

Air Pollution Monitoring in Coldstream, Lumby and Vernon, BC

Air pollution is known to be the cause of several negative health outcomes including increased incidence and severity of asthma, heart disease, and cancer. The Coldstream area has several air pollution challenges owing to its unique topography (it being a narrow-constrained valley), the seasonal occurrence of weather inversions that tend to trap emissions in the valley, and emissions from industries and residential wood burning appliances. Lavington LIFE Society, in partnership with the District of Coldstream, has assembled and continues to build upon a network of air pollution monitors so that residents can make informed decisions regarding health risks associated with outdoor activities. This document describes the Coldstream Air pollution monitoring network.

A predominant form of air pollution in the Coldstream Valley is particulate matter that is a product of combustion. Particulate matter is classified by size, with the smallest of particles being less than 2.5 microns in diameter (known as PM2.5); that which is less than 10 microns is referred to as PM10. While both produce negative health outcomes, the smaller particles are more harmful because, once inhaled, they can diffuse through one's lungs and enter a person's bloodstream. While there is no known lower safe limit to the concentration of PM2.5, the BC provincial government has set Air Quality Objectives (AQO) in relation to this pollutant. They are $8 \mu\text{g}/\text{m}^3$ (micro-grams per meter cubed) when averaged over the course of a year; and $25 \mu\text{g}/\text{m}^3$ based on a 24 hour rolling average. A practice of the BC Ministry of Environment (MOE) has been to issue air quality advisories when PM2.5 concentrations exceed the 24 hour AQO. Unfortunately, the MOE has removed their air pollution monitoring instrumentation from Coldstream; thus, the best and only information regarding air pollution levels in the Coldstream area is the "Purple Air" network, described in the following paragraphs.

Lavington LIFE Society, with the gracious financial assistance of the District of Coldstream, has acquired and installed air pollution monitors at residences in the Coldstream Valley. These monitors measure PM2.5 and PM10 concentrations and the results of these measurements are displayed on a map (as per the example shown in Figure 1, below) and can be viewed in real time at this link [Purple Air Map](#).

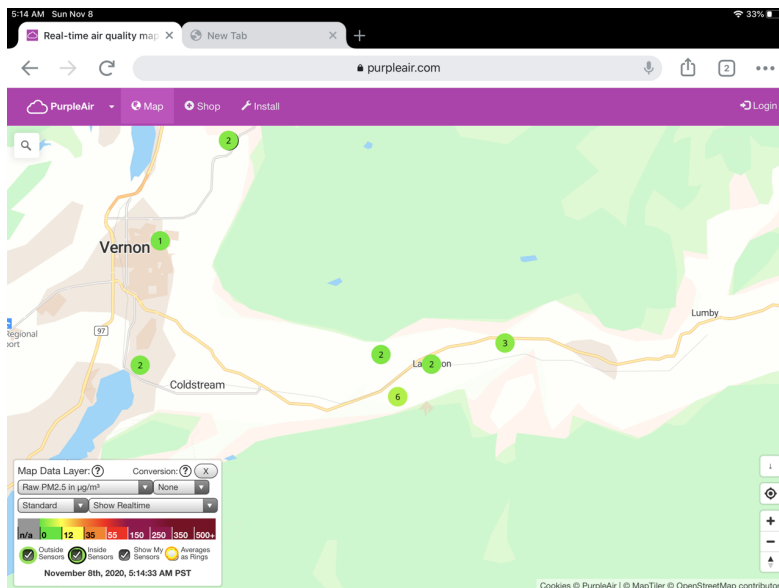


Figure 1. Measurements of PM2.5 concentrations in $\mu\text{g}/\text{m}^3$, on a clean air day.

The PurpleAir Map site presents several options for viewing data. For an apples-to-apples comparison to the BC AQOs, it's best to view the data in units of "Raw PM2.5 in $\mu\text{g}/\text{m}^3$ ", which can be selected from the legend that appears in the bottom left corner of the map. These data can also be viewed as averages over time periods that vary from real time to 24 hours, as well as yearly averages. An example of Purple Air measurements in the Coldstream Valley on a poor air quality day is shown in Figure 2 below.

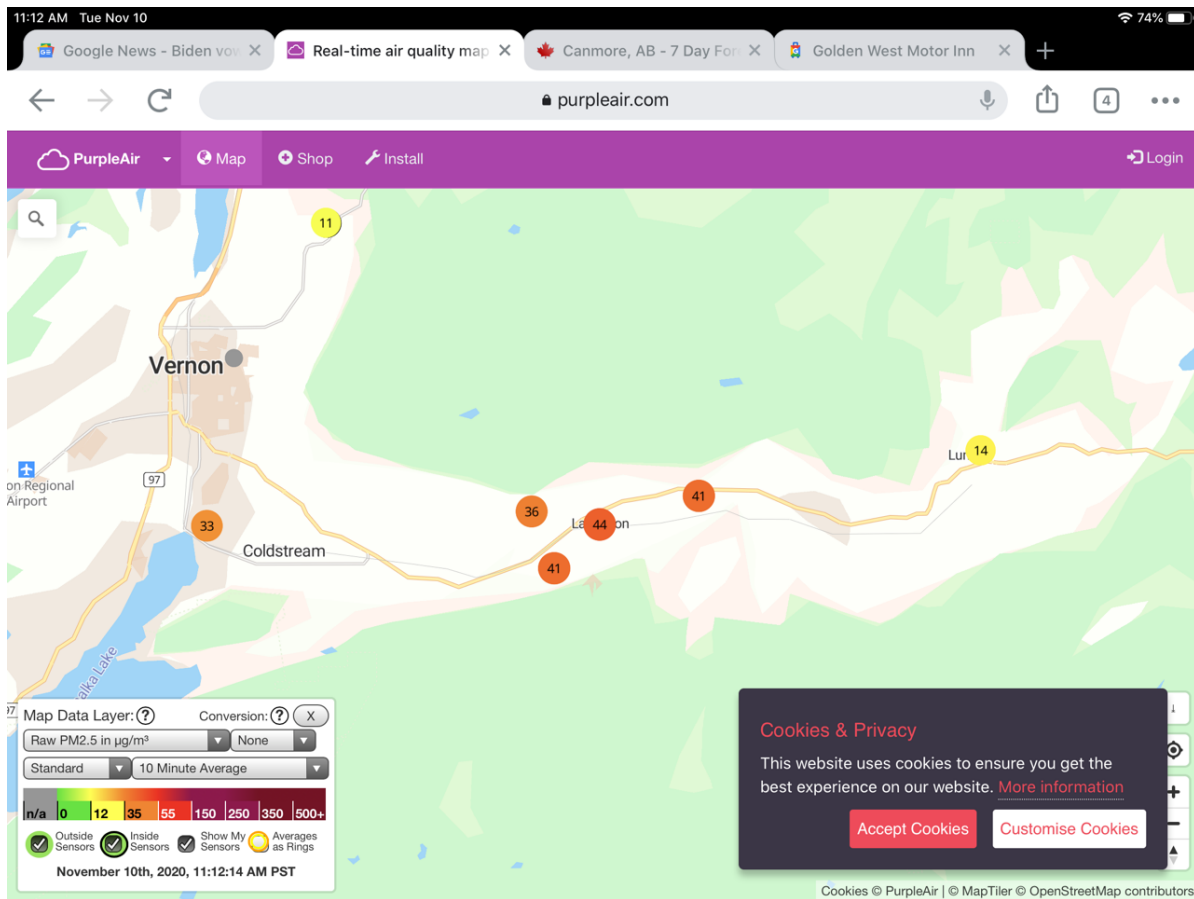


Figure 2. Coldstream Valley PM2.5 concentrations in $\mu\text{g}/\text{m}^3$ (10-minute average).

For more information regarding the PurpleAir Monitoring network, including how to acquire monitors for home use, is available on the PurpleAir website or by contacting Lavington Life at lavingtonlifesociety@shaw.ca.