

2012

City of North Bay Container Sorting Line



Final Project Report

CIF 649.8

Acknowledgement

This project has been delivered with the assistance of Waste Diversion Ontario's Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario.

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Executive Summary

This is the concluding report of the Continuous Improvement Fund (CIF) Project Number 649.8 for the installation of a MRF Container Sorting Line. This project commenced May 30, 2011 and was completed by July 1st, 2012.

The City of North Bay's Blue Box Program has operated in the same manner for approximately twenty years. One of the difficulties experienced was the limited capability to expand the program to include further types of plastics due to inadequate processing equipment at the material recovery facility.

With the financial assistance from Waste Diversion Ontario's Continuous Improvement Fund, the City of North Bay was able to install a container sorting line which alleviates the inefficiency of sorting and permitted the City to expand the Blue Box Program to include a mixed plastic stream.

The container sorting line was installed in June 2011 and the processing of mixed plastics commenced in July. To ensure that no operational problems would affect the advertising campaign, the City decided not to officially promote the new plastics program until the early fall. With the financial assistance of Stewardship Ontario, the mixed plastics advertising campaign was divided into two time frames. The first campaign was launched in mid-October to avoid September's back to school marketing and to ensure families were not pre-occupied with the new school year. The second campaign commenced in late January to avoid any holiday marketing. Both campaigns were deemed successful. Details of the campaign can be found in Appendix A.

Although it is difficult to estimate the increase in the capture rate of mixed plastics as the City has gone from not having a program to that of having one, the City has realized a substantial growth of captured material. In October 2011, the daily processing rate for mixed plastics was approximately 1 bale every two weeks with an approximate weight of 375 kg. Within a twelve month time period this number increased to 1875 kg per week and is expected to increase further.

Based on public acceptance and feedback the addition of mixed plastics to the City's Blue Box Program has been successful and has alleviated numerous inefficiencies at the material recovery facility.

The City of North Bay would like to thank Waste Diversion Ontario Continuous Improvement Fund and Stewardship Ontario for the financial assistance in this program.

Background

The population of North Bay is 54,000. The blue box recycling program serves approximately 19,000 households and 180 multi-residential buildings with 10 or more units. There are a number of other surrounding municipalities that use the City of North Bay material recovery facility. These include the Township of Bonfield, Callander and Calvin. Over the past 20 years it has been North Bay's philosophy to expand the program as material markets develop and stabilize.

For those 20 years, the collection of recyclables involved separating the various materials into as many separate categories as possible at the curb. However with the introduction of HDPE #2 small mouth containers, the City's contractor was forced to combine these containers with the PETE #1 small mouth containers and complete further processing at the material recovery facility. This processing involved placing the materials on the floor of the material recovery facility and separating the material by hand while kneeling or squatting on the floor. Not only was this process inefficient and labour intensive but, it posed long term health and safety issues as contract staffed aged. With the introduction of plastic tubs and lids in mid-2010, this separation process and related inefficiencies only worsened.

The possibility of expanding the program to include further types of plastics was quite limited due to this rudimentary separation problem. The most practical solution to this problem was to upgrade the facility and install a container sorting line to ease the burden of separation and provide future opportunity to expand the program to other materials.

With the assistance of Waste Diversion Ontario's Continuous Improvement Fund the City was able to install the proper equipment and expand the program to include a mixed plastic stream with the exception of plastic film and Styrofoam.

Costs and Installation of the Container Sorting Line

The original estimate of the costs of this project was \$248,392.00 with the Continuous Improvement Fund contributing \$97,807.00.

The costs that actually incurred during the installation of the container sorting line increased from our original estimate to \$286,854.44. The reasons for the increase in price are due to unexpected electrical upgrades to the material recovery facility and the discovery of old petroleum tanks in line with our underground electrical services.

Actual Costs	
	Costs
Container Line Equipment, Freight, And Installation	\$ 250,259.00
Pre-Installation and Upgrading of Electrical Services	\$ 27,264.65
PSHS	\$ 3,200.00
Engineering Fees	\$ 3,067.95
Installation of Ducts	\$ 2,562.84
ESA	\$ 500.00
Total :	\$ 286,854.44

Analysis

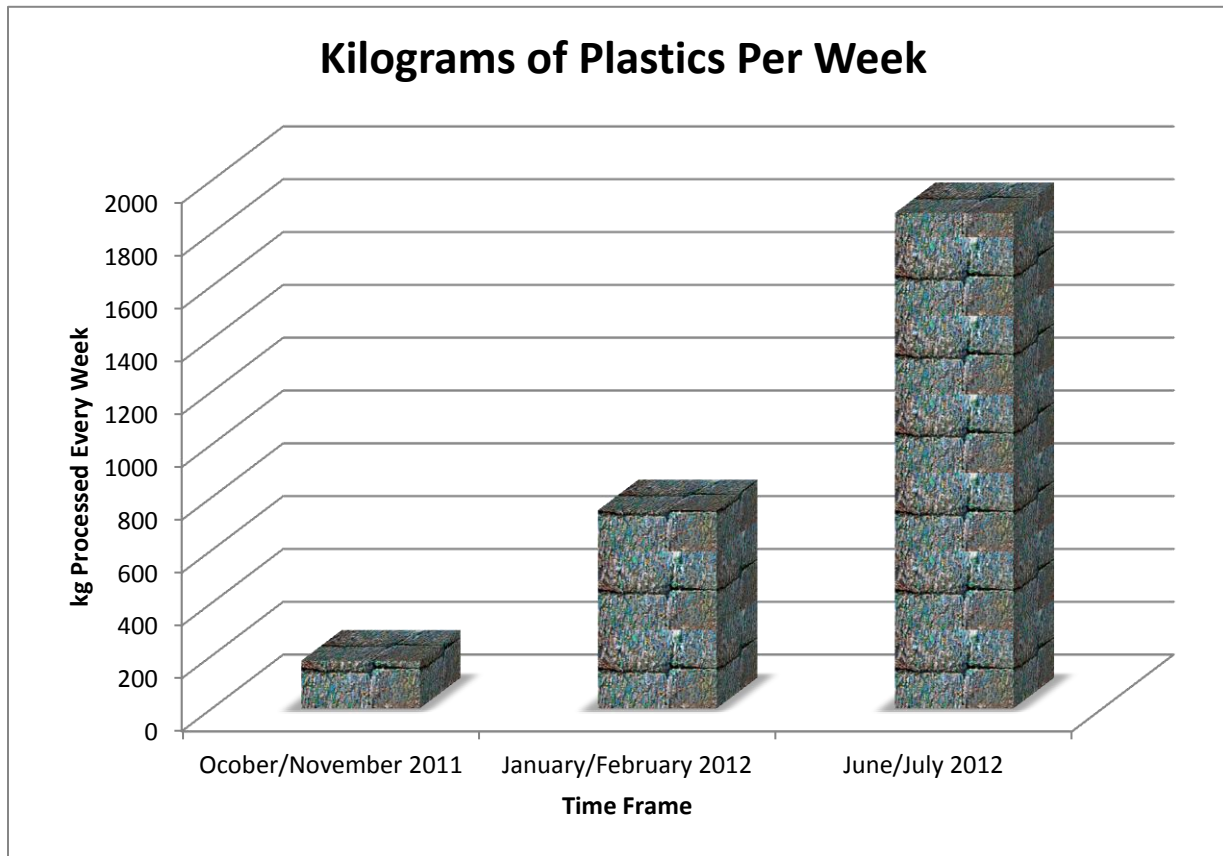
It is difficult to quantify the efficiencies gained from the installation of the sorting line as there are influencing factors that affect the results.

As stated in the Executive Summary prior to the installation of the container sorting line, mixed plastics was not part of North Bay's Blue Box Program. Hence there is no pre-sorting line data. Another factor influencing the results is the implementation of the City's Multi-Residential 95-Gallon Cart Expansion Program. With the assistance of CIF, this program was implemented almost simultaneously with the installation of the new sorting line. Over 210 new carts were distributed over the same time frame. It is estimated that 20 % to 30% of these new carts were to be utilized for mixed plastics.

Although hard to quantify, discussions with the City's contractor and their staff have concluded that efficiencies have been gained. Prior to the installation of the equipment three personnel were required to sort the types of plastics (PETE #1, HDPE #2, Tubs, and Lids). Depending on the weekday, this material separation could expend up to 3-4 hours per day. One of the contractor's staff was also responsible for manning the magnetic separator for approximately 7 hours per day which was necessary to remove glass and other contaminants.

The sorting line has reduced the requirement of the magnetic separator as a new magnet is located near the end of the sorting line, however the extra separation of the mixed plastics and increase in plastics and other materials from the new multi-residential building participating in the recycling program have negated any real labour savings realized by the contractor, however a greater variety of plastics are being separated and processed.

In October/November 2011 the City collected and processed approximately 175 kg of mixed plastics a week. By January/February 2012, this figure increased to approximately 750 kg a week. Currently during the months of June/July the City is processing approximately 1825 kg of mixed plastics on a weekly basis.



Health and Safety

Prior to the installation of the containing sorting line, the contractor's personnel experienced pains and stiffness in their feet, knees, and backs. This was exacerbated by the moisture on the floor produced from the blue box materials. This condition was no doubt caused by kneeling and squatting for prolonged periods of time. According to the MRF staff, the container sorting line has alleviated these symptoms and moral has increased dramatically.

Residual Rates

With the introduction of a mixed plastic stream the City had anticipated an increase in residuals collected both at the curb, multi-residential buildings, and the public drop-off area. In 2010 the residual rate was approximately 1.87% this rate increased to approximately 2.00% in 2011. Based on recent data the residual waste for the past six months is now between 2.50% - 3.00%



Photo of the new container line that was installed at the Recycling Center at 112 Patton Street, North Bay, Ontario.



Photo of the right hand side of the new container line that was installed at the Recycling Center at 112 Patton Street, North Bay, Ontario. It indicates the inclined conveyer belt.



Photo of the left side of the new container line that was installed at the Recycling Center at 112 Patton Street, North Bay, Ontario.

Summary

The implementation of the installation of the container sorting line has been very successful in terms of introducing a mixed plastic stream to the City's Blue Box Program. Public response has been overwhelming in terms of acceptance and participation

Although residue levels have increased, contract staff is no longer required to separate material in a rudimentary fashion and moral has increased.

This new equipment will provide the City the opportunity to expand its recycling program in the future.

Appendix A

City of North Bay Mixed Plastics Promotional and Educational Campaign

In 2011 the City of North Bay installed a container sorting line in the City's recycling center with the financial assistance of Waste Diversion Ontario's Continuous Improvement Fund. The primary condition for this assistance was for the City to include additional plastics to its blue box program. A component of this agreement also included a promotional and educational advertising campaign with financial and creative assistance from Stewardship Ontario.

An extensive advertising campaign commenced on October 23rd, 2011. This campaign included radio and newsprint ads, the delivery of household brochures and setting up displays at hockey games.

In 2012 the second phase of this advertising campaign started. A brochure developed by Stewardship Ontario was delivered to each householder by Canada Post.

Paid newsprint ads were also run in three local papers in conjunction with ads from the Canadian Newspaper Association In-Kind Advertising Program. Four local radio stations ran ads for a continuous three week period

The City set up manned displays at a number of events and functions held in North Bay.

COSTS FOR THE MIXED PLASTICS PROMOTIONAL AND EDUCATIONAL CAMPAIGN

RADIO

\$19,975.85

NEWSPRINT

\$4,222.49

RESIDENTIAL BROCHURES

\$5,582.20

BUS SIGNS

\$275.72

MANNED DISPLAY AT HOCKEY GAMES AND EVENTS (STAFFING AND PRIZES)

\$7,336.65

TOTAL COST - \$37,392.91

Stewardship Ontario costs - \$18,696.45

City of North Bay costs - \$18,696.46