



Township of The Archipelago
Waste Recycling Strategy

Prepared for:
Township of the Archipelago

Prepared by:
Azimuth Environmental
Consulting, Inc.

March 2014

AEC 10-330



Environmental Assessments & Approvals

March 10, 2014

AEC 10-330

Township of the Archipelago
9 James St.
Parry Sound, ON
P2A 1T4

Attention: Glenn Kargus, Manager of Public Works and Facilities

Re: Township of the Archipelago Waste Recycling Strategy

Dear Mr. Kargus:

Azimuth Environmental Consulting Inc., with input from the Township of the Archipelago and Waste Diversion Ontario, has completed a Waste Recycling Strategy for the Township of the Archipelago that identified methods by which the waste management system can become more efficient, effective and increase recycling of waste material.

The Township of The Archipelago has options (initiatives) available to increase the Blue Box Capture Rate with the added benefit of extending the lifespan of its Site 9 Landfill Site.

The first two initiatives will not change the actual amount of material being diverted but will produce more accurate information in comparing The Archipelago to other municipalities on their success with waste diversion. The Township should also benefit financially from better benchmarking results used in calculating funding received from Waste Diversion Ontario.

The remaining four Priority Initiatives have the potential to increase the actual amount of material being diverted from the landfill and bring the Township in line with Waste Diversion Ontario's Rural Depot – North Target Blue Box Capture Rate of 65%. Five Future Initiatives have also been identified, however they would require significantly more effort and study to determine if they would produce the desired results.



Achieving Waste Diversion Ontario's Goal of \$720.00 per tonne is not realistic for reasons detailed in Section 5.0 Stated Problem. Implementation of the first initiative will significantly lower the Township's per tonne rate for Blue Box Material by default but further reductions in the rate will require successful implementation of the Future Initiatives.

Monitoring of the waste management system should occur to identify successful components of the system and areas of improvement. The volume of material processed and diverted should be recorded and publicized yearly to promote public participation. Waste audits should occur on a regular basis annually to characterize the waste entering the system. The Waste Recycling Strategy should be reviewed on a five year cycle to remain current with provincial and municipal regulations, supply and demand and technologies available.

If you have any questions or comments, please do not hesitate to contact me.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Melissa Fuller B.Sc.
Terrestrial Ecologist

MMF: PCN



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1.0 INTRODUCTION

This Waste Recycling Strategy (WRS) was initiated by the Township of the Archipelago (Archipelago) with the purpose of developing a plan that will increase the efficiency and effectiveness of the waste management system and maximize the amount of material diverted from the landfill stream. Specifically, the purpose of this plan is to maximize recycling of solid waste by assessing the current system to determine the maximum capture rate of target materials; improve cost-effectiveness of recycling in the community; and increase participation in the program.

The Archipelago faces a number of waste management challenges. In particular, the population is predominately seasonal and many of the residences and transfer stations are accessible only by water. This challenge is compounded by the fact that the Archipelago is comprised of two geographically distinct land areas. This strategy addresses these challenges, and presents possible solutions to overcome these challenges.

This project has been delivered with the assistance of Waste Diversion Ontario's Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. Notwithstanding this support, the views expressed are the views of the author(s), and Waste Diversion Ontario and stewardship Ontario accept no responsibility for these views.

2.0 OVERVIEW OF THE PLANNING PROCESS

This WRS was prepared in conjunction with the Archipelago staff. Upon finalizing the draft document based on staff and Council comments, it was distributed to the Township residents for review as described below. No comments on the document were received during the consultation process.

The following steps are being undertaken to complete the WRS:

- Consultation with Archipelago staff to determine current waste recycling activities and associated facilities and to establish waste recycling goals/objectives;
- Reviewed community character and current waste recycling rates and quantities;
- Reviewed waste recycling options and estimation of future needs for the municipality;



- Established criteria for the identification and evaluation of waste recycling alternatives;
- Consulted with local residents regarding existing waste recycling activities and recommendations/opportunities for recycling enhancement through the use of the municipal website and consultation with ratepayers associations;
- Identified potential future initiatives for waste recycling; and
- Prepared a long term WRS that will achieve the waste recycling goals and objectives of the municipality, including future initiatives, methods for monitoring program success and integration of public comment to enhance public participation.

To ensure Township residents were able to participate in the preparation of this WRS, a draft version of the WRS was posted on the website of the Archipelago for public review for a period of 60 days. Residents were informed of the review period for the draft strategy through mailouts, public open houses and advertisements in association newsletters/websites.

3.0 STUDY AREA AND TARGET AUDIENCE

The study area for the WRS includes the entirety of the Archipelago (Figure 1). The Archipelago was created in 1980 as a result of the amalgamation of the geographic Townships of Harrison, Shawanaga, Cowper and Conger. It includes the recreational inland lakes of Healey, Kapikog, Crane, Blackstone and Three Legged in the south and Rock Island, Naiscoot and Wilson Lakes in the north. The Archipelago incorporates several thousand islands of the 30,000 Islands of Georgian Bay, north and south of Parry Sound, spanning 74 kilometres of the eastern shore of Georgian Bay and encompassing a land area of 609km². The Township has a permanent population of 560 permanent residents and a seasonal population of approximately 14,800 (Township of the Archipelago Emergency Response Plan, Jan 2012). The coastline of Georgian Bay comprises part of the Great Lakes Heritage Coast and has been designated a UNESCO Biosphere Reserve.

This WRS will address the following sectors:

- Residential single-family;
- Marinas;
- Small businesses (general stores, liquor stores, gas stations, hardware stores, restaurants, cottage rental resorts, etc.); and
- Small institutions (small community centres, etc.).



4.0 PUBLIC CONSULTATION

Stakeholder groups included within the consultation process were:

- Local Businesses;
- Cottage Associations;
- Permanent residents; and
- Seasonal population.

The consultation process consisted of the following activities:

- Draft report was made available on the Township of the Archipelago website for public review. Comments regarding the report were directed to the Township of the Archipelago office;
- An article was published within the Annual Waste Newsletter. The article included directions for obtaining the report and provided instructions for the review and comment process;
- Township of the Archipelago municipal office and transfer stations posted an advertisement regarding the opportunity for draft report review at the municipal office;
- An open house regarding the Waste Management Strategy may be held for residents to review the plan and ask questions; and
- Additional advertising was accomplished with distribution of stickers and handouts.

No comments on the document were received during the consultation process.

5.0 STATED PROBLEM

Management of municipal solid waste, including the recycling of materials, is a key responsibility for all municipal governments in Ontario. The factors that encourage or hinder municipal recycling endeavors can vary greatly and depends on a municipality's size, geographic location and population. The population of the Archipelago varies greatly over the course of the year, with a seasonal resident influx that is approximately 20 times greater than the permanent population. During the off-season, the remaining population is dispersed throughout the northern and southern wards (Figure 2a and 2b). In addition, a majority of the residences are accessible only by water and there are a high proportion of transient users, specifically recreational cabin cruiser boats, that frequent



the Archipelago/Georgian Bay shoreline. Therefore providing efficient service to a fluid population over a large geographic area presents a variety of challenges to providing an efficient cost effective waste management service.

The key drivers that led to the development of this WRS include:

- Improving cost efficiency and service;
- Increasing participation of the Township residents; and
- Maximize Best Practices Funding.

6.0 GOALS AND OBJECTIVES

6.1 Waste Diversion

Based on the data submitted in the 2012 Waste Diversion Ontario Report the Township had a Waste Diversion Rate of 19%, however, WDO in its annually summary under the heading of “2012 Diversion Rate by Municipal Grouping” reported it as 29% (see rational detailed in 10.2.2). The Province of Ontario has set a waste diversion goal of 60%, though achieving it would require diversion of kitchen organics from the waste stream.

It is felt that improvements in the Blue Box Capture Rate have the greatest potential for increasing the Township’s Diversion Rate. Costs associated with these improvements do not have a significant effect on the waste budget and are for all practical purposes either offset by the savings in landfill fees or within annual fluctuations in costs/usage.

6.2 Blue Box Capture

Based on the data submitted in the 2012 Waste Diversion Ontario Report the Township had a Blue Box Diversion Rate of 17.17%. At first glance, this appears low when compared to other Rural North Depot Municipalities that average of 25%, however, data gathered through waste audits indicate the amount of uncaptured blue box material is only around 14% and calculations used to determine “Material Remaining in Waste Stream for Diversion” reveals a 3.7% increase in diversion is required to achieve the Rural Depot – North “Target Blue Box Capture Rate” of 65% (Appendix A).

Priority Initiatives 10.2.1 and 10.2.2, discussed in detail under Section 10, have the potential to significantly change the Blue Box Capture Rates noted above. If that



potential is realized and additional initiatives identified in Section 10, are implemented, it is felt that reaching Waste Diversion Ontario's Rural Depot – North Target Blue Box Capture Rate of 65% could be an achievable goal within 5 years.

The cost to operate the 2012 Blue Box Diversion Program in the Township was \$711,596.41 which includes \$118,628.13 in Capital Depreciation (20 compaction bins and truck purchased since 2009). Divided by 215 tonnes of blue box material captured equates to \$3294.00 per tonne compared to Waste Diversion Ontario's Goal of \$720.00 per tonne for a Rural Depot – North. Appendix "A" indicates \$3781.00 per tonne based on 188 tonnes of blue box material marketed rather than captured.

Achieving the \$720.00/tonne does not seem achievable but that does not say there isn't potential for closing the gap. Barging costs associated with waste transfer stations on islands in Georgian Bay alone add \$200/tonne to the cost, a much reduced number since the introduction of compaction bins. Priority Initiative 10.2.1 also has the potential to significantly narrow this gap. If that potential is realized and additional initiatives identified in Section 10, are implemented, it is felt that achieving a per tonne program cost of \$2500.00 by the end of a 5 year period is feasible.

7.0 CURRENT SOLID WASTE TRENDS

7.1 Community Characteristics

The Archipelago has a permanent population of 560 and a seasonal population of 14,800. In 2010, the municipality documented 3,286 dwellings. Of these, approximately 295 are permanent single-family. There are no multi-family dwelling units.

7.2 Current Waste Generation and Recycling

According to data obtained from the 2012 information provided by the Township, approximately 1,223 tonnes of residential solid waste per year is generated. Of this, 217 tonnes, or 17.7 percent, is diverted through the recycling program for typical blue box materials (Table 2). Currently, the most common material recycled is fibre products, while the least common is glass. In addition to the materials diverted through traditional recycling practices, an additional 211.6 tonnes of other material is diverted from the waste stream. This material includes scrap metal, bulk goods, electronics, tires, large items, and refrigerators (Table 3). Hazardous household materials and propane tanks are also diverted from the landfill, however, the volume of these materials is not recorded.



The tables below summarize the current waste generation and recycling rates according to 2012 data obtained from the municipality.

Table 2: Residential Solid Waste Generated and Diverted Through Recycling

Residential Waste Stream/Blue Box Material	Tonnes²	Percent of Total Waste
Total waste generated	1223 ¹	-
Papers (ONP, OMG, OCC, OBB and fine papers) ³	163	13.3%
Metals (aluminum, steel, mixed metal)	14	1.1%
Plastics (containers, film, tubs and lids)	30	2.5%
Glass	9	0.7%
Total Blue Box material currently diverted	217	17.7%

¹ Value represents total amount of waste entering the landfill in 2012.

² All volumes are from 2012 data unless otherwise stated

³ ONP - old newspapers; OMG - old magazines; OCC - old corrugated cardboard; OBB - old boxboard

Archipelago's current diversion rate (17.7%) is below average for its Waste Diversion Ontario (WDO) municipal grouping (Rural Depot – North, 25.05%, as per 2012 Residential GAP Diversion data). The WDO grouping serves as a comparison tool as it groups municipalities with similar population, collection methods, and proximity to end-markets for recyclables to provide an indication of their effectiveness.

Table 3: Additional Residential Solid Waste Diverted from the Waste Stream

Material²	Tonnes¹
Refrigerators	11
Tires	4.1
Charitable Bottle Drives	38
Reuse Items	15
Bulk Goods	5
Scrap Metal	149.7
Electronic Waste	3.8
Total additional material currently diverted	211.6

¹ All values are from 2012 unless otherwise stated.

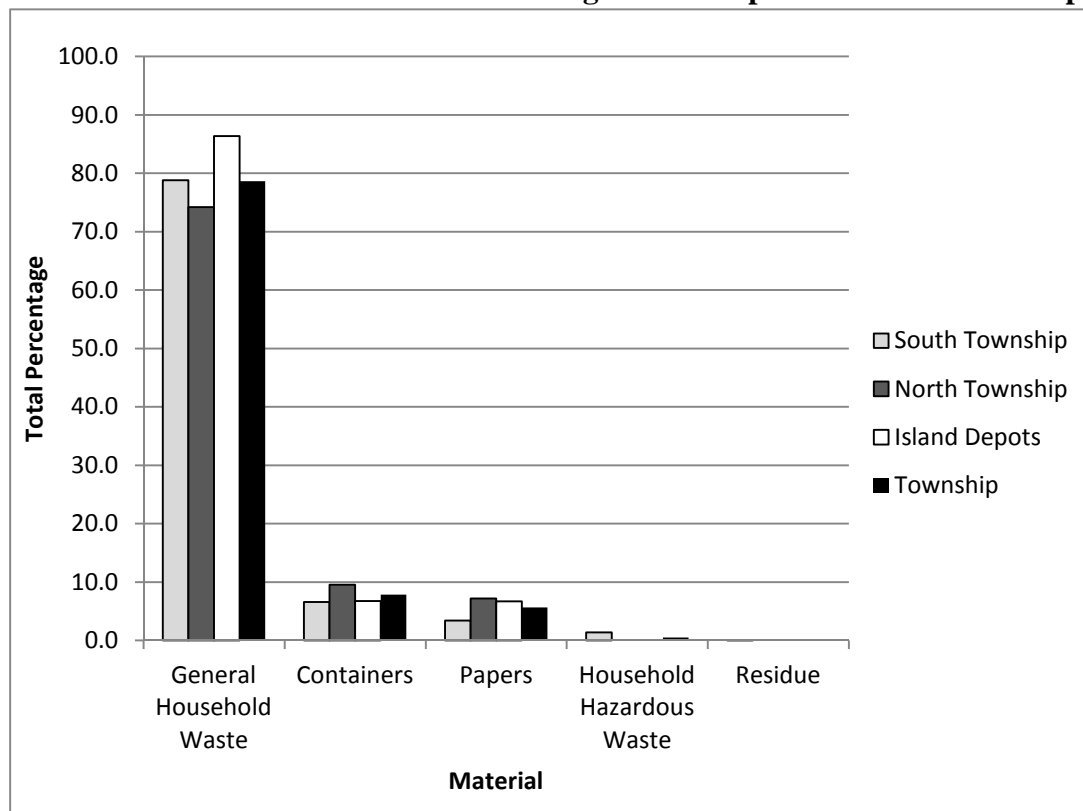
² Hazardous household waste and used propane tanks are also diverted, however, the Township has no tonnage data for these parameters



7.3 Potential Waste Recycling

The Archipelago's current waste composition was estimated using data acquired from waste audits conducted in 2012 and 2013 (Figure 3). The percent composition of recyclable materials used to calculate the tonnage of recycled materials was based on total volumes obtained from waste audits completed three times a year (January 22, 2012, July 3, 2012, July 26, 2012 (Sheephead and Devil's Elbow only), August 12, 2012, February 12, 2013, June 18, 2013, June 20, 2013 (Sheephead and Devil's Elbow only), and August 14, 2013) per transfer station. Raw data from the audit is appended (Appendix B). A comparison of percent composition obtained from transfer stations in the South Township (Woods Bay, Healy Lake, Crane Lake) North Township (Site 9 Landfill, Skerryvore and Pointe Au Baril, Bayfield) and Island depots (Sheephead and Devil's Elbow) is presented in Figure 3. A total of 1.4 tonnes was assessed over two years (Appendix B). Table 4 indicates the total potential waste volume for the Township that could be diverted from the Site 9 Landfill. The worksheets used to calculate the values are provided in Appendix C.

Figure 3. Composition of Landfill Residential Waste, by Geographic Location. General Household Waste also includes organic waste produced in the municipality.





According to local waste audit data, diverting the blue box material remaining in the Archipelago's waste stream could potentially raise its waste recycling rate to 21.4%.

Table 4. Potential Waste Volume based on Local and Representative Waste Audit Data from 2012 and 2013 (tonnes)

Material	Currently Recycled	Township		
		Total Available in Waste Stream ¹	Potential Increase ²	Percent Increase
Papers (ONP, OMG, OCC, OBB and fine papers)	163	235	0	0.0%
Metals (aluminum, steel, mixed metal)	14	40	12	1.0%
Plastics (containers, film, tubs and lids)	30	87	26	21%
Glass	9	24	0.6	0.6%
Total	216	386	45	
Percent Diverted³	17.7%			3.7%

¹Waste audit quantified the weight of "containers" and did not specifically identify metals, plastics and glass. The values presented here have been obtained from equal division of the total recorded weight of containers.

²Potential for increase was based on a target of 65% recycling of recyclable materials from the residential waste stream.

³Based on a 1223 tonnes of total waste generated by the Archipelago in 2012

7.4 Existing Programs and Services

The Archipelago currently operates eight transfer stations and one landfill site (Site 9). Three transfer stations are located in the southern wards of the Archipelago (Figure 2b). The landfill and remaining three transfer stations are located in the northern wards. Two additional transfer stations are located on islands, in the southern ward (Figure 2a). Six sites are open year round, but operate with reduced hours mid fall to early spring. A waste disposal pass is required to use the facilities.



All facilities accept household waste and recyclable materials. All waste and recyclables must be disposed of using clear plastic bags. Electronics (i.e. computers, monitors and televisions), used tires, and re-use waste (i.e. couches, chairs, barbeques) are accepted year round at the Site 9 landfill, Healey Lake, and Crane Lake Transfer stations. These items are accepted seasonally at the remaining transfer stations. Household hazardous waste is only accepted by the MacFarlane Street Station (Parry Sound) during the peak season (May through September).

Materials collected at the transfer stations are dispersed as follows:

- Waste from the northern wards is transported to the Site 9 Landfill. Waste from the southern wards is transported to the MacDougall Landfill site;
- All fibres and plastics are packed separately, compacted and transported to BFI Canada in Bracebridge;
- Metals, used tires and Freon free refrigerators are collected by Adams Brothers Construction;
- Household hazardous waste is collected by Brendar Environmental, a hazardous waste management company based in Bracebridge;
- Large batteries are sold to Parry Sound Auto Recyclers. Smaller batteries are incorporated into Household Hazardous Waste at the Site 9 Landfill;
- The removal of electronic waste is typically tendered, and is currently awarded to the Miller Group; and
- Used propane tanks are collected by Georgian Bay Propane.

The Township promotes the use of the Orange Drop program, a program operated by Stewardship Ontario which facilitates and co-ordinates convenient drop off locations for household hazardous waste, usually at various businesses within a municipality. The program accepts paint, solvents, single-use batteries, pressurized cylinders, fertilizers and pesticides, antifreeze, coolant, empty oil and oil filters. Items diverted from the waste stream through the Orange Drop have not been accounted for within the recycling calculations as no data is not available at this time.

Bottle drives for charitable organizations frequently occur within the Township. Material diverted from the landfill stream by this method is not accounted for within the calculations for Table 2 as they are not typically processed by the municipality.

The Township promotes the return of glass containers to the local Beer Store. Material diverted from the landfill stream by this method is not accounted for within the recycling calculations.



Disposal and recycling services are paid for primarily through tax levys, pay-per-use fees, Waste Diversion Ontario funding and provincial grants. The income from these fees is considered within the cost to complete the recycling program.

8.0 PROGRAM COSTING

Prior to the preparation of the WRS, the Archipelago has identified methods to decrease operation costs of the waste management program. Specifically, the Archipelago has installed compaction bin units at all facilities to compress materials for efficient transport.

In 2012, the total net annual recycling cost for the Archipelago was \$674,088.00, with capital depreciation of \$118,628.00. This amounts to \$3,106.00 per tonne, or \$46.00 per capita. The per capita value was calculated using both permanent and seasonal population values, and assuming full participation. Net annual recycling costs for the Archipelago are significantly above the 2012 average for its WDO municipal grouping (\$860.00 net cost per tonne marketed, from the WDO 2012 Financial Summary, Appendix A) and the target cost for the Northern Depot WDO grouping of \$720.00 per tonne (Appendix A).

It should be noted that the Township incurs unusual costs associated with the need to utilize barges to transport waste from island depot locations, a cost that averages \$200.00 per tonne. Further, most municipalities, or recycling companies, have the ability to sell diverted materials directly to the end market, therefore offsetting the cost of collecting the recyclables. The Township pays Adams's Brothers, BFI Canada and Brendar Environmental to receive their diverted materials, and sees no revenue from an end source market to help offset the annual costs of waste recycling. Finally, the Township incurs costs associated with permanent staffing of all transfer station to ensure appropriate disposal of items, as required by the Ministry of the Environment.

9.0 ANTICIPATED FUTURE WASTE MANAGEMENT NEEDS

Solid waste generation is expected to remain relatively constant over the 10 year planning period due to minimal population growth. Table 5 depicts the expected growth rates for solid waste generation and recyclable materials recovery, based on projected population growth rates for permanent and seasonal residents. The growth rates are estimated at 0.2 people/year for permanent residents and 18.2 people/year for seasonal residents. An initial seasonal population of 14,600 (Township of the Archipelago Emergency Response



Plan, Jan 2012) is utilized for the calculations. The calculations used to determine the values below can be found in Appendix C.

Table 5. Anticipated Future Solid Waste Generation Rates and Available Blue Box Material (tonnes)

	Current Year	2018	2023
Population	14,600	14,691	14,782
Total Waste	1223	1234	1242
Blue Box Material Available	216	220	222

10.0 PLANNED RECYCLING SYSTEM

10.1 Overview of Planned Initiatives

The Archipelago is reviewing a number of initiatives for consideration within the WRS. To evaluate the suitability of the initiatives we propose to apply the following criteria to objectively assess and compare alternative initiatives. The proposed criteria have been taken from the Continuous Investment Fund's Guidebook for Creating a Municipal Waste Recycling Strategy (2010) and are summarized below:

- % Waste Diverted – Initiatives with the greatest potential for recycling will be preferred. However we should have regard for options that may divert more waste than others, while other options may not directly divert waste but instead support other programs or initiatives that do. (e.g., composting versus education).
- Proven Results – Initiatives should be proven in comparable municipalities in Ontario and supported by WDO.
- Economically Feasible – Initiatives should be economic for the municipality and affordable for the participants. The cost of the option would be weighed against the ability to afford it and the resulting benefit.
- Public Acceptance – Initiatives should be readily acceptable to the public such that participation rates will be high. The public's responsiveness to a proposed initiative directly correlates to the potential success of that initiative.
- Ease of Implementation – An initiative that is easily implemented is typically well received by the public, requires minimal preparation and on-going effort, and is cost-effective.



In accordance with the aforementioned guideline we provide a relative scoring of the recycling initiatives to identify those options that are most appropriate for the Township to pursue based on the criteria. The purpose of the scoring is to define what initiative would be the most appropriate given the opportunities and constraints to waste recycling in the municipality. The findings represent a relative qualitative comparison based on past experience of the Township and other municipalities and does not represent a rigorous financial or quantitative evaluation.

Each criterion was assigned a score from 1, 3 or 5 for each of the initiatives assessed within this report. Each score was assigned a qualitative descriptor that enabled the assigning of a level of effort, suitability or relative cost to the individual criteria. A score of 25 is the highest attainable score for any given initiative. A detailed breakdown of the scoring can be found in Appendix D.

10.2 Priority Initiatives

10.2.1 Tonnage Diverted Through Charity Bottle Drives

It is estimated that over 35 tonnes of glass is diverted from the waste stream annually through charity bottle drives. These bottle drives started taking off in 2011 but to date the tonnage has not reported in the Township's Waste Diversion Ontario Reports. Incorporating this tonnage for 2012 would raise the Blue Box Diversion Rate from 17.7% to 20%.

Implementation

The Township presently has agreements in place with the groups who run the charity bottle drives, specifying the conditions under which they may operate out of its waste sites. These agreements should be amended to include a requirement to provide more specific details from which tonnage can be accurately calculated. This tonnage should then be reported in in the Township's Waste Diversion Ontario Reports.

The Township should also encourage/facilitate charity bottle drives at sites that presently do not have such activities, and gather data pertaining to tonnage diverted by staff returning bottles.

The cost to implement this initiative would be minimal but reduce the amount of blue box material required to be captured from 3.7% to 2.6% in achieving the Rural Depot – North "Target Blue Box Capture Rate" of 65%. The per tonne cost would be reduced from \$3,106.00 to \$2,675.00.



10.2.2 Estimating Residential Waste Tonnage

The Township does not have weigh scales at its Site 9 Landfill Site which receives all the waste from the north municipality. Waste from the south is taken to the McDougall Landfill Site, and is weighed upon entry. In its annually summary, under the heading of “2012 Diversion Rate by Municipal Grouping”, WDO lowered the Township’s 2012 Residential Waste Generated from our reported 1223 tonnes to 797 tonnes. The rationale was the Township’s reported waste generated per capita of 479 kg compared to 245kg/per capita average in its grouping. This would suggest there is room for improvement in the Township’s method for estimating residential waste generation.

Implementation

Almost all of the residential waste generated in the Township is transported in compaction bins. Accurate weights for these bins is available for all material in the south end of the municipality but only for the blue box materials in the north. Keeping detail records of all the bin lifts would allow for better estimates of waste generated. Weight estimates of the northern waste can be calculated by using the average weight for the bins in the south.

The cost to implement this initiative would be minimal but have the potential of raising the municipality’s reported Blue Box Diversion Rate of 17.7% to 23.7%. Combined with Initiative 10.2.1, the rate would raise to 26.9%. There would be no resultant reduction in the cost per tonne.

The option to install weigh scales at the Township’s Site 9 Landfill is considered cost prohibited at an estimated \$50,000.00.

10.2.3 Enhanced Enforcement of Recycling

The waste audits indicate 14% of the waste entering the landfills is blue box material that could be recycled.

Implementation

The clear bag policy facilitates closer scrutiny of the contents within. While rejecting bagged waste that contains blue box material is a possibility, a more workable scenario would involve fining bags with a large proportion of recyclables. The fine could be insignificant (eg. \$2.00 a bag) but it would have the effect of driving the point home and increasing participation.



10.2.4 Training of Key Program Staff

Well-trained staff can lead to greater cost and time efficiencies and improved customer service. Knowledgeable staff (including both front line staff and policy makers) have a greater understanding of the municipal programs and can perform their responsibilities more effectively. There are a number of low-cost training options available. The Archipelago currently provides in-house training to staff in addition to training opportunities through the Continuous Improvement Fund (Ontario Recycler Workshop) and the Association of Municipalities of Ontario. Staff also participate in the auditing of recyclable materials collected, which serves as training on the effectiveness of The Archipelago recycling program.

Implementation

The Archipelago will continue to train in-house as required. External training (e.g., involvement in organizations, attendance at conferences or workshops) will also be continued to keep staff up to date on best practices in waste management. Memberships in Municipal Waste Association, Ontario Waste Management Association and Solid Waste Association of North America will also be reviewed for educational and training potential. Each spring all front-line staff will receive a full day of internal training on all aspects of waste management, including recycling. In 2012, \$2,557.00 was spent on training and development for all aspects of waste management. The budget for 2014 is \$3,000.00.

10.2.5 Public education and promotion program

Public promotion and education (P&E) programs are crucial for ensuring the success of local recycling programs. Well-designed and implemented P&E programs can have positive impacts throughout the municipal Blue Box recycling program. Furthermore, having a P&E program as identified in the best practice section of the WDO municipal datacall, contributes toward the amount of WDO funding a municipality receives.

Benefits of public education and promotion programs include:

- Greater participation levels and community involvement;
- Higher diversion rates;
- Less contamination in recovered materials, potentially leading to higher revenues; and
- Lower residue rates at recycling facilities.



Currently, The Archipelago reaches out to cottage associations and community groups. Other components of The Archipelago's communications program include information publicized on the Township's Web Page, handouts at waste sites and surveys. Promotion and education is increased in summer to increase access to the information by seasonal residents.

Implementation

Continue public education and promotion program through various media means. Re-initiate the Annual News Letter and mail-out to all residents to ensure seasonal population is informed.

In 2012 only \$542.00 was spent on blue box specific promotion & education which was historically very low. The effort in this area should be increased with expenditures in the more historical range of \$4,000.00 to \$4,500.00.

10.2.6 Survey of Public Opinion

It is important to incorporate public opinion into a waste management system. By determining the general public opinion of the system, you can tailor the system to meet the needs of the public, encouraging participation.

Implementation

The survey should specifically target the seasonal population and should:

- Characterize the current habits of the residents;
- Identify perceived barriers to participation in recycling program;
- Assess the willingness to participate in waste recycling programs; and
- Determine measures that can be implemented to increase participation.

Both online and mail-out surveys are recommended. An online survey would provide ample opportunity for seasonal residents to participate, while mailed surveys would be more appropriate for permanent residents with limited internet access. The formation and distribution of a survey is inexpensive, specifically in light of the future gains obtainable through increased public use of the recycling system. Past mail-out surveys on a waste management issue in the Township achieved a good response rate.



10.3 Future Initiatives

The following are initiatives that could be considered in the future as supply and demand varies and as technology advances.

10.3.1 Enhance Transfer Stations and Landfill Sites

Creating facilities that are convenient and efficient will encourage public use. It should be the goal of the Archipelago to ensure that the facilities:

- Attract residents;
- Are functional for ease of use;
- Clearly indicate the proper disposal area for materials, and the types of materials accepted; and
- Provide sufficient staff on site to serve the needs of the public during anticipated busy periods (i.e., during large item drop-off, hazardous waste drop off, holiday weekends).

Implementation

Township staff should continue to provide recommendations for facility improvements based on comments received by the users and their operational experience. The opinion survey will assist with the identification of potential areas for improvement and prioritizing efforts.

10.3.2 Limit Volume of Waste and Recycling

Requiring one bag of recycling per bag of garbage would force those who do not participate in recycling to do so. Those who diligently recycle should have no problem meeting this requirement

Implementation

Data should be collected for a season to confirm most residents have at least one bag of recycling for every bag of waste. Upon confirmation the requirement should be implemented with an appropriate penalty for not complying. The cost associated with this initiative will be covered through the Promotional and Educational budget to inform the public of the change.

10.3.3 Recycling facilities / fees

A number of recycling facilities are within reasonable commuting distance of the Township.



Implementation

In the past the Township has explored the possibility of using alternate recycling facilities within commuting distance of the Township but determined there were no cost savings to be realized. Since then, there have been significant changes in the markets and revisiting the possibility of using an alternate facility may reveal potential savings.

10.3.4 Shared Services

Sharing services with other municipalities has the potential for cost savings.

Implementation

The Township of The Archipelago has already embarked on a process of sharing services with the Township of Carling. This has resulted in savings in the administrative functions and is expected to do the same in the public works functions including waste and recycling.

10.3.5 Diversion of Household Organics

Results of the waste audit indicate that organic waste comprise a large portion of the total weight processed. Removal of the organics from the waste stream could significantly increase the volume of material diverted from the landfills.

Implementation

While promoting backyard composting seems like an obvious approach, nuisance bears are a big problem in the Township and it is believed back yard composting would aggravate this problem.

The Township should continue researching ways to increase their diversion rate and explore the possibility / economics of developing a joint municipal facility to which kitchen organics can be diverted.

11.0 MONITORING AND REPORTING

The monitoring and reporting of the Archipelago's recycling program is considered a program fundamental best practice and will be a key component of the WRS. Once implementation of the strategy begins, the performance of the system should be



monitored and measured against the baseline established for the current system. Once the results are quantified, they should be reported to Council and the public.

The approach for monitoring the success of the Archipelago's WRS is outlined below.

11.1 Waste Audits

Waste audits should be conducted every other year to identify new recycling targets. They should be conducted during the summer months to accurately represent the tendencies of the seasonal population. A representative volume (e.g., 1 tonne) of waste should be collected during each audit, to facilitate comparison of waste composition over time. During audit years, a multi-week audit is recommended to obtain a statistically sound volume of material and to represent the majority of seasonal residents.

11.2 Tonnage Reporting

The volume of all material processed in the waste system should be quantified and annually reported to the municipality and public. This will allow the municipality to track the volume of material collected, calculate an annual recycling rate, and identify gaps in the collection system. In addition, publishing the data will increase the accountability of the municipality's waste management system.

11.3 Adaptive Management

The WRS should be reviewed and updated, as required, every five years to ensure that the document reflects the waste recycling requirements of the municipality and provincial legislation. The focus of the WRS should be modified as the needs of the municipality change and new technologies become available. The review process will also provide the municipality with a means of assessing progress in accomplishing identified priority and future initiatives.

12.0 CONCLUSION

The Township of The Archipelago has options (initiatives) available to increase the Blue Box Capture Rate with the added benefit of extending the lifespan of its Site 9 Landfill Site.

The first two initiatives will not change the actual amount of material being diverted but will produce more accurate information in comparing The Archipelago to other



municipalities on their success with waste diversion. The Township should also benefit financially from better benchmarking results used in calculating funding received from Waste Diversion Ontario.

The remaining four Priority Initiatives have the potential to increase the actual amount of material being diverted from the landfill and bring the Township in line with Waste Diversion Ontario's Rural Depot – North Target Blue Box Capture Rate of 65%. Five Future Initiatives have also been identified, however they would require significantly more effort and study to determine if they would produce the desired results.

Achieving Waste Diversion Ontario's Goal of \$720.00 per tonne is not realistic for reasons detailed in Section 5.0 Stated Problem. Implementation of the first initiative will significantly lower the Township's per tonne rate for Blue Box Material by default but further reductions in the rate will require successful implementation of the Future Initiatives.

Monitoring of the waste management system should occur to identify successful components of the system and areas of improvement. The volume of material processed and diverted should be recorded and publicized yearly to promote public participation. Waste audits should occur on a regular basis annually to characterize the waste entering the system. The Waste Recycling Strategy should be reviewed on a five year cycle to remain current with provincial and municipal regulations, supply and demand and technologies available.



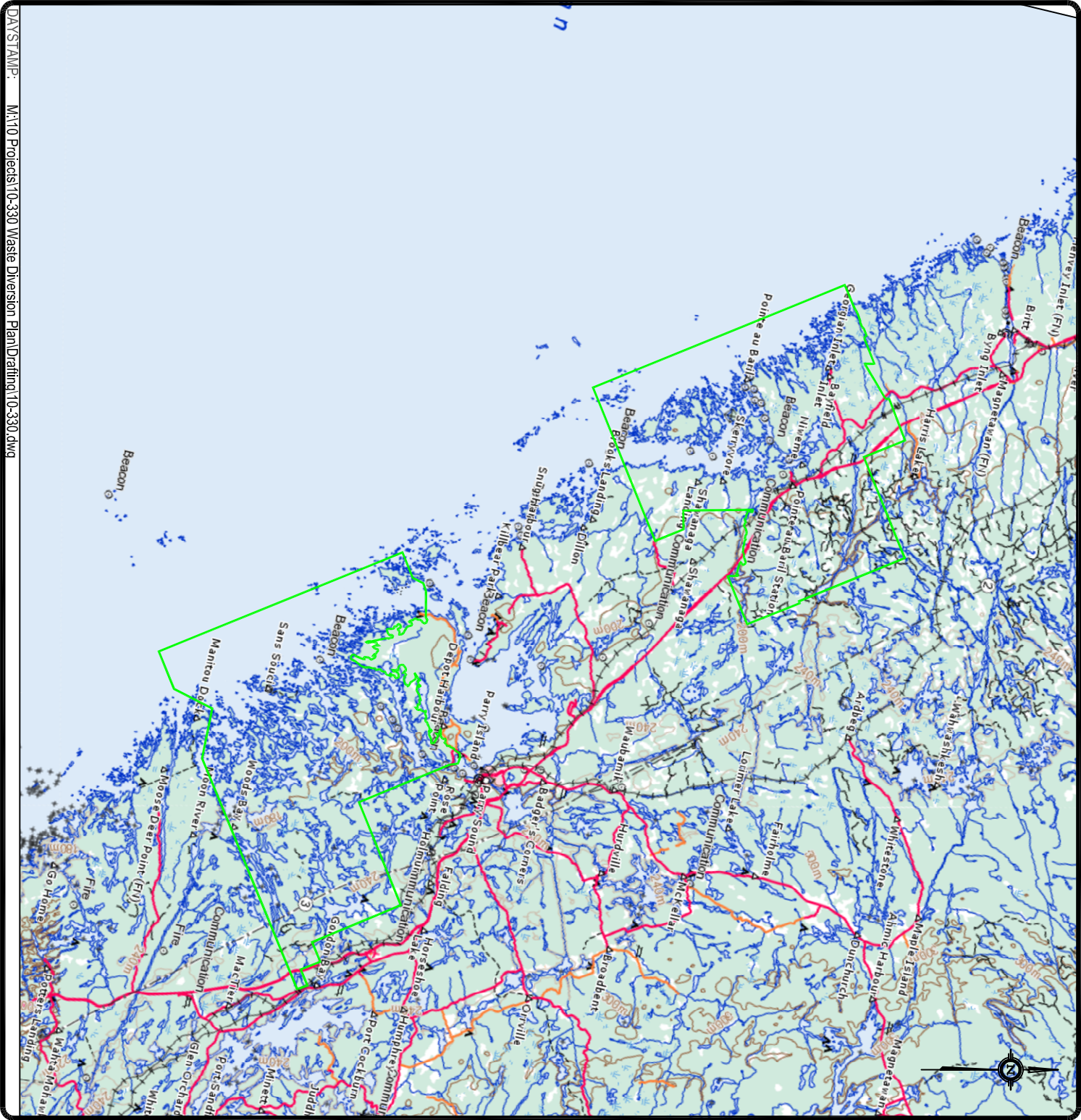
13.0 REFERENCES

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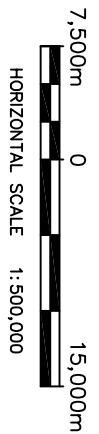
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Township of the Archipelago Official Plan. Office Consolidation. April 2010



LEGEND:
Archipelago Township Boundaries

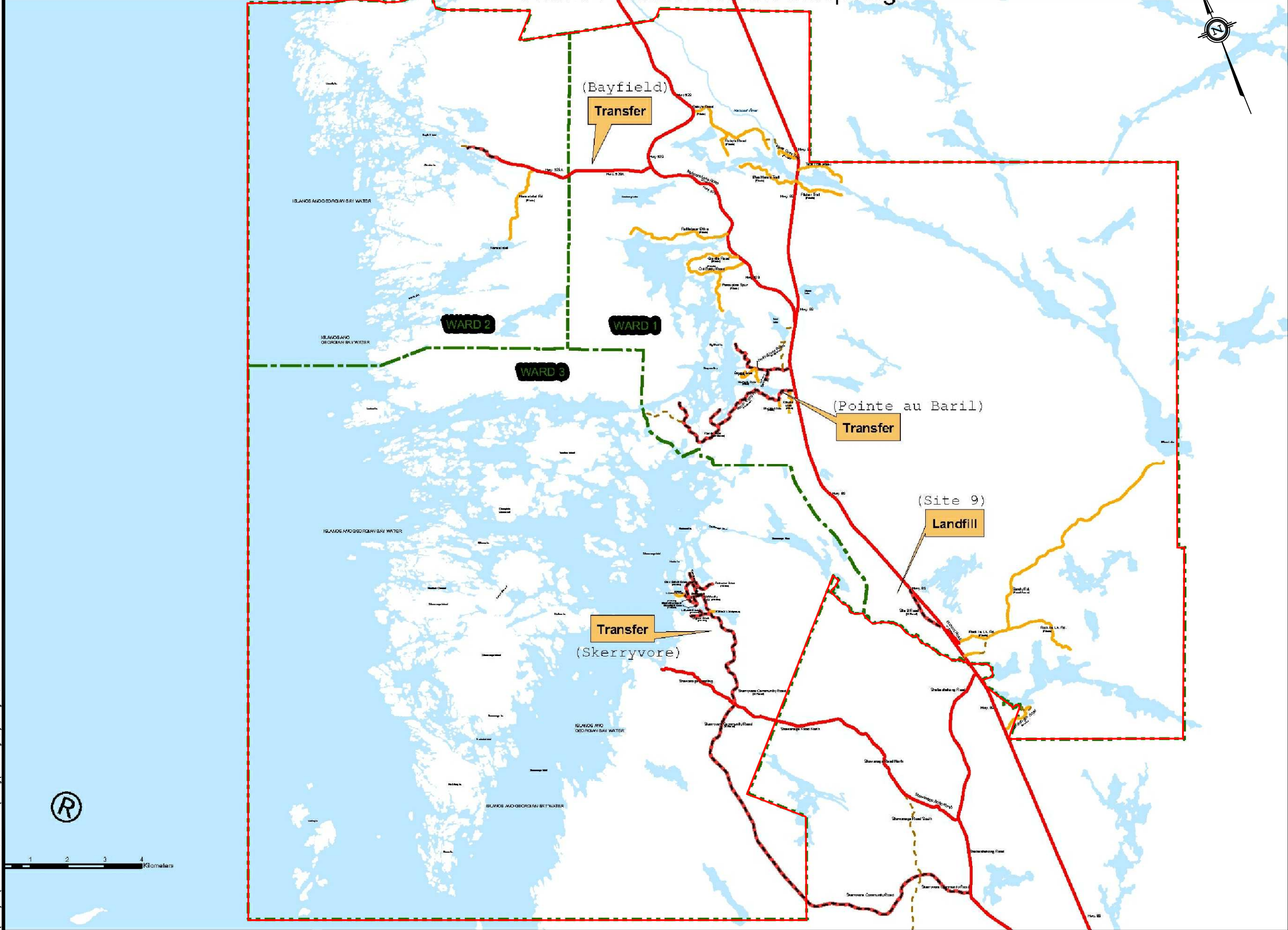


Study Area Location

Waste Diversion Plan
The Archipelago, ON

DATE ISSUED: January 2012	Figure No.
CREATED BY: JLM	
PROJECT NO.: 10-330	
REFERENCE: Gazetteer Maps	1

Waste Facilities North Archipelago



LEGEND:
— Approx. Township Boundary

1500m 0 3000m
HORIZONTAL SCALE 1:100,000



Waste Facilities North

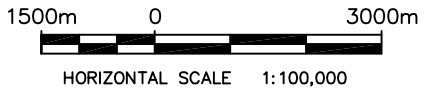
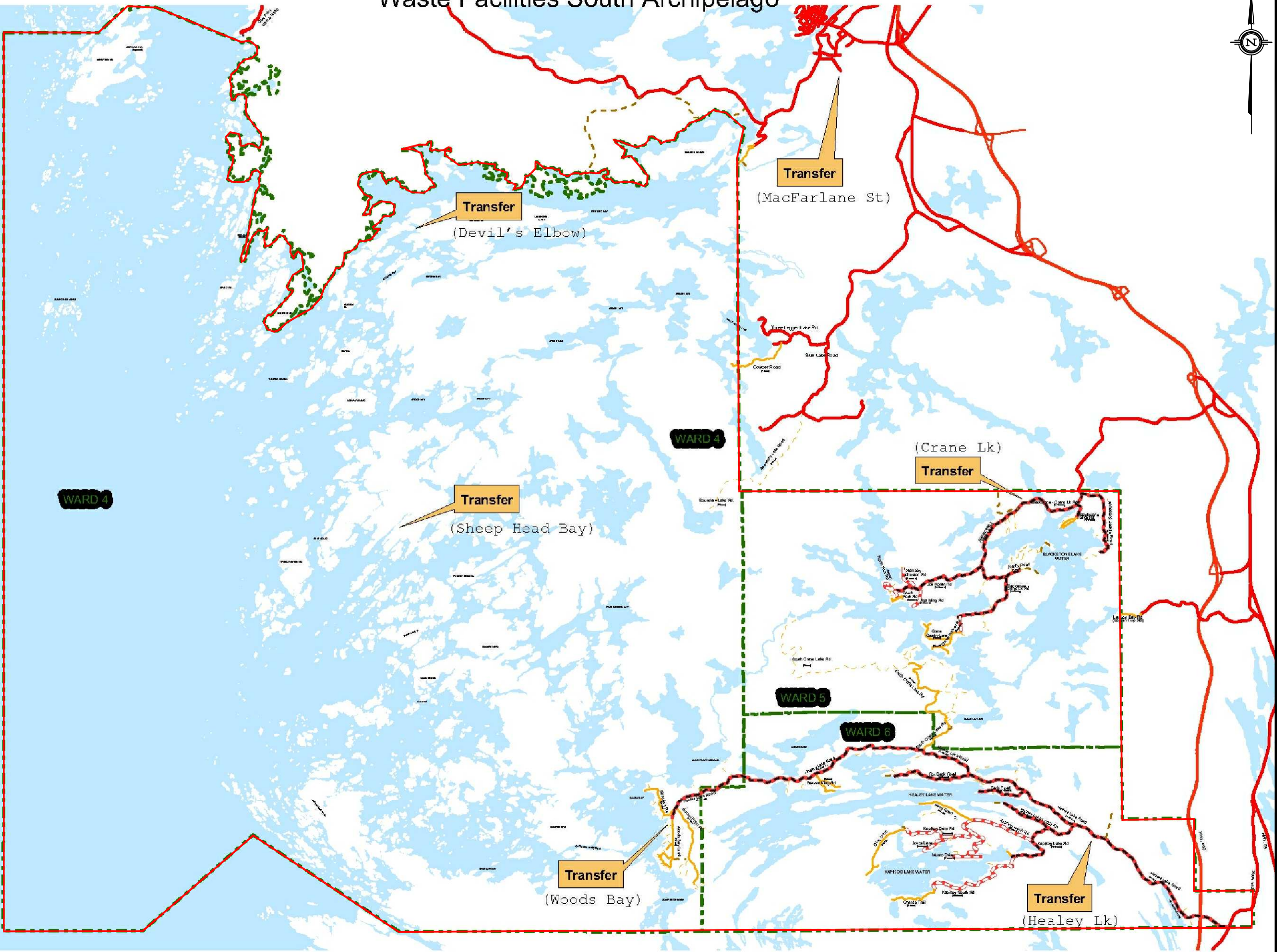
Waste Diversion Plan
The Archipelago, ON

DATE ISSUED:	January 2012	Figure No. 2a
CREATED BY:	JLM	
PROJECT NO.:	10-330	
REFERENCE:	First Base Solutions	

Waste Facilities South Archipelago



LEGEND:
— Approx. Township Boundary



Waste Facilities South

Waste Diversion Plan
The Archipelago, ON

DATE ISSUED:	January 2012	Figure No.
CREATED BY:	JLM	2b
PROJECT NO.:	10-330	
REFERENCE:	First Base Solutions	

Plotted by: JMCARTNEY on January 24, 2012 at 10:01am
File: M:\10 Projects\10-330 Waste Diversion Plan\Drafting\10-330.dwg Layout: Figure 2b Plotcode: 0.5



APPENDICES

Appendix A Waste Diversion Ontario 2012 Datacall Data

Appendix B Waste Audit Data

Appendix C Predicted Waste Generation Calculations

Appendix D Initiative Assessment



APPENDIX A

Waste Diversion Ontario 2012 Datacall Data

Municipality	Total Reported Single Family Households Including Seasonal Households	Reported Multi-Family Households	Reported Seasonal Households	Reported Population	Reported Population + Calculated Seasonal Population	Total Residential Waste Generated			Total Residential Waste Diverted		Total Residential Waste Disposed			Residential Waste Diverted							Residential Waste Disposed			
														Residential Deposit Return Program	Residential Reuse	Residential On Property	Residential Recyclables Diverted	Residential Organics Diverted	Residential MHSW Treatment / Reuse / Recycling	Total Residential Diversion Rate	Residential EFW	Residential Hazardous Waste Disposal	Residential Landfill	Total Residential Disposal Rate
						Tonnes	Kg/Cap		Tonnes	Kg/Cap	Tonnes	Kg/Cap		%	%	%	%	%	%	%	%	%	%	%
Rural Depot - North																								
RED LAKE, MUNICIPALITY OF	2,135	0	0	4,670	4,670	2,627	563	^{1, 3}	1,420	304	1,207	258	³	0.98%	41.98%	0.00%	10.46%	0.00%	0.62%	54.05%	0.00%	0.00%	45.95%	45.95%
WHITESTONE, MUNICIPALITY OF	1,634	0	1,280	728	1,261	653	517	^{1, 3}	326	258	327	259	³	0.61%	0.00%	0.00%	49.27%	0.00%	0.00%	49.89%	0.00%	0.39%	49.72%	50.11%
NIPISSING, TOWNSHIP OF	1,278	0	526	1,704	1,923	459	239		216	112	243	126		2.05%	0.00%	0.00%	44.94%	0.00%	0.00%	46.99%	0.00%	0.00%	53.01%	53.01%
MACHAR, TOWNSHIP OF	859	0	443	838	1,023	471	461	^{1, 3}	202	198	269	263	³	0.98%	1.30%	0.36%	34.88%	5.42%	0.00%	42.93%	0.00%	0.00%	57.07%	57.07%
CASEY, TOWNSHIP OF	157	0	0	374	374	182	487	^{1, 3}	77	207	105	281	³	1.13%	0.00%	0.00%	41.30%	0.00%	0.00%	42.43%	0.00%	0.00%	57.57%	57.57%
KEARNEY, TOWN OF	967	0	588	841	1,086	469	432	³	188	173	281	259	³	0.99%	0.00%	0.00%	39.04%	0.00%	0.00%	40.02%	0.00%	0.44%	59.54%	59.98%
MCKELLAR, TOWNSHIP OF	1,499	0	992	949	1,362	590	433	³	231	170	358	263	³	0.89%	0.37%	5.09%	24.50%	8.33%	0.07%	39.24%	0.00%	0.17%	60.59%	60.76%
ASSIGINACK, TOWNSHIP OF	707	0	0	960	960	392	408	³	148	155	244	254	³	1.35%	0.00%	0.00%	27.83%	8.67%	0.00%	37.85%	0.00%	0.51%	61.64%	62.15%
HARLEY, TOWNSHIP OF	221	0	0	540	540	232	430	³	87	161	145	269	³	1.28%	0.00%	0.00%	36.19%	0.00%	0.00%	37.47%	0.00%	0.00%	62.53%	62.53%
ARMOUR, TOWNSHIP OF	2,176	8	488	2,680	2,883	1,122	389	³	397	138	725	251	³	1.32%	0.00%	8.67%	25.44%	0.00%	0.00%	35.42%	0.00%	0.00%	64.58%	64.58%
MCMURRICH/MONTEITH, TOWNSHIP OF	787	0	432	642	822	315	384	³	110	133	206	250	³	1.12%	0.00%	0.00%	33.65%	0.00%	0.00%	34.77%	0.00%	0.00%	65.23%	65.23%
KILLARNEY, MUNICIPALITY OF	933	0	737	454	761	298	392	³	102	134	196	258	³	0.84%	0.00%	0.00%	33.37%	0.00%	0.00%	34.21%	0.00%	0.00%	65.79%	65.79%
KERNS, TOWNSHIP OF	135	0	0	360	360	145	403	³	49	137	96	266	³	1.37%	0.00%	0.00%	32.58%	0.00%	0.00%	33.94%	0.00%	0.00%	66.06%	66.06%
MAGNETAWAN, MUNICIPALITY OF	2,000	0	1,313	1,454	2,001	773	386	³	254	127	519	259	³	1.04%	0.00%	0.00%	31.83%	0.00%	0.00%	32.87%	0.00%	0.55%	66.58%	67.13%
STRONG, TOWNSHIP OF	1,004	1	329	1,625	1,762	669	380	³	219	124	450	255	³	1.34%	0.00%	0.00%	31.42%	0.00%	0.00%	32.76%	0.00%	0.00%	67.24%	67.24%
BILLINGS, TOWNSHIP OF	621	0	372	509	664	246	371	³	79	120	167	251	³	1.14%	0.00%	0.00%	31.11%	0.00%	0.00%	32.25%	0.00%	0.00%	67.75%	67.75%
ST. JOSEPH, TOWNSHIP OF	910	18	365	1,181	1,333	484	363	³	150	113	334	250	³	1.35%	0.00%	0.00%	29.70%	0.00%	0.00%	31.04%	0.00%	0.00%	68.96%	68.96%
MCDougall, Municipality of	1,800	0	701	2,705	2,997	1,262	421		377	126	885	295		1.18%	0.00%	0.00%	28.68%	0.00%	0.00%	29.86%	0.00%	0.00%	70.14%	70.14%
THE ARCHIPELAGO, TOWNSHIP OF	3,299	0	3,299	575	1,950	797	409	³	232	119	565	290	³	0.40%	0.00%	0.00%	28.67%	0.00%	0.00%	29.07%	0.00%	0.00%	70.93%	70.93%
Perry, Township of	1,600	31	541	2,317	2,542	1,007	396		285	112	723	284		1.27%	0.00%	0.13%	24.63%	1.90%	0.35%	28.27%	0.00%	0.00%	71.73%	71.73%
EMO, TOWNSHIP OF	660	72	1	1,175	1,175	420	357	³	119	101	301	256	³	1.54%	0.00%	0.71%	14.07%	0.00%	11.91%	28.24%	0.00%	0.00%	71.76%	71.76%
HUDSON, TOWNSHIP OF	336	0	123	475	526	187	356	³	52	98	136	258	³	1.40%	0.00%	0.00%	26.19%	0.00%	0.00%	27.58%	0.00%	0.00%	72.42%	72.42%
Huron Shores, Municipality of	1,338	0	489	1,632	1,836	628	342	³	166	90	462	252	³	1.43%	0.00%	0.00%	25.01%	0.00%	0.00%	26.44%	0.00%	0.00%	73.56%	73.56%
JOHNSON, TOWNSHIP OF	408	1	264	754	864	285	329	³	68	79	216	251	³	1.46%	0.00%	0.00%	22.46%	0.00%	0.00%	23.92%	0.00%	0.00%	76.08%	76.08%

Municipality	Total Reported Single Family Households Including Seasonal Households	Reported Multi-Family Households	Reported Seasonal Households	Reported Population	Reported Population + Calculated Seasonal Population	Total Residential Waste Generated			Total Residential Waste Diverted		Total Residential Waste Disposed		Residential Waste Diverted							Residential Waste Disposed			
						Tonnes	Kg/Cap		Tonnes	Kg/Cap	Tonnes	Kg/Cap	Residential Deposit Return Program	Residential Reuse	Residential On Property	Residential Recyclables Diverted	Residential Organics Diverted	Residential MHSW Treatment / Reuse / Recycling	Total Residential Diversion Rate	Residential EFW	Residential Hazardous Waste Disposal	Residential Landfill	Total Residential Disposal Rate
GILLIES, TOWNSHIP OF	190	0	0	473	473	157	332		37	79	119	253	1.66%	0.00%	0.00%	22.19%	0.00%	0.00%	23.86%	0.00%	0.00%	76.14%	76.14%
TARBUTT & TARBUTT ADDITIONAL, TOWNSHIP OF	2,557	0	930	3,796	4,184	1,375	329 ³		320	76	1,056	252 ³	1.52%	0.00%	0.00%	21.72%	0.00%	0.00%	23.24%	0.00%	0.00%	76.76%	76.76%
HILTON BEACH, VILLAGE OF	499	0	133	407	462	153	330 ³		35	76	118	254 ³	1.47%	0.00%	0.00%	21.28%	0.27%	0.00%	23.02%	0.00%	0.00%	76.98%	76.98%
FRENCH RIVER, MUNICIPALITY OF	2,476	0	0	2,659	2,659	911	343 ³		199	75	712	268 ³	1.61%	0.00%	0.00%	20.26%	0.00%	0.00%	21.86%	0.00%	1.98%	76.16%	78.14%
CARLING, TOWNSHIP OF	1,678	0	1,157	1,025	1,507	670	445		143	95	527	350	0.84%	0.00%	0.00%	20.48%	0.00%	0.00%	21.32%	0.00%	0.00%	78.68%	78.68%
SEGUIN, TOWNSHIP OF	4,732	0	3,101	4,280	5,572	3,178	570 ¹		643	115	2,535	455	0.74%	0.19%	1.33%	17.39%	0.57%	0.00%	20.24%	0.00%	0.00%	79.76%	79.76%
SAGAMOK ANISHNAWBEK FN	374	24	44	2,745	2,763	580	210		113	41	467	169	2.61%	0.00%	0.00%	16.95%	0.00%	0.00%	19.56%	0.00%	0.00%	80.44%	80.44%
NEEBING, MUNICIPALITY OF	1,285	1	425	2,291	2,468	850	344 ³		165	67	685	278 ³	1.48%	0.00%	0.04%	16.97%	0.88%	0.00%	19.38%	0.00%	0.00%	80.62%	80.62%
OCONNOR, TOWNSHIP OF	274	0	0	685	685	191	278		36	53	154	225	1.98%	0.00%	0.00%	17.09%	0.00%	0.00%	19.06%	0.00%	0.00%	80.94%	80.94%
COCHRANE TEMISKAMING WMB	19,872	0	0	39,942	39,942	12,050	302 ³		2,246	56	9,804	245 ³	1.83%	0.00%	0.00%	16.81%	0.00%	0.00%	18.64%	0.00%	0.00%	81.36%	81.36%
OLIVER PAIPOONGE, MUNICIPALITY OF	2,149	0	0	5,732	5,732	1,774	310 ³		329	57	1,445	252 ³	1.78%	0.00%	0.00%	16.79%	0.00%	0.00%	18.57%	0.00%	0.00%	81.43%	81.43%
CONMEE, TOWNSHIP OF	284	1	0	764	764	194	254 ³		34	44	160	209 ³	2.17%	0.00%	0.13%	12.11%	3.07%	0.00%	17.48%	0.00%	0.00%	82.52%	82.52%
SHUNIAH, MUNICIPALITY OF	2,460	0	0	2,913	2,913	900	309 ³		156	53	745	256 ³	1.78%	0.00%	0.00%	15.50%	0.00%	0.00%	17.29%	0.00%	0.00%	82.71%	82.71%
MACDONALD; MEREDITH & ABERDEEN ADDITIONAL,	771	0	196	1,413	1,495	581	389		98	66	482	323	1.34%	0.53%	0.00%	15.05%	0.00%	0.00%	16.93%	0.00%	0.00%	83.07%	83.07%
SERPENT RIVER FNS	160	0	1	440	440	184	417		28	64	156	354	1.32%	0.00%	0.00%	13.96%	0.00%	0.00%	15.27%	0.00%	0.00%	84.73%	84.73%
HILLIARD, TOWNSHIP OF	141	0	2	300	301	88	292 ³		13	44	75	248 ³	1.88%	0.00%	0.00%	13.08%	0.00%	0.00%	14.96%	0.00%	0.00%	85.04%	85.04%
RAINY RIVER, TOWN OF	460	70	12	842	847	252	298 ³		38	45	215	253 ³	1.84%	0.00%	0.00%	13.11%	0.00%	0.00%	14.95%	0.00%	0.00%	85.05%	85.05%
CALVIN, MUNICIPALITY OF	300	0	82	605	639	188	295 ³		27	42	162	253 ³	1.77%	0.00%	0.00%	12.42%	0.00%	0.00%	14.19%	0.00%	0.00%	85.81%	85.81%
BONFIELD, TOWNSHIP OF	1,021	0	0	2,096	2,096	595	284 ³		77	37	518	247 ³	1.94%	0.00%	0.00%	10.94%	0.00%	0.00%	12.88%	0.00%	0.00%	87.12%	87.12%
WIKWEMIKONG UNCEDED INDIAN RESERVE	706	446	0	3,158	3,158	849	269 ³		71	23	778	246 ³	2.05%	0.00%	0.00%	6.37%	0.00%	0.00%	8.42%	0.00%	0.00%	91.58%	91.58%
SIOUX NARROWS NESTOR FALLS, TOWNSHIP OF	1,171	0	861	581	940	251	268 ³		19	20	232	247 ³	1.27%	0.00%	0.00%	6.32%	0.00%	0.00%	7.59%	0.00%	0.00%	92.41%	92.41%
																		Average >	25.52%				
Rural Depot - South																							
MADAWASKA VALLEY, TOWNSHIP	2,937	48	775	4,385	4,708	1,539	327		801	170	739	157	1.57%	0.00%	3.31%	34.70%	11.93%	0.50%	52.02%	0.00%	0.03%	47.96%	47.98%
AUGUSTA, TOWNSHIP OF	2,810	45	0	7,430	7,430	2,029	273		1,007	135	1,023	138	2.02%	0.00%	0.12%	47.47%	0.00%	0.00%	49.60%	0.00%	0.00%	50.40%	50.40%
BONNECHERE VALLEY, TOWNSHIP OF	2,415	4	680	3,280	3,563	1,603	450 ^{1, 2,}		761	214	842	236 ^{2, 3}	1.13%	8.23%	4.51%	24.65%	8.76%	0.22%	47.49%	0.00%	0.09%	52.42%	52.51%
FARADAY, TOWNSHIP OF	1,308	0	0	1,397	1,397	808	578 ^{1, 3}		358	256	450	322 ³	0.95%	0.00%	0.00%	41.74%	0.00%	1.59%	44.28%	0.00%	0.53%	55.19%	55.72%
CENTRAL FRONTENAC, TOWNSHIP OF	3,871	1	1,911	3,953	4,749	1,415	298		618	130	797	168	1.54%	0.00%	0.00%	40.62%	0.00%	1.49%	43.65%	0.00%	0.00%	56.35%	56.35%

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														Residential Deposit Return Program	Residential Reuse	Residential On Property	Residential Recyclables Diverted	Residential Organics Diverted	Residential MHSW Treatment / Reuse / Recycling	Total Residential Diversion Rate	Residential EFW	Residential Hazardous Waste Disposal	Residential Landfill	Total Residential Disposal Rate
						Tonnes	Kg/Cap		Tonnes	Kg/Cap	Tonnes	Kg/Cap		%	%	%	%	%	%	%	%	%	%	%
DYSART ET AL, TOWNSHIP OF	7,093	0	4,437	5,966	7,815	4,824	617	¹	2,086	267	2,738	350		0.68%	0.00%	0.00%	42.13%	0.00%	0.44%	43.25%	7.36%	0.21%	49.19%	56.75%
MINDEN HILLS, TOWNSHIP OF	6,859	0	4,216	6,251	8,008	3,130	391	³	1,331	166	1,799	225	³	1.10%	0.00%	5.75%	35.68%	0.00%	0.00%	42.54%	0.00%	0.00%	57.46%	57.46%
NORTHERN BRUCE PENINSULA, MUNICIPALITY OF	4,921	0	3,114	3,615	4,913	2,157	439		873	178	1,285	262		0.92%	1.10%	0.93%	26.13%	10.98%	0.39%	40.45%	0.00%	0.17%	59.39%	59.55%
WOLLASTON, TOWNSHIP OF	1,176	0	817	708	1,048	343	328		139	132	205	195		1.14%	0.00%	0.00%	39.30%	0.00%	0.00%	40.44%	0.00%	0.00%	59.56%	59.56%
FRONTENAC ISLANDS, TOWNSHIP OF	1,286	0	483	1,732	1,933	681	352		268	139	412	213		1.40%	0.00%	3.67%	34.34%	0.00%	0.00%	39.41%	0.00%	0.00%	60.59%	60.59%
KILLALOE; HAGARTY & RICHARDS, TOWNSHIP OF	1,645	1	480	2,402	2,602	740	284		276	106	463	178		1.79%	0.07%	1.77%	31.53%	1.39%	0.82%	37.37%	0.00%	0.03%	62.60%	62.63%
HIGHLANDS EAST, MUNICIPALITY OF	4,306	68	2,881	3,249	4,449	2,293	515	¹	849	191	1,444	325		0.78%	0.00%	6.15%	29.23%	0.53%	0.33%	37.02%	0.00%	0.11%	62.87%	62.98%
LEEDS & THE THOUSAND ISLANDS, TOWNSHIP OF	5,819	3	1,615	8,874	9,547	3,451	361		1,272	133	2,179	228		1.42%	0.00%	11.70%	23.43%	0.31%	0.00%	36.85%	0.00%	0.00%	63.15%	63.15%
TAY VALLEY, TOWNSHIP OF	3,868	0	1,591	5,571	6,234	1,788	287		618	99	1,170	188		1.72%	0.00%	0.00%	32.83%	0.00%	0.00%	34.55%	0.00%	0.00%	65.45%	65.45%
MELANCTHON, TOWNSHIP OF	1,144	0	0	2,347	2,347	812	346	³	273	116	540	230	³	1.59%	0.00%	0.00%	23.29%	8.15%	0.53%	33.56%	0.00%	0.12%	66.32%	66.44%
ALGONQUIN HIGHLANDS,TOWNSHIP OF	4,537	0	3,545	2,156	3,633	1,821	501	^{1, 3}	607	167	1,214	334	³	0.65%	0.00%	0.00%	31.81%	0.00%	0.88%	33.35%	0.00%	0.52%	66.13%	66.65%
RIDEAU LAKES, TOWNSHIP OF	7,575	0	2,351	10,652	11,632	3,802	327		1,261	108	2,541	218		1.54%	0.00%	3.34%	27.88%	0.00%	0.39%	33.16%	0.00%	0.13%	66.71%	66.84%
ADDINGTON HIGHLANDS, TOWNSHIP OF	2,705	1	0	1,945	1,945	665	342	³	219	113	446	229	³	1.61%	0.00%	1.01%	30.00%	0.00%	0.37%	32.99%	0.00%	0.14%	66.87%	67.01%
GREATER MADAWASKA, TOWNSHIP OF	2,200	15	1,098	2,485	2,943	1,022	347		328	111	694	236		1.34%	0.00%	0.00%	30.73%	0.00%	0.00%	32.07%	0.00%	0.32%	67.61%	67.93%
NORTH FRONTENAC, TOWNSHIP OF	3,343	0	2,412	1,842	2,847	939	330	³	286	101	653	229	³	1.08%	0.00%	1.13%	27.09%	0.00%	1.19%	30.49%	0.00%	1.19%	68.32%	69.51%
TUDOR & CASHEL, TOWNSHIP OF	586	0	268	675	787	282	358		82	104	200	254		1.32%	0.00%	0.00%	27.78%	0.00%	0.00%	29.10%	0.00%	0.00%	70.90%	70.90%
CARLOW MAYO, TOWNSHIP OF	663	0	254	806	912	284	311	³	81	89	203	222	³	1.57%	0.00%	0.00%	26.94%	0.00%	0.00%	28.51%	0.00%	0.00%	71.49%	71.49%
LANARK HIGHLANDS, TOWNSHIP OF	3,210	3	1,081	5,180	5,630	2,598	461	¹	726	129	1,872	333		1.10%	0.45%	8.67%	16.70%	0.11%	0.91%	27.93%	0.00%	0.03%	72.04%	72.07%
BRUDENELL; LYNDONCH & RAGLAN, TOWNSHIP OF	1,158	0	325	1,437	1,572	488	310	³	132	84	356	226	³	1.62%	0.00%	0.00%	25.45%	0.00%	0.00%	27.08%	0.00%	0.00%	72.92%	72.92%
FRONT OF YONGE, TOWNSHIP OF	1,210	0	100	2,752	2,794	853	305	³	222	79	631	226	³	1.78%	0.00%	0.00%	24.22%	0.00%	0.00%	25.99%	0.00%	0.20%	73.80%	74.01%
STONE MILLS, TOWNSHIP OF	3,519	2	391	7,560	7,723	2,306	299	³	583	75	1,723	223	³	1.81%	0.00%	0.26%	23.20%	0.00%	0.00%	25.27%	3.05%	0.00%	71.67%	74.73%
ADMASTON/BROMLEY, TOWNSHIP	1,336	0	0	2,640	2,640	1,009	382		190	72	819	310		1.44%	0.00%	0.02%	17.10%	0.00%	0.28%	18.84%	0.00%	0.05%	81.11%	81.16%
ENNISKILLEN, TOWNSHIP OF	1,138	0	0	3,178	3,178	912	287		135	42	777	245		1.92%	0.00%	0.00%	12.86%	0.00%	0.00%	14.78%	0.00%	0.00%	85.22%	85.22%
SIX NATIONS	2,835	9	0	12,278	12,278	3,030	247	³	358	29	2,673	218	³	2.23%	0.00%	0.00%	9.57%	0.00%	0.00%	11.81%	0.00%	0.00%	88.19%	88.19%
ONEIDA NATION OF THE THAMES	454	1	0	2,100	2,100	541	258		59	28	482	230		2.14%	0.00%	0.00%	8.74%	0.00%	0.00%	10.88%	0.00%	0.00%	89.12%	89.12%
ELIZABETHTOWN-KITLEY, TOWNSHIP OF	3,858	4	0	9,724	9,724	2,260	232	³	148	15	2,112	217	³	2.37%	0.00%	0.00%	3.92%	0.00%	0.27%	6.56%	0.00%	0.32%	93.12%	93.44%

Municipality	Total Reported Single Family Households Including Seasonal Households	Reported Multi-Family Households	Reported Seasonal Households	Reported Population	Reported Population + Calculated Seasonal Population	Total Residential Waste Generated			Total Residential Waste Diverted		Total Residential Waste Disposed			Residential Waste Diverted						Residential Waste Disposed				
														Residential Deposit Return Program	Residential Reuse	Residential On Property	Residential Recyclables Diverted	Residential Organics Diverted	Residential MHSW Treatment / Reuse / Recycling	Total Residential Diversion Rate	Residential EFW	Residential Hazardous Waste Disposal	Residential Landfill	Total Residential Disposal Rate
						Tonnes	Kg/Cap		Tonnes	Kg/Cap	Tonnes	Kg/Cap		%	%	%	%	%	%	%	%	%	%	%
WALPOLE ISLAND FN	717	0	47	4,400	4,420	1,157	262		67	15	1,091	247		2.09%	0.00%	0.00%	3.65%	0.00%	0.00%	5.75%	0.00%	0.00%	94.25%	94.25%
CHIPPEWAS OF KETTLE & STONY POINT FNS	907	13	150	2,215	2,278	521	229 ³		28	12	493	217 ³		2.34%	0.00%	0.00%	3.02%	0.00%	0.00%	5.36%	0.00%	0.00%	94.64%	94.64%
																			Average >	32.70%				
Totals>	3,954,354	1,238,541	151,537	13,106,441	13,169,581	4,820,655			2,274,810		2,545,869								47.19%					52.81%

¹⁾ Per capita waste generation above 450 kg likely indicates either over reporting of waste disposed and/or materials diverted or under reporting of population and/or, where reported, seasonal households.

²⁾ Removed unreasonable estimated yard waste tonnes and replaced with municipal group averages.

³⁾ Includes calculated garbage tonnes based on municipal group averages for municipalities not reporting garbage tonnes, municipalities reporting unreasonable volume estimates, municipalities reporting garbage tonnes for only a portion of their total households, or municipalities reporting <100 kg/capita of garbage.

2012 Blue Box Financial Data by Municipal Group									
Municipal Group	Program Code	Program Name	Calculated Blue Box Tonnes Marketed	Total Gross Costs	Gross Costs Per Tonne Marketed	Total Gross Revenue	Gross Revenue Per Tonne Marketed	Total Net Cost	Net Cost Per Tonne Marketed
		Rural Depot - North							
8	975	ALGONQUINS OF PIKWAKANAGAN	28	25,456	894	-	-	25,456	894
8	188	ARMOUR, TOWNSHIP OF	218	190,184	872	24,437	112	165,747	760
8	709	ASSIGINACK, TOWNSHIP OF	86	38,715	449	-	-	38,715	449
8	714	BILLINGS, TOWNSHIP OF	49	17,071	351	-	-	17,071	351
8	955	BONFIELD, TOWNSHIP OF	48	25,328	530	-	-	25,328	530
8	611	CALVIN, MUNICIPALITY OF	19	18,660	960	-	-	18,660	960
8	372	CARLING, TOWNSHIP OF	117	130,775	1,121	-	-	130,775	1,121
8	537	CASEY, TOWNSHIP OF	52	10,284	199	-	-	10,284	199
8	979	CHIPPEWAS OF GEORGINA ISLAND	23	111,444	4,818	-	-	111,444	4,818
8	338	COCHRANE TEMISKAMING WMB	1,742	749,435	430	176,856	102	572,579	329
8	754	DESERONTO, TOWN OF	121	28,918	239	220	2	28,698	237
8	764	EMO, TOWNSHIP OF	45	12,074	268	-	-	12,074	268
8	775	FRENCH RIVER, MUNICIPALITY OF	180	72,992	405	-	-	72,992	405
8	545	GILLIES, TOWNSHIP OF	16	11,918	742	-	-	11,918	742
8	790	HARLEY, TOWNSHIP OF	52	8,768	169	-	-	8,768	169
8	796	HILLIARD, TOWNSHIP OF	8	12,632	1,593	-	-	12,632	1,593
8	797	HILTON BEACH, VILLAGE OF	18	14,317	778	-	-	14,317	778
8	607	HUDSON, TOWNSHIP OF	26	7,737	297	-	-	7,737	297
8	801	HURON SHORES, MUNICIPALITY OF	137	36,452	266	-	-	36,452	266
8	807	JOHNSON, TOWNSHIP OF	56	7,943	141	-	-	7,943	141
8	810	KEARNEY, TOWN OF	114	101,229	889	-	-	101,229	889
8	605	KERNS, TOWNSHIP OF	17	5,298	305	-	-	5,298	305
8	812	KILLARNEY, MUNICIPALITY OF	41	65,160	1,575	506	12	64,653	1,563
8	833	MACDONALD; MEREDITH & ABERDEEN ADDITIONAL, TOWNSHIP	71	19,364	272	-	-	19,364	272
8	834	MACHAR, TOWNSHIP OF	104	35,500	343	4,324	42	31,176	301
8	837	MAGNETAWAN, MUNICIPALITY OF	155	66,685	431	-	-	66,685	431
8	375	MCDougall, Municipality of	182	154,477	847	-	-	154,477	847
8	413	MCKELLAR, TOWNSHIP OF	89	85,767	968	15	0	85,752	968
8	847	MCMURRICH/MONTEITH, TOWNSHIP OF	53	60,675	1,135	-	-	60,675	1,135
8	610	NEEBING, MUNICIPALITY OF	57	21,987	385	-	-	21,987	385
8	866	NIPISSING, TOWNSHIP OF	183	38,504	210	-	-	38,504	210
8	871	OCONNOR, TOWNSHIP OF	19	10,204	537	-	-	10,204	537
8	873	OLIVER PAIPOONGE, MUNICIPALITY OF	145	52,108	359	-	-	52,108	359
8	616	PERRY, TOWNSHIP OF	155	126,491	818	-	-	126,491	818
8	895	RAINY RIVER, TOWN OF	29	12,923	438	-	-	12,923	438
8	897	RED LAKE, MUNICIPALITY OF	213	288,401	1,356	-	-	288,401	1,356
8	404	SEGUIN, TOWNSHIP OF	443	277,839	628	8	0	277,831	628
8	974	Serpent River FNS	22	21,253	982	-	-	21,253	982
8	905	SHUNIAH, MUNICIPALITY OF	91	51,535	566	-	-	51,535	566
8	907	SIOUX NARROWS NESTOR FALLS, TOWNSHIP OF	11	46,450	4,115	-	-	46,450	4,115
8	918	ST. JOSEPH, TOWNSHIP OF	74	37,585	509	-	-	37,585	509
8	922	STRONG, TOWNSHIP OF	179	147,934	824	15,248	85	132,685	739
8	924	TARBUTT & TARBUTT ADDITIONAL, TOWNSHIP OF	215	30,012	139	-	-	30,012	139
8	245	THE ARCHIPELAGO, TOWNSHIP OF	188	711,596	3,781	-	-	711,596	3,781
8	232	WHITESTONE. MUNICIPALITY OF	87	75.382	864	-	-	75.382	864

8	907	SIOUX NARROWS NESTOR FALLS, TOWNSHIP OF	11	46,450	4,115	-	-	46,450	4,115
8	918	ST. JOSEPH, TOWNSHIP OF	74	37,585	509	-	-	37,585	509
8	922	STRONG, TOWNSHIP OF	179	147,934	824	15,248	85	132,685	739
8	924	TARBUTT & TARBUTT ADDITIONAL, TOWNSHIP OF	215	30,012	139	-	-	30,012	139
8	245	THE ARCHIPELAGO, TOWNSHIP OF	188	711,596	3,781	-	-	711,596	3,781
8	232	WHITESTONE, MUNICIPALITY OF	87	75,382	864	-	-	75,382	864
8	985	WIKWEMIKONG UNCEDED INDIAN RESERVE	68	74,426	1,089	-	-	74,426	1,089
		Totals	6,048	4,149,890		221,614		3,928,276	
		Total Municipalities >	46	Simple Average ¹	867		8		860
				Weighted Average ²	686		37		649



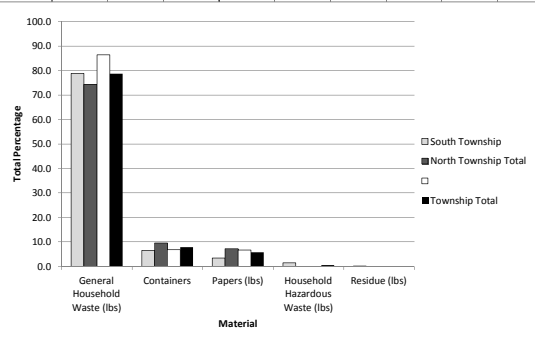
APPENDIX B

Waste Audit Data

SUMMARY OF WASTE AUDITS 2012 & 2013								
Percent of Recyclables (Containers & Fibers) in Waste								
		Bag Weight (lbs)	General Household Waste (lbs)	Organics (lbs)	Containers	Papers (lbs)	Household Hazardous Waste (lbs)	Residue (lbs)
Woods Bay	22-Jan-12	8.77	0.59	3.79	0.22	0.39	0	0
	03-Jul-12	115.38	88.22		9.37	3.05	15.19	
	27-Aug-12	84.92	80.23		3.1	1.1		0.49
	12-Feb-13	121.25	56.5	27.5	7.82	1.91		
	18-Jun-13	79.71	67.2		8.08	4.5		
Healey Lake	14-Aug-13	90.25	85.45		1.6	3.2		
	22-Jan-12	12.18	0.59	3.79	0.22	0.39		
	03-Jul-12	67.7	54.26		9.11	4.02		0.31
	27-Aug-12	79.34	71.22		7.51	0.61		
	12-Feb-13	34.18	17.6	6.22	3.17	0.92		
Crane Lake	18-Jun-13	65.28	55.81		5.31	4.57		
	14-Aug-13	81.13	77.43		2.6	1.1		
	22-Jan-12	30.58	1.4	12.86	1.05	1.94	0.22	
	03-Jul-12	35.3	23.75		7.01	4.54	0.13	
	27-Aug-12	65.54	62.84		1.78	0.97		
	18-Jun-13	86.42	77.17		5.31	4.57		
	14-Aug-13	73.39	71.52		1.17	0.7		
South Township Total		1131.32	891.78	54.16	74.43	38.48	15.54	0.8
South Township Percentage			78.8		6.6	3.4	1.4	0.1
		Bag Weight (lbs)	General Household Waste (lbs)	Organics (lbs)	Containers	Papers (lbs)	Household Hazardous Waste (lbs)	Residue (lbs)
Point au Baril	22-Jan-12	7.03	1.01	1.24	2.03	1.51		
	03-Jul-12	82.51	54.2		22.42	5.89		
	27-Aug-12	94.51	64.91		9.78	11.17		
	12-Feb-13	133.4	50.03	30.15	16.5	5.37		
	18-Jun-13	62.94	59.5		2.42	1.16		
Skerryvore	14-Aug-13	113.92	104.95		4.45	4.52		
	22-Jan-12	11.15	2.94	1.87	0.34	4.13		
	03-Jul-12	79.74	62.78		9.2	7.76		
	27-Aug-12	73.72	60.16		8.22	5.34		
	12-Feb-13	47.36	14.02	13.92	3.25	1.26		
Bayfield	18-Jun-13	25.65	23.28		0.47	2.03		
	14-Aug-13	32.27	27.55		1.68	3.04		
	03-Jul-12	138.7	128.08		3.8	6.82		
	27-Aug-12	85.25	76.03		6.27	2.94		
	18-Jun-13	30.28	24.96		3.77	1.47		
Site 9	14-Aug-13	102.25	96.46		2.82	2.97		
	22-Jan-12	11.86	4.24	2.35	1.47	3.33		
	12-Feb-13	98.1	58.54	2.46	18.84	17.78		
North Township Total		1230.64	913.64		117.73	88.49		
North Township Percentage			74.2		9.6	7.2		
		Bag Weight (lbs)	General Household Waste (lbs)	Organics (lbs)	Containers	Papers (lbs)	Household Hazardous Waste (lbs)	Residue (lbs)
Sheephead	26-Jul-12	67.29	38.12		7.5	21.47		
	27-Aug-12	66.23	58.33		5.59	2.31		
	20-Jun-13	43.56	35.44		5.27	2.8		
Devil's Elbow	26-Jul-12	79.37	63.68		5.18	10.51		
	27-Aug-12	98.9	84.92		11.59	2.29		
	20-Jun-13	33.45	31.85		1.25	0.8		
Sheephead and Devil's Elbow		291.1	275.11		9.7	5.29		
Island Total		679.9	587.45	0	46.08	45.47		
Island Percentage			86.4	0.0	6.8	6.7		
Township Total		3041.86	2392.87		238.24	172.44	15.54	0.8
Township Percentage			78.7		7.8	5.7	0.5	0.0

The bar chart displays the total percentage of recyclables (containers and fibers) in waste for three entities: South Township (light gray bars), North Township Total (dark gray bars), and Township Total (black bars). The Y-axis represents the Total Percentage from 0.0 to 100.0. The X-axis lists the materials: General Household Waste (lbs), Containers, Papers (lbs), Household Hazardous Waste (lbs), and Residue (lbs). The data is as follows:

Material	South Township	North Township Total	Township Total
General Household Waste (lbs)	78.8	74.2	78.8
Containers	6.6	9.6	6.6
Papers (lbs)	3.4	7.2	3.4
Household Hazardous Waste (lbs)	1.4	0.0	1.4
Residue (lbs)	0.1	0.0	0.1





APPENDIX C

Predicted Waste Generation Calculations

Appendix C - Predicted Waste Generation Calculations

Solid Waste Generated per Capita (kg/person/year)	84
Blue Box Material Available per Capita (kg/person/year)	15

	Current Year	Current Year + 5	Current Year + 10
Population	14,600	14,691	14,782
Total Waste (tonnes)	1,223	1,234	1,242
Blue Box Material Available (tonnes)	216	220	222

7c: Calculating Material Available for Recycling (for municipalities working individually)

Waste/Resource Material	Composition (%) (from local or sample audit)	Total Residential Waste Generated (tonnes)	Total Blue Box Material in Waste Stream (tonnes)	Target Blue Box Capture Rate (%) (see Table 1, right)	Blue Box Material Available for Diversion (tonnes)	Blue Box Material Currently Diverted (tonnes)	Blue Box Material Remaining in waste Stream (tonnes)	Material Remaining in Waste Stream for Diversion (% of total waste stream)
Papers (ONP, OMG, OCC, OBB and fine papers)	19.2	1,223	235	65	153	163	0	0.0%
Metals (aluminum, steel, mixed metal)	3.3		40		26	14	12	1.0%
Plastics (containers, film, tubs and lids)	7.1		87		56	30	26	2.1%
Glass	2		24		16	9	7	0.6%
Total Blue Box Materials	31.6	1,223	386	65	251	217	45	3.7%
Current Blue Box Diversion Rate						17.7%		
Additional Blue Box Diversion Rate								3.7%
Potential Future Blue Box Diversion Rate								21.4%

Table 1: Reasonable Blue Box Diversion Goals		
Municipal Grouping	Capture Rate Target for Blue Box Materials	Net Cost Target (\$/tonne)
Large Urban	85%	\$150.00
Urban Regional	75%	\$150.00
Medium Urban	85%	\$170.00
Rural Regional	75%	\$280.00
Small Urban	80%	\$210.00
Rural Collection – North	70%	\$540.00
Rural Collection – South	70%	\$410.00
Rural Depot – North	65%	\$720.00
Rural Depot – South	70%	\$390.00



APPENDIX D

Initiative Assessment

Appendix D – Initiative Assessment

	Criteria (Score out of 5)					
Description of Options / Best Practises	% Waste Diverted	Proven Results	Economically Feasible	Public Acceptance	Ease of Implementation	Total Criteria Score
10.2.1 Tonnage diverted through charity bottle drives	5	5	5	5	5	25
10.2.2 Estimating Residential Waste Tonnage	5	5	5	5	5	25
10.2.3 Enhanced enforcement of recycling	5	5	5	3	3	21
10.2.4 Training of Key Program Staff	4	4	4	5	4	21
10.2.5 Public education and promotion program	4	4	4	4	4	20
10.2.6 Survey Public Opinion	4	4	4	4	4	20
10.3.1 Enhance Transfer Stations and Landfill Sites	3	3	3	4	5	18
10.3.2 Limit Volume of Waste and Recycling	3	3	5	3	3	17
10.3.3 Recycling facilities / fees	1	3	5	5	2	16
10.3.4 Shared Services	1	3	5	3	3	15
10.3.5 Diversion of Household Organics	5	3	1	3	1	13