

Bottled Water in the NWT



Photo Credit: Daniel Orth¹

Background Research Report on Bottled Water Consumption in the NWT

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With support from:

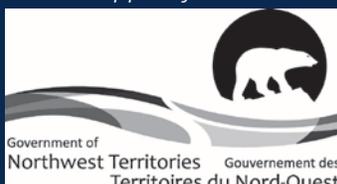


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Background

A key element of the water stewardship program at Ecology North is Canada Water Week (CWW), which is a national celebration of water held annually in the third week of March to coincide with World Water Day on March 22. For the past seven years Ecology North has coordinated various water-related events, visited several classrooms to deliver water-related activities, and has produced multiple water-themed education resources in recognition of CWW (soon to be available through Ecology North's new online environmental education teacher's portal).

As part of CWW 2016, Ecology North focused on bottled water. The global bottled water industry is valued at approximately \$170 billion, and North Americans are among the top consumers². The global market is expected to reach approximately \$270 billion by 2020. The market is growing at a similar pace in Canada. In 1999, the average Canadian consumed 24.4 litres of bottled water per year³. Fifteen years later, in 2014, that number has nearly tripled to 70 litres⁴.

The rapid increase in bottled water consumption has raised a number of environmental and social concerns in Canada and abroad. These concerns largely stem from the negative environmental impacts associated with manufacturing, transporting and disposing of single use plastic water bottles, in addition to the social issues of selling a substance that many consider a 'public good'. Figure 1 highlights some of these concerns.

- The two most popular brands of bottled water in Canada are simply filtered tap water from southern cities⁵
- Bottled water is up to 2,000 times more energy-intensive than tap water⁶
- 125 to 150 mL of oil is needed to manufacture a 500 mL single-use plastic water bottle, fill it with water and transport it to the NWT – enough oil to fill 25-30% of the bottle⁷
- It takes as much as 3 L of water to make 1 L of bottled water⁸
- In the NWT, bottled water can be 275 times more expensive than tap water, and 3 times more expensive than gasoline
- Drinking a 1 L bottle of water every day for a year costs more than \$900
- More than 90% of the cost of bottled water goes to things other than water⁹
- 15% of plastic bottles in the NWT are not recycled¹⁰ and end up in landfills, where they take 450 years to decompose¹¹

Figure 1: What we know about the costs of bottled water

So why do Canadians, among other global consumers, continue to buy and consume bottled water? Considerable effort has been put towards answering this question through consumer preference research. In addition to aggressive advertising by the bottled water industry, many sources cite perceived health benefits, safety, convenience, aesthetics and taste as the primary reasons for consumers choosing to purchase bottled water^{12, 13, 14}. Bottled water

consumption patterns are also found to be impacted by the season, whereby bottled water consumption peaks during the summer months and declines in the winter¹⁵. Several researchers have also investigated the influence of socio-demographic characteristics on bottled water consumption^{16, 17}.

Research Goals

Although there is some background information available that sheds light on where Canada stands with bottled water consumption, there is no public data pertaining to the NWT. At Ecology North we feel this is an important data gap that requires attention as we too have concerns about the environmental and social costs of bottled water that are not always considered by consumers. As such, we used CWW 2016 as an opportunity to learn more about the consumption of bottled water in the NWT.

Two broad goals guided our research aimed at helping to fill the NWT bottled water data gap: 1) to gather baseline information about the amount of bottled water consumed in the NWT in 2014-2015; and, 2) to communicate this new information to the public in an informative and relatable way. It is important to note that we focused our research exclusively on single-use plastic bottled water sales. Flavoured and sparkling water products were excluded from this research, although the bottled water consumption statistics cited in paragraph two of the background section do include all forms of bottled water.

This report provides a brief overview of the research undertaken to achieve these goals. Data collection methods, preliminary results and limitations are discussed in the following sections.

Data Collection Methods

Several data collection approaches were considered in order to fulfill the broad goal of gathering information about bottled water consumption in the NWT. The options considered included an analysis of the NWT Beverage Container Program, an NWT-wide consumer survey, an NWT-wide retailer survey, and a combination of the latter two. Due to a number of factors (i.e., timelines with CWW 2016, limited financial resources, restrictions on data and an expected low consumer survey response rate), we opted to conduct an NWT-wide survey of bottled water sales provided by bottled water retailers. The survey was conducted by telephone and data was provided through both telephone and email. This method was time efficient, budget sensitive and allowed for direct, often instant contact with bottled water retailers across the NWT. Communicating with retailers directly was advantageous for the purpose of the research as most retailers were able to extract their bottled water sales data directly from an inventory system, rather than relying on consumer consumption estimates.

The first phase of the data collection process was to build an inventory of retailers that sell bottled water in the NWT. The intent of the inventory was to capture all of the locations where bottled water is sold in the NWT. Ecology North staff collaborated to identify Yellowknife sales locations, while we relied on community contacts such as community government offices to help identify bottled water sales locations outside of Yellowknife. With the exception of the Yellowknife Multiplex and Fieldhouse, vending machines were not included in the inventory due to data access challenges. Food service vendors (i.e. restaurants) were excluded for the same reason. In total, 26 retailers were identified, representing 55 bottled water sales locations across the NWT. These included large grocery stores, mine commissaries, convenience stores, gas stations and small community stores from across the NWT.

Subsequently, bottled water retailers were contacted for survey participation through email. Retailers were sent the purpose and goals of the research, and were asked to provide data pertaining to their bottled water sales for the year of 2014. They were also asked to describe any unusual circumstances that may have impacted the sales data for the year (i.e., boil water advisory). In some cases retailers asked that the data request be made via email, and thus email was also used as a means of data collection. Data collection activities were ongoing between October 2015 and February 2016.

Data was entered into an MS Excel spreadsheet as it was received, after which it was scrutinized for any entry errors. Data analysis, which primarily consisted of sum totals, averages, and volume calculations, was also completed in MS Excel. The results are reported below and summarized in Table 1.

Results Summary

In total 24 different bottled water retailers provided bottled water sales data, totaling 53 sales locations across the NWT. The data that each retailer provided pertained to the annual quantity of bottles sold for each bottled water product they sell. In terms of timeframe, some retailers provided data for the requested 2014 annum, where as others were only able to provide 2015 data, or data for parts of the 2015 year due to inventory system limitations or change in store ownership. In cases where data was provided for only part of the year, weekly sales averages were calculated based on the data provided, and then extrapolated to sales for one year.

In total, 12 retailers provided data pertaining to 2014 sales and 12 provided data pertaining to 2015 sales. However, 8 of the retailers were unable to recount historical sales data for an entire year, and thus could only provide estimates of their annual bottled water sales. In addition, there were 2 retailers who could not provide data for an entire year, and thus extrapolations were necessary to calculate annual sales.

Once all of the retailer data was in the form of annual quantity of water bottles sold for each size of bottle, two figures were calculated for each retailer: 1) the total number of single use,

plastic water bottles sold for the year of data provided (2014 or 2015); and, 2) the total volume (L) of bottled water sold for the year of data provided (2014 or 2015). These values for each retailer were then amalgamated to represent the total quantity (single-use water bottles) and volume (L) of bottled water sold in the NWT as a whole. In total, the results indicate that 1307222 single use plastic water bottles were sold in the NWT (based on a mix of data from 2014 and 2015), totaling a volume of 1818693.19 L of bottled water. It is important to note that the volume figure does include the litres of water sold in the form of plastic bulk dispenser jugs. However, the total number of physical bulk dispenser jugs sold is not included in the total number of water bottles sold as retailers only track the dispenser sales by volume of water sold in litres.

Table 1: Summary of NWT Bottled Water Sales Data 2014-2015

Retailer ID	Year of Data	Source of Data	# Single-Use Water Bottles Sold	Volume (L) of Bottled Water Sold
1	2014	Inventory System	88027	241612.23
2	2014	Inventory System	450558	399466.26
3	2014	Inventory System	65808	765870.46
4	2014	Manager Estimate	49200	24600.00
5	2014	Manager Estimate	14400	7200.00
6	2014	Manager Estimate	2952	1476.00
7	2014	Manager Estimate	3632	1928.00
8	2104	Manager Estimate	2952	1476.00
9	2014	Manager Estimate	3000	1773.00
10	2015	Inventory System	55535	35165.96
11	2014	Inventory System	7200	5354.16
12	2014	Inventory System	28458	14229.00
13	2014	Manager Estimate	88764	67099.50
14	2014	Inventory System	19760	10769.20
15	2015	Manager Estimate	1200	600
16	2015	Inventory System	169169	92197.35
17	2015	Manager Estimate	20000	10900.00
18	2015	Inventory System	4824	2850.98
19	2015	Inventory System	11885	9064.37
20	2015	Manager Estimate	9000	9000
21	2015	Inventory System	3060	2946
22	2015	Inventory System	9600	5673.60
23	2015	Inventory System <i>(based on 4 months of data)</i>	147230	77502.76
24	2015	Inventory System <i>(based on 2 months of data)</i>	45559.62	27214.35
TOTAL			1307222	1818693.19

The results from this research are communicated through a visual info-graphic poster that also includes additional statistics associated with bottled water consumption in general (see Appendix A). The poster will be distributed throughout the NWT through outreach activities carried out by the department of Environment and Natural Resources, Ecology North's Environmental Education Program and Canada Water Week outreach activities, and via mail to schools and community government offices throughout the NWT. It will also be available on Ecology North's website: www.ecologynorth.ca. and at www.nwtwaterstewardship.ca.

Limitations

Despite efforts to reduce the shortcomings of this research, it is important to recognize that there are some inherent limitations to the results that emerged during the data collection process. One limitation stems from the fact that only some retailers were able to provide 2014 bottled water sales data, whereas others were limited to providing 2015 data. Consequently, the results do not provide a clear indication of bottled water sales for one year in particular, rather it provides an approximate value based on the two years of mixed data.

A similar limitation is tied to there being 2 retailers who could not provide sales data for an entire year, and thus extrapolations were necessary to calculate annual sales. Similarly, there were 8 cases where retailers (for various reasons) did not have a complete annual record of sales data, and thus could only provide best estimates of their annual bottled water sales. Due to these factors, it is important to recognize that the results are not entirely based on quantitative inventory data and do include some retail manager estimates.

It should also be noted that there were some unique circumstances in both 2014 and 2015 in the NWT that likely impacted the bottled water sales. For example, 2014 was reportedly the worst forest fire year on record, which has direct implications for bottled water sales (i.e., bottled water used to compensate for water service disruptions, bottled water needed to hydrate large fire crews). In 2015, the city of Yellowknife and nearby communities of NDilo and Dettah were subjected to a 32 day boil water advisory, which one retailer estimated to have led to a five-fold increase in Yellowknife's bottled water sales.

Finally, it is important to acknowledge that although the bottled water sales inventory that was compiled at the beginning of the research includes all large- and medium-sized bottled water retailers in the NWT, there may be some small-scale retailers that were missed. This limitation is particularly relevant to communities outside of Yellowknife, where we did not have an opportunity to do a physical inventory of potential retailers in the community. Consequently, it is likely that some of the small-scale community stores that sell bottled water in the NWT were not included in the original inventory, and thus were not asked to provide data.

Conclusion

Overall, this research was successful in achieving its two broad goals of gathering baseline information about the amount of bottled water consumed in the NWT and communicating the new information in an informative way. In total, and with the study limitations in mind, we estimate that 1307222 single use plastic water bottles were sold in the NWT (based on a mix of data from 2014 and 2015), totaling a volume of 1818693.19 L of bottled water. These numbers, which were rounded to 'more than 1.3 million' and 'more than 1.8 million', respectively, provide a general, although valuable sense of how much bottled water is being consumed in the NWT. The intention is that this research serves as a starting point for further research and more discussion about bottled water in the NWT.

Several recommendations for future bottled water work have emerged from this research. It is recommended that a similar study be replicated, with improvements, in future years in order to assess how bottled water consumption patterns are changing in the NWT. There are several potential improvements that should be considered when pursuing this work:

- Depending on the timeline available for the study, it would be beneficial to approach bottled water retailers one year in advance of the target completion date for data collection. This would give the retailers who were unable to supply complete annual data the opportunity to begin recording such data in time for the completion of the study.
- In order to improve the application of the results, the research should be designed in a way that allows the researcher to amalgamate bottled water sales data by region in the NWT. This would yield useful results in helping to direct education efforts on drinking water within the NWT.
- Seasonal breakdowns of bottled water consumption across the NWT would also be valuable to help guide the messaging for drinking water education activities in the NWT.
- Expanding the scope of the research to include all forms of bottled water sold in the NWT (i.e., sparkling, flavoured, etc.) would also be beneficial as it would allow for more accurate comparisons between the NWT and Canadian consumption statistics (which already include these other types of bottled water).
- When possible, a physical inventory of small-scale bottled water retailers should be conducted in NWT communities outside of Yellowknife. This process would help to ensure that even the small-scale community stores that sell bottled water in the NWT are included in the potential data collection inventory.

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WHY WE Love NWT TAP WATER

IT'S LOCAL.
You know where it comes from!

1¢ **IT'S CHEAP.**
Less than one cent per litre!

IT'S TESTED.
Quality tests are strict and frequent!

IT'S SIMPLE.
Tap water is easy to access!

TAKE THE PLEDGE!

Now is the time to take the pledge to commit to drinking NWT tap water over bottled water.

Visit ecologynorth.ca to take the pledge and join the movement today!

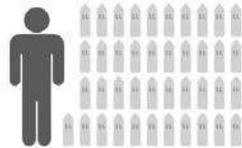


Source: Bottled Water in the NWT: Background Research Report on Bottled Water Consumption in the NWT (Sep.) 2010, Yellowknife, NT: Ecology North.

THE FACTS

ABOUT BOTTLED WATER IN THE NWT

Annually, we consume more than **1.8 MILLION** litres of water from more than **1.3 MILLION** bottles



That's **41 litres** per person



Nearly **200,000** of these bottles became litter or land fill

Bottled water can be **three times** more expensive than gasoline

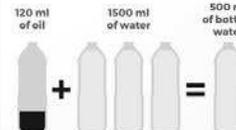


It costs more than **\$900** to drink a one-litre bottle of water every day for a year

Most bottled water is filtered tap water from southern cities

Bottled water takes up to **2,000 times** more energy to produce and transport than tap water

It takes **125 ml of oil** to make and transport a 500 ml bottle of water



It takes up to **three litres** of water to make one litre of bottled water