

Village of Montrose 2009-2013 data review and actions summary

Results to date

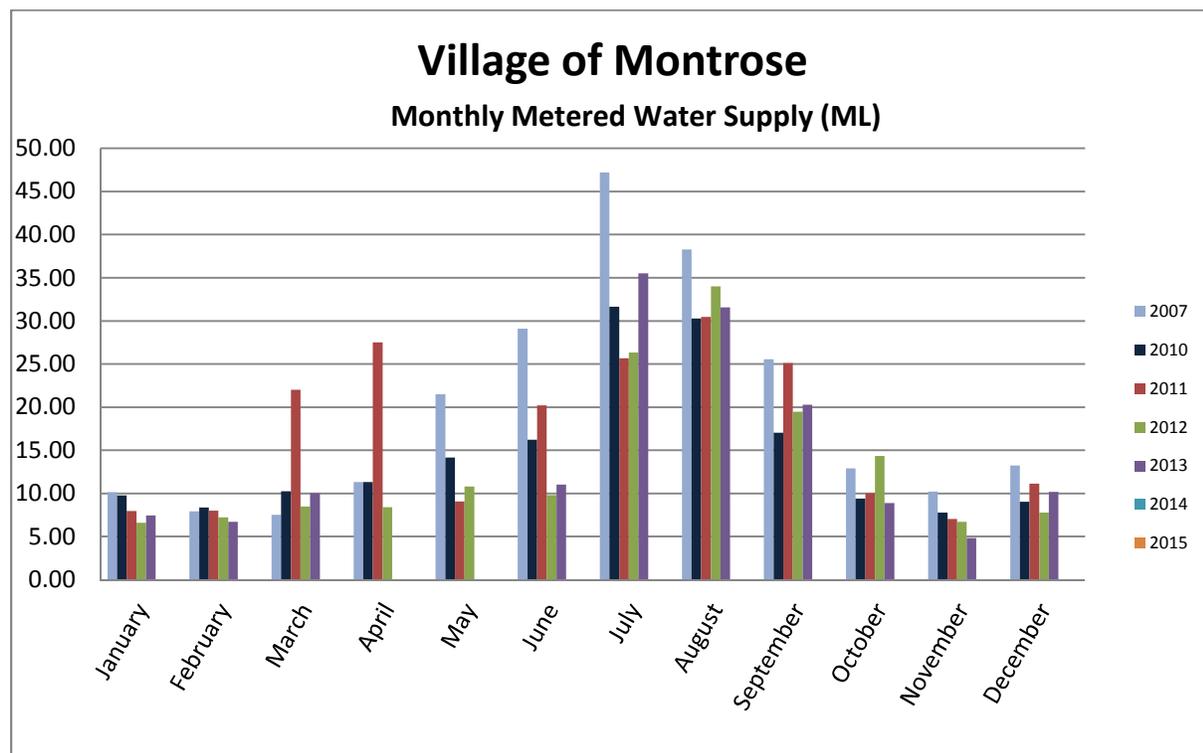
- MONTROSE: Water savings from 2009 to 2013 for the Village of Montrose cannot be confirmed due to limitations in data quality. Montrose’s 2015 water conservation target is 7%.
- Data from the Village’s new gross supply meter is not yet reliable – accurate data should be available for 2014. In addition, the Village was connected to the Beaver Falls water system for April and May in 2013, significantly skewing total demand data.
- WATER SMART: From 2009 to 2013, Water Smart communities have reduced gross annual demand by an average of 8% and a total of 10%. See www.cbt.org/watersmart for more information.

Primary Drivers of Success to Date:

- Implementation of the Water Smart Ambassador program from 2011-2013
- Improvements to the quality of gross supply data, and completion of the Village’s Industrial, Commercial, and Institutional (ICI) water metering program and draft ICI metering bylaw.
- Incremental implementation of a sustainable water loss management program by utility operators.

Primary Opportunities for Improved Water Use Efficiency

- Continued improvement to water system data availability and accuracy including, source meter upgrades and adoption of the draft mandatory ICI metering bylaw.
- Ongoing implementation of a sustainable water loss management program.
- Continued implementation of programs targeting outdoor residential and municipal demand reductions.



Note: These averages are derived from the information currently and historically available to staff. It is known that the source meters have been under registering and/or historical records are not available for a number of years including since the beginning of the Water Smart Initiative. Confidence in data will increase in 2014 with availability of quality data from the new source meter. Data from Montrose has therefore not been included in the overall Basin average calculations.

Indicator	Montrose					Basin-wide ¹ 2013	B.C. ² 2009
	2013	2012	2011	2010	2007		
Total Average Daily Flow (Total water use / service population)	467 lpd	Unknown	Unknown	Unknown	Unknown	972 lpd (average)	606 lpd (average)
Average Residential Demand (Indoor + outdoor)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	353 lpd
Average Residential Demand ³ (Indoor only)	Unknown	Unknown	Unknown	Unknown	Unknown	230 lpd (estimate)	Unknown
2015 water conservation target	-7%	-7%	-7%	-7%	-7%	-20%	n/a
Change in gross demand from 2007	Unknown	Unknown	Unknown	Unknown	Unknown	-10%	n/a
Change in gross demand from 2007	Unknown	Unknown	Unknown	Unknown	Unknown	-3008 ML	n/a

Summary of notable data findings from Montrose's 2013 water data and reports

- The 2009 ground water protection plan (GWPP) states that the Montrose aquifer is a reliable and adequate source of water for the Village.
- Further, the Village appears to have a lower than average per capita demand despite an extreme summer peaking factor (7x more water in summer than in winter), as well as apparently low leakage in the distribution system.
- Together, these factors may be interpreted to suggest that water conservation is not an urgent priority for the water utility at this time. ***This assumes both that the GWPP and the source meter data accurately present the Village's supply and demand realities, AND that there are no opportunities for water or waste water treatment infrastructure deferral or operational cost savings that could be realized by lowering total and peak demand.***

¹ Including the 17 of the 23 participating Water Smart communities; data known to be unreliable or unavailable has been omitted from the overall analysis.

² Environment Canada. pp. 6. 2011 Municipal Water Use Report. Municipal Water Use 2009 statistics.

³ Note: 350+ lpd is considered a "high use home"; 200 lpd would be the expected demand in a home built to current building code standards; and 150 lpd is considered an achievable conservation target for indoor per capita water demand in BC.

- **In Montrose, water conservation is first and foremost about the responsible maintenance of municipal infrastructure** – by minimizing water consumption and water loss (leakage) it is possible to extend the lifespan of existing infrastructure and minimize the operating cost of the utility.
- Notwithstanding the comments above, data gathering and analysis improvements remain a top priority for the Village of Montrose.
 - The gross supply data provided for 2013 is insufficiently accurate to assess progress toward water conservation targets or to support optimal utility operations. Inaccurate and missing source meter data has compromised the Village’s ability to quantify water demand since 2009. Accurate source meter data should be available for the second half of 2013 and 2014.
- Further, despite a lower than BC average per capita annual demand, the Village has an extreme peak in summer water demand. Reducing the utility’s peak demand would generate operational cost savings from reduced pump times and energy costs. Peak demand is driven by both residential and municipal irrigation practices.

2009 Water Smart Action Plan objectives, actions taken, and results

Objective 1: Implement proven strategies for reducing outdoor water demand

- The Village of Montrose has opted to put the Water Smart Ambassador program on hiatus due perceived “market saturation” with the Program.
- Given the overwhelming majority of residential connections in Montrose, residential demand reductions remain a significant opportunity for water demand savings in Montrose, followed closely by municipal irrigation reduction.

Objective 2: Build on the current leakage detection program with improved data.

- In 2014 SCADA improvements will be implemented to include automatic collection of night time flow data.
- Completed installation of a new supply meter in 2013. Start collecting data as soon as possible for complete records.
- While the current condition of water loss in Montrose is good, it is important to keep in mind that water loss management is an ongoing operational priority for every water utility. In the absence of a water loss management program, it can be expected that leakage will increase over time, which speeds the rate of infrastructure decline and increases operating costs for the utility as a whole.

Objective 3: Implement a phased in metering approach.

- The Village installed meters at the remaining three commercial connections in the fall of 2013. All existing ICI connections are now metered and the data is being collected monthly.
- The water connection to the WWTP was also located and a meter will be installed in a pit in 2014.
- Completion of a draft ICI metering bylaw requiring installation of a meter on all *new* ICI connections.
- The completion of these two items will give ensure that the Village maintains a now-complete data set for the ICI sector, which will significantly improve the accuracy of future water balance calculations, and thus the efficiency of long-term water utility operations.

Objective 4: Coordinate energy, pumping, storage, and watering restrictions to reduce utility costs and secure fire flows.

- Ongoing engagement with Fortis BC is required as/when rates and off-peak hours change.

Summary of required revisions to Water Smart Action Plan based on data analysis and spring meeting

- It is recommended that a revised water balance be developed in 2015 using 2014 data sets. New data to be included in a refined water balance includes: reliable source meter data; a residential per capita demand estimate; night flow data; and Industrial, Commercial, Institutional (ICI) data. A revised water balance will support improved decision making in the areas of public education and water loss management.

Summary of recommendations for action based on data analysis and spring meeting

Keeping in mind that a careful cost/benefit analysis must be undertaken prior to any investment in water demand management activities in Montrose, the WS team is recommending that the following actions be implemented in the foreseeable future. Many of these recommendations are preventative in nature, and are, therefore, integral to a sustainable approach to water utility asset management.

Water Loss Management and water demand data collection

- While water loss appears relatively low in Montrose, water loss management must be understood as an ***ongoing operational best practice*** that needs to be implemented consistently and persistently as part of normal utility operations. It is, therefore, recommended that the Village should develop a long term water loss management plan that will ensure maintenance of low water loss, which will in turn extend the life of the water utility's existing infrastructure.
- A WLM plan must include, at minimum:
 - a workplan for the collection and analysis of night flow data at minimum 2x/year (spring and fall) to evaluate Current Annual Real Losses (CARL), Infrastructure Leakage Index (ILI) and to inform planning of necessary infrastructure repair and replacement;
 - consistent and persistent analysis of all available water utility meter data (source and ICI meters);
 - periodic, planned calibration of all meters;
 - a water meter replacement plan, with budget allocation;
 - a dedicated team to implement the plan.
- The Water Smart Engineer is available to provide support on developing an ILI calculation once night flow analysis data is available. Night flow should be completed by ensuring the pumps are turned off at night and recording the draw down in each reservoir between 12-4am.
- Completion of the ICI data set is a significant improvement for Montrose's water utility. In order to protect the value of the investment into the existing meters, it is imperative that Council proceeds to adopt the corresponding draft ICI metering bylaw prepared in 2013.
- It is essential that all of the Village's ICI meters are read on a consistent basis – whether monthly or quarterly. Precision and consistency in the reading periods is necessary in order to be able to accurately identify trends and changes in both the total demand for each period, as well as for each individual connection.
- By completing improvements to metering at the source, as well as completing the ICI metering, Montrose may be in an improved position with respect to eligibility for Provincial grant funding.

Outdoor demand reduction

As noted above, The Village of Montrose has opted to put the Water Smart Ambassador program on hiatus due perceived "market saturation" with the Program. However, given the extreme peak in

summer demand, and the overwhelming majority of residential connections in Montrose, residential demand reductions remain a significant opportunity for water conservation in Montrose, followed closely by municipal irrigation reduction.

- The Water Smart Team recommends that the Village could consider a cyclical approach to delivery of face to face irrigation education for residents (e.g.: deliver outreach for 2-3 consecutive years in every five years). The previous partnership approach taken with nearby water utilities proved to be cost effective, and should be considered in future.
- Village staff should participate in 2014 irrigation best practices training hosted by Water Smart.
- Staff should also carefully analyze all available irrigation meter data on a consistent basis to identify opportunities for demand management.