REGIONAL DISTRICT OF NANAIMO

STAFF REPORT

TO:	Larry Gardner Manager, Solid Waste	**DATE:**	January 7, 2016
		MEETING:	RSWAC, January 14, 2016
FROM:	Meghan Larson Special Projects Coordinator	**FILE:**	5365-00
SUBJECT:	Multi Family and IC&I Collection in the RDN		

RECOMMENDATION

That the Regional Solid Waste Advisory Committee (RSWAC) receives this report for information.

PURPOSE

To provide background on the current state of Multi-Family and Industrial, Commercial and Institutional (IC&I) sector collection in the RDN and to estimate additional waste diversion potential from this sector.

BACKGROUND

The IC&I sector represents 63% of landfilled waste at the Regional Landfill. Examples of waste generators in this sector include businesses, industries, or commercial operations including stores, offices, hotels, hospitals, schools, restaurants, construction companies, factories etc., and the Multi-Family housing sector. In the Regional District of Nanaimo (RDN) the IC&I sector (including Multi-Family) is serviced by private waste haulers. However, for the purpose of this report Multi-Family waste collection will be examined separately from the rest of the IC&I sector even though the waste is collected together by most haulers.

When comparing the 2004 RDN waste composition study with the study completed in 2012, the amount of waste disposed at the Regional Landfill from the IC&I sector has remained relatively static at approximately 33,239 MT, while the overall percentage of the waste stream coming from the IC&I sector has increased from 56% of waste disposed at the Regional Landfill in 2004 to 63% of waste disposed at the Regional Landfill in 2012.

Multi-Family Housing Sector

As indicated in Table 1, the residential housing sector consists of the following types of housing: single family housing which includes single family detached homes, duplexes and fourplexes (75%), Townhouses and Mobile Home Parks (12%) and Apartments (13%)[1]. Townhouses, Mobile Home Parks and Apartments are typically referred to as Multi-Family housing. Service delivery to the Multi-Family sector is primarily by the private sector. In the RDN, Multi-Family waste is estimated to be 8% of the IC&I waste received at the Regional Landfill and is approximately 20% of the residential solid waste generated in the region (not including self-haul waste).

[1] Estimates based on data from 2012 RDN Multi-Family Housing Diversion Strategy Progress Report

Table 1: Regional Distribution of Housing Units by Type, 2012

Area	Single Family			Townhouses/MHPs			Apartments			Municipal Collection	Private Collection
	%	Garbage	Recycling/FW	%	Garbage	Recycling/FW	%	Garbage	Recycling/FW	%	%
City of Nanaimo	67%	CON	CON	13%	*Private*	*Private*	19%	*Private*	*Private*	67%	32%
Electoral Areas	92%	RDN	RDN	8%	RDN	RDN	0%	*Private*	*Private*	100%	0%
COP	59%	RDN	RDN	24%	RDN	RDN	16%	*Private*	*Private*	83%	16%
Town of Qualicum Beach	84%	TQB	RDN	13%	TQB	RDN	3%	*Private*	*Private*	97%	3%
District of Lantzville	97%	RDN	RDN	3%	RDN	RDN	0%	-	-	100%	0%
Region Wide	75%	-	-	12%	-	-	13%	-	-	80%	20%

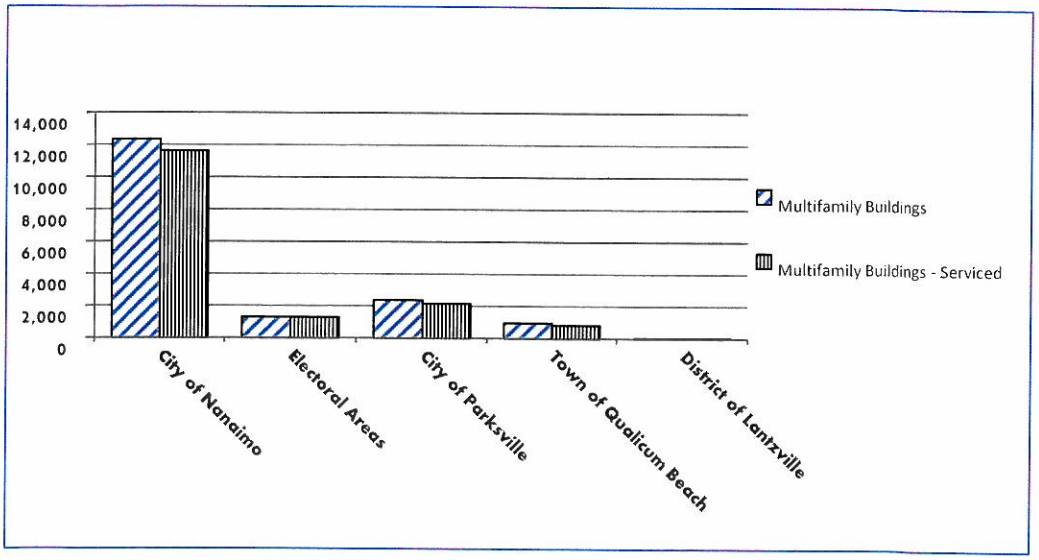
Multi-Family Diversion Strategy

Since 1991, the RDN has progressively banned materials from landfill disposal as local recycling and processing facilities became available. Banned household items include recyclable paper, cardboard, metal and, most recently in 2010, household plastic containers (i.e. empty HDPE and LDPE plastic containers from residential premises including milk jugs, margarine and yogurt containers and dish soap and laundry detergent bottles).

In 2008, the RDN launched a Multi-Family Recycling Program which was designed to increase waste diversion through source separation of recyclable material at multi-family buildings. This was an information program working collaboratively with key stakeholders such as; private haulers, property owners and managers and strata council representatives. Staff met frequently with haulers and consulted with property owners and managers as well as strata council representatives through letters and onsite visits.

The fieldwork involved face to face meetings with building owners to verify onsite recycling services throughout the RDN. Based on observations through these onsite visits, staff concluded that in 2012 94% of multi-family housing buildings had access to on-site recycling services (not including organics) that was equivalent to those provided to the single-family housing as presented in Figure 1.

Figure 1: Multi-Family Buildings with On-site Recycling Services, 2012



As indicated in Figure 1, the Multi-Family Recycling Program significantly improved access to recycling services in the multi-family housing sector. However, the 2012 waste composition study shows that there are still improvements that could be made (see Figure 2). For comparison purposes, the waste composition for the residential curbside is presented in Figure 3. Based on the 2012 Waste Composition study, paper and plastic still made up 31% of the multi-family waste stream. Comparatively, the same materials make up 21% of the residential curbside waste steam. This data suggests that, in 2012, although there was a high level of access (i.e. 94%) to multi-family on-site recycling facilities, there is significant opportunity to increase diversion.

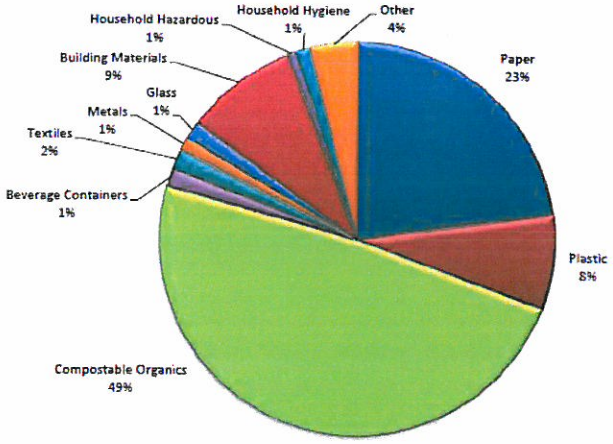


Figure 2: Multi-Family Waste Composition (2012)

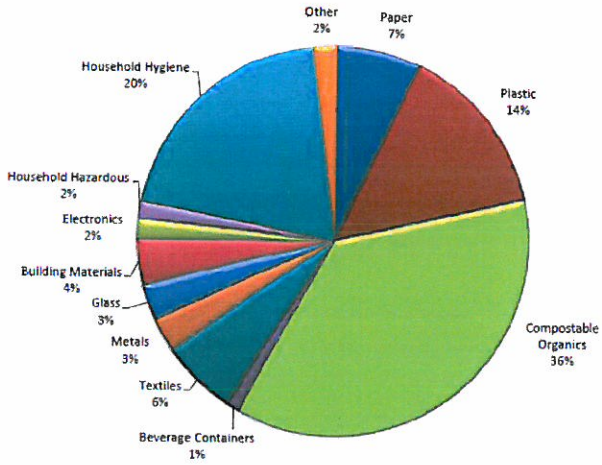


Figure 3: Curbside Residential Waste Composition (2012)

Since the work undertaken in 2012, the Ministry of Environment has amended the provincial Recycling Regulation to include Printed Paper and Packaging (PPP) generated from the residential sector as a stewardship material. Multi-Family housing is included in the residential sector per the recycling regulation, however participation in the stewardship program's collection side relies on haulers to sign on with the stewardship agency and not all have. At present the Ministry has approved one stewardship plan for residential PPP, however a second plan with a focus on Multi-Family is currently with the Province for consideration; if approved this additional plan may result in increased recycling opportunities for this housing sector.

Furthermore, the greatest diversion opportunity continues to be with the compostable organics which make up almost half the waste stream from this housing sector.

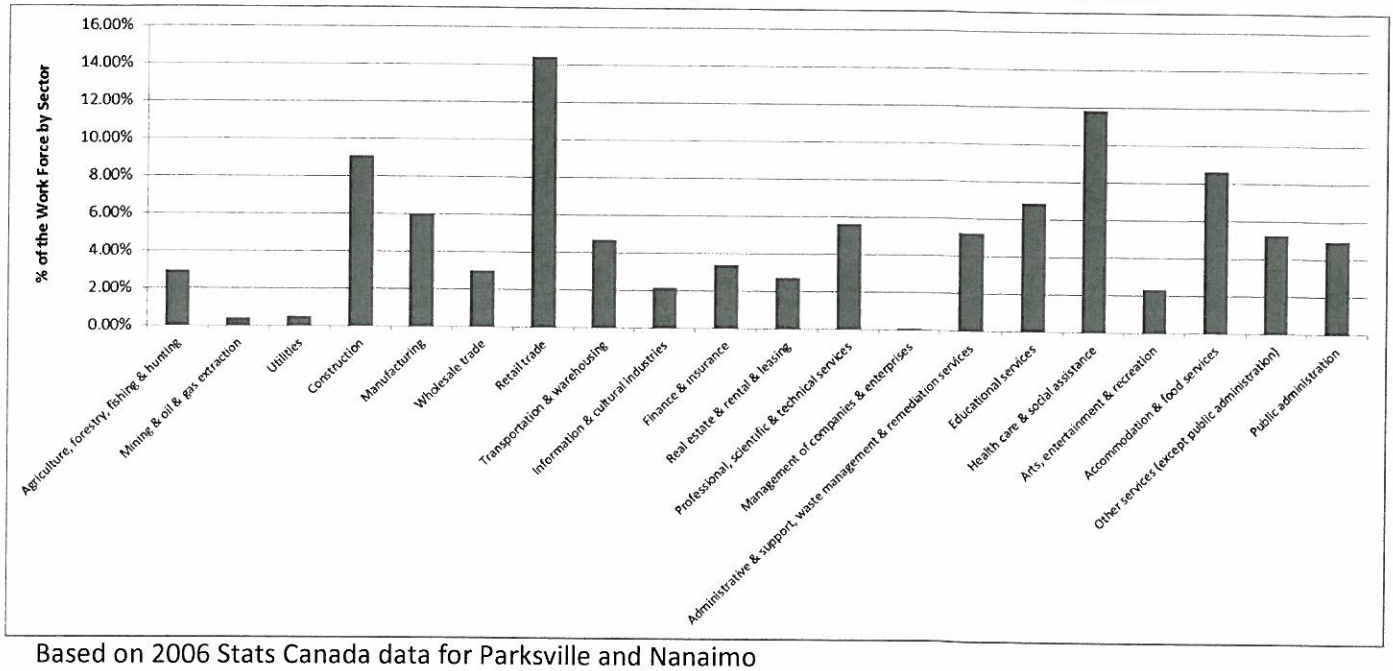
Challenges to achieving a high degree of source separation in the multi-family sector include inconvenience, cost, available space for separation and often a lack of a site champion to promote diversion. Appendix A presents a list of challenges and limitations that hinder diversion in both the multi-family and ICI sectors.

IC&I Sector

In the RDN, the IC&I sector is fully serviced by private waste haulers. Figure 4 provides an overview of the labour force in the Regional District by category with Retail Trade, Construction, and Health Care and Social Assistance being the top ranked employers in the Region.

In large part due to a successful Construction and Demolition (C&D) Waste Diversion Strategy, IC&I waste disposal in the RDN is largely generated from small and large businesses, industry, grocery stores, restaurants, multi-family residences and schools. Further discussion on the C&D Waste Diversion Strategy is not included in this discussion and will be presented to the RSWAC in a separate report.

Figure 4: Regional Distribution of Labour by Categories in Parksville and Nanaimo



Based on 2006 Stats Canada data for Parksville and Nanaimo

Commercial Food Waste Diversion Strategy

In 2004, the RDN waste composition study found that food waste and compostable paper comprised from the IC&I waste sector made up 21.6% of the waste disposed at the Regional Landfill. Following the opening of the International Composting Corporation (now Nanaimo Organic Waste) in June 2005, the RDN banned commercial food waste at the region's solid waste facilities. Commercial food waste includes raw and cooked food and other compostable organic material from commercial and institutional premises.

Extensive consultation preceded the commercial food waste and organics disposal ban with follow-up site visits to over 200 businesses and organizations. Under Bylaw 1531, landfill disposal of compostable organic waste from a commercial or institutional facility is not permitted. It was expected that this prohibition on organic waste being received at the landfill and transfer station would be the catalyst for commercial and institutional facilities to have food waste diversion systems in place.

Figure 5 shows the results from the 2012 RDN waste composition study for the IC&I sector. The compostable organics category (estimated at 26.2% of the total waste disposed at the Regional Landfill disposed) consisted of food scraps (28%), yard waste (7%) and compostable paper products (6%).

The compostable organics from the IC&I sector made up 26.2% of the waste stream in 2012 as compared to 21.6% in 2004. However, with a changing waste stream, the efficacy of the Commercial Food Waste Diversion Strategy is better gauged by considering the change in per capita tonnage of compostable organics in the waste stream and this amount dropped from 95.5 kg/capita to 91.2

kg/capita between 2004 and 2012 respectively. These findings show that the current strategy has only realized modest success and there is significant opportunity for additional organics diversion in the IC&I sector. Furthermore, there is still a significant diversion opportunity with paper and plastic components.

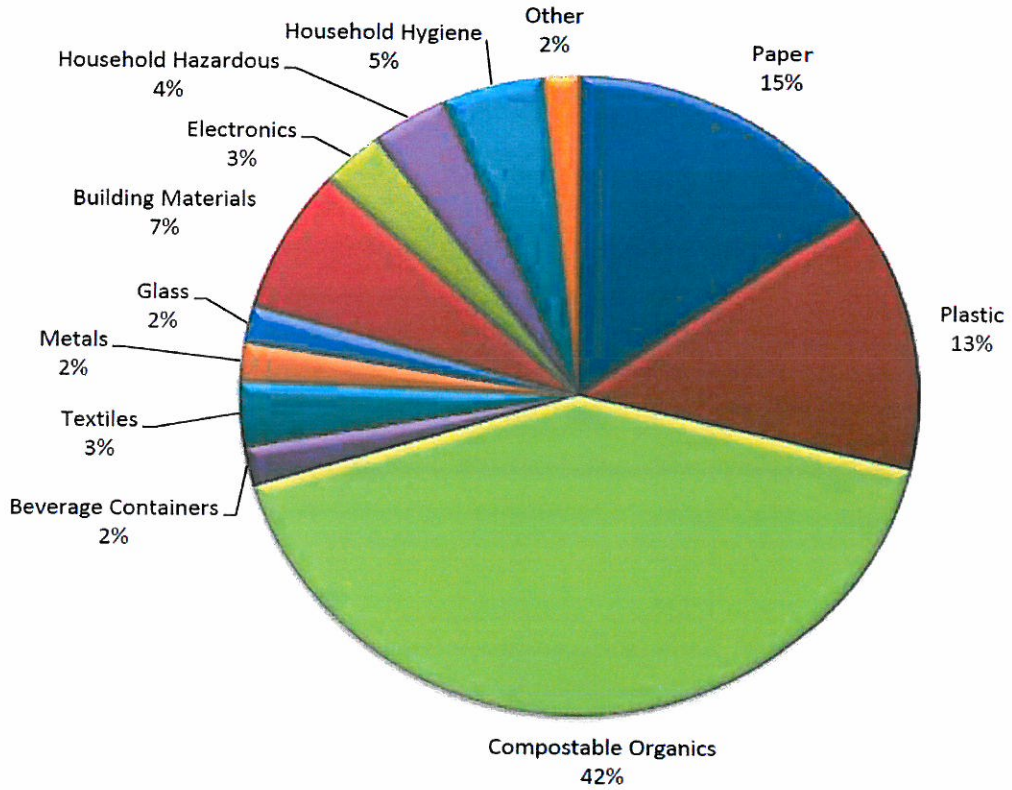


Figure 5: Industrial, Commercial, Institutional Waste Composition in the RDN (2012)

IMPACT ON DIVERSION

Based on the 2012 RDN Waste Composition Study, four material categories characterize approximately 77% of the IC&I waste stream: compostable organics, paper, plastic and building materials as shown in Figure 5. That means that there is an estimated 36% of waste disposed at the Regional Landfill that consists of compostable organics and paper from the IC&I sector that are banned from landfill disposal.

It is clear from the 2012 RDN Waste Composition Study that a large component of compostable organics is still not being diverted from landfill, with only a modest reduction in per capita disposal (from 95.5 kg/capita in 2004 to 91.2 kg/capita in 2012) (refer to Appendix B).

Table 2 shows IC&I weights of compostable organics diverted from landfill disposal from 2007-2015. There are a number of factors affecting these numbers however it is important to recognize that the amount of commercial organics diverted within the RDN has not increased despite the current Commercial Organics ban.

Table 2: IC&I Sector Organics Diversion in the RDN

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Weight (tn)	3,408	4,103	3,550	3,187	3,371	3,711	3,566	3,332	3,380

Enforcement

As mentioned previously in this report, the primary mechanism to motivate the diversion of recyclables and organics is by virtue of bans at the landfill and transfer station (refer to Appendix C for full list of existing landfill bans in the RDN). The RDN has encouraged voluntary compliance and has reserved the application of fines to the most egregious cases.

Since 2010, fines have been imposed on 65 separate occasions for recyclables in mixed solid waste. These have primarily been for metal and cardboard being in the waste. Few fines have been issued for commercial organic waste and possibly no fines imposed for household plastic containers. Details of the occurrences as well as pre-2005 data is available in the RDN archives but were un-researched at the time of this report. Anecdotally, landfill staff report that there are seldom significant amounts of banned materials in individual loads, offences on food waste and recyclables in mixed solid waste are applied only when there is contamination of 10% or more in the load.

There are a number of challenges with the current enforcement strategy as follows:

1. No Requirement for Source Separation – Although the landfill ban was intended to drive source separation, there is no actual requirement for the waste producer to make the effort.
2. Enforcement Transferred to the Waste Hauler – Fines are applied to the waste hauler depositing banned material. In theory, the cost can be transferred back to the waste producer but in practice this does not happen (i.e. fear of alienating customers, unable to pinpoint source of contamination due to mixing of loads).
3. Encourages Waste Export – The relative value of the Canadian and US dollar is currently a barrier to waste export to the US. As well, there are also private Canadian for-profit landfills. The imposition of fines on haulers does further increase the potential of waste export to locations that do not impose such restrictions. Should this happen, no waste diversion would likely be achieved.
4. Bans Apply to Different Sectors - Food waste is banned from the commercial sector while plastic containers are banned from households. Waste from different sectors is often collected in the same truck making enforcement in these cases virtually impossible.

IC&I Diversion Strategy

Table 3 looks at two scenarios for increasing diversion in the IC&I and Multi-family sectors.

Scenario 1: Increased Education/Enforcement at Regional Facilities

The RDN continues to work within the current regulatory authorities under the existing SWMP to improve IC&I organics and recycling diversion. This may include:

- Increase education and awareness
- Increase enforcement of current landfill bans at the landfill and transfer station

It is expected that the Multi-Family and IC&I sector would experience a marginal increase in diversion though additional outreach and that diversion would increase commensurate with increased enforcement of the landfill bans and issuing of fines. This approach runs the risk of increasing waste leakage where private haulers opt to haul waste out of district in order to bypass landfill bans. It is estimated that such an approach could remove as much as 20% of the recyclable materials and organics that still remain in the waste stream.

Scenario 2: Additional Regulatory Authority

Through the SWMP the RDN requests additional authorities to further drive diversion of recycling and organics within the IC&I and Multi-Family sectors. This could include:

- Mandatory Waste Collection
- Waste Hauler Franchising
- Waste Haulers as Agents
- Waste Source Control

This scenario provides for the introduction of economic and regulatory tools that encourage diversion. It is estimated that this approach could remove as much as 50-70% of the recyclable material and organics that remain in the waste stream.

Table 3: IC&I Sector Diversion Potential in the RDN

	2012		Scenario 1			Scenario 2					
			If 20% is diverted			If 50% is diverted			If 70% is diverted		
Target Material	Waste Stream %	Amount in Waste Stream (MT)	Amount in Waste Stream (MT)	Waste Stream %	Diversion Potential of Total Waste Stream	Amount in Waste Stream (MT)	Waste Stream %	Diversion Potential of Total Waste Stream	Amount in Waste Stream (MT)	Waste Stream %	Diversion Potential of Total Waste Stream
Paper	9.5	5,049	4039	7.6%	0.6%	2525	4.7%	1.5%	1515	2.8%	2.1%
Plastic	8.4	4,432	3546	6.6%	0.5%	2216	4.2%	1.3%	1330	2.5%	1.9%
Metal	4.8	2,864	2291	4.3%	0.3%	1432	2.7%	0.9%	859	1.6%	1.2%
Compostable Organics	26.2	13,879	11103	20.8%	1.7%	6940	13.0%	4.2%	4164	7.8%	5.8%
Total	48.9	26,224	20,979	39.3%	**3.1%**	13,112	24.6%	**7.9%**	7,867	14.8%	**11.0%**

Note: Scenario 1: 20% increase in diversion of available materials.
Scenario 2: 50% to 70% increase in diversion of available materials.
All estimates based on 2012 total waste generation of approximately 167,000 MT; 53, 319 MT disposed and 68% overall diversion

FINANCIAL IMPLICATIONS

Scenario 1 Increased Education/Enforcement at Regional Facilities	1 new FTE or equivalent at $80,000/year including benefits to oversee the new IC&I diversion strategy. $20,000/year in administrative costs to run the program. $100,000/year for increased enforcement
Scenario 2 Additional Regulatory Authority	No financial estimate is available at this time as cost projections would be dependent on the type of additional regulatory authority which was granted.

REGULATORY AUTHORITY

If Scenario 2 is the preferred option additional regulatory authorities would need to be requested under the new SWMP.

SUMMARY/CONCLUSIONS

The IC&I and Multi-Family sectors waste streams contain significant amounts of recyclable material and compostable organics. This is despite landfill bans being in place for various recyclable materials and commercial organics starting in 1991. These sectors provide the greatest opportunity for further waste diversion in the RDN.

The RDN has done outreach to promote diversion in these sectors and has largely relied on voluntary compliance with the landfill bans and applying fines in the most egregious cases. It is believed that an increased effort in both outreach and enforcement consistent with the current strategies can achieve a moderate increase of about 3% in overall waste diversion. It is also believed that the provision of authorities available through the SWMP can provide additional regulatory and economic tools to drive very high levels of diversion up to a 10% increase in overall waste.

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Appendix A: Common Challenges in the IC&I Sector Identified for Waste Diversion

Challenge as identified by: *Waste Haulers*	Limitation to Diversion
Single stream/co-mingled recycling capacity is limited. ICI businesses do not have access to the co-mingled materials recycling facility (MRF).	Haulers can only offer source separated recycling opportunities to their customers – usually cardboard or mixed paper. The material limitation also limits the amounts of materials that can be diverted
Cost to establish and maintain a recycling program is more than the cost for a single mixed waste stream service. Not all haulers for Multi-Family are involved in the PPP stewardship agency (MMBC) so not same level of service available throughout the region.	Customers expect recycling services to be provided for free or at a considerably reduced rate. Some even expect to be paid for their recycling efforts. If these expectations are not met then disposal alternatives are more fiscally attractive for the waste generator.
Not enough space available for the storage of separated materials (i.e. paper)	The amount and type of recycling that can occur onsite is limited by the space available for the collection and storage infrastructure.
Need to have a single point of contact on the client side who is also a "waste champion"	Without someone being responsible for the recycling programs on the client side, recyclable materials such as cardboard, paper, etc. still end up in the waste stream.
Inability of haulers to pinpoint contamination in a load due to multiple stops on each route to fill up the truck	The lack of ability to track where contamination comes from in the load makes it difficult to impose penalties or even offer feedback to those waste generators who are not participating properly in the programs.
Each customer has very different and unique needs	The need to customize programs for each client creates difficulties in offering efficient programs which in turn limits the haulers' ability to collect and handle more types and volumes of materials for diversion.

Challenge as identified by: ***Multi-Tenant building managers including shopping centres***	Limitation to Diversion
Lack of clear understanding of roles, responsibilities and fund allocations for common infrastructure	With an unclear assignment of roles, responsibilities and accountability, programs tend not to materialize or function well in multi-tenant buildings. Similarly, the infrastructure used for a common good (such as waste rooms) tends not to receive the funding or priority it requires for maintenance and improvement.
High staff turnover rates for those most likely to be on the front lines of waste management tasks means a loss of program continuity	Lack of training and/or standardized programs makes separating waste seem difficult and may lead to increased contamination rates and decrease in participation in recycling programs.
Lack of overarching regulations to incentivize/force generator responsibility for waste and participation in programs	Independent tenants of a building may have their own waste diversion policies and targets but their ability to meet them may be hindered if the waste infrastructure is provided on a whole building basis and does not meet their needs.

Challenge as identified by: ***Educational Institutions***	**Limitation to Diversion**
The cost of "extra service" waste management programs is borne by the individual schools and facilities	Schools needing to make budget cuts may look to downsizing or eliminating waste diversion programs as a way to save money.
Lack of available infrastructure to recycle comingled recyclables and organics	Being limited to material specific recycling opportunities (i.e. paper) because of a lack of processing infrastructure in the region has limited the programs the schools can offer for waste diversion activities.

Appendix B: RDN Waste Composition Comparison (2004 to 2012)

Material Category	Residential				ICI				Self-Haul				Waste Stream Summary			
	2004 Waste Stream %	2004 Waste Disposed (MT)	2012 Waste Stream %	2012 Waste Disposed (MT)	2004 Waste Stream %	2004 Waste Disposed (MT)	2012 Waste Stream %	2012 Waste Disposed (MT)	2004 Waste Stream %	2004 Waste Disposed (MT)	2012 Waste Stream %	2012 Waste Disposed (MT)	2004 Waste Stream %	2004 Waste Disposed (MT)	2012 Waste Stream %	2012 Waste Disposed (MT)
Paper	1.6%	931	1.2%	637	6.4%	3,793	9.5%	5,049	1.6%	970	1.7%	969	9.5%	5,694	12.5%	6,656
Plastic	2.7%	1,598	2.5%	1,313	9.2%	5,496	8.4%	4,432	1.8%	1,069	2.9%	1,599	13.7%	8,163	13.8%	7,344
Compostable Organics	16.5%	9,834	6.4%	3,301	21.6%	12,898	26.2%	13,879	2.1%	1,264	2.6%	1,453	40.2%	23,996	35.2%	18,633
Beverage Containers	0.3%	152	0.2%	98	0.3%	205	1.3%	670	0.3%	203	0.2%	86	0.9%	560	1.6%	855
Textiles	1.2%	689	1.1%	576	2.5%	1,476	2.0%	1,080	1.7%	1,029	2.5%	1,380	5.3%	3,194	5.6%	3,037
Metals	0.9%	544	0.5%	260	4.8%	2,864	1.2%	656	0.9%	564	0.7%	375	6.7%	3,972	2.4%	1,291
Glass	0.3%	203	0.5%	275	1.0%	621	1.2%	611	0.4%	224	0.9%	500	1.8%	1,048	2.6%	1,386
Building Materials	0.9%	525	0.7%	347	5.4%	3,207	4.6%	2,438	4.3%	2,596	5.3%	2,963	10.6%	6,328	10.6%	5,748
Electronics	0.0%	14	0.3%	144	0.6%	333	1.9%	997	0.1%	36	0.3%	182	0.6%	383	2.5%	1,323
Household Hazardous	0.1%	83	0.3%	135	0.3%	168	2.3%	1,220	0.6%	334	0.3%	162	1.0%	585	2.9%	1,517
Household Hygiene	1.6%	961	3.5%	1,829	0.6%	351	3.1%	1,633	0.1%	35	0.8%	470	2.3%	1,347	7.4%	3,932
Other	0.3%	133	0.3%	168	3.8%	2,241	1.1%	572	2.7%	2,080	1.4%	859	6.8%	4,454	2.8%	1,599
Totals	26%	15,666	17%	9,083	56%	33,653	63%	33,239	17%	10,405	20%	10,998	100%	59,724	100%	53,319

Appendix C: Landfill Bans

Schedule 'C'

"Prohibited Waste"

The following gaseous liquids and municipal solid wastes are not acceptable for disposal at a Solid Waste Management Facility and include, but are not limited to:

1. At the Regional Landfill:
   - (i) Biomedical Waste;
   - (ii) Commercial Organic Waste;
   - (iii) Concrete or asphalt pieces, or rocks greater than $0.03m^3$ or 70 kg;
   - (iv) Corrugated Cardboard;
   - (v) Drums;
   - (vi) Garden Waste;
   - (vii) Gypsum;
   - (viii) Hazardous Waste;
   - (ix) Household Plastic Containers;
   - (x) Ignitable Wastes;
   - (xi) Land Clearing Waste;
   - (xii) Liquids, except as permitted herein;
   - (xiii) Metal;
   - (xiv) Motor vehicle bodies and farm implements;
   - (xv) Municipal Solid Waste that is on fire or smouldering;
   - (xvi) Radioactive Waste;
   - (xvii) Reactive Wastes;
   - (xviii) Recyclable Paper;
   - (xix) Stewardship Materials:
   - (xx) Special waste, as defined in the *Special Waste Regulation* (British Columbia) except asbestos ;

(xxi) Tires;

(xxii) Wood Waste

2. At Church Road Transfer Station: (i)

Biomedical Waste;

(ii) Commercial Organic Waste;

(iii) Concrete or asphalt pieces, or rocks greater than $0.03m^3$ or 70 kg;

(iv) Controlled Waste;

(v) Corrugated Cardboard;

(vi) Garden Waste;

(vii) Gypsum;

(viii) Hazardous Waste;

(ix) Household Plastic Containers; (x)

Ignitable Wastes;

(xi) Land Clearing Waste;

(xii) Liquids, except as permitted herein;

(xiii) Metal;

(xiv) Motor vehicle bodies and farm implements;

(xv) Municipal Solid Waste that is on fire or smouldering;

(xvi) Radioactive Waste;

(xvii) Reactive Wastes;

(xviii) Recyclable Paper;

(xix) Special waste, as defined in the *Special Waste Regulation* (British Columbia) except asbestos;

(xx) Stewardship Materials;

(xxi) Tires;

(xxii) Wood Waste.