Effectiveness and Efficiency Fund – Project #164
Municipal Partner – Region of Peel

Prepared by:

Markets Help Desk Report

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Executive Summary

The Markets Help Desk Project (#164) conducted by Recyclable Materials Marketing (ReMM) with the support of the Region of Peel and the Stewardship Ontario Effectiveness and Efficiency Fund highlighted the following:

- Annually, more than $1 million dollars of marketable commodities are being disposed of as residue from the Material Recovery Facilities (MRF's) analyzed as part of this study. Residue audits from three of the studied recycling programs indicated between 40-50% of the residue generated from the MRF's is comprised of marketable recyclable commodities. Additional analysis is required to determine the cost vs the benefit of capturing recyclable commodities from the residue stream.
- Protocols for auditing residue composition from MRF's should be utilized by all recycling facilities.
- Additional opportunities exist for municipalities to increase the net revenues associated with the marketing of commodities from their recycling programs by examining the following areas: Materials Marketed, Load Weights of Commodities being marketed, Transportation Methods to Market materials, Reviewing and/or Enforcing Contract Provisions.
- There appears to be inconsistent reporting to Waste Diversion Ontario's (WDO) datacall, which may have resulted in data being interpreted and reported incorrectly.
- Net system costs must be considered as some recycling programs receive lower collection and processing costs by allowing contractors to keep revenue from the sale of commodities.
- There is a need for additional support to municipalities to identify opportunities and implement the necessary changes to maximize net revenues.
- A follow-up review of the eight programs should be performed to determine if improvements have been made to increase net revenues or if additional support is required to facilitate the proposed recommendations.

1.0 Study Objectives

The key objectives of project #164 of the Stewardship Ontario Effectiveness and Efficiency Fund were as follows:

1. Review commodities marketing efforts of up to ten municipal programs. Emphasis to be placed upon programs marketing larger amounts of material with basket of goods revenues lower than the provincial average.
2. Identify potential limitations, highlighting why revenues from selected municipalities are lower than the provincial average.
3. Identify opportunities to increase net revenues for the selected programs.

The Region of Peel was the municipal partner for this project. Representatives from The Region of Peel provided comments and insight into components of this project.

2.0 Methodology

The methodology undertaken to meet the objectives of the study included the following:

1. Review of 2004 WDO datacall to identify municipalities with lower revenue than the Provincial average. The use of 2004 data was required as the project commenced in early 2006 and the 2005 data call was incomplete.
2. The City of Thunder Bay was added to the study since a representative from the Contractor providing marketing services to Thunder Bay contacted Stewardship Ontario with market related questions and was referred to ReMM.
3. Email and telephone discussions and personal meetings with selected municipalities to review the 2004 data and 2005 current revenue data.
4. During conversations and data review with selected municipalities, the following areas were discussed to identify opportunities to increase net revenues:
    a. Determine if materials are being marketed to the highest level (e.g. can "hardpack" be marketed as OCC)
    b. Determine if freight load weights are being maximized
    c. Determine if revenue is being lost due to the use of third parties (brokers)
    d. Identify if materials currently being disposed of could potentially be baled for resorting overseas
    e. Determine if high value items are ending up in the residue stream
    f. Determine if plastic containers are being sorted to the highest level for revenue recovery
    g. Determine if proper transportation methods are being used to ship glass
5. Based on willingness of the municipality and/or contractor to provide information, potential opportunities were identified to improve net revenues from each program. These opportunities are highlighted to assist other municipalities to identify similar opportunities within their own program.

3.0 Data Review

Based on a review of the 2004 WDO datacall, the following municipal programs were identified as generating the lowest revenue per tonne:

Table 1: WDO 2004 Program Rankings – Lowest Revenue per Tonne

Municipality	Tonnes Marketed – 2004	$/Tonne
1. Orillia	2731	$40 *
2. Kenora	934	$63
2. County of Simcoe	16194	$75
3. City of Hamilton	34786	$85
4. Kawartha Lakes	6815	$92
5. Peel Region	84869	$102
6. Cochrane Temisikaming Waste Mgmt Board	1377	$102
7. County of Northumberland	7450	$104
8. City of Toronto	153688	$108
9. Greater Sudbury	10371	$111
10. Town of Newmarket	6638	$123
11. Muskoka	6375	$126
12. Barrie	10875	$129
13. London	23951	$131
14. Blind River	225	$0

* NOTE: As a result of a contract change in July of 2004, Orillia went from retaining 75% percent of revenue generated for the first half 2004, to the processor (Mid Ontario) retaining all the revenue and in turn charging the City an all-inclusive price. As a result of this change the revenue per tonne depicted above may be artificially low.

Based on initial discussions and email communications with the municipalities in the aforementioned summary, the following municipalities were identified as the most suitable to proceed with further analysis.

Table 2: Selected Municipalities

Municipality	Tonnes Marketed – 2004	$/Tonne
1. Orillia	2731	$40
2. County of Simcoe	16194	$75
3. City of Hamilton	34786	$85
4. Peel Region	84869	$102
5. Cochrane Temisikaming Waste Mgmt Board	1377	$102
6. County of Northumberland	7450	$104
7. Kenora	934	$63
8. Thunder Bay	4022	$0

Orillia and the County of Simcoe were combined as they both use the same processor and receive similar market revenues for the majority of their material.

Following inquiries by Recool to Stewardship Ontario regarding market conditions and the closure of a Northern paper mill, the City of Thunder Bay was added to the project. The City did not record any revenue from the sale of commodities as the contractor retained all of the revenue from commodity sales under the contract.

Preliminary background information relating to each of the municipal programs is provided in the following table:

Table 3: Background Information of Selected Municipalities

Municipality	**Approximate Population**	**Municipalities/Cities Serviced by MRF**	**Processor-MRF**	**Revenue Share – Commodities**	**Marketing Responsibility**
1. Orillia	30 045	City of Orillia	Mid-Ontario Recycling	100% Processor	Processor
2. County of Simcoe	240 300	16 member municipalities [1]	Mid-Ontario, Frith County MRF	100% Processor 100% County	Processor County Staff
3. City of Hamilton	503 000	City of Hamilton Dundas, Ancaster, Flamborough, Glanbrook, Waterdown & Stoney Creek)	Canada Fiber	100% City	Fiber – Canada Fiber Containers – ReMM
4. Peel Region	988 948	Brampton, Caledon, Mississauga	Canadian Waste	100% City	Fiber – Canadian Waste Containers – ReMM
5. Cochrane Temiskaming Waste Mgmt Board	69 901	See below [2]	Public Staff (New Liskard and Kapaskasing)	100% Municipality	Waste Management Board
6. County of Northumberland	75 000	See below [3]	Public Staff	100% Municipality	Municipality
7. Kenora	18 000	City of Kenora	Metro Waste – Winnipeg	100% Municipality after freight	Processor
8. Thunder Bay	120 000	Thunder Bay	Recool	100% Contractor	Processor

1. Municipalities of Simcoe County:
    a. Town of Bradford West Gwillimbury
    b. Town of Collingwood
    c. Town of Innisfil
    d. Town of Midland
    e. Town of New Tecumseth
    f. Town of Penetanguishene
    g. Town of Wasaga Beach
    h. Township of Adjala-Tosorontio
    i. Township of Clearview
    j. Township of Essa
    k. Township of Oro-Medonte
    l. Township of Ramara
    m. Township of Springwater
    n. Township of Tay
    o. Township of Tiny
    p. Severen Township

2. Municipalities of Cochrane and Temiskaming:
    a. City of Temiskaming Shores
    b. Municipality of Charlton and Dack
    c. Town of Englehart
    d. Town of Kirkland Lake
    e. Town of Latchford
    f. Township of Armstrong
    g. Township of Brethour
    h. Township of Casey
    i. Township of Chamberlain
    j. Township of Coleman
    k. Township of Evanturel
    l. Township of Gauthier
    m. Township of Harley
    n. Township of Harries
    o. Township of Hilliard
    p. Township of Hudson
    q. Township of James
    r. Township of Kerns
    s. Township of Larder Lake
    t. Township of Matachewan
    u. Township of McGarry
    v. Village of Thornloe

3. Municipalities of Northumberland:
    a. Municipality of Alnwick/ Haldimand
    b. Municipality of Brighton
    c. Town of Coburg
    d. Township of Cramahe
    e. Township of Hamilton
    f. Municipality of Port Hope
    g. Municipality of Trent Hills

4.0 Discussion Summary

The discussion summary for each program includes the following sections:

A. Data Review
B. Materials Marketed
C. Material Weights
D. Transportation
E. Opportunities to Improve Net Revenue

A summary is provided for each municipality, detailing the aforementioned sections. An initial review of the 2004 data was conducted, followed by an assessment of the current strategies for marketing materials.

Potential opportunities to improve net revenues are also provided for each municipality.

4.1 City of Orillia and County of Simcoe

A. Data Review

The 2004 WDO datacall reported the City of Orillia received 75% of the revenue generated from the sale of fiber and no revenue from the sale of container material. In actuality, this was only the case for the first half of 2004. As of July 2004, the processor received 100% of the revenue as part of an all-inclusive contract.

The 2004 WDO datacall reported the County of Simcoe received 50% of the revenue from the sale of its commodities. However, the County of Simcoe currently has three locations where recyclable materials are processed from its sixteen member municipalities: Mid-Ontario Disposal, Frith Recycling and the County Recycling Facility. Mid-Ontario Disposal processes more than half of the material collected from the County of Simcoe under the same terms and conditions as the material from Orillia. Therefore, the following summary provides an overview of the arrangements Orillia and the County of Simcoe have with a common processor. A brief overview of the arrangements the County has for the balance of its materials is provided at the end of this section.

B. Materials Marketed

The City of Orillia and the County of Simcoe each have separate agreements whereby Mid-Ontario Disposal manages the collection and processing of curbside material on behalf of the City and part of the County respectively.

Fiber

- Orillia – Mid-Ontario pulls out residential OCC at its transfer station and bales this material with OCC from the IC&I sector. Mid-Ontario also markets approximately 150 tonnes per month of loose fiber as #6 ONP from Orillia to a third party broker, who bales the material and sells it to end markets. The broker also markets the OCC from Mid-Ontario Disposal.
- Simcoe – Mid-Ontario markets approximately 550 tonnes per month of loose fiber as #6ONP from the County of Simcoe.

Containers

- Orillia and Simcoe – Mid-Ontario markets approximately 350 tonnes per month of loose containers to third party recycling facilities including Guelph, Niagara Recycling and in the past to Muskoka Containerized Services. Mid-Ontario generally ships more material to Guelph and Niagara due to higher market prices.

Reasons for Current Handling of Containers and Fiber

- In the past, Mid-Ontario sorted and baled all of their materials on-site. However, due to high labour issues, costs and equipment maintenance issues they now only bale OCC, plastic film and Styrofoam.
- Mid-Ontario indicates their current method of marketing materials allows them to provide lower collection costs to municipalities as part of a household pick up fee.
- Mid-Ontario indicated that it currently does not rebate any of the commodity revenue to Orillia and Simcoe (one contract previously received 50% of the revenue but the new contract effective July 2006 allocated 100% revenue to Mid-Ontario).

C. Material Weights

The fiber and containers are currently transported using walking floor trailers. The mixed fiber loads are approximately 20 tonnes, while the container loads vary in weight from 5-10 tonnes.

D. Transportation

The broker purchasing the fiber from Mid-Ontario currently arranges and pays for the transportation.

Mid-Ontario uses some of its own vehicles to transport loose container loads to various end markets.

E. Opportunities to Increase Net Revenue

Table 4: Opportunities to Increase Revenue: City of Orillia/ County of Simcoe

Opportunity	Commodity impacted	Potential Revenue Impact	Potential Annual Revenue Impact	Additional Impact
1. Re-establish revenue share	All	Unknown	Unknown	May increase collection costs.
2. Have contractor bale produce #8 vs. #6 ONP	News	$10-$15 per tonne	$100,000	
3. Bale material vs. loose shipments	Containers	$20-30 per tonne	$100,000	May not have baling capability for containers.

Re-establish Revenue Share

The City of Orillia has chosen to receive no revenue from the sale of their material. The County of Simcoe previously received 50% of the revenue from the marketing of its commodities. However, under the new contract effective July 2006, the County opted to allow their contractor to retain 100% of the revenue in return for lower collection costs.

Both of these municipalities have chosen to allow their Contractor to retain all the revenue from the sale of commodities in return for lower collection costs. However, under this scenario, the contactor is likely to factor risk associated with commodities marketing into the discounted collection costs. Therefore, the collection costs are not fully discounted to reflect the value of the commodities received by the Contractor.

Both the municipalities indicated they their collection contract was put out to tender, and the companies that bid on it had an incentive through competition to reduce their costs based on the revenue expected from the sale of recyclable materials. Based on this it can be assumed that the competitors would have strived to produce the most competitive price while factoring the risk associated with the marketing of containers.

Also, it should be noted that under Orillia's previous contract, Mid Ontario was able to deduct transportation costs to the market from the City's revenue share. This discussion does not factor in additional administration time the City would incur to ensure transportation costs are reasonable, these costs would add to the overall processing fees.

The current contracts provide a lower collection cost by allowing the contractor to retain commodities revenue. However, the Contractor likely factors in commodity risk into their collection price. Therefore, these municipalities may want to consider issuing proposals that would allow them to compare the option of retaining commodities revenue and paying collection and processing costs; with the option of allowing the Contractor to retain revenues and provide a lower collection cost.

Commodities Marketing Changes

Additional opportunities may exist for these two municipalities to further reduce their overall program costs if their Contractor was able to increase commodity revenues thereby passing on some of the gains to the municipalities through lower collection costs.

Potential areas where revenues could be increased include the following:

- Sorting the #6 news at the transfer operation to produce #8 news
- Selling material directly to mills instead of using a third party
- Negotiating long-term deals with local container processors to maximize net revenue from the container stream – the use of several processors may not allow Mid Ontario to realize the best net revenue option for this stream

These changes could allow the Contractor to realize up to an additional $100,000 - $200,000 in revenue from the sale of the commodities depending on the additional cost of sorting to produce #8 news versus #6 news. Some of these savings could be passed onto Orillia and the County of Simcoe through reduced collection and processing charges. The staff at the municipality of Orilia, however, thought that the additional cost to sort would be significant, and did not think that their processor, Mid Ontario, would agree that such large efficiencies were possible.

F. County of Simcoe – Additional Processors and Opportunities

Currently approximately 10,000 tonnes of recyclable material from the County of Simcoe is managed by Mid-Ontario Disposal. However, there are two other locations where material is processed: Frith Recycling and the County Recycling Facility.

Frith Recycling manages approximately 5,000 tonnes of material while the County MRF processes approximately 4,000 tonnes of material per year. The Agreement with Frith is similar to the Agreement with Mid-Ontario whereby Frith collects, processes and markets all the recyclable materials from a designated area of the County. Frith then charges the County for collection services. The County is not charged for processing and does not receive any revenues from the sale of the recyclable commodities.

Currently, the County staff provides collection for four of the municipalities within the County (a private contractor will assume collection services in January 2007). The recyclable material is taken to the County MRF where it is processed and marketed by County staff. Annually, approximately 2,800 tonnes of mixed curbside fiber is separated and marketed in two streams: hardpack (OCC and boxboard) and ONP. A private broker provides two spotted trailers at the MRF and pays the municipality for the fiber on a monthly basis.

Approximately 1,200 tonnes per year of containers are separated and marketed by County Staff into the following streams: PET, HDPE, Tubs and Lids, Aluminum, Cans, Steel Cans and Mixed Glass.

Opportunities

The County recently awarded five-year contracts that allow two private contractors to collect the recyclable materials, process and market materials and retain 100% of the revenue. However, should future Council decide on the construction of a larger more modern County owned recycling facility, included in the contracts are provisions that allow the County to provide six-month notice for the Contractors to begin delivering the recyclable materials to a County recycling facility. If a County owned recycling facility were to be constructed, the County would likely retain 100% of the revenues from the sale of commodities. This would likely be more desirable than the current scenario where Contractors are retaining 100% of the commodity revenue to offset processing fees and earn additional profits.

In the interim, the County continues to operate its existing recycling facility that contains older sorting equipment and a single ram baler. The County may be able to increase revenues from its existing facility by arranging to market its fiber materials directly to end markets rather than through a broker. The County currently sells some of its containers (steel, aluminum) directly to end markets while generally using brokers to market its plastics.

In the event a new County owned recycling facility is not constructed, the County should continue to explore options to market all of its unsorted containers and fibers to another recycling facility to reduce or eliminate the processing and maintenance costs at its existing MRF.

4.2 City of Hamilton

A. Materials Marketed

In 2004, Canada Fiber was the processor at the City owned MRF. As part of this contract, Canada Fiber was responsible for marketing the fiber from the City of Hamilton. Recyclable Materials Marketing (ReMM) was the Contractor responsible for marketing the container stream for the City.

Fiber

As part of the processing contract, Canada Fiber agreed to purchase the mixed fiber from the City. In turn, Canada Fiber transported this material to its own recycling facility in Toronto where the material was sorted and marketed. The City of Hamilton paid a processing fee to Canada Fiber for the fiber and Canada Fiber rebated the City of Hamilton based on a negotiated material composition.

In 2006, the City agreed to extend its contract with Canada Fiber. As part of the new contract, Canada Fiber installed a fiber sorting line at the City MRF. Canada Fiber retains the marketing of the fiber stream and the City receives revenue based on the fiber composition.

Containers

ReMM continues to be responsible for marketing the container stream on behalf of the City. The containers are sorted and baled by Canada Fiber and ReMM acts as a consultant for the City to market the container materials. The revenue from the sale of the container materials is directly paid to the City from end markets.

B. Material Weights

The weights of the fiber material loads are consistent with other recycling facilities with most fiber loads averaging between 18-23 tonnes. However, the weights of the fiber loads are not significant for the City, as the City receives a monthly price based on the incoming fiber composition. The price paid to the City is Freight On Board (FOB) the City's recycling facility.

The weights of the container material marketed from the City MRF are generally light compared to other large recycling facilities. Plastic (PET, HDPE, Tubs and Lids) and Aluminum loads are generally between 12-15 tonnes, whereas other large recycling facilities generally produce loads weighing between 17-20 tonnes.

C. Transportation

Fiber transportation is not a concern to the City under the current agreement as the City receives revenue for the fiber based on an FOB price at the City MRF.

PET, HDPE, Tubs and Lids, Polystyrene, Film and Aluminum Cans are baled and transported via van trailers. Steel cans and glass are transported in 30 and 40-yard roll-off containers.

D. Opportunities to Increase Revenues

The following opportunities exist to potentially improve net revenue from the City of Hamilton recycling program. A summary of the opportunities along with potential revenue improvement is presented below.

Table 5: Opportunities to Increase Revenue: City of Hamilton

Opportunity	Commodity impacted	Potential Revenue Impact	Potential Annual Revenue Impact	Additional Impact
1. Reevaluate perforator and baler for plastics.	PET, HDPE, aluminum cans, tubs and lids, film	.005 to .01 per pound improvement per commodity	$30,000-$60,000	Ability to exploit export markets
2. Bale steel cans	Steel Cans	$3000/month	$36,000	Reduce transportation cost
3. Modify glass handling system	Glass	Cost reduction	$100,000	
4. Capture 50% of Marketable Material from Residue	All	Varies by commodity.	$250,000	Reduction in disposal costs. ($65,000)

Re-evaluate baler and perforator

A one-year old baler was installed in 2006 in an effort to improve the weights of plastics being marketed from the Hamilton recycling facility. However, the baler is producing light bales that are preventing the City of Hamilton to capitalize on higher revenues from domestic and overseas mills. The baler and perforation system should be reevaluated to determine the best method to improve load weights allowing the City of Hamilton to realize higher revenues from the sale of commodities.

Bale Steel Cans

Post-consumer steel cans are captured by the magnet on the container line and stored loose in 30-yard containers. These containers are transported to end markets. Approximately 30 trips per month are required to transport the loose cans. If the material were baled, only 6-7 loads would need to be transported to the end market. The transportation savings would be approximately $3,000 per month or $36,000 per year.

Modification of Current System to Transport Glass

In 2004 and for a part of 2005, the City of Hamilton used roll-off containers to transport glass to end markets resulting in significantly higher costs to manage the glass from the recycling facility. In 2005, a system was developed to transport glass using dump trailers. This system has assisted in lowering the transportation cost associated with glass. However, the current system requires the trucking company to place a loader at the MRF and have someone load the truck and transport the glass to market. The cost of the driver, the front-end loader and trucking are all reflected in the cost per load to transport glass to various end markets.

There may be two alternative approaches to reduce the glass handling and transportation costs:

- All glass leaving the MRF would fall directly into a dump trailer via a retractable conveyor system to properly fill a dump truck. This system would eliminate the need for a loader and operator at the site.

- Use the new loaders from the compost facility located near the MRF to load glass into third party dump trailers. This system would require coordination between the MRF operator and the composting facility operator. Furthermore, there are concerns regarding the potential contamination of the compost with glass from the MRF, making this option less attractive.

Capture Material from the Residue Stream

The preliminary results **(**Appendix A) of a residue audit from the Hamilton MRF in August 2006, suggests that approximately 40% of the residue from the MRF is comprised of recyclable material that could be marketed. The Hamilton MRF is projected to generate approximately 5,200 tonnes of residue in 2006. Based on the residue audit results approximately 2,000 tonnes of this material is marketable. Assuming that only 50% of the 2,000 tonnes of marketable material was captured, the City of Hamilton would generate more than $250,000 in additional revenue (based on the 2006 average market value of the material as summarized in Appendix B). Furthermore, the City would realize savings of approximately $65,000 due to avoided transportation and disposal cost of managing the residue being captured as marketable commodities.

No reaction from the municipality is provided

4.3 Region of Peel

Background Information

2004 Revenue Share = 80% for the Region
= 20% for the Contractor
⇒ 2006 Revenue Share - Fiber – Region paid based on formula, Contractor markets all fiber
⇒ 2006 Revenue Share – Containers – Region hires consultant to market containers and Region retains 100% of the revenue

A. Data Review

There appears to be inconsistencies in the data reporting and recording for the Region of Peel in the 2004 WDO datacall. For example, the total revenue generated by the sale of #8 ONP from the Region of Peel was approximately $5.2 million. However, the Region only retained 80% of the revenue or approximately $4.2 million which is the number recorded by the WDO[1].

Furthermore, the aluminum revenue reported in the WDO datacall for Peel is $1,193 per tonne. This is significantly lower than the actual revenue per tonne received by Peel, which was $1,785 per tonne. The difference results from two main factors: a) an additional 130 tonnes of aluminum from Caledon were included in the Peel diversion number even though Peel did not receive any revenue for these tonnes as Caledon was

[1] These reporting discrepancies have been brought to the attention of Peel Region and the WDO.

rebated 100% of the revenue; b) the revenue reported in the WDO datacall reflects 80% of the revenue received by Peel as opposed to the total revenue generated by the sale of aluminum.

A third discrepancy appears in the revenue numbers associated with glass marketing. Based on the WDO datacall, municipalities were to report the gross revenue received for their glass. Costs associated with transporting materials to markets were to be reported under operating costs. However, it appears the net revenue after deducting transportation costs was reported for the clear/flint glass.

B. Materials Marketed

Fiber

In 2004, the Region relied on their MRF operator to market all grades of fiber. The Region received 80% of the revenue and the processor retained 20% of the revenue plus a marketing fee.

Under the new contract (2006) the MRF operator pays the Region revenue for the fiber stream based on a formula that accounts for the fiber composition and monthly market price fluctuations. The Contractor has the ability to market the fiber material under as few or as many grades desired, however, the Contractor must pay the Region based on a formula.

Containers

In 2004, the Region used ReMM as a consultant to market their container materials from the MRF. However, the Region was obligated to share 20% of the revenue from the container stream with the MRF operator.

In 2006, the Region continues to use the services of ReMM to market the container material. However, the Region now retains 100% of the revenue (less consulting ReMM fees) from the sale of the container stream. As part of the new contract, ReMM markets the following materials as part of the container stream:

- PET
- HDPE coloured
- HDPE natural
- Tubs and Lids
- Post consumer film
- Polycoat/ Tetra-pak
- Aluminum cans
- Steel cans
- Mixed broken glass
- Flint glass

The Region of Peel is one of the few Ontario municipalities that separates Natural and mixed colour HDPE. The experience to date indicates there is a noticeable financial benefit to segregating natural HDPE from mixed colour.

C. Material Weights

The balers at the new MRF have ensured weights of all commodities from the Region of Peel meet minimum weight requirements for domestic and export markets. The heavy loads have allowed the Region to realize higher revenues from some export markets.

D. Transportation

The heavy weights of all loads have ensured transportation efficiencies are maximized. Glass is transported via dump trailers thereby further maximizing transportation efficiencies.

E. Opportunities for Increasing Revenue

Table 6: Opportunities to Increase Revenue: the Region of Peel

Opportunity	Commodity impacted	Potential Revenue Impact	Potential Annual Revenue Impact	Additional Impact
1. Reduce marketable material in residue	All	$85/tonne (based on recovering 50% of marketable material from residue)	$300,000 (recover 50% of marketable material from residue)	Disposal savings of $130,000 by recovering 50% of marketable material from residue. Additional WDO funds.
2. Reduce marketable containers in fiber stream	Aluminum PET	2.5 cents per can 1 cent per bottle	$120,000 $38,000	Contaminates Fiber – revenue impact to Contractor.

Note: Due to the fact that the author of this report is ReMM, the consultant that markets the Region of Peel's container materials, the internalization of container marketing will not be examined as a third opportunity to increase revenue for Peel.

A brief overview of the two opportunities to potentially increase revenue from the Region of Peel is provided.

a. Marketable Material in Residue and Containers in Fiber Stream

The Region of Peel has developed preliminary audit protocols for inbound material, outbound commodities and for residue audits. A report titled Protocols and Procedures for Conducting Audits at the Peel Integrated Waste Management Facility (PIWMF) is attached as Appendix C**.**

These protocols and procedures have been used to conduct eighteen audits of the MRF residue between March – September 2006. The preliminary results of the MRF residue audits (Appendix D) suggest the residue being generated by the MRF is comprised of approximately 45% marketable commodities.

The loss of marketable commodities into the MRF residue has significant revenue implications for the Region of Peel. Approximately 500 tonnes per month of residue leaves the MRF. Approximately 225 tonnes of this residue are marketable commodities as identified in the residue audits. The annual revenue loss associated with these marketable commodities is projected to be approximately $600,000. Assuming that the MRF operators were able to capture approximately 50% of the marketable commodities being disposed as residue, the Region of Peel could realize additional revenue of approximately $300,000 as summarized in Appendix E.

Furthermore, the Region could save an additional $130,000 in disposal cost avoidance by capturing 50% of the marketable material from the residue stream. The capture of additional recyclable material would also allow the Region to realize additional funds from the WDO.

b. Minimize containers in fiber stream

Additionally, there continues to be a considerable amount of marketable containers (PET, aluminum cans) being shipped with the #6 ONP from the MRF. The inclusion of these items contaminates the fiber stream, which may directly impact the revenues being received by the Contractor. Although it would not impact the fiber revenue received by the Region, due to the current agreement whereby the Region is paid for the fiber based on a formula, the inclusion of marketable aluminum cans and PET bottles in the fiber stream results in a revenue loss for the Region of Peel of approximately $150,000 annually as summarized in Appendix F.

4.4 Cochrane Temisikaming Waste Management Board

A. Data Review

The 2004 data as reported in the WDO datacall appears to be accurate. In 2004, the Board marketed 1,377 tonnes of material and retained 100% of the revenue from all commodity sales. Currently, the Board continues to retain 100% of the revenue from the sale of all commodities.

B. Materials Marketed

The Board is responsible for marketing materials generated from two small recycling facilities in New Liskard and Kapaskasing.

The materials managed by the Waste Management Board include:

- OCC
- PET
- Aluminum
- Steel cans
- Mixed curbside fiber including ONP, office paper, boxboard

Approximately 90% of the material marketed is mixed fiber and OCC. The Board staff generally issues monthly bids for its material and sells the material to the highest bidder.

C. Material Weights

The weights for the fiber loads are generally very heavy considering the small operations. The fiber loads range from 20-25 tonnes, which helps to minimize the transportation cost per tonne.

D. Transportation

The distance to end markets negatively impacts the net revenue received by the Board. In most cases, the consuming mills will not arrange to pick up material from New Liskard and Kapaskasing. Therefore, the Board generally uses brokers to arrange for the shipment of material to end markets.

E. Opportunities to Improve Net Revenue

Table 7: Opportunities to Increase Revenue: CTWMB

Opportunity	Commodity	Potential Revenue Impact	Potential Annual Revenue Impact	Additional Impact
1. Longer term agreement with broker or end market to maximize freight efficiencies	Mixed fiber OCC	$5-$10/tonne	$7500-$15,000	
2. Produce #8 ONP vs. mixed paper	Mixed paper	$10-$20 per tonne from mixed paper to #8 ONP	$15,000-20,000	Analyze additional cost of sorting mixed paper to produce #8 ONP.

The use of a monthly bidding system for the few loads of material managed by the Board may not be the most effective or efficient method to market materials. In some instances, the Board only receives one bid, as other bidders may not feel there is enough volume to merit the effort to submit monthly bids, especially if they have been unsuccessful in previous bids.

Furthermore, bidders may not be able to maximize transportation efficiencies since they are not assured of material on a regular basis. Their negotiation ability with trucking companies for lower rates is diminished since they cannot guarantee a consistent number of loads on a monthly basis.

By entering into a longer-term arrangement with a broker or end markets, the Board is likely to realize higher net revenues ranging from $5-$10 per tonne.

Another opportunity exists to produce higher revenue yielding #8 ONP instead of mixed paper. The Board may be able to realize $15,000-$20,000 in additional revenue by sorting mixed paper to produce #8 ONP. However, the additional sorting costs would need to be analyzed to determine the viability of this option.

4.5 Northumberland County

A. Data Review

The 2004 data review for Northumberland appears to be correct. In 2004, the County of Northumberland reported marketing 7,450 tonnes of recyclable materials. The County retained 100% of the revenues from commodity sales.

In 2006, the County continues to retain 100% of the revenue from the sale of recyclable commodities.

B. Materials Marketed

The materials marketed from the recycling facility include:

- ONP8
- OCC
- Aluminum cans
- Steel cans
- PET
- HDPE
- Tubs/Lids
- Plastic Film
- Polystyrene
- Tetrapak/Gable top
- Clear glass
- Green glass
- Mixed broken glass

The County has assigned the responsibility of marketing materials to an individual based at the recycling facility. All material is marketed to a combination of end markets and brokers. Generally, ONP, aluminum, steel and glass are sold directly to end markets while OCC and plastics are sold through brokers.

C. Material Weights

The loads of fiber are heavy enough to meet domestic mill specifications. Loads of PET and HDPE are generally between 13.5 – 19 tonnes and therefore are sold to domestic markets since the load weights are generally too light for export shipments**.**

D. Transportation

The recycling facility generally arranges for all loads to be priced based on a picked-up price at the recycling facility. Transportation of mixed broken glass and coloured glass are managed by the recycling facility as this material is shipped to a local aggregate market.

E. Opportunities to Improve Net Revenue

Table 8: Opportunities to Increase Revenue: Northumberland

Opportunity	Commodity	Potential Revenue Impact	Potential Annual Revenue Impact	Additional Impact
1. Capture recyclable material from residue	All - audits show approx. 50% of residue is fiber	Approx. $100/tonne (commodity recovery –fiber and containers)	Up to $200,000/yr (2000 tonnes of marketable material per year)	Avoided disposal costs of approx. $200,000 per year.
2. Improved glass manage-ment	Coloured and mixed glass	$46/tonne cost (freight plus processing)	$15,000 - $20,000	

Commodity Retrieval from Residue

Northumberland currently generates approximately 3200 tonnes per year of residue, which represents approximately 25% of all incoming material. The County currently pays approximately $390,000 per year to manage and dispose of the residue generated by the MRF.

Preliminary results of audits of the MRF residue indicate approximately 70% of the residue (2,200 tonnes per year) is marketable material. Of the 2,200 tonnes, approximately 50% is fiber. Therefore, Northumberland has the ability to potentially capture up to 1,100 tonnes of additional fiber and 1,100 tonnes of container material. Based on conservative estimates, the County can potentially generate an additional $200,000 by capturing up to 2,200 tonnes of marketable material from the residue stream. The County can also generate an additional $200,000 in savings as a result of cost avoidance associated with disposal.

A detailed consultant's report was prepared for Northumberland to submit to Stewardship Ontario to apply for funds to make improvements at the MRF to capture additional marketable commodities (E&E project 81).

Glass Handling and Marketing

Mixed broken glass and green glass are captured in roll-off containers at the MRF. The roll-off containers are then transported to a local processor who charges a tipping fee to receive the material.

The County is willing to modify its operations to handle the coloured and mixed glass together to be transported in dump trailers to alternative end markets. Modifying the glass handling system will allow the County to realize a net savings of $15,000 - $20,000 per year.

4.6 City of Kenora

The Kenora recycling program was previously managed as part of the Northwest Recycling Association (NORA). However, NORA ceased operations, so the City of Kenora developed its own initiatives to continue their recycling efforts. The City currently provides bi-weekly curbside blue box collection and operates a drop-off facility at the local transfer station.

Kenora was referred by Stewardship Ontario as a municipality that should be examined to assess the potential for increasing revenue from the program.

A. Data Review

The initial information provided by the WDO datacall was incomplete. Upon additional investigation, it was determined that, in 2004, the City of Kenora marketed 934 tonnes of recyclable materials and retained 100% of the net commodity value after paying transportation costs.

B. Materials Marketed

Three commodities are marketed by the City of Kenora**:**

- Loose #6 ONP
- Loose OCC/boxboard
- Loose mixed containers

All the material is transported to a MRF in Winnipeg where it is processed and marketed by an independent processor. Kenora receives a price for the material delivered to Winnipeg.

C. Material Weights

Each of the three commodities are shipped loose in trailers with the following average material weights by commodity:

- 24-25 tonnes for #6 ONP
- 11-12 tonnes for OCC/boxboard mix
- 9 tonnes for mixed containers

Minimal compaction is done at the transfer facility prior to the loads being shipped to Winnipeg.

D. Transportation

Approximately ten loads per month of the three different commodities are transported to Winnipeg in walking floor trailers. The transportation cost per load is approximately $700 resulting in a cost per tonne of $78 for mixed containers, $58 per tonne for OCC/boxboard and $28 per tonne for #6 ONP.

E. Opportunities to Improve Net Revenue

Table 9: Opportunities to Increase Revenue: City of Kenora

Opportunity	Commodity	Potential Revenue Impact	Potential Annual Revenue Impact	Additional Impact
1. Alternative local processors	All	$20-$70 per tonne transportation savings	$30,000	
2. Revised Agreement	ONP and OCC	$10-$30 per tonne	$13,000-$39,000	

1. Alternative Local Processors

Previously, the City was involved in sorting and baling materials on behalf of NORA. However, due to high costs, the City does not want to engage in internalizing the operations. The City of Kenora could contact local scrap metal dealers to determine if there may be alternative methods to process the recyclable materials to reduce transportation costs.

The City could have issued a request for proposals from other Northern processors or other processors in Winnipeg. The City chose to renew its existing agreement with the current processor as the City felt there were no viable alternative options.

The City currently uses a compactor walking floor trailer to transport loose containers to the processor in Winnipeg. This method costs the City approximately $78 per tonne. However, it may be worthwhile to determine if there is another company in the Kenora area that could potentially bale the commingled material on behalf of the City to reduce transportation costs.

2. Analyze Existing Agreements

The City of Kenora opted to extend the existing Agreement with its current processor. However, based on an initial review of the Agreement, it appears certain provisions may be omitted, or are not being followed as per the Agreement. For example, the Agreement states the City of Kenora will be paid for #6ONP and OCC based on the published price as per the Official Board Markets for the Chicago Region. However, based on the prices currently being received by the City, it appears a significant processing fee is being deducted for the OCC while the ONP 6 is being paid without the deduction of a processing fee, as summarized in Appendix G.

An opportunity may exist to revise the Agreement to reflect market based processing fees. Also, the ONP being delivered to Winnipeg may qualify as a higher grade than #6, thereby allowing the City to potentially increase the revenue received.

4.7 Thunder Bay

A. Data Review

Based on the 2004 datacall, the City of Thunder Bay used the services of a private company, Recool Canada Inc., to collect, process and market all the materials from the curbside and depot-recycling program. Recool retains 100% of the revenue from the sale of all recyclable commodities.

City of Thunday Bay staff have indicated that they current contract between the City and Recool is for 7 plus three one year options to renew commencing in 2006. At the time of this contract, the City administration felt that it was in the best interest of the program, both economically and resource wise to have the contractor collect 100% of the revenue.

B. Materials Marketed

The Thunder Bay program includes:

- ONP8
- Magazines
- OCC
- Polycoat/Tetra
- PET
- HDPE
- Steel Cans
- Aluminum Cans
- Glass

Representatives from Recool contacted Stewardship Ontario in 2005 after the announcement of the closure of the Red Rock paper mill. This mill was the main consumer of the OCC generated by Recool. The unexpected closure of this mill resulted in OCC being stockpiled at Recool. Prior to the inception of the Stewardship Ontario Markets Help Desk project, ReMM assisted Recool by identifying some US mills for the stockpiled OCC. However, high freight costs to ship the OCC to the US resulted in decreased net revenues that were undesirable to Recool. In turn, Recool used the Internet to advertise the availability of OCC. The results were positive as a company came forward and offered to pay attractive prices to export OCC from Thunder Bay.

The export market assisted to alleviate the short term OCC glut from Thunder Bay. However, lack of shipping containers and high transportation costs reduced the attractiveness of the export market.

Domestic end markets are once again being utilized for the OCC generated by Recool.

C. Material Weights

The bale weights are very heavy thereby providing flexibility to transport material generated by Recool to both domestic and export markets.

D. Transportation

Transportation costs from Thunder Bay to end markets continue to impact the net revenues received by Recool.

E. Opportunities to Improve Net Revenue

Initially, Recool was selling all of its newspaper to a mill based in Manitoba rather than selling the material to Bowater, a large newsprint mill based in Thunder Bay.

ReMM acted as an intermediary and initiated the sale of a portion of Recool's ONP8 and Magazines into Bowater for a higher price than the price being paid by the Manitoba based mill.

Unfortunately, in early September 2006, Bowater announced a temporary closure of its mill due to financial issues. It is unknown if this mill will resume the consumption of ONP in the future. In the interim, all the ONP and magazines generated by Recool continues to be sold to the Manitoba based mill.

Additional domestic and export opportunities will need to be considered for the sale of materials from Thunder Bay in the future in the event the existing ONP mill purchasing Recool's material closes.

5.0 Observations/Findings

The findings related to this project are summarized in the following headings below:

- Reporting
- Opportunities
- Next Steps

5.1 Reporting

1. There continues to be confusion regarding WDO reporting requirements related to gross and net revenues. Some municipalities report gross revenues excluding transportation costs while other municipalities are reporting net revenues after deducting transportation costs. This is most commonly found in glass and steel revenues.

2. The accounting of third party tonnes by including additional material from other jurisdictions whereby the revenue is returned to those jurisdictions may result in lower net revenue per tonne for the municipality processing and reporting the tonnes as part of their datacall.

3. There may be confusion in reporting requirements for municipalities that share commodities revenue with their Contractor. In some cases, municipalities may be reporting their share of the revenue only, while in other cases, municipalities may be reporting the gross revenue, ie. the Contractor's share plus the municipal share.

5.2 Opportunities

There are numerous opportunities to increase the net revenue associated with the recycling programs reviewed. These opportunities are summarized under the following sections: Materials Marketed, Material Weights, Transportation, Agreement Management and Residue Analysis.

Materials Marketed

1. Larger municipalities may want to assess the potential financial benefits of separating Natural and Mixed Colour HDPE due to the financial gains realized by the Region of Peel.

2. Municipalities may want to assess the financial benefits of encouraging and/or mandating their Contractor to produce higher quality newsprint ie. #8 vs. #6. In some instances where the municipality does not receive revenue, the Contractor may produce a lower grade of fiber, ie. #6, which yields lower revenue. In turn, the Contractor may charge the municipality higher collection and/or processing costs.

Material Weights

1. The recycling programs studied appear to be maximizing the load weights for their fiber material. However, there continue to be opportunities to maximize the weights of the container materials. The use of perforators and proper balers for the container streams can help maximize load weights resulting in higher net revenues from domestic buyers while providing an option to explore export markets.

Transportation

1. Maximizing load weights reduces the cost per tonne of transporting commodities.
2. The use of dump trailers for transporting glass generally provides a cost savings compared to the use of 30 or 40 yard roll-off containers.

Contract Management

1. There may be opportunities to increase net revenues by understanding and enforcing the terms and conditions of existing Agreements with Contractors.
2. Cost benefit analysis need to be conducted to ensure the savings offered by a Contractor for collection and/or processing are offset by allowing the Contractor to retain all the revenue from the sale of commodities.
3. The use of third parties to market materials and/or provide advice needs to be analyzed to determine if the benefit outweighs the cost of providing the service internally.

Residue Analysis

1. Municipalities should consider implementing mandatory audits of the residue from their MRF. Based on the results from The Region of Peel, The City of Hamilton and Northumberland County there is a significant financial opportunity to capture marketable material that is currently being disposed.
2. Standardized audit protocols and procedures being used by the Region of Peel could be used as a template for other municipalities.
3. Based on the audit results of each program, the municipality needs to determine the best method to capture the marketable material from the residue stream.

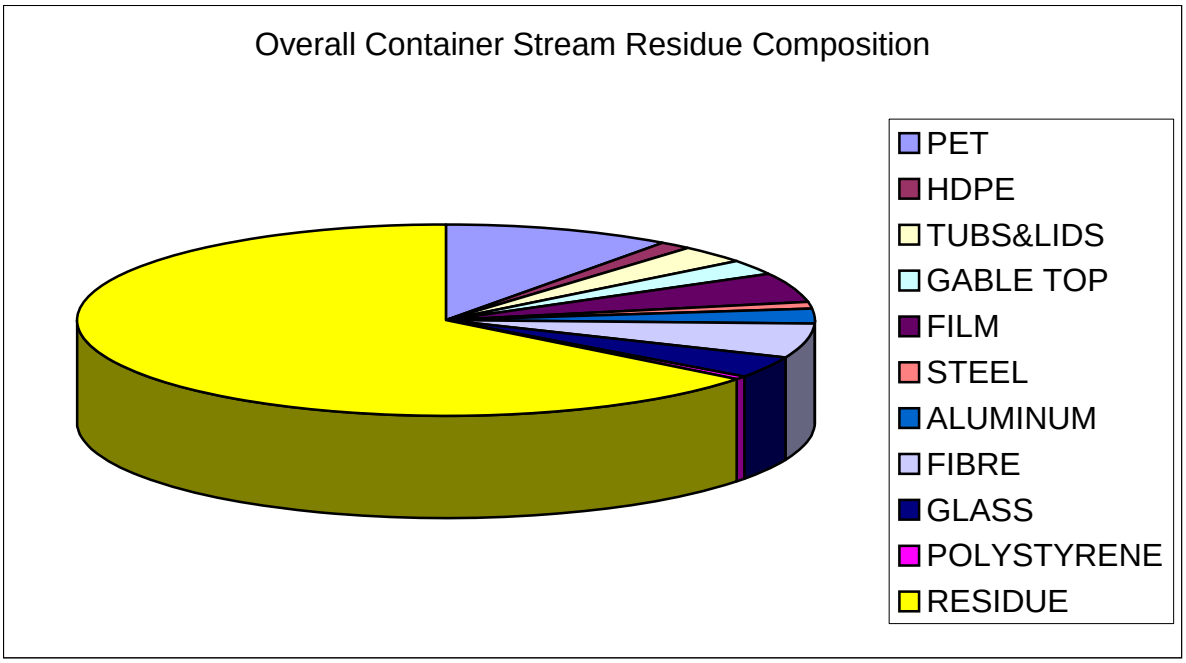
5.3 Next Steps – Stewardship Ontario

The findings of the Markets Help Desk Project clearly suggest there are numerous opportunities for the eight municipal recycling programs studied to increase the net revenue from the marketing of recyclable commodities.

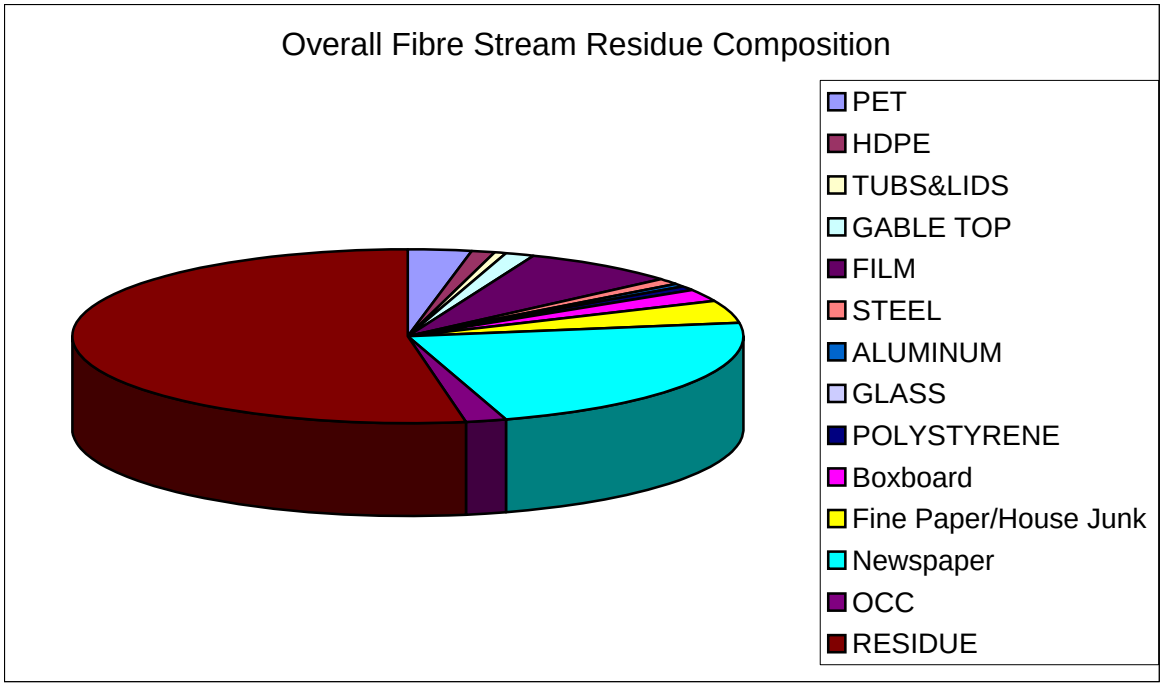
Stewardship Ontario may want to consider an expanded Markets Help Desk service to assist other municipal recycling programs to identify opportunities to maximize revenues from the marketing of their commodities.

Once opportunities are identified, municipal representatives generally need assistance in implementing the recommended changes in order to maximize their net revenues. An expanded Markets Help Desk could provide support to the municipalities to make the necessary changes to maximize revenues.

An expanded Markets Help Desk could assist municipalities to deal with the dynamic nature of commodities marketing. Furthermore, the Help Desk could assist municipalities with the marketing of difficult items, providing market research and conducting market development.



PET	9.92%
HDPE	1.47%
TUBS&LIDS	3.08%
GABLE TOP	2.39%
FILM	5.19%
STEEL	0.99%
ALUMINUM	2.62%
FIBRE	5.79%
GLASS	3.63%
POLYSTYRENE	0.44%
RESIDUE	64.49%
TOTAL	100.00%



Material	Percentage
PET	3.01%
HDPE	1.14%
TUBS&LIDS	0.47%
GABLE TOP	1.45%
FILM	7.63%
STEEL	0.99%
ALUMINUM	0.49%
GLASS	0.21%
POLYSTYRENE	0.62%
Boxboard	2.18%
Fine Paper/Junk	4.31%
Newspaper	22.80%
OCC	1.92%
Residue	52.77%
TOTAL	100.00%

Table 1: Residue in Tonnes for 2006

	Total Residue	Container Residue	Est. Marketable Material (Container Line)
January	311.6	311.6	110.7
February	307.8	307.8	109.3
March	436.13	283.5	100.7
April	481.22	312.8	111.1
May	638.74	415.2	147.4
June	588.08	382.3	135.7
July	363.05	236.0	83.8
August	383.22	249.1	88.5
Proj. Sept-Dec.	1754.93	1140.7	405.1
Total	5264.77	3638.9	1292.2

Table 2: Marketable Material Composition of Container Line Residue

Material	Pounds	Percentage
PET	432	27.94%
HDPE	64	4.14%
TUBS&LIDS	134	8.67%
GABLE TOP	104	6.73%
FILM	226	14.62%
STEEL	43	2.78%
ALUMINUM	114	7.37%
FIBRE	252	16.30%
GLASS	158	10.22%
POLYSTYRENE	19	1.23%
TOTAL	1546	100.00%

Table 3: Container Line - Lost Revenue

Commodity	Jan	Price	Revenue	Feb	Price	Revenue	March	Price	Revenue
PET	30.92	$389.47	$12,042.71	30.54	$366.48	$11,192.93	28.13	$352.74	$9,922.22
HDPE	4.58	$956.14	$4,379.94	4.52	$839.98	$3,800.66	4.17	$819.99	$3,417.11
TUBS&LIDS	9.59	$149.96	$1,438.29	9.47	$80.00	$757.89	8.73	$169.93	$1,482.67
GABLE TOP	7.44	$0.00	$0.00	7.35	$0.00	$0.00	6.77	$0.00	$0.00
FILM	16.18	$159.43	$2,578.96	15.98	$0.00	$0.00	14.72	$158.28	$2,329.19
STEEL	3.08	$124.55	$383.34	3.04	$152.11	$462.42	2.80	$168.65	$472.20
ALUMINUM	8.16	$2,116.15	$17,267.04	8.06	$2,239.32	$18,048.07	7.42	$2,226.91	$16,530.20
FIBRE	18.04	$70.52	$1,271.98	17.82	$72.25	$1,287.21	16.41	$76.69	$1,258.37
GLASS	11.31	$0.00	$0.00	11.17	$0.00	$0.00	10.29	$0.00	$0.00
POLYSTYRENE	1.36	$0.00	$0.00	1.34	$0.00	$0.00	1.24	$0.00	$0.00
TOTAL	110.66		$39,362.25	109.30		$35,549.17	100.67		$35,411.97

	April	Price	Revenue	May	Price	Revenue	June	Price	Revenue
PET	31.04	$352.74	$10,948.05	41.20	$275.57	$11,352.57	37.93	$263.63	$9,999.30
HDPE	4.60	$665.53	$3,060.17	6.10	$516.36	$3,151.46	5.62	$503.17	$2,827.39
TUBS&LIDS	9.63	$119.94	$1,154.69	12.78	$169.93	$2,171.47	11.77	$184.97	$2,176.19
GABLE TOP	7.47	$0.00	$0.00	9.92	$0.00	$0.00	9.13	$0.00	$0.00
FILM	16.24	$74.89	$1,215.99	21.55	$48.49	$1,045.06	19.84	$0.00	$0.00
STEEL	3.09	$185.18	$572.09	4.10	$196.20	$804.54	3.78	$206.12	$778.18
ALUMINUM	8.19	$2,347.09	$19,223.52	10.87	$2,641.22	$28,713.63	10.01	$2,174.30	$21,762.82
FIBRE	18.11	$77.58	$1,404.59	24.03	$69.07	$1,659.85	22.13	$69.81	$1,544.58
GLASS	11.35	$0.00	$0.00	15.07	$0.00	$0.00	13.87	$0.00	$0.00
POLYSTYRENE	1.37	$0.00	$0.00	1.81	$0.00	$0.00	1.67	$0.00	$0.00
TOTAL	111.07		$37,579.09	147.43		$48,898.57	135.74		$39,088.46

	July	Price	Revenue	August	Price	Revenue	Sept.-Dec	Price	Revenue
PET	23.42	$83.83	$1,962.93	24.72	$116.18	$2,871.56	113.19	$274.86	$31,110.69
HDPE	3.47	$480.00	$1,665.11	3.66	$429.99	$1,574.49	16.77	$643.94	$10,797.91
TUBS&LIDS	7.26	$0.00	$0.00	7.67	$149.97	$1,149.77	35.11	$147.42	$5,175.78
GABLE TOP	5.64	$0.00	$0.00	5.95	$0.00	$0.00	27.25	$50.63	$1,379.61
FILM	12.25	$0.00	$0.00	12.93	$0.00	$0.00	59.21	$118.75	$7,031.64
STEEL	2.33	$106.78	$248.87	2.46	$137.99	$339.48	11.27	$170.53	$1,921.25
ALUMINUM	6.18	$2,132.24	$13,175.34	6.52	$2,059.73	$13,434.39	29.87	$2,199.41	$65,693.95
FIBRE	13.66	$75.60	$1,032.63	14.42	$74.03	$1,067.36	66.03	$73.84	$4,875.36
GLASS	8.56	$0.00	$0.00	9.04	$0.00	$0.00	41.40	$0.00	$0.00
POLYSTYRENE	1.03	$74.88	$77.12	1.09	$0.00	$0.00	4.98	$13.04	$64.92
TOTAL	83.80		$18,161.99	88.45		$20,437.06	405.06		$128,051.09

	Tonnage	Revenue
Grand Total	1292.18	$402,539.65

*assumes 65% of total residue is attributed to the container line

**all fiber commodities valued as mixed paper

Revenue Loss 2006 – Fiber Line

Table 1: Residue in Tonnes for 2006

	Total Residue	Fiber Residue*	Est. Marketable Material (Fiber Line)
January	-	-	-
February	-	-	-
March	436.13	152.6	72.1
April	481.22	168.4	79.5
May	638.74	223.6	105.6
June	588.08	205.8	97.2
July	363.05	127.1	60.0
August	383.22	134.1	63.3
Proj. Sept-Dec.	1754.93	614.2	290.1
Total	4645.37	1625.9	767.9

Table 2: Marketable Material Composition of Fiber Line Residue

Material	Pounds	Percentage
PET	116	6.38%
HDPE	44	2.42%
TUBS&LIDS	18	0.99%
GABLE TOP	56	3.08%
FILM	294	16.16%
STEEL	38	2.09%
ALUMINUM	19	1.04%
GLASS	8	0.44%
POLYSTYRENE	24	1.32%
Boxboard	84	4.62%
Fine Paper/House Junk	166	9.13%
Newspaper	878	48.27%
OCC	74	4.07%
TOTAL	1819	100%

Table 3: Fiber Line - Lost Revenue

Commodity	Jan	Price	Revenue	Feb	Price	Revenue	March	Price	Revenue
PET	-	-	-	-	-	-	4.60	$352.74	$1,621.74
HDPE	-	-	-	-	-	-	1.74	$819.99	$1,429.98
TUBS&LIDS	-	-	-	-	-	-	0.71	$169.93	$121.23
GABLE TOP	-	-	-	-	-	-	2.22	$0.00	$0.00
FILM	-	-	-	-	-	-	11.65	$158.28	$1,844.35
STEEL	-	-	-	-	-	-	1.51	$168.65	$254.00
ALUMINUM	-	-	-	-	-	-	0.75	$2,226.91	$1,676.97

GLASS	-	-	-	-	-	-	0.32	$0.00	$0.00
POLYSTYRENE	-	-	-	-	-	-	0.95	$0.00	$0.00
MIXED FIBER**	-	-	-	-	-	-	47.64	$76.69	$3,653.53
TOTAL	0.00		$0.00	0.00		$0.00	72.09		$10,601.80

	April	Price	Revenue	May	Price	Revenue	June	Price	Revenue
PET	5.07	$352.74	$1,789.41	6.73	$275.57	$1,855.53	6.20	$263.63	$1,634.34
HDPE	1.92	$665.53	$1,280.61	2.55	$516.36	$1,318.81	2.35	$503.17	$1,183.20
TUBS&LIDS	0.79	$119.94	$94.41	1.04	$169.93	$177.55	0.96	$184.97	$177.94
GABLE TOP	2.45	$0.00	$0.00	3.25	$0.00	$0.00	2.99	$0.00	$0.00
FILM	12.86	$74.89	$962.87	17.07	$48.49	$827.52	15.71	$0.00	$0.00
STEEL	1.66	$185.18	$307.73	2.21	$196.20	$432.77	2.03	$206.12	$418.59
ALUMINUM	0.83	$2,347.09	$1,950.21	1.10	$2,641.22	$2,912.97	1.02	$2,174.30	$2,207.82
GLASS	0.35	$0.00	$0.00	0.46	$0.00	$0.00	0.43	$0.00	$0.00
POLYSTYRENE	1.05	$0.00	$0.00	1.39	$0.00	$0.00	1.28	$0.00	$0.00
MIXED FIBER**	52.57	$77.58	$4,078.04	69.77	$69.07	$4,819.16	64.24	$69.81	$4,484.48
TOTAL	79.55		$10,463.28	105.59		$12,344.31	97.21		$10,106.36

	July	Price	Revenue	August	Price	Revenue	Sept.-Dec	Price	Revenue
PET	3.83	$83.83	$320.83	4.04	$116.18	$469.34	18.50	$274.86	$5,084.90
HDPE	1.45	$480.00	$696.81	1.53	$429.99	$658.89	7.02	$643.94	$4,518.68
TUBS&LIDS	0.59	$0.00	$0.00	0.63	$149.97	$94.01	2.87	$147.42	$423.20
GABLE TOP	1.85	$0.00	$0.00	1.95	$0.00	$0.00	8.93	$50.63	$452.18
FILM	9.70	$0.00	$0.00	10.24	$0.00	$0.00	46.89	$118.75	$5,567.93
STEEL	1.25	$106.78	$133.87	1.32	$137.99	$182.61	6.06	$170.53	$1,033.47
ALUMINUM	0.63	$2,132.24	$1,336.62	0.66	$2,059.73	$1,362.90	3.03	$2,199.41	$6,664.58
GLASS	0.26	$0.00	$0.00	0.28	$0.00	$0.00	1.28	$0.00	$0.00
POLYSTYRENE	0.79	$74.88	$59.29	0.84	$0.00	$0.00	3.83	$13.04	$49.91
MIXED FIBER**	39.66	$75.60	$2,998.10	41.86	$74.03	$3,098.94	191.70	$73.84	$14,154.98
TOTAL	60.01		$5,545.53	63.35		$5,866.71	290.10		$37,949.83

	Tonnage	Revenue
Grand Total	767.90	$92,877.81

*assumes 35% of total residue is attributed to the fiber line

**all fiber commodities valued as mixed paper

Protocol and Procedures for Conducting Audits at the PIWMF

Prepared for:

Region of Peel

Prepared by:

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Table of Contents

What is an Audit?

An audit is a formal procedure used to determine the amount and types of material being processed by Waste Management of Canada Corporation (WMCC) for the Region of Peel (ROP), using the Peel Integrated Waste Management Facility (PIWMF) Material Recovery Facility (MRF).

The three main audits that will be conducted at the PIWMF MRF will be the following:

- inbound audits
- residue audits
- commodity audits

Why are Audits conducted?

Audits are conducted to ensure that the recyclable material is being processed to meet the specifications outlined in Part B of the Operations and Maintenance Agreement (Agreement). Penalties and incentives are based on Recovery Rates which are determined by using the results of the audits. Audits are also used as guidelines to determine if our material meets market specifications as set out in the Agreement.

Different types of Audits

There are several different types of audits that can be conducted. All the audits for the PIWMF will be conducted in-house, by Region of Peel employees. Waste Management of Canada Corporation employees will also be invited to participate in/attend/observe the audits. The types of audits that will be conducted at the PIWMF MRF are:

- An **inbound audit** is a process used to determine the composition of the recyclable material being received at the MRF. These audits will be done on a quarterly basis, as per Part B, Appendix G of the Agreement.

- A **residue audit** is used to determine the amount of recyclable material that is lost in residue. These audits are also used to calculate the penalties and incentives as per the Agreement.

- A **commodity audit** is a process that is used to determine that the processed material destined for the market is meeting the specifications as outlined in the Agreement.

How to conduct an Audit

The physical sorting of an audit will be done by placing the material on a table (or 2 tables) and a series of blue boxes/garbage bins designated for each type of material (see Diagram 1).

Residue Audits:

1. Collect a sample size (see below on “How to collect a Sample Size”) of material from the residue pile.
2. Separate the material into each type of material: PET, HDPE C, HDPE N, Aluminum, Steel, Gabletop/Tetrapak, Film, Tubs, Polystyrene, Glass, Fibre and Residue.
3. Weigh each type of material and record the weights (see appendix A for record sheet).
4. Transfer information from Appendix A into the respective spreadsheet.
5. The spreadsheet calculates the percentage of each material in the residue/stream/bale/glass.

Inbound Audits:

1. Collect a sample size (see below on “How to collect a Sample Size”) of material from the tipping floor.
2. Separate the material into each type of material: PET, HDPE C, HDPE N, Aluminum, Steel, Gabletop/Tetrapak, Film, Tubs, Polystyrene, Glass, Fibre and Residue.
3. Weigh each type of material and record the weights (see appendix B for record sheet).
4. Transfer information from Appendix B into the respective spreadsheet.
5. The spreadsheet calculates the percentage of each material in the residue/stream/bale/glass.

Commodity Audits:

1. Collect a sample size (see below on “How to collect a Sample Size”) of material from the inventory at the MRF or from the baler.
2. Weigh the material.
3. Separate the material into each type of material PET, HDPE C, HDPE N, Aluminum, Steel, Gabletop/Tetrapak, Film, Tubs, Polystyrene, Glass, Fibre and Residue.
4. Weigh the material separate from the foreign material and record the weights (see appendix C for record sheet).
5. The spreadsheet calculates the percentage of each material in the residue/stream/bale/glass.

Glass Audits:

1. Collect a sample size of glass from the bunker.
2. Separate the glass and the foreign material.
3. Weigh each type of material, including glass and record the weights (see appendix D for record sheet).
4. Transfer information from Appendix D into the respective spreadsheet.

How to Collect a Sample Size

The ASTM standard was used to determine the sample size for both residue and commodity audits. Each sample should be 100 kg. Please see the **ASTM Standards Results** for the number of audits per commodity.

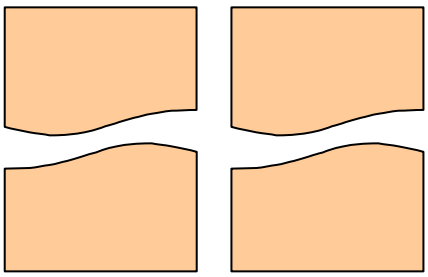
To collect a sample size of approx. 100 kg of residue, the residue belt will be reversed for approx. 4 minutes and the residue will be dropped into a forklift tip bin or loader bucket on the tip floor. After the sample is complete, the direction of the belt will then be changed again to feed the residue into the compactors.

To collect a sample size of approx 100 kg for a commodity audit, either a partial bale will be used or a portion of material that is ready to be baled will be taken right off of the belt that feeds the baler.

To collect the sample for a glass audit, one auto (or garbage pail) will be used to obtain 200 kg – half from the material under the air knife, and half from the material under the belt.

To collect a sample size for an inbound audit, there are two options. The first is to randomly select one WM vehicle and one Sandhill vehicle. Have both vehicles dump in a designated spot on the tip floor and have the loader cone and quarter the material (see Diagram 2). Take two ¼, and combine and repeat until you have one cone that is **X kg.** The second option is to randomly select a sample that is already on the tip floor and have the loader cone and quarter the material (see Diagram 2). Repeat until you have one cone that is **X kg.**

Diagram 2:



What are the objectives of an Audit?

Audit Objectives can be determined by the following categories:

- To determine material composition
- To determine the amount of material and/or residue being processed/generated
- To measure the effectiveness of the MRF operations
- To identify improvements and/or modifications to the MRF operations

What data is taken from an Audit and how is it reported?

For a residue audit, the data is taken and placed in an excel spreadsheet (see appendix A), to determine the amount of recyclable material that is lost product. This information is then used to calculate the recovery rates as stated in Part B, section 4.10 of the Agreement.

For an inbound audit, the data is taken and placed in an excel spreadsheet (see appendix B), to determine the container to fibre ratio that is being collected. This audit has a direct impact on the fibre formula in Appendix C of the Agreement.

For a commodity audit, the data is taken and placed in an excel spreadsheet (see appendix C), and is used to determine the amount of contamination in the processed commodity.

A monthly report will summarize all the results from the audits. This summary will be in an excel spreadsheet, and include all the information recorded at each audit.

Health and Safety

Health and Safety will be taken into account for each and every audit conducted. The audits will be conducted in the Quality Assurance/Quality Control Room at the PIWMF that was built for audits, specifically. Personal Protective Equipment (PPE) will be distributed to each individual assisting with the audit. The PPE will include reflective cover-alls, several pairs of gloves, safety glasses and masks (if required). Safety boots will also be required.

Schedule of Audits/Scheduling Audits

A monthly schedule will be set up for the PIWMF MRF. The scheduling of Audits will reflect the outbound market loads, as well as feedback from the end markets. The schedule will change from month to month, and will include six 100 kg residue audits, three taken from the day shift and three taken from the afternoon shift.

Ideally, all processed commodities will be audited according to the ASTM standard. However, at a minimum, one audit of 100 kg per commodity (200 kg of glass) will occur monthly, providing audit personnel are available.

An inbound composition audit will be conducted on a quarterly basis.

ASTM Standard Results

On a monthly basis, audits should be conducted based on the results of the ASTM Standard. Please see Table 1.

Table 1

HDPE Coloured	3 x 100kg
HDPE Natural	3 x 100kg
Tubs	3 x 100kg
PET	3 x 100kg
Polycoat	3 x 100kg
Film	3 x 100kg
PS Foam	6 x 100kg
Steel	9 x 100kg
Aluminum	4 x 100kg
Glass	10 x 100kg
Residue	6 x 100kg

Appendix A

Residue Audit Record Sheet

Container Residue Audit Record Sheet

Date: _____

Time of Sample Collection: _____

_____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

PLASTICS						
Tubs	HDPE [N]	HDPE [C]	PET	Polycoat	PS Foam	Film

METAL	
Aluminum	Steel

Glass	Fibres	Residue	Oversize

Condition of Material: _____

_____

_____

Other Comments: _____

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Inbound Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

CONTAINER									
Glass	HDPE [N]	HDPE [C]	PET	Steel	Aluminum	Film	Tubs	Polycoat	PS Foam

FIBRE						
Newspaper	OCC	Magazines	Boxboard	Fine Paper	Telephone Books	Kraft Paper

Residue	UNA

Condition of Material: _____

_____

_____

Other Comments: _____

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Aluminum Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)		Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Aluminum						
Other Foreign Material						must be <1% BY WEIGHT
Prohibited Material						NONE
Total Material (kg):	n/a	n/a			PASS/FAIL	

Prohibited Material: _____ Lead

_____ hazardous or medical waste

_____ free-flowing liquid

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Steel Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Steel					
Aluminum					must be <10% BY VOLUME
Other Foreign Material					None
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material:

_____

_____

No non-ferrous metals (copper, brass, etc.)

No visible garbage (wood, glass, rubber, plastics)

No containers bearing hazardous chemicals (e.g. gasoline)

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Appendix C: PET Audit Record Sheet

PET Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
PET					
PVC, Plastic Bags, HDPE bottles, Polypropylene					must be <1% of plastic contaminants BY WEIGHT
Other Foreign Material					must be <3% BY WEIGHT (TOTAL)
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material: Black Microwave Trays & dishes; containers with handles;
Polystyrene - rigid & foam; PET-G; Polycarbonare;
Deli & bakery trays, covers & containers; glass, wood;
medical or hazardous waste; free-flowing liquid

General: Essentially free of dirt, mud & stones
Good faith efforts to rinse bottles & remove closures

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

HDPE (coloured) Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
HDPE (coloured)					
Closures, Other plastics, Labels & Glues on bottles					must be <2% BY WEIGHT
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material:
- 45 gallon barrels or 10 gallon pails
- Oil, transmission fluid, antifreeze, pesticide/herbicide bottles
- medical or hazardous waste
- free-flowing liquid

General:
- No sand, mud, stones or gravel
- Good faith efforts to rinse bottles & remove closures

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

HDPE (natural) Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
HDPE (natural)					
Closures, Other plastics, Labels & Glues on bottles					must be <2% BY WEIGHT
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material:
- 45 gallon barrels or 10 gallon pails
- Oil, transmission fluid, antifreeze, pesticide/herbicide bottles
- medical or hazardous waste
- free-flowing liquid

General:
- No sand, mud, stones or gravel
- Good faith efforts to rinse bottles & remove closures

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Appendix C: Polycoat Audit Record Sheet

Polycoat Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Polycoated Containers					Total <2% BY WEIGHT
Plastic Bottles					must be <2% BY WEIGHT
Caps, Closures, rings					must be <2% BY WEIGHT
Metals (ferrous & non-ferrous)					must be <1% BY WEIGHT
Newspapers/magazines					must be <1% BY WEIGHT
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material: _____

medical or hazardous waste

free-flowing liquid or saturated bales

apparent contamination from insects or rodents

No sand, mud, stones or gravel

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Mixed Plastic Tubs Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Mixed Plastic Tubs					
Paper, metal, glass, boxes, motor oil/ vegetable oil containers					Total Contamination <3% BY WEIGHT
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material: _____

hazardous or medical waste

_____

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Plastic Film Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Plastic Tubs					
Paper, metal, glass, cardboard, dirt, other plastics					Total Contamination <3% BY WEIGHT
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material:

- hazardous or medical waste
- snack food bags; cereal liners
- meat and cheese packages
- household food wrap
- pool covers

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Polystyrene Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Polystyrene					
Other Foreign Material					Total Contamination <2% BY WEIGHT
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

Prohibited Material: _____
hazardous or medical waste
containers previously used for medical
or hazardous waste
free-flowing waste

Date: _____

Audit Accepted by ROP Rep: _____

Audit Accepted by WM Rep: _____

Glass Audit Record Sheet

Date: _____ Sample Bin (s) Tare Mass: _____

Time of Sample Collection: _____

_____ Sample & Sample Bin Mass: _____

Approximate Sample Mass (kg): _____ Sample Mass: _____

Recorded By: _____

Component	Sorting Bin Tare Mass: (kg)	Sample (sorted) + Sort Bin: (kg)	Sample (sorted) Mass: (kg)	Percentage of Total Sample Mass: (%)	**REQUIREMENTS**
Glass					
Normal container labels, rings and metal closures, paper & cardboard, plastics, aliminium and steel cans					must be <5% BY WEIGHT
Vision ware, ceramics, bricks, clay, grindings & refractory materials, rocks, clay and ceramic closures					must be <1000 g per tonne
Prohibited Material					NONE
Total Material (kg):	n/a	n/a		PASS/FAIL	

_____

_____

Prohibited Material: bio-medical waste

inorganics (refractory, nitrates, chrome metal carbide)

Hazardous, toxic or controlled substances

free-flowing liquid

_____

General: Good faith efforts to rinse bottles & remove closures

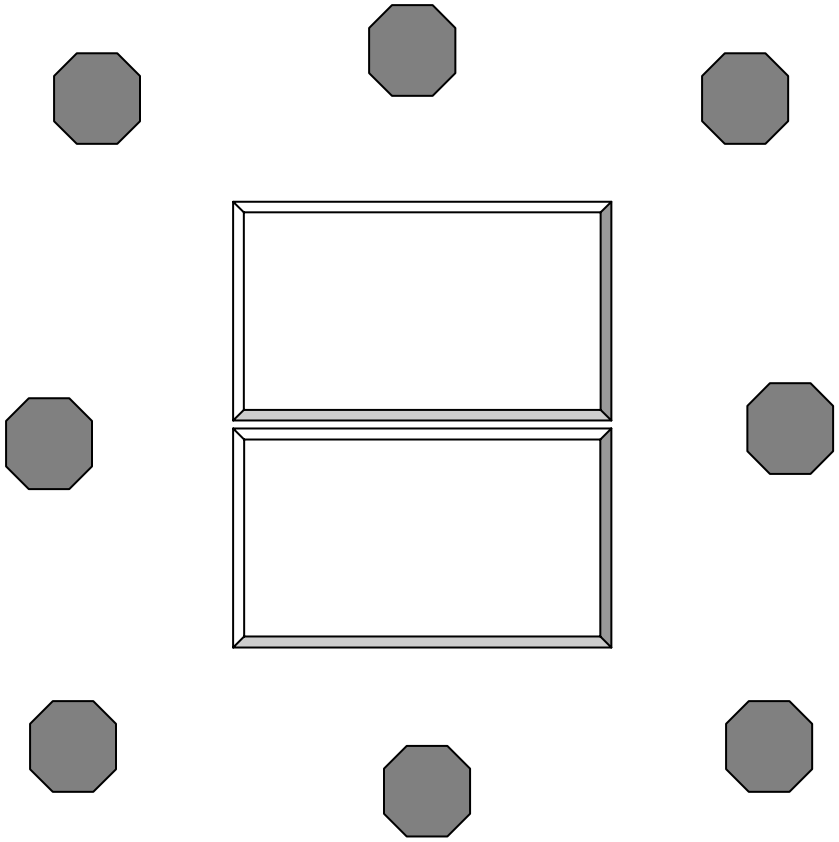
Date: _____

Audit Accepted by ROP Rep: _____

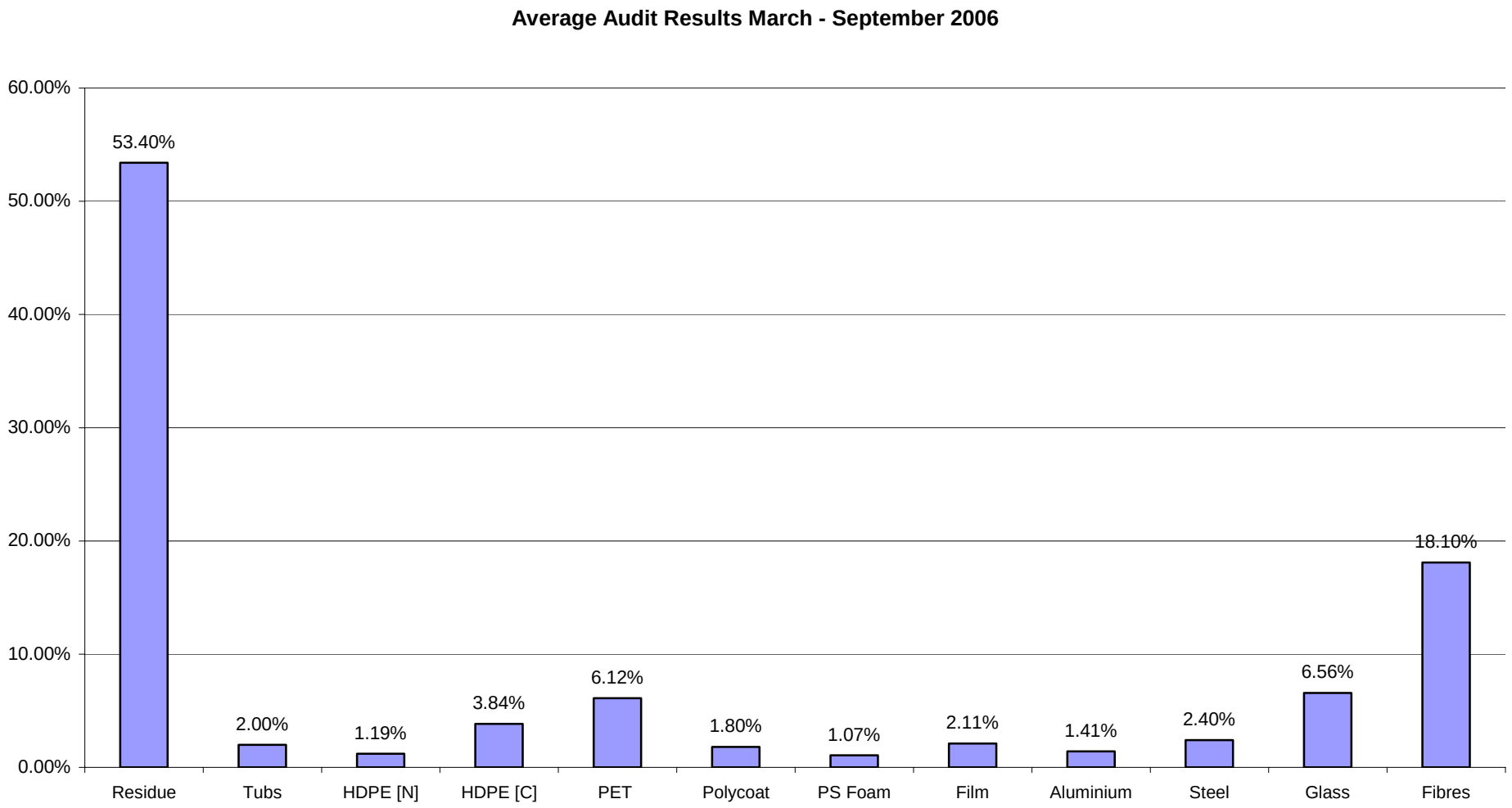
Audit Accepted by WM Rep: _____

Diagram 1

Conducting an Audit



- Garbage Pails/Autos for sorted material


Average Audit Results March - September 2006
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
53.40%
2.00%
1.19%
3.84%
6.12%
1.80%
1.07%
2.11%
1.41%
2.40%
6.56%
18.10%
Residue
Tubs
HDPE [N]
HDPE [C]
PET
Polycoat
PS Foam
Film
Aluminium
Steel
Glass
Fibres

Marketable Commodities in Residue

Material	Approx (1) MT/month	% Comp (2) Mar-Sep Audits	Est. Tonnes Monthly	Estimated Lost Revenue Mar-Sept
Residue	500	53.40%	267	0
Tubs	500	2.00%	10	9450
HDPE N	500	1.19%	5.95	31297
HDPE C	500	3.84%	19.2	74112
PET	500	6.12%	30.6	63985
Polycoat	500	1.80%	9	3510
PS Foam	500	1.07%	5.35	2809
Film	500	2.11%	10.55	10940
Aluminum	500	1.41%	7.05	107907
Steel	500	2.40%	12	12972
Glass	500	6.56%	32.8	-7118
Fibres	500	18.10%	90.5	44345
		100.00%	500	354209
			Monthly	**$ 50,601**
			Annual	**$ 607,215**
		Assume 50% Captured		**$ 303,608**
	Estimated	Residue - Mar-Sept (MT)		3500
		Residue Cost per MT		$75
	Estimated	Residue Cost Mar-Sept		$262,500
	Estimated	Residue Savings capture 50%		$131,250.0
	Estimated	Commodities and Residue Avoidance (50% recovery from residue)		$434,857.7

Region of Peel Aluminum Can and PET Revenue Loss in Fiber Line

Aluminum Can Revenue Loss

	Number of Cans		Pounds		Rev. US/lb Sep-06	Pounds per can
Aluminum Association	1000		29.00	$	0.80	0.029
Visual Timing Tests of Fiber Line Region of Peel MRF - Aug 22, 24, 2006	31	per min	0.90	$	0.72	
	1860	per hour	53.94	$	43.15	
	18600	per 10/hrs	539.40	$	431.52	
	4650000	per yr (2500 hrs)	134,850.00	$	107,880.00	
www.aluminum.org/			in Cdn $	$	120,825.60	

PET Revenue Loss

	Number of Bottles		Pounds		Rev. US/lb Sep-06	Pounds per 500ml bottle
Napcor - Single Serve Toolkit	18		1.00	$	0.13	0.0556
Visual Timing Tests of Fiber Line Region of Peel MRF - Aug 22, 24, 2006	32	per min	1.78	$	0.23	
	1920	per hour	106.67	$	13.87	
	19200	per 10/hrs	1,066.67	$	138.67	
	4800000	per yr (2500 hrs)	266,666.67	$	34,666.67	
			in Cdn. $	$	38,826.67	

City of Kenora Net Revenue – Calculations

Material	Tonnes Per Year	May 2006 Cdn.$/MT delivered to Winnipeg (amount paid to Kenora)	Chicago OBM US $ /st (published price referenced in Agreement)	Freight cost per tonne	Net Revenue (Cost) Per tonne	Annual Revenue (Cost) based on May act.
ONP 6	496	$ 55.00	$ 50.00 $63/Cdn/tonne	$ 28.00	$ 27.00	$ 13,392.00
OCC	833	$ 35.00	$ 70.00 $85/Cdn/tonne	$ 58.00	$ (23.00)	$ (19,159.00)
Containers	206	$ 35.00		$ 78.00	$ (43.00)	$ (8,858.00)
						$(14,625.00)