



STREAM FLOW TIMING

What does this measure & why is it important?

This indicator compares median half total flow dates for the past 20 years (1992-2011) with those of the preceding 20 year period (1972-1991). 'Half total flow date' refers to the day of the year when half of the total annual volume passes through a monitoring station on a stream. Twenty-seven active Basin Boundary monitoring stations measuring unregulated flows were included in the calculation. Raw data were gathered from the [Water Survey of Canada](#).

Stream flow timing influences the ecological processes in each stream and the availability of water for human use. A trend to earlier half total flow generally suggests longer periods of low flows in the late summer and fall. In addition to impacts on human use, low flows can contribute to higher water temperatures with implications for species that require cold-water habitats.

What are the trends & current conditions?

Stream flow monitoring data indicates that half total flow dates in the region have generally shifted earlier over the past 40 years, but that the magnitude of that shift is small. The average median date of half total flow for the years 1972-1991 was the 13th of June and, for the years 1992-2011, the 12th of June. Sixty-three percent of monitoring stations showed earlier median half total flow dates and one third showed later half total flow dates. One station showed no change (Figure 1).

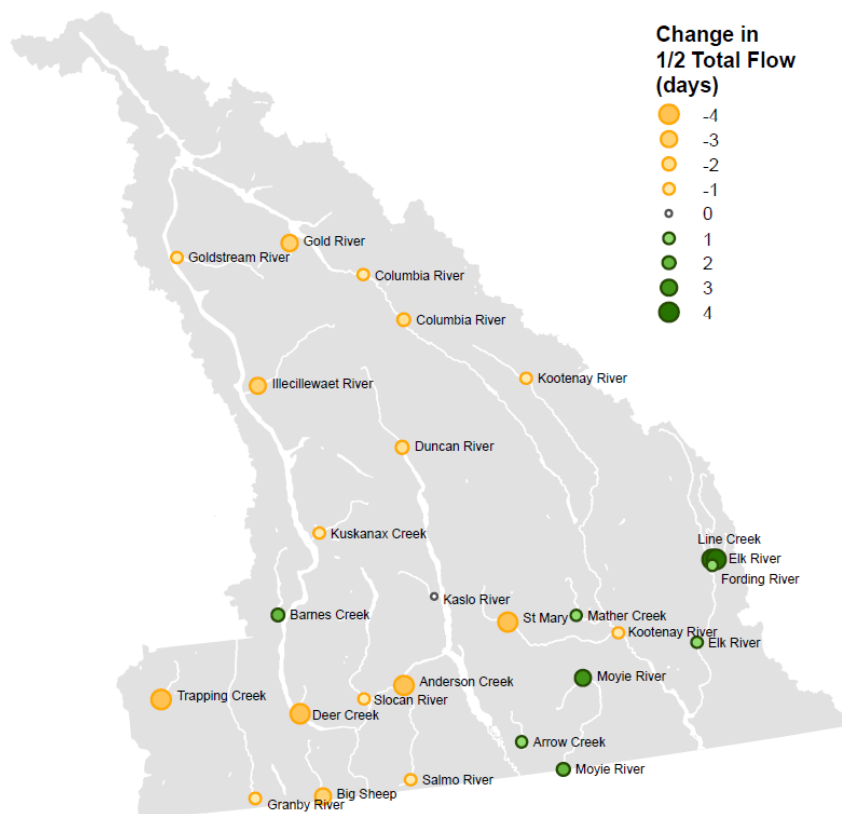


Figure 1: Change in 1/2 Total Flow Date, 1972-2011

Source: Environment Canada, 2013a

These findings generally support past studies suggesting that the timing of flow in our rivers is shifting earlier. However, some of these past studies imply a more dramatic rate of change than is supported by this analysis. For example, one study found that, in South Central BC, including the Columbia Basin, spring freshet occurred 20 days earlier over the period 1984-1995 as compared to the period 1970-1983 (CBT, 2007). Since stream flow timing is highly dependent on weather, which

can change dramatically from year to year, analyses using relatively short timelines should be expected to produce varying results. In addition, different types of analysis (e.g., half total flow vs. peak flow) can generate different results. Long-term tracking of flow data will provide a more reliable indicator of change over time.



The Columbia Basin Rural Development Institute, at Selkirk College, is a regional centre of excellence in applied research and information provision focused on strengthening rural communities in the Columbia Basin-Boundary Region. Visit www.chrdi.ca for more information.