City of London
Continuous Improvement Project # 146
Final Report
Manning Drive Regional Material Recovery Faciltiy

Artist Rendering

London
CANADA

December 3, 2012

Executive Summary

The Waste Diversion Organization/Continuous Improvement Fund contributed $4,450,000 towards the construction of a Regional Material Recovery Facility (MRF) in the City of London. This grant covered the cost of increasing the capacity of the MRF from a "London only" facility (40,000 tonnes per year) to a regional facility (75,000 tonnes per year).

Grant payments were to be made to the City during construction ($3,337,500 disbursed at semi-annual intervals), after substantial performance ($667,500) and a payment one year after substantial performance ($445,000).

Prior to release of the of payment to be disbursed one year following substantial performance of the construction of the MRF, the City must submit a satisfactory report with respect to the operation of the MRF for the first full year following the date of substantial performance.

Substantial performance was achieved in October 2011 when the MRF conducted and passed its acceptance testing. This report details the operation of the MRF for the one year period following substantial performance from November 2011 to October 2012.

During this period the MRF:

- received materials from seven municipalities of (London, Aylmer, Bayham, Central Elgin, DuttonDunwich, Malahide and Thames Centre);
- operated at a processing rate of 85,000 tonnes per year;
- processed over 29,000 tonnes;
- had a recyclable capture rate of over 99%;
- had a residue rate of 3%;
- produced high quality materials for end markets
- experienced no maintenance/equipment issues
- provided lower process operating costs ($15 to $25) per tonne and increased revenue (approximately $10 per tonne) for London; it should be noted that operating costs will drop further in the future due to economies of scale if more municipalities use the facility; it should also be noted the other six municipalities using the facility experience greater savings
- permitted the expansion of materials included in the Blue Box program of seven municipalities (plastics 3 – 7, spiral wound containers, aerosol containers for all seven municipalise and polycoat for some municipalities)

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1. Brief History of MRF Development

Table 1 below provides a brief summary of the development of the Manning Drive Regional MRF up to substantial performance.

Table 1 Chronology of Development

Event	Date	Comment
London Regional MRF study	July/05 – study begins Jan/07 – study completion	Stewardship Ontario, Waste Diversion Ontario (WDO) and the Federation of Canadian Municipalities (FCM) funded a *London Regional MRF Study* to examine the potential economic and environmental benefits of a new regional MRF to process recyclables from the City of London and surrounding municipalities.
Recyclers' Knowledge Network (1 versus 2 stream)	Dec/05 – study begins Jun/06 – study completion	London participated in the development of the Recyclers' Knowledge Network and the first issue examined by the knowledge network which was single stream versus two stream processing of recyclable materials in large facilities.
MRF Ownership Review	Sept/06 – study begins July/07– study completion	The City's Management Support & Audit Services (MS&AS) division to examine the pros and cons of ownership and financing issues associated with a new MRF.
Request for Qualifications	Jan/07 – RFQ released Feb/07 – RFQ closes July/07 – Council decision	Six submissions were received and evaluated against pre-determined criteria. Five firms (Canada Fibers, Halton Recycling, Metro Waste Paper Recovery, Miller Waste Systems and Waste Management) were pre-qualified to respond to any RFP call.
Request for Proposals	Feb/08 – RFP released June/08 – RFP closes Feb/10 – Council decision	Three submissions (Halton Recycling, Canada Fibers and Miller Waste Systems) were received however one arrived after the official closing time and was returned unopened to the Proponent. Miller Waste Systems was awarded the contract to build a regional (75,000 tonne per year) facility.
Construction	May/10 – Start site works July/10 – Substantial Completion Sept/11 - Completion	Cost of the 75,000 tonne per year facility is $23.4 million excluding land. Construction was completed on time and on budget.
Commissioning	July/11 – Test loads Aug/11 – All London recyclables going to MRF Oct/11 – Acceptance Testing	Substantial performance achieved when acceptance testing demonstrated that the facility can process materials at 120,000 tonnes per year while exceeding specific minimum capture rates.

2. Description of MRF Processing

Overview

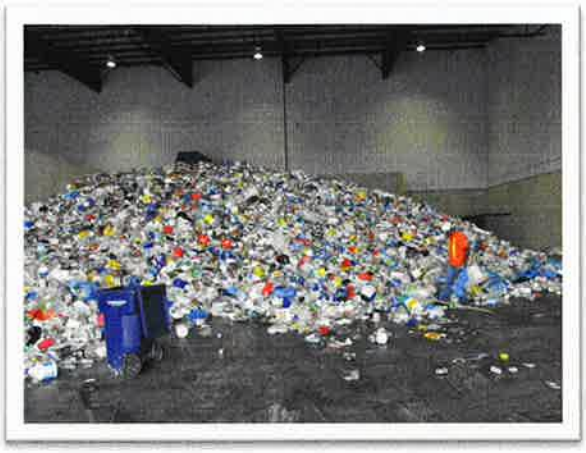
This section provides an overview of how materials received at the Manning Drive Regional MRF are processed and prepared for end markets. The overview of the process is divided into six parts corresponding to the six main functions that occur at the MRF. These functions are:

- Receiving material
- Pre-sort to remove contamination and cross-contamination
- Processing of container materials
- Processing of paper fibre materials
- Baling and storage of materials
- Residue management

Receiving Material – 4 bay doors and double tip floors to minimize unload times

Once vehicles pass over the weigh scales drivers are directed to the tip floor. Vehicle unloading takes place inside the MRF building on the tipping floors. Vehicles enter the tip floor areas through one of the four overhead doors (two each for each stream). Four doors allow up to four trucks to unload at the same time in the event that trucks become backed up. The two tip floors are divided to eliminate cross contamination between the two streams. All trucks are directed throughout the tipping operation by a spotter. Once unloaded, both fibre and container materials are inspected by plant staff for hazardous waste and larger contaminates. Once recyclables pass this first inspection, they are moved into the conveyor pits for processing through the facility sorting systems.

Fibre tip floor



Container tip floor

Pre-sort to Remove Contamination and Cross-Contamination

Conveyor lines transfer the fibre and container materials to the enclosed **Pre-Sort Room**. Both lines move through this room where sorting staff begin the process of sorting recyclables and removing contaminates. This area focuses on removing plastic film and bags, large contaminates, oversized recyclables and pulling off recyclables placed in the wrong stream. The cross contaminates (i.e. recyclables) are collected and returned to the correct stream. All other materials continue on through the process either on the container line or fibre line.

The glass line also goes through the pre-sort room on its return from the Air Classifier (separates glass from lighter weight recyclables) where staff pull off contaminates. From here the glass is conveyed to bunkers inside the glass storage area where it is then loaded into roll-off bins and shipped to end markets.

Pre-sort fibre line

Pre-sort container line

Processing of Container Materials – featuring: 'Air Classifier' 'Perforator' and 'Optical Sorter'

The container processing line sorts this stream into the following marketable grades:

- Steel cans (including spiral wound containers , cardboard cans, aerosols, paint cans)
- Clear & coloured glass
- PET plastics (including thermoform clam-shells)
- HDPE plastics
- Mixed Plastics (3 through 7)
- Polycoat (gable top) and aseptic containers (drink boxes)
- Aluminum cans, including aerosols
- Aluminum foil

Beyond the Pre-sort Room, the first stop on the container line is an **overhead magnet** which separates steel cans, paint cans, aerosols and cardboard cans (spiral wound containers). A quality control feature is the magnetised conveyor head which captures steel that was not pulled off by the overhead magnet.

Container stream under steel magnet

All other materials continue to the **Air Classifier** (i.e. 'heavy-light separator). The Air Classifier separates materials by weight. The 'heavies' consist of all glass and the 'lights' consist of all the plastic, aluminum and polycoat/aseptic containers. Glass is conveyed through the pre-sort room (as described above) and remaining materials are blown into the **Perforator**. It should be noted that if any 'lights' are heavy (such as a plastic water-bottles full of water) they will initially be sent onto the glass line but then captured by staff in the pre-sort room and sent to the optical sorter for further sorting.

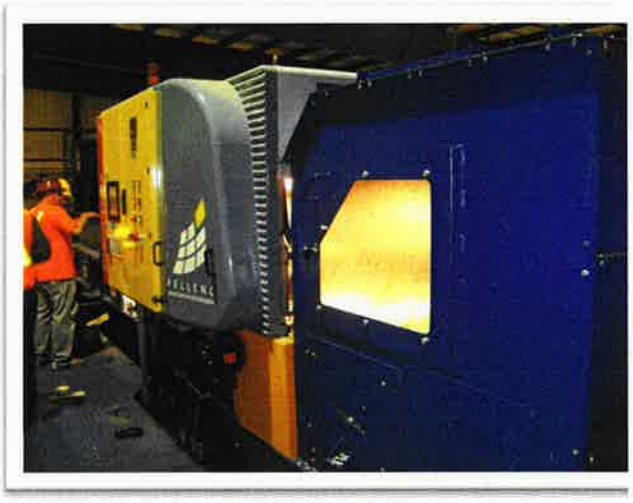
The Perforator punctures and flattens materials to prepare the materials for more effective optical sorting and greater storage capacities in the container bunkers.

Air Classifier

Perforator

The **Optical Sorter** separates the remaining container stream into: PET plastics, Mixed plastics and all remaining containers (HDPE plastics, polycoat & aseptic containers and aluminum). Staff are stationed at the exit to the optical sorter in the enclosed container sort room to perform quality control on the PET and Mixed Plastics streams to ensure the highest grade of these plastics. The third stream, consisting of 'all remaining containers' is conveyed through the enclosed Container Sort Room where staff are stationed to positively sort any PET & Mixed Plastics missed by the optical sorter, HDPE and Polycoat & Aseptic Containers. We have also recently started to sort aluminum foil in this room. By keeping the aluminum foil separated from the aluminum beverage can grade we are able to obtain a higher revenue for our aluminum cans. A spare sort station and bunker in the container sort room allows for future expansion to add new recyclables. Aluminum and residue are left on the conveyor as it enters the Eddy Current.

Optical sorter input



Optical sorter side view

Eddy Current. The final separation of recyclables on the container stream takes place as the **Eddy Current** repels the aluminum into a storage bunker while the residue continues on to the garbage compactor.

Eddy Current

Processing of Paper Fibres – featuring a Triple-Deck OCC Screen

The fibre processing line sorts this stream into the following marketable grades:

- OCC
- OBB/Hardpack
- ONP
- Mixed paper

Fibre is sorted in two stages: First mechanically, as it travels over a series of disc screens, and then manually, by sort staff in the Fibre Sort Room.

The first of the screens is the **Triple Deck OCC Screen.** The Screen mechanically separates OCC by 'floating' the rigid OCC fibres over the top of the screen while allowing the other more flexible and smaller fibres (ONP, OBB, mixed paper) to drop through onto a lower conveyor leading to the **ONP/OBB screen**. The Triple Deck feature means more screen and conveyor surface resulting in a higher quality OCC grade. Other MRF OCC screens work the same way but this is the first municipal MRF in Canada with a triple deck. OCC is sent to the Fibre Sort Room while the remaining fibres move to the ONP/OBB screen where ONP and OBB are floated along the top and mixed paper falls onto the lower conveyor.

The three grades (OCC, ONP & OBB, and mixed paper) are conveyed on separate lines into the Paper Sort Room where staff manually separate OBB from the ONP, and pick off any residue and other recyclables to ensure the highest quality grades of finished fibre. Residue is conveyed to the garbage compactor and other recyclables are returned back into the process.

Triple-deck OCC screen

Paper Sort Room ONP line

Baling and Storage of Materials – featuring 2 balers

Once materials are separated by grade, they are prepared for shipping to end markets. This may take further processing by baling or in the case of some materials (ONP, glass) may be shipped loose. The facility operates with two balers. There is also a small plastic film baler under the Pre-sort Room. Two balers ensure that this area does not become a bottle-neck.

An inside baled storage area allows for storage of 1.5 trailer load for material grade, or a total of 22.5 trailer loads.

Baler

Baled product in storage area

Residue Management Area

Residue from the container and fibre lines is conveyed to the residue management area where sorting staff manually pull any recyclables that have been missed up to this point. Mixed materials from the container stream are placed on a Container Return Line where they head back to the Optical Sorter. Mixed fibres are placed in cages under the platform and returned to the Fibre Sort Line.

Residues are shipped next door to the City of London landfill site.

Removing Recyclables from the Residual

3. Operations after One Year

Processing Capacity

The design capacity of the MRF is 75,000 tonnes per year based on a two shift operation.

During acceptance testing the MRF processed 28 tonnes per hour of fibres and 7.2 tonnes per hour of container which is equivalent to 120,000 tonnes per year.

The actual capacity of the MRF based on one year of operation is 85,000 tonnes based on typical production rates of 6.5 tonnes/hr of containers and 19.7 tonnes/hr of fibres.

Equipment

There have been no equipment failures or repairs during the first year other than routine maintenance.

Incoming and Outgoing Quantities

During the one year period following substantial performance, the MRF received 29,298 tonnes of residential Blue Box recyclables as detailed in Table 2. Monthly audits of the incoming material shows that average contamination rate was 5% to 6%. The contamination rate typically consists of 2.5% non-recyclables and 3% cross-contamination (containers in the fibre stream or fibres in the container stream).

Table 2 : Incoming Materials
(November 2011 to October 2012)

Municipality	Quantity (tonnes)	Comment
London	28,020	
Alymer	248	• Using MRF since April, 2012
Bayham	204	• Using MRF since May, 2012
Central Elgin	397	• Using MRF since May, 2012
DuttonDunwich	103	• Using MRF since April, 2012
Malahide	191	• Using MRF since May, 2012
Thames Centre	135	• Using MRF since Sept., 2012
Total	29,298	

Note: a) Supporting documentation provided in Appendix A.

The MRF is currently receiving materials at the rate of 32,000 tonnes per year consisting of residential Blue Box recyclables from the municipalities of London, Aylmer, Bayham, Central Elgin, DuttonDunwich, Malahide and Thames Centre.

The MRF shipped 28,087 tonnes of material to end markets and 987 tonnes of residue for disposal for an overall residue rate of 3%. A breakdown of the outgoing materials is provided in Table 3.

Table 3 : Outgoing Materials
(November 2011 to October 2012)

Recyclable Material Marketed	***Quantity (tonnes)***	***% of Material Marketed***
Hardpack	2,334	8.3%
Mixed Paper	871	3.1%
OCC	3,296	11.7%
ONP # 8	14,780	52.7%
Total Fibre:	***22,281***	***75.8%***
Aluminum Cans and Foil	390	1.4%
PETE (Including Thermoform PETE)	1,358	4.8%
HDPE	524	1.9%
Mixed Plastics (#3 to #7)	540	1.9%
Mixed Plastics (Film and Oversized HDPE)	204	0.7%
Gable/Polycoat	255	0.9%
Steel	1,063	3.8%
Glass (Mixed Broken)	2,472	8.8%
Total Containers:	***6,806***	***24.2%***
Residue	987	***100%***
Total Outgoing[a]	**29,074**	-

Note: a) The ongoing tonnes were 224 tonnes less than incoming due to an increase in the stockpiled inventory and/or moisture loss.
b) Supporting documentation provided in Appendix A

Recovery Rates

The Manning Drive Regional MRF has an estimated average capture rate of recyclables of 99%. Capture rates for individual materials are listed in Table 4 (next page).

Quantity of Material

The MRF is producing superior quality recyclables to ship to end markets. This is demonstration by the letters provided by the end markets (see Appendix B) and consistently higher revenue.

Waste composition audits were completed by Stewardship on outgoing materials from the MRF in June 2012. Audits were completed on hardpack, mixed plastics, ONP, PET and polycoat. The results from the audits show that material being shipped from the MRF contained between 94% and 99% of the targeted recyclables. A summary of the waste composition audits on outgoing materials is presented in Appendix C.

Table 4 : Recovery Rates
(November 2011 to October 2012)

Material Type	Contract Minimum Required Recovery Rate (%)	London MRF Acceptance Test Recovery Rate (%)	Recovery Rate	
			%	Comment
Aluminum cans	97	99.5	98.5	• aggregate container (excluding glass) recovery rate determined from monthly operational audits
Aluminum foil trays	97	99.5	98.5	• aggregate container (excluding glass) recovery rate determined from monthly operational audits
Steel cans	97	99.9	98.5	• aggregate container (excluding glass) recovery rate determined from monthly operational audits
HDPE bottles, jugs and jars	95	100	98.5	• aggregate container (excluding glass) recovery rate determined from monthly operational audits
PET bottles and containers	95	100	98.5	• aggregate container (excluding glass) recovery rate determined from monthly operational audits
Mixed plastics (#3 to #7)	80	96.6	98.5	• mixed plastic tubs and lids are captured with other mixed rigid plastics • aggregate container (excluding glass) recovery rate determined from monthly operational audits
Container glass (flint and mixed)	95	100	100	• glass is negatively sorted allowing for 100% recovery which is verified in monthly operational audits
Polycoat cartons	93	98	98.5	• aggregate container (excluding glass) recovery rate determined from monthly operational audits
Fibre material	98	100	100	• fibres are negatively sorted allowing for 100 % recovery which is verified in monthly operational audits

Revenue

Higher revenue has been received by the City since the MRF has opened. Table 5 provides a comparison of the average revenue received per tonne at the Manning Drive Regional MRF compared to the Composite Index from StewardEdge Pricesheet for the period of January 2012 to September 2012.

On average the revenue received was 15% ($18 per tonne) greater than the StewardEdge Pricesheet Composite Index. Some of the increased revenue is paid to the MRF operator as an incentive to produce high quality materials and find strong markets. The net revenue to the City is approximately $10 per tonne higher than previously received.

Table 5: Comparison of Overall Pricing Achieved

Material	Price Manning Drive MRF ($/tonne)	StewardEdge PriceSheet (Composite Index $/tonne)	% Increase Price Achieved Over StewardEdge PriceSheet
January	141	129	9%
February	157	133	18%
March	156	142	10%
April	172	143	20%
May	157	140	12%
June	134	127	6%
July	133	111	20%
August	116	100	12%
September	112	90	24%
Average	142	124	15%

Regionalization

As previously mentioned, the MRF is receiving materials from seven municipalities (London, Aylmer, Bayham, Central Elgin, DuttonDunwich, Malahide and Thames Centre). The Blue Box program for each of the municipalities is the same which provides several benefits.

Having identical programs and messaging will contribute to a better informed population in London and the six partner municipalities as people travel around the area for home, work or school, and access their local news on regional media outlets such as radio, television, and print.

Creation and production of public outreach and awareness materials and campaigns can be expensive for smaller municipalities. All public outreach and awareness materials that are created by the City of London are made available to the other municipalities at no cost.

Municipalities are also able to save on the production of public outreach and awareness materials through joint purchases. An example of these potential savings is the print cost of a Multi-residential Bag for Aylmer was reduced from $3 to $0.80 per bag by partnering.

The City of London and its six partner municipalities can provide more effective public outreach and awareness campaigns or advertising by partnering. For example this fall London and its six partner municipalities pooled their CNA/ONCA advertising allotment to a larger and more uniform regional advertising campaign promoting Blue Box recycling.

Finally, it is expected that more municipalities will be using the Manning Drive Regional MRF in the future. This will increase the above mentioned benefits plus further reduce processing costs through economies of scale. The operating costs for processing London's recyclables have been reduced by $15 to $25 per tonne and by more than $25 for its partner municipalities.

4. Conclusion

During the first year of operation the Manning Drive Regional MRF has exceeded required processing and capture rates while producing a high quality end product and had no maintenance/ equipment issues. The MRF has lowered operating processing costs, increased revenues and provided additional benefits through regionalization such as more effective public outreach and awareness campaigns.

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Attachment A

Recycling Quantities

Material Analysis Report by Account

Inbound materials only for the period 2011-11-01 - 2012-10-31
Summary Report for Sites: 1, 2
Accounts 0 - 999999 Customer Types - Z Materials - ZZZZZZZZZZ Material Types - ZZ

Date	Material	Type	Customer	Type	Tickets	Count	Est. vol.	Act. Vol.	Est. Wt.	Actual Wt.	Charge
1001	Miller Waste Systems			Total	13289	0	0	0	27884.01	27884.01	0.00
				Average		0	0	0	2.10	2.10	0.00
1003	Waste Management			Total	22	0	0	0	29.64	29.64	0.00
				Average		0	0	0	1.35	1.35	0.00
1004	City of London			Total	144	0	0	0	91.75	91.75	0.00
				Average		0	0	0	0.64	0.64	0.00
1005	Town of Aylmer			Total	242	0	0	0	247.34	247.34	0.00
				Average		0	0	0	1.02	1.02	0.00
1006	Dutton Dunwich			Total	42	0	0	0	103.24	103.24	0.00
				Average		0	0	0	2.46	2.46	0.00
1007	Township of Malahide			Total	118	0	0	0	191.30	191.30	0.00
				Average		0	0	0	1.62	1.62	0.00
1009	Central Elgin			Total	112	0	0	0	396.83	396.83	0.00
				Average		0	0	0	3.54	3.54	0.00
1010	Thames Centre			Total	42	0	0	0	135.25	135.25	0.00
				Average		0	0	0	3.22	3.22	0.00
1011	Municipality of Bayham			Total	29	0	0	0	204.01	204.01	0.00
				Average		0	0	0	7.03	7.03	0.00
1012	Super Save Disposal (Ontario)			Total	7	0	0	0	9.54	9.54	0.00
				Average		0	0	0	1.36	1.36	0.00
1013	BFI Canada Inc.			Total	7	0	0	0	4.59	4.59	0.00
				Average		0	0	0	0.66	0.66	0.00
2005	W12 Landfill			Total	4	0	0	0	0.66	0.66	0.00
				Average		0	0	0	0.17	0.17	0.00
				Report Total	**14058**	**0**	**0**	**0**	**29298.16**	**29298.16**	**0.00**
				Report Average		**0**	**0**	**0**	**2.08**	**2.08**	**0.00**

Material Analysis Report by Material

Outbound materials only for the period 2011-11-01 - 2012-10-31
Summary Report for Sites: 1, 2
Accounts 0 - 999999 Customer Types - Z Materials - ZZZZZZZZZZ Material Types - ZZ

Date	Material	Type	Customer	Type	Tickets	Count	Est. vol.	Act. Vol.	Est. Wt.	Actual Wt.	Charge
	OB ALUMINU			Total	20	0	0	0	390.08	390.08	0.00
				Average		0	0	0	19.50	19.50	0.00
	OB BOX			Total	106	0	0	0	2334.16	2334.16	0.00
				Average		0	0	0	22.02	22.02	0.00
	OB FILM			Total	16	0	0	0	203.61	203.61	0.00
				Average		0	0	0	12.73	12.73	0.00
	OB HDPE			Total	51	0	0	0	523.51	523.51	0.00
				Average		0	0	0	10.26	10.26	0.00
	OB MIX GLA			Total	72	0	0	0	2471.71	2471.71	0.00
				Average		0	0	0	34.33	34.33	0.00
	OB MIX PAP			Total	36	0	0	0	871.18	871.18	0.00
				Average		0	0	0	24.20	24.20	0.00
	OB MIX PLA			Total	53	0	0	0	540.16	540.16	0.00
				Average		0	0	0	10.19	10.19	0.00
	OB OCC			Total	135	0	0	0	3296.17	3296.17	0.00
				Average		0	0	0	24.42	24.42	0.00
	OB ONP8-B			Total	254	0	0	0	6120.72	6120.72	0.00
				Average		0	0	0	24.10	24.10	0.00
	OB ONP8-L			Total	293	0	0	0	8658.88	8658.88	0.00
				Average		0	0	0	29.55	29.55	0.00
	OB P.C.M.			Total	12	0	0	0	255.36	255.36	0.00
				Average		0	0	0	21.28	21.28	0.00
	OB PET			Total	61	0	0	0	1358.25	1358.25	0.00
				Average		0	0	0	22.27	22.27	0.00
	OB RESIDUE			Total	168	0	0	0	987.07	987.07	0.00
				Average		0	0	0	5.88	5.88	0.00
	OB STEEL			Total	37	0	0	0	1063.49	1063.49	0.00
				Average		0	0	0	28.74	28.74	0.00

Material Analysis Report by Material

Outbound materials only for the period 2011-11-01 - 2012-10-31
Summary Report for Sites: 1, 2
Accounts 0 - 999999 Customer Types - Z Materials - ZZZZZZZZZZ Material Types - ZZ

Date	Material	Type	Customer	Type	Tickets	Count	Est. vol.	Act. Vol.	Est. Wt.	Actual Wt.	Charge
				Report Total	1314	0	0	0	29074.35	29074.35	0.00
				Report Average		0	0	0	22.13	22.13	0.00

Attachment B

Letters from End Markets

THERM·O·COMFORT

CELLULOSE FIBRE INSULATION

November 4, 2012

To Whom It May Concern,

Therm-O-Comfort has been purchasing #8 grade ONP from the Manning Drive Regional Materials Recovery Facility operated by Miller Waste System for the past year. The paper is processed at our St Thomas manufacturing facility into cellulose fibre insulation which sold primarily in Southern and Central Ontario under the Therm-O-Light brand name. We find the quality of the paper to be very good and the staff at Miller Waste System very friendly and accommodating as it is very important that the paper we process is dry.

If you require any further information, please feel free to contact me at the number below.

Sincerely,

Craig Holzscherer
VP Sales and Operations

www.thermocomfort.ca
Road, St.Thomas, ON Canada
Email: info@thermocomfort.ca

Canada Fibers Ltd.

Embracing the paper industry

October 24, 2012

Miller Waste Systems Inc.
Att: Rodney Libbey
8050 Woodbine Ave
Markham, ON
L3R 2N8

Dear Rodney:

We would like to take this opportunity to show our appreciation to Miller Waste Systems Inc. for providing Canada Fibers Ltd with materials from your various recycling facilities in Canada. Through the successful commitment and growing relationship between Miller Waste Systems Inc. and Canada Fibers Ltd., we have been privileged to procure the #8 Old Newspapers, OCC, Hardpack, Mixed Paper, Post-Consumer Poly Milk Carton, and PET processed at the facility located in London, Ontario since August 1, 2011 and have consistently received an exceptionally high level of quality materials.

It has been a tremendous pleasure working with the Miller Waste staff in London. With their clear concern of quality and integrity for all the materials generated, we are honored to be included in the process.

In closing, we thoroughly appreciate the business relationship we have experienced over the years and look forward to strengthening our partnership in the future.

Sincerely,

Anne Sneyd

Anne Sneyd
Manager Sales and Marketing

Canada Fibers Ltd.
322 Horner Avenue Toronto Ontario M8W 1Z4
Tel 416-253-0400 Fax 416 253 1230

Eco-Choice Recycling Inc.

November 9, 2012

Miller Waste Systems Inc.
100 Garfield Wright Boulevard
Sharon, ON
L0G 1V0

Attention: Mr. Rodney Libby

Dear Rodney,

We at Eco-Choice Recycling Inc. are pleased to inform you that the baled loads of PET that we have been purchasing since August 21st of 2011 is of exceptional quality when compared to other suppliers.

We look forward to and count on purchasing all of the PET loads generated at you City of London MRF for the foreseeable future. .

Sincerely,

Miro Seperic
Eco-Choice Recycling Inc.

CPG

Solutions for Global Paper Needs

November 8, 2012

To Whom It May Concern:

This letter is to verify that Continental Paper Grading of Canada Inc., has been the purchaser of Post Consumer Milk Carton from the Miller Waste Systems Facility in London Ontario beginning August of 2011.

The quality of the Post Consumer Milk Carton grade has continually exceeded the Mills' expectations and if the volume were to increase, the mill would welcome the additional shipments.

We have been working with the Miller Group for over 8 years, and with their various facilities in Ontario and Nova Scotia. Miller has always conducted their business in a professional manner, and we have never experienced a quality issue during this time working together.

We look forward to continuing and expanding our relationship in the future.

Please feel free to contact me if you have any questions or comments.

Yours Truly,

Peter Valeriote

President

Continental Paper Grading of Canada Inc.

Continental Paper Grading
of Canada Inc.
6790 Century Avenue, Suite 400
Mississauga, ON L5N 2V8

P: 905.286 3690
F: 905 286 3677 (sales)
F: 905.286 3699 (accounting)

www.cpgco.com

EFS–Plastics Inc.

PLASTIC REPROCESSING TECHNOLOGY

October 25, 2012.

Miller Waste Systems Inc.
Att Tracy Stephenson
8050 Woodbine Ave
Markham, ON L3R 2N8

Dear Tracy,

We would like to express our gratitude for the high quality service Miller Waste Systems Inc provides us with on a regular basis.

We have been purchasing mixed plastic and film from the London, Ontario facility since March 2012. The material has been of good quality and arrives in a timely manner according to agreement.

We have enjoyed doing business with Miller Waste Systems Inc. and look forward to business in the future.

Sincerely,

Lisa Boerner

Lisa Boerner.
Purchasing Dept.

EFS-plastics Inc.
81 Union Street
Elmira, ON N3B 2Y1
Canada

Phone 519 669 4011
Fax 519-669 8364

www.efs-plastics.ca

ENTROPEX
RIGID PLASTIC REMADE

ISO 9001
2008

October 29, 2012

To Whom This May Concern

Entropex is one of the largest Post Consumer plastic recyclers in Canada and has been recycling plastic containers since 1985.

We have been receiving plastic containers from the Miller Waste Systems at the London location since the opening of this facility and have experienced a very professional relationship in all of our dealings with the staff and the management of this facility.

Entropex receives HDPE Post Consumer Bottles and Mixed Rigid plastic Containers (1 thru 7) from this facility and we find the quality to be the best in Ontario.

We find Miller Waste Systems to be a very good supplier not only in London, but at all of the locations we service and we look forward to future dealings with this company.

Regards

Carl Yates
General Manager
Entropex

NEXCYCLE
A DIVISION OF STRATEGIC MATERIALS

October 24, 2012

Miller Waste Systems Inc.
3438 Manning Drive
London, ON
N6L 1K4

To Whom It May Concern,

NexCycle Industries has been accepting material from the Miller Waste London facility since it opened in August 2011. We have received upwards of 3000 tons of their Mixed Bottle Cullet which has been of high quality for this material classification. All materials delivered to our facility are processed and sold for use in various products.

We look forward to continuing to receive material and doing business with the Miller team for many years to come.

Thank you,

Courtny Shelly
Materials Co-ordinator

Novelis Inc.
3560 Lenox Road, Suite 2000
Atlanta GA 30326

November 6, 2012

To whom it may concern,

Novelis Inc is the world's leading aluminium can recycler and the largest buyer of used beverage cans worldwide, collecting more than 40 billion cans each year. The company operates in 11 countries, over 11,000 employees and generates $11 billion dollars in annual revenues.

We have been receiving Baled UBC's (Used Beverage Cans) from Miller Waste Systems that are generated from London, ON since May of 2012 and the quality of the material has met our specifications.

We look forward to continue working relationship with Miller Waste Systems and should you have any questions please do not hesitate contacting me.

Best regards,

Alex Polgardi

UBC Buyer - Novelis, Inc.

Cell: 615 495-3625

PAPER FIBRES INC.

Recycling Paper Since 1888

6405 Northwest Drive, Mississauga, Ontario L4V 1K2
Telephone: (905) 672-7222 • Fax: (905) 672-5333
Toll Free: 1-877-452-8540
E-mail: mail@paperfibresinc.com • www.paperfibresinc.com

October 24, 2012

To Whom It May Concern:

Having dealt with Miller Waste Systems at the new City of London MRF for over one (1) year now since it's startup in August of 2011, we at Paper Fibres Inc. continue to be more than satisfied with the quality of loads of "fibre" coming from this facility.

With a steady supply of all "fibre" grades thus far – Old Corrugated Cardboard, Old News Papers. Hard Pack and Mixed Paper – we have had no issues with regards to quality at any of our end markets. In fact, having dealt with many other residential recycling programs throughout Ontario in our many years in the industry, we would have to say that this quality would rank right up there among the best we have seen. Having a dual stream process would be a huge factor in providing this quality.

Communication between our office staff and those at MRF continues to be great with regards to load requirements/requests. But that seems to be the norm with all MWS facilities we deal with throughout Ontario.

If you should have any questions, please don't hesitate to contact me.

Yours truly,

Mark Mateer

RAM

Monday, October 24, 2012

Miller Waste Systems Inc.
3438 Manning Drive
London, ON N6K 1K6

SENT VIA EMAIL

Attention: Tracy Stephenson and Rodney Libby

Dear Tracy and Rodney,

This letter is to confirm that Ram Iron & Metal Inc. has been purchasing ferrous and non-ferrous recyclable scrap metals (i.e. Post Consumer Cans and Used Beverage Cans) from Miller Waste Systems Inc in London for re-melting purposes since the facility opened in August 2011.

Ram Iron & Metal is dedicated to the quality of its products and services. The Company strives to achieve a high level of customer satisfaction at all times by maintaining its commitment to the implementation of its quality assurance practices. Therefore, all grades received must meet the quality standards of the Company.

To date, all grades received from Miller Waste have been of exceptional quality. The grades provided have been fit and suitable for the intended purposes.

Aside from the quality aspect, Ram Iron & Metal Inc. is also committed to maintaining focus on a safe and healthy work environment according to industry standards and legislative requirements. Materials brought to the facility are processed according to Company and industry specifications, while maintaining compliance with Government regulations.

Additionally, RAM Iron & Metal Inc. has been proudly participating in the Blue Box recycling program with Miller Waste Systems Inc. for over ten years, and appreciates the opportunity to be of service.

If you should you have any questions or require additional information, please do not hesitate to contact me at (416) 630-4545 ext. 223.

Best regards,

Peter Racco
President

60 Ashwarren Road • Toronto, ON • M3J 1Z5 • **Tel:** 416.630.4545 • **Fax:** 416.630.5258 • **TF:** 1.877.660.1336

resolute
Forest Products

November 8, 2012

Miller Waste Systems Inc.

Attention Mr. Rodney Libby

8050 Woodbine Ave.

Markham, Ontario

L3R2N8

Dear Rodney:

Resolute Forest Products has purchased #8 Old Newspapers (ONP) from Miller Waste Systems' MRF in London since it started in August 2011. Good Quality ONP is most important to our mill in Thorold Ontario, to ensure that we can manufacture good quality newsprint. Miller Management is always willing to take steps to improve the quality of ONP generated at the London MRF.

We look forward to continuing doing business with Miller Waste Systems at the London MRF.

Yours truly

Colin Johnston

Northern Region Fibre Supply Manager

P.O. Box 1040, 2 Allanburg Rd

Thorold, Ontario, L2N3Z5

Royal Hongcheng International Inc.

41 Charlton Blvd North York Ont. M2M 1C1
Tel: (416) 221-9767,2060099
Fax:(416) 512-8886
richardslu@hotmail.com

Oct 24, 2012

To Whom It May Concern:

Royal Hongcheng International Inc. is one of the largest waste paper exporters in Canada and has been exporting waste paper since 2001.

We have been receiving waste paper from Miller Waste Systems at the London location since Aug 2011 and have experienced a very professional relationship in all of our dealing with the staff and the management of the facility.

Royal Hongcheng International Inc. receives ONP (newspaper) and mix paper from this facility and we find the quality to be the best in Ont.

We find Miller Waste Systems to be a very good supplier not only in London but all of the locations we service, such as Newmarket, Markham, Halifax and Pickering, and we look forward to future dealing with this company.

Best regards,

Richard Lu
General Manager
Royal Hongcheng International Inc

Sonoco Recycling Canada
33 Park Avenue East
Brantford, ON

October 24th, 2012

Miller Waste Systems Inc.
100 Garfield Wright Boulevard
Sharon, ON
L0G 1V0

Attention: Tracy Stephenson

Dear Tracy,

We at Sonoco Recycling Canada are pleased to inform you that the baled loads of Hardpack that we have been purchasing since September 14st of this year is of excellent quality.

We look forward to, and count on purchasing as many loads of hardpack as possible, and that on a regular basis, generated at your City of London MRF.

Sincerely,

Nathalie Dussault
Sr. Mill Supply Manager / Northeast

TRIPLE M METAL

November 6, 2012

To: Whom it may concern

Re: London MRF – Miller Waste Systems – Post Consumer Cans

Triple M Metal LP has been receiving Post Consumer Can (steel) material from the London Facility since it opened in August 2011. From the first load that we received from this state of the art facility it has exceeded all market quality standards of PC Can material. It is a pleasure to work with a company like Miller Waste that consistently strives to provide such a high quality of recyclable products. Their dedication to quality makes it easier for our operations to prepare this material into mill ready bales. That is why Miller Waste/City of London receives the premium pricing for this material. With this great partnership, we hope this facility reaches it's full volume potential in the very near future!

If you have any question or concerns, please feel free to contact me.

Thanks;

Brad Masters
Manager of Recyclable Materials
Triple M Metal LP

Attachment C

Composition Audits on Outgoing Material

Summary of June 2012 Bale Audits - London

		ONP #8	HP	Mixed Fibres	Polycoat	Mixed Plastic	PET
Category	**Bales distribution**	London	London	London	London	London	London
Newsprint	Newspaper and Inserts	60.5%	7.9%	7.0%	0.0%	0.0%	0.0%
Telephone Books	Telephone Books / Directories	2.2%	4.5%	1.9%	0.0%	0.0%	0.0%
Magazines and Catalogues	Magazines & Catalogues	6.5%	8.2%	5.0%	0.0%	0.0%	0.0%
Other Printed Paper	Other Printed Paper	9.7%	7.0%	5.1%	0.0%	0.0%	0.0%
Other Printed Paper	Kraft Paper	0.7%	2.0%	1.8%	0.0%	0.0%	0.0%
Corrugated Cardboard	Corrugated Cardboard	4.7%	33.1%	36.4%	0.0%	0.0%	0.0%
Boxboard	Boxboard / Cores	11.6%	31.9%	39.2%	0.0%	0.0%	0.0%
Boxboard	Molded Pulp	0.8%	3.6%	2.5%	0.0%	0.0%	0.0%
Boxboard	Tissue/Toweling	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Gable Top Cartons	Gable Top Containers - milk and milk substitute	0.3%	0.1%	0.1%	42.9%	0.0%	0.0%
Gable Top Cartons	Gable Top Containers - other beverages	0.3%	0.1%	0.0%	42.4%	0.0%	0.0%
Gable Top Cartons	Gable Top Containers - non beverage	0.1%	0.0%	0.0%	0.3%	0.0%	0.0%
Aseptic Containers	Aseptic Containers - milk and milk substitute	0.1%	0.0%	0.0%	2.6%	0.0%	0.0%
Aseptic Containers	Aseptic Containers - other beverages (non-alcoholic)	0.1%	0.1%	0.0%	7.2%	0.0%	0.0%
Aseptic Containers	Aseptic Containers - alcoholic beverage containers	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Aseptic Containers	Aseptic Containers -non beverage	0.1%	0.1%	0.0%	1.1%	0.0%	0.0%
Paper Laminants	Hot drink polycoat cups	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
Paper Laminants	Cold drink polycoat cups	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Paper Laminants	Spiral wound containers	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%
Paper Laminants	Ice cream containers	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%
Paper Laminants	Other bleached long polycoat fibre	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Paper Laminants	Other paper laminate categories	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%
PET Bottles	PET Bottles and Jars	0.0%	0.0%	0.0%	0.0%	6.4%	67.6%
HDPE Bottles	HDPE Bottles and Jugs	0.0%	0.0%	0.0%	0.0%	3.3%	0.8%
Plastic Laminants	Plastic Laminants and Other Film Packaging	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Polystyrene	#6 PS - Non-expanded - all other	0.0%	0.0%	0.0%	0.0%	14.1%	0.2%
Other Plastics	#2 HDPE other	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Other Plastics	PP Bottles	0.0%	0.0%	0.0%	0.0%	1.4%	0.2%
Other Plastics	Tubs & Lids	0.0%	0.0%	0.0%	0.0%	34.8%	2.2%
Other Plastics	PET Thermoform - clear	0.0%	0.0%	0.0%	0.0%	2.6%	26.4%
Other Plastics	#1 PET - other thermoform (coloured)	0.0%	0.0%	0.0%	0.0%	1.5%	0.1%
Other Plastics	Other Rigid Plastic Packaging	0.0%	0.0%	0.0%	0.0%	33.4%	0.6%
MHSW Solvents	Solvent containers	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
Others	Other Accepted Recyclables	1.2%	0.2%	0.1%	2.4%	1.2%	1.5%
Others	Other Material	0.7%	0.4%	0.7%	0.6%	0.9%	0.5%
	Targeted Material	96.8%	98.2%	98.8%	96.8%	97.6%	94.1%
	Non-targeted material	3.2%	1.8%	1.2%	3.2%	2.4%	5.9%

Stewardship Ontario Blue Box Material MRF Audits – Description of Audit and Notes

Contact Information

Municipality: London

Municipal or MRF Operator Contact Name:

Municipal or MRF Operator Phone:

Municipal or MRF Operator Contact Email:

Study Conducted By (Contractor): 2cg

Audit Supervisor Name: Ulrike Klein

Audit Supervisor Phone: 519-777-2398

Audit Supervisor E-mail: Ulrike@2cg.ca

Description and Address of Sort Site: Manning Drive, London

Timing and Materials Sorted

Date of Audit: 25-26 June 2012

Materials Sorted (e.g. ONP#8, Plastics #3-#7, etc): 1. 10 x ~50kg ONP#8

2. 8 x ~50 kg Hard Pack

3. 10 x ~ 50 kg Polycoat

Notes / Observations

Pertinent information that may be useful for interpreting the results, general observations on waste composition, problems/issues with the audit, etc

-all material was delivered to and from the audit area by London MRF staff to improve sorting efficiencies as material is direct feed to baler, enclosed bunkers or compactors. This process improved overall audit time.

London ONP # 8 had minimal cross contamination (clean)

Stewardship Ontario Blue Box Material MRF Audits – Description of Audit and Notes

Stewardship Ontario Blue Box Material MRF Audits – Material Categories

Commodity	Material Category	Description / Examples
- ONP #8 - ONP #6 - Hardpack - Mixed Residential Paper	Newspaper and Inserts	Daily and weekly newspapers, community newspapers, free newspapers and other newsprint publications. E.g. Globe and Mail, Star, Metro, Auto Trader, Condo Living, Real Estate News. Includes flyers and advertising distributed with newspapers.
	Telephone Books / Directories	Telephone books and other directories such as the Yellow Pages
	Magazines & Catalogues	Glossy magazines, catalogues, calendars, annual reports (must be bound, i.e. stapled or glued).
	Other Printed Paper	Mixed fine paper and books. Includes soft and hard cover books, writing paper, office paper, bills and statements, ad mail, etc. Includes flyers and advertising that are not distributed with newspapers.
	Corrugated Cardboard	Includes micro-flute corrugated containers, pizza boxes, waxed corrugated containers, etc.
	Kraft Paper	Kraft paper bags and wrap, grocery or retail bags, potato bags, some pet food bags, etc. Includes brown, white, and coloured kraft paper and bags. No bags with bonded plastic or foil liners/layers/coatings.
	Boxboard / Cores	Boxboard, paperboard, cereal box, shoe box, frozen food box, cores from toilet paper/ toweling/gift wrap, etc. Includes wet-strength boxboard, fast food, ice cream boxes, cartons such as fry/onion ring boxes and paper plates
	Molded Pulp	Egg cartons, drink trays, other trays, molded pulp flower pots/trays, etc.
	Gable Top Containers - milk and milk substitute	Polycoat containers with a gable shaped top; milk and milk substitutes like soy, almond and rice milk
	Gable Top Containers - other beverages	Polycoat containers with a gable shaped top; predominantly juices
	Gable Top Containers - non beverage	polycoat containers with a gable shaped top - some foods, sugar, molasses etc.
	Aseptic Containers - milk and milk substitute	Polycoat fibre and foil containers (e.g. Tetra Pak) for soy, almond and rice milk
	Aseptic Containers - other beverages (non-alcoholic)	Polycoat fibre and foil containers (e.g. Tetra Pak) for juice boxes, water
	Aseptic Containers - alcoholic beverage containers	Polycoat fibre and foil containers (e.g. Tetra Pak) for wine and other spirits
	Aseptic Containers -non beverage	Polycoat fibre and foil containers (e.g. Tetra Pak) for soup, sauces etc.
	Hot drink polycoat cups	Hot beverage containers, typically with polycoat on inside only, including coffee cups, soup cups/bowls, chili cups etc. (excludes fountain drink cups)
	Cold drink polycoat cups	Cold beverage cups, typically with polycoat on both sides including for fountain drinks, take-out ice cream cups
	Spiral wound containers	Polycoat or paper containers with steel bottoms include chip containers, frozen concentrate juices, pre-packaged cookie dough etc. May also have foil and or plastic on ends
	Ice cream containers	Polycoated paper ice cream containers, typically with a lid, excluding boxboard folded ice cream boxes
	Other bleached long polycoat fibre	Food containers with white fibre and a rolled or folded rim, includes Michelina's frozen food, KFC tubs
	Other paper laminate categories	1. Paper with aluminum foil; 2. Paper with plastic; 2. Multi-layered paper - Includes microwave popcorn bags, some cookie bags, gift wrap, dog food bags, paper granola bar wrappers etc.
	Corrugated Cardboard	Electronic product boxes such as television and computer boxes, pizza boxes, kraft wrapping paper for mailing packages, kraft bags such as brown grocery bags, perscription bags, paper take-out bags used for mushrooms or food delivery, kraft bags for food such as flour, sugar, potatoes or oatmeal, kraft produce and bulk, store bags used for mushrooms, boxes used to direct mail for residential consumers

Commodity	Material Category	Description / Examples
	Boxboard / cores (tubes)	Paperboard such as cereal boxes and shoe boxes, Moulded pulp paper packaging such egg cartons and formed coffee take-out trays, Stiff paperboard used to mount plastic blister packs used (e.g., for products such as toys and batteries), the roll inside of toilet paper, paper towel, tin foil and plastic wrap
	Tissue/Toweling	Tissues, napkins, paper towels (includes wet/damp items)
	Other Accepted Recyclables	All other accepted recyclable materials
	Other Material	Prohibited material not acceptable in the product
Polycoat	Gable Top Containers - milk and milk substitute	Polycoat containers with a gable shaped top; milk and milk substitutes like soy, almond and rice milk
	Gable Top Containers - other beverages	Polycoat containers with a gable shaped top; predominantly juices
	Gable Top Containers - non beverage	polycoat containers with a gable shaped top - some foods, sugar, molasses etc.
	Aseptic Containers - milk and milk substitute	Polycoat fibre and foil containers (e.g. Tetra Pak) for soy, almond and rice milk
	Aseptic Containers - other beverages (non-alcoholic)	Polycoat fibre and foil containers (e.g. Tetra Pak) for juice boxes, water
	Aseptic Containers - alcoholic beverage containers	Polycoat fibre and foil containers (e.g. Tetra Pak) for wine and other spirits
	Aseptic Containers -non beverage	Polycoat fibre and foil containers (e.g. Tetra Pak) for soup, sauces etc.
	Hot drink polycoat cups	Hot beverage containers, typically with polycoat on inside only, including coffee cups, soup cups/bowls, chili cups etc. (excludes fountain drink cups)
	Cold drink polycoat cups	Cold beverage cups, typically with polycoat on both sides including for fountain drinks, take-out ice cream cups
	Spiral wound containers	Polycoat or paper containers with steel bottoms include chip containers, frozen concentrate juices, pre-packaged cookie dough etc. May also have foil and or plastic on ends
	Ice cream containers	Polycoated paper ice cream containers, typically with a lid, excluding boxboard folded ice cream boxes
	Other bleached long polycoat fibre	Food containers with white fibre and a rolled or folded rim, includes Michelina's frozen food, KFC tubs
	Other paper laminate categories	1. Paper with aluminum foil; 2. Paper with plastic; 2. Multi-layered paper - Includes microwave popcorn bags, some cookie bags, gift wrap, dog food bags, paper granola bar wrappers etc.
	Other Accepted Recyclables	All other accepted recyclables
	Other Material	Prohibited material not acceptable in the product
- Plastics #3 to #7 - PET *** excluding containers from MHSW**	PET Bottles and Jars	#1 plastic bottles and jars including pop, juice, liquor, cooking oil, honey, dish soap,
	HDPE Bottles and Jugs	#2 plastic bottles and jugs, juice, milk, laundry soap, shampoo, windshield washer fluid, etc.
	PP Bottles	# 5 plastic bottles includes nutritional supplement drinks, shampoos, etc.
	Tubs & Lids	tubs and lids (# 2, #4 & #5)
	PET Thermoform - clear	#1 clamshells, #1 egg cartons, #1 trays, #1 blister packaging
	#1 PET - other thermoform (coloured)	coloured PET microwave trays etc.
	#6 PS - Expanded polystyrofoam	Foam take-out containers such as drink cups, large, white packaging foam, meat trays
	#6 PS - Non-expanded - all other	Polystyrene clear clamshell containers such as berry and muffin containers, opaque clamshell containers such as food take-out containers, yogurt containers, rigid trays, small milk or cream containers for hot beverages, cold drink cups

Commodity	Material Category	Description / Examples
	LDPE/HDPE Plastic Film	HDPE & LDPE film, dry cleaning bags, bread bags, frozen food bags, milk bags, toilet paper and toweling over-wrap, lawn seed bags. Non packaging HDPE & LDPE film (e.g. kitchen catchers, sandwich and freezer bags, etc.) goes in Other Material. Grocery and retail carry-out bags go in LDPE/HDPE Plastic Film Carry-Out Bags
	LDPE/HDPE Plastic Film Carry-Out Bags	HDPE & LDPE grocery and retail carry-out bags. Non packaging HDPE & LDPE film (e.g. kitchen catchers, sandwich and freezer bags, etc.) goes in Other Material.
	Plastic Laminants and Other Film Packaging	Laminated plastic film and bags that is at least 85% by weight plastic. Includes chip bags, vacuum sealed bags; cereal liners, candy wraps, pasta bags, boil in a bag, plastic based food pouches, etc.
	Other Rigid Plastic Packaging	other rigid containers (#3, #4 & #7), non-PET blister packaging, unmarked/coded packaging, plant pots and trays, pails etc.
	Other Accepted Recyclables	All other accepted recyclables
	Other Material	Prohibited material not acceptable in the product
Aluminum	Aluminum Food & Beverage Cans	Soft drinks, soda, juice, beer cans, certain brands of sardines and cat food, etc.
	Aluminum Foil & Foil Trays	Aluminum foil wrap, pie plates, baking trays, etc.
	Aluminum Aerosols	Aluminum aerosol containers, hair products, tubes, etc.
	Other Accepted Recyclables	All other accepted recyclables
	Other Material	material not accepted in recycling program.
Steel	Steel Food & Beverage Cans	Apple juice, soup, beans, peaches, etc. No alcohol containers.
	Steel Aerosol Cans	Empty spray paint cans, cooking oil, whipped cream, etc.
	Spiral Wound Containers	Polycoat or paper containers with steel bottoms includes chip containers, frozen concentrate juices, etc.
	Other Accepted Recyclables	All other accepted recyclables
	Other Material	Prohibited material not acceptable in the product
MHSW Containers	Steel Paint Cans	
	Aerosols - paint	
	Aerosols - solvents	
	Aerosols - pesticides	
	Aerosols - other MHSW	
	Lubricating oil containers	
	Antifreeze containers	
	Pesticide containers	
	Fertilizer containers	
	Propane or compressed gas	To include all propane and compressed gas tanks and cylinders
	Batteries	
	Solvent containers	
- Commingled Fibre and Containers - Residue	Paper	Recyclable paper (accepted in recycling program)
	Paper Packaging	Recyclable paper packaging (accepted in recycling program)
	Polycoat Containers	Recyclable polycoat (accepted in recycling program)
	Plastic Packaging	Recyclable plastic packaging (accepted in recycling program)
	Glass Containers	Recyclable glass (accepted in recycling program)
	Steel Cans	Recyclable steel cans (accepted in recycling program)
	Aluminum Cans and Foil	Recyclable aluminum cans and foil trays (accepted in recycling program)
	Other Material	Prohibited material not acceptable in the product

Stewardship Ontario Blue Box Material MRF Audits – Sort Results

Municipality: London

Date: 25 & 26 June, 2012

	Commodity (e.g. ONP#8):	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	HP	HP
	Sample Number	1	2	3	4	5	6	7	8	9	10	1	2
	Notes:												
Commodity	**Material Category** (see Material Categories spreadsheet for category description/product examples)	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***
- ONP #8 - ONP #6 - Hardpack - Mixed Residential Paper	Newspaper and Inserts	31.18	29.68	28.08	28.48	30.82	30.38	28.46	27.18	30.72	29.96	2.84	2.84
	Telephone Books / Directories			2.60	0.20		0.46		1.74	0.98		1.52	1.72
	Magazines & Catalogues	2.64	2.52	3.72	4.00	2.60	3.42	5.04	3.42	4.54	3.54	4.82	4.24
	Other Printed Paper	6.18	4.62	4.54	4.82	4.56	8.22	4.46	4.38	5.66	5.18	3.92	3.90
	Corrugated Cardboard	3.58	2.02	2.64	2.22	2.42	3.74	2.60	3.22	0.70	3.20	17.90	17.84
	Kraft Paper	0.56	0.40	0.26	0.60	0.48	0.32	0.30	0.42	0.22	0.04	0.90	1.56
	Boxboard / Cores	7.60	7.00	5.30	6.12	7.06	6.18	6.86	6.50	5.86	5.58	15.06	16.46
	Molded Pulp	0.92	0.38	0.26	0.52	0.36	0.66	0.42	0.30	0.22	0.30	2.20	2.64
	Gable Top Containers - milk and milk substitute	0.20	0.14	0.16		0.06		0.04	0.18	0.12	0.42		
	Gable Top Containers - other beverages	0.08		0.24	0.14	0.16			0.14	0.08	0.06	0.08	
	Gable Top Containers - non beverage			0.02					0.04				
	Aseptic Containers - milk and milk substitute				0.08						0.02		
	Aseptic Containers - other beverages (non-alcoholic)	0.06	0.08	0.08	0.02	0.08		0.10	0.18	0.02			0.04
	Aseptic Containers - alcoholic beverage containers												
	Aseptic Containers -non beverage	0.04								0.04			
	Hot drink polycoat cups	0.08	0.10	0.02	0.02	0.04	0.14	0.02	0.04	0.04	0.02		
	Cold drink polycoat cups		0.02		0.08	0.02				0.02			
	Spiral wound containers		0.10	0.04	0.02	0.06	0.04			0.04	0.04		
	Ice cream containers	0.04			0.02	0.04	0.08	0.02		0.04			0.04
	Other bleached long polycoat fibre											0.02	
	Other paper laminate categories	0.06		0.02	0.02								
	Tissue/Toweling												
	Other Accepted Recyclables	0.88	0.62	0.64	0.56	0.40	0.44	0.66	0.66	0.30	0.90	0.10	0.04
	Other Material	0.40	0.36	0.46	0.52	0.70	0.26	0.44	0.28	0.20	0.18	0.42	0.08
Mixed Polycoat	Gable Top Containers - milk and milk substitute												
	Gable Top Containers - other beverages												
	Gable Top Containers - non beverage												
	Aseptic Containers - milk and milk substitute												
	Aseptic Containers - other beverages (non-alcoholic)												
	Aseptic Containers - alcoholic beverage containers												
	Aseptic Containers -non beverage												
	Hot drink polycoat cups												
	Cold drink polycoat cups												
	Spiral wound containers												
	Ice cream containers												
	Other bleached long polycoat fibre												
	Other paper laminate categories												
	Other Accepted Recyclables												
	Other Material												
- Plastics #3 to #7 **- Tubs and Lids**	PET Bottles and Jars												
	HDPE Bottles and Jugs												
	#2 HDPE other												
- PET	PP Bottles												
	Tubs & Lids												

Stewardship Ontario Blue Box Material MRF Audits – Sort Results

Municipality: London

Date: 25 & 26 June, 2012

	Commodity (e.g. ONP#8):	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	ONP#8	HP	HP
	Sample Number	1	2	3	4	5	6	7	8	9	10	1	2
	Notes:												
Commodity	**Material Category** (see Material Categories spreadsheet for category description/product examples)	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***
	PET Thermoform - clear												
	#1 PET - other thermoform (coloured)												
	#6 PS - Expanded polystyrofoam												
	#6 PS - Non-expanded - all other												
	LDPE/HDPE Plastic Film												
	#4 LDPE - Rigid												
	LDPE/HDPE Plastic Film Carry-Out Bags												
	Plastic Laminants and Other Film Packaging												
	Other Rigid Plastic Packaging												
	Other Accepted Recyclables												
	Other Material												
Aluminum	Aluminum Food & Beverage Cans												
	Aluminum Foil & Foil Trays												
	Aluminum Aerosols												
	Other Accepted Recyclables												
	Other Material												
Steel	Steel Food & Beverage Cans												
	Steel Aerosol Cans												
	Steel Paint Cans												
	Spiral Wound Containers												
	Other Accepted Recyclables												
	Other Material												
MHSW Containers	Steel Paint Cans												
	Aerosols - paint												
	Aerosols - solvents												
	Aerosols - pesticides												
	Aerosols - other MHSW												
	Lubricating oil containers												
	Antifreeze containers												
	Pesticide containers												
	Fertilizer containers												
	Solvent containers												
- Commingled Fibre and Containers - Residue	Paper												
	Paper Packaging												
	Polycoat Containers												
	Plastic Packaging												
	Glass Containers												
	Steel Cans												
	Aluminum Cans and Foil												
	Other Material												
	Total Weight (kg)	**54.50**	**48.04**	**49.08**	**48.44**	**49.86**	**54.34**	**49.42**	**48.68**	**49.80**	**49.44**	**49.78**	**51.40**

* Net weight minus weigh bin. Record multiple weigh-ins for one category as separate entries as follows: e.g. "=25.15+5.25"

Describe and weigh separately any item that significantly affects the total weight for a material category - note using Excel Comments

Each ~50 kg sample should be sorted separately into the material categories for that commodity. E.g. Sort aluminum samples into five categories: Aluminum Food & Beverage Cans, Aluminum Foil & Foil Trays, Aluminum Aerosols, Other Accepted Recyclables and Other Materials (i.e. non-recyclable material).

Stewardship Ontario Blue Box Material MRF Audits – Sort Results

Municipality: London

Date: 25 & 26 June, 2012

	Commodity (e.g. ONP#8):	HP	HP	HP	HP	HP	HP	Polycoat	Polycoat	Polycoat	Polycoat	Polycoat	Polycoat
	Sample Number	3	4	5	6	7	8	1	2	3	4	5	6
	Notes:												
Commodity	Material Category (see Material Categories spreadsheet for category description/product examples)	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*	Net Weight (kg)*
- ONP #8 - ONP #6 - Hardpack - Mixed Residential Paper	Newspaper and Inserts	1.48	1.08	3.62	4.14	9.66	6.52						
	Telephone Books / Directories	5.00	2.84		1.56	2.36	1.08						
	Magazines & Catalogues	5.84	4.98	3.24	3.10	2.94	3.92						
	Other Printed Paper	2.94	3.66	2.88	2.66	4.64	3.80						
	Corrugated Cardboard	13.72	19.56	17.18	17.52	13.60	16.14						
	Kraft Paper	1.24	0.86	0.44	1.22	1.48	0.38						
	Boxboard / Cores	15.58	13.26	19.12	17.20	16.08	15.88						
	Molded Pulp	2.84	2.16	1.26	1.36	1.50	0.66						
	Gable Top Containers - milk and milk substitute				0.02	0.04	0.06						
	Gable Top Containers - other beverages						0.04						
	Gable Top Containers - non beverage												
	Aseptic Containers - milk and milk substitute												
	Aseptic Containers - other beverages (non-alcoholic)		0.02	0.04	0.06	0.12	0.10						
	Aseptic Containers - alcoholic beverage containers												
	Aseptic Containers -non beverage					0.04							
	Hot drink polycoat cups			0.04	0.02	0.10	0.08						
	Cold drink polycoat cups			0.02	0.04	0.02							
	Spiral wound containers				0.10		0.04						
	Ice cream containers			0.10									
	Other bleached long polycoat fibre					0.04							
	Other paper laminate categories				0.14								
	Tissue/Toweling												
	Other Accepted Recyclables	0.16		0.10	0.06	0.20	0.06						
	Other Material	0.16	0.58	0.10	0.24	0.18	0.02						
Mixed Polycoat	Gable Top Containers - milk and milk substitute							22.88	23.60	25.34	21.44	21.70	23.40
	Gable Top Containers - other beverages							20.72	20.26	25.72	22.26	22.82	22.54
	Gable Top Containers - non beverage							0.08	0.12	0.08	0.10	0.08	0.12
	Aseptic Containers - milk and milk substitute							0.96	0.82	1.74	1.24	1.32	1.52
	Aseptic Containers - other beverages (non-alcoholic)							3.44	3.22	3.48	2.62	3.44	3.66
	Aseptic Containers - alcoholic beverage containers								0.04		0.04		
	Aseptic Containers -non beverage							0.28	0.50	0.44	0.48	0.58	0.58
	Hot drink polycoat cups												
	Cold drink polycoat cups								0.02				
	Spiral wound containers							0.06	0.06				
	Ice cream containers								0.06	0.18		0.08	0.04
	Other bleached long polycoat fibre												
	Other paper laminate categories												
	Other Accepted Recyclables							1.32	0.96	1.74	0.92	1.36	1.84
	Other Material							0.16	0.26	0.12	0.52	0.36	0.28
- Plastics #3 to #7 - Tubs and Lids	PET Bottles and Jars												
	HDPE Bottles and Jugs												
	#2 HDPE other												
- PET	PP Bottles												
	Tubs & Lids												

Stewardship Ontario Blue Box Material MRF Audits – Sort Results

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	Commodity (e.g. ONP#8):	HP	HP	HP	HP	HP	HP	Polycoat	Polycoat	Polycoat	Polycoat	Polycoat	Polycoat
	Sample Number	3	4	5	6	7	8	1	2	3	4	5	6
	Notes:												
Commodity	**Material Category** (see Material Categories spreadsheet for category description/product examples)	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***
	PET Thermoform - clear												
	#1 PET - other thermoform (coloured)												
	#6 PS - Expanded polystyrofoam												
	#6 PS - Non-expanded - all other												
	LDPE/HDPE Plastic Film												
	#4 LDPE - Rigid												
	LDPE/HDPE Plastic Film Carry-Out Bags												
	Plastic Laminants and Other Film Packaging												
	Other Rigid Plastic Packaging												
	Other Accepted Recyclables												
	Other Material												
Aluminum	Aluminum Food & Beverage Cans												
	Aluminum Foil & Foil Trays												
	Aluminum Aerosols												
	Other Accepted Recyclables												
	Other Material												
Steel	Steel Food & Beverage Cans												
	Steel Aerosol Cans												
	Steel Paint Cans												
	Spiral Wound Containers												
	Other Accepted Recyclables												
	Other Material												
MHSW Containers	Steel Paint Cans												
	Aerosols - paint												
	Aerosols - solvents												
	Aerosols - pesticides												
	Aerosols - other MHSW												
	Lubricating oil containers												
	Antifreeze containers												
	Pesticide containers												
	Fertilizer containers												
	Solvent containers												
- Commingled Fibre and Containers - Residue	Paper												
	Paper Packaging												
	Polycoat Containers												
	Plastic Packaging												
	Glass Containers												
	Steel Cans												
	Aluminum Cans and Foil												
	Other Material												
	Total Weight (kg)	**48.96**	**49.00**	**48.14**	**49.44**	**53.00**	**48.78**	**49.90**	**49.92**	**58.84**	**49.62**	**51.74**	**53.98**

* Net weight minus weigh bin. Record multiple weigh-ins for one category as separate entr
Describe and weigh separately any item that significantly affects the total weight for a ma
Each ~50 kg sample should be sorted separately into the material categories for that com

Stewardship Ontario Blue Box Material MRF Audits – Sort Results

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	Commodity (e.g. ONP#8):	Polycoat	Polycoat	Polycoat	Polycoat								
	Sample Number	7	8	9	10								
	Notes:												
Commodity	**Material Category** (see Material Categories spreadsheet for category description/product examples)	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***
- ONP #8 - ONP #6 - Hardpack - Mixed Residential Paper	Newspaper and Inserts												
	Telephone Books / Directories												
	Magazines & Catalogues												
	Other Printed Paper												
	Corrugated Cardboard												
	Kraft Paper												
	Boxboard / Cores												
	Molded Pulp												
	Gable Top Containers - milk and milk substitute												
	Gable Top Containers - other beverages												
	Gable Top Containers - non beverage												
	Aseptic Containers - milk and milk substitute												
	Aseptic Containers - other beverages (non-alcoholic)												
	Aseptic Containers - alcoholic beverage containers												
	Aseptic Containers -non beverage												
	Hot drink polycoat cups												
	Cold drink polycoat cups												
	Spiral wound containers												
	Ice cream containers												
	Other bleached long polycoat fibre												
	Other paper laminate categories												
	Tissue/Toweling												
	Other Accepted Recyclables												
	Other Material												
Mixed Polycoat	Gable Top Containers - milk and milk substitute	23.78	23.00	23.62	23.26								
	Gable Top Containers - other beverages	20.76	21.12	20.72	21.72								
	Gable Top Containers - non beverage	0.28	0.14	0.04	0.10								
	Aseptic Containers - milk and milk substitute	1.44	1.24	0.94	1.74								
	Aseptic Containers - other beverages (non-alcoholic)	3.00	3.28	3.70	3.06								
	Aseptic Containers - alcoholic beverage containers		0.10	0.04	0.06								
	Aseptic Containers -non beverage	0.44	0.76	0.50	0.44								
	Hot drink polycoat cups												
	Cold drink polycoat cups	0.02	0.02										
	Spiral wound containers	0.06	0.10										
	Ice cream containers		0.06	0.04	0.06								
	Other bleached long polycoat fibre												
	Other paper laminate categories			0.02									
	Other Accepted Recyclables	1.26	1.54	1.08	1.72								
	Other Material	0.18	0.30	0.24	0.50								
- Plastics #3 to #7 - Tubs and Lids	PET Bottles and Jars				1.08								
	HDPE Bottles and Jugs												
	#2 HDPE other												
- PET	PP Bottles												
	Tubs & Lids												

Stewardship Ontario Blue Box Material MRF Audits – Sort Results

Municipality: London

Date: 25 & 26 June, 2012

	Commodity (e.g. ONP#8):	Polycoat	Polycoat	Polycoat	Polycoat								
	Sample Number	7	8	9	10								
	Notes:												
Commodity	**Material Category** (see Material Categories spreadsheet for category description/product examples)	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***	**Net Weight (kg)***
	PET Thermoform - clear												
	#1 PET - other thermoform (coloured)												
	#6 PS - Expanded polystyrofoam												
	#6 PS - Non-expanded - all other												
	LDPE/HDPE Plastic Film												
	#4 LDPE - Rigid												
	LDPE/HDPE Plastic Film Carry-Out Bags												
	Plastic Laminants and Other Film Packaging												
	Other Rigid Plastic Packaging												
	Other Accepted Recyclables												
	Other Material												
Aluminum	Aluminum Food & Beverage Cans												
	Aluminum Foil & Foil Trays												
	Aluminum Aerosols												
	Other Accepted Recyclables												
	Other Material												
Steel	Steel Food & Beverage Cans												
	Steel Aerosol Cans												
	Steel Paint Cans												
	Spiral Wound Containers												
	Other Accepted Recyclables												
	Other Material												
MHSW Containers	Steel Paint Cans												
	Aerosols - paint												
	Aerosols - solvents												
	Aerosols - pesticides												
	Aerosols - other MHSW												
	Lubricating oil containers												
	Antifreeze containers												
	Pesticide containers												
	Fertilizer containers												
	Solvent containers												
- Commingled Fibre and Containers - Residue	Paper												
	Paper Packaging												
	Polycoat Containers												
	Plastic Packaging												
	Glass Containers												
	Steel Cans												
	Aluminum Cans and Foil												
	Other Material												
	Total Weight (kg)	51.22	51.66	50.94	53.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Net weight minus weigh bin. Record multiple weigh-ins for one category as separate entr
Describe and weigh separately any item that significantly affects the total weight for a ma
Each ~50 kg sample should be sorted separately into the material categories for that com