mosquito year due to peak flows on the Fraser River that year that reached 6.4 m and caused localized flooding within the region, only 14,489 kg of pesticide needed to be applied over a total of 2,012 hectares of mosquito breeding habitat.

Based on post-treatment monitoring data collected, each time Bti is applied it reduces the number of mosquito larvae by 85-95%. Based on the extremely high larvae abundance in 2020, despite the intensive treatment effort, the remaining 5-15% of surviving larvae that hatched into adults were

enough to cause unfortunate annoyance in many lowland areas near the Fraser River. As a result, 130 calls were received on the Mosquito Hotline this year, up from only 4 in 2019.

In addition to the water level and the abundance of active mosquito larvae, Covid-19 provided some additional challenges this year. Due to the restrictions on social gatherings and in-person contact, our contractors replaced their usual community outreach efforts with added information on their website and increased social and traditional media presence. The contractors also had to ensure worker safety by reducing the number of people permitted in company vehicles, their boat, or in the helicopter during aerial treatment campaigns. Due to the experience of the crew and the pilot however, these limitations are not believed to have significantly impacted the treatment efficacy. In addition, due to the large amount of Bti used this year and some challenges in bringing additional supplies up from the US due to the pandemic, there was some concern about product shortages. Morrow BioScience was able to eventually secure sufficient volumes from elsewhere in BC and obtain an adequate amount needed for our region.

While it is hoped that 2020 floodplain mosquito conditions in the Fraser Valley remain an anomaly and that 2021 conditions will be better, our contractors will be prepared to provide the necessary monitoring and treatment to keep mosquito abundances as low as possible. Morrow BioScience is pre-ordering Bti early in the year to ensure its timely arrival, and will have Covid safety policies already in place next year. An additional adult mosquito monitoring trap will also be installed in northwest Abbotsford to better track species composition and relative mosquito abundance. This new trap will complement the other trap in Abbotsford (at the JAMES plant), as well as the traps in Hope, Agassiz, Mission, and Chilliwack.

## **COST**

Due to the unforeseen costs needed this year for pesticide and repeated treatment applications, total expenditures (including staff time) associated with the program in 2020 will be approximately \$444,000. This exceeds the amount budgeted for 2020 (\$393,000), with the estimated deficit of \$51,000 carried forward into 2021 due to a lack of surplus funds in this account. With recent budget increases, it is expected that the surplus account will be able to be replenished over the next 2-3 years, allowing for greater ability to absorb the added costs needed for high water years that require additional mosquito treatments.

## **CONCLUSION**

Prolonged and late season high water events contributed to an ideal mosquito breeding season in 2020. In response to this, treatment efforts were increased to cover more area and utilize more pesticide than had been done in the recent past. COVID-19 provided additional operational challenges, but were able to be mitigated.

## **COMMENTS BY:**

**Stacey Barker, Director of Regional Services:** Reviewed and supported.

**Kelly Lownsborough, Chief Financial Officer/ Director of Finance:** Reviewed and supported.

**Jennifer Kinneman, Chief Administrative Officer:** Reviewed and supported.