The background of the slide features a light green outline map of British Columbia on the left side. Overlaid on the right side is a large, semi-transparent green recycling symbol, which is a universal symbol for recycling, consisting of three chasing arrows forming a triangle.

Current System for Managing Residential Packaging and Printed Paper in British Columbia

Multi-Material
British Columbia

Prepared by
Glenda Gies & Associates
February 2012

Current System for Managing Residential Packaging and Printed Papers in British Columbia

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Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

1.0 Background

1.1 Regulatory Context

British Columbia (BC), like many other jurisdictions, has been taking steps to transition responsibility for managing end-of-life products from government, and its taxpayers, to industry, and its consumers. Under this approach, producers assume responsibility for the collection and diversion of their products and packaging at end of life.

In July 2004, BC enacted the Environmental Management Act and then, in October 2004, the Recycling Regulation. The Recycling Regulation was amended in May 2011 to include Schedule 5 which defines the packaging¹ and printed paper² product (PPP) category. With this inclusion, the producers of PPP became obligated to submit a stewardship program plan for approval by the director under Part 2 or comply with specified product stewardship program requirements set out in Part 3. Should a producer fail to comply with one of these requirements, the producer may no longer sell, offer for sale, distribute or use the product in a commercial enterprise in British Columbia.

Where producers choose to submit a stewardship plan for approval by the director under Part 2, the stewardship program plan is due to the Ministry of Environment by November 19, 2012 with implementation of the approved program by May 19, 2014. The stewardship program must address PPP from residential premises³ and municipal property that is not industrial, commercial and institutional (IC&I) property⁴.

1.2 Multi-Material British Columbia

Multi-Material British Columbia⁵ (MMBC) is a not-for-profit agency established under the British Columbia Society Act formed in anticipation of the requirement to develop, submit and implement a stewardship plan for packaging and printed paper.

MMBC's intention is to assume the role of a stewardship agency in order to discharge the obligations of PPP producers (brand owners and first sellers) under Schedule 5 of the Recycling Regulation.

¹ "Packaging" is defined in the Environmental Management Act as "a material, substance or object that is used to protect, contain or transport a commodity or product, or attached to a commodity or product or its container for the purpose of marketing or communicating information about the commodity or product". Beverage containers, with the exception of milk containers, are managed under a provincial deposit return program.

² "Printed Paper" is defined in Schedule 5 of the Recycling Regulation as "paper that is not packaging, but is printed with text or graphics as a medium for communicating information, and includes telephone directories, but does not include other types of bound reference books, bound literary books, or bound text books".

³ Excerpt from BC Recycling Regulation: "residential premises" includes houses, apartments, condominiums, town homes and other premises in which persons reside but does not include institutional accommodations or visitor accommodations.

⁴ PPP from the IC&I sector is not included in the program plan to be developed by MMBC at this time.

⁵ MMBC is governed by a board comprised of a representative from each of the Retail Council of Canada (RCC), Food and Consumer Products of Canada (FCPC), Canadian Federation of Independent Grocers (CFIG), Canadian Restaurant and Food Services Association (CRFA) and the Canadian Newspaper Association (CNA).

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1.3 Phased Approach to Producer Responsibility Program for Packaging and Printed Paper

MMBC is currently developing a comprehensive PPP stewardship plan through a three-phased approach:

- Phase 1: Current state analysis and program design options development;
- Phase 2: Program plan development, using the findings of Phase 1; and
- Following approval of the stewardship program plan by the director, MMBC will proceed to a third phase to prepare for implementation of the program.

2.0 Sources of Residential Packaging and Printed Papers

Under Schedule 5 of the Recycling Regulation, the packaging and printed paper program is to address residential premises and municipal property that is not industrial, commercial or institutional property.

The program does not include packaging and printed paper program from industrial, commercial or institutional sources.

2.1.1 Residential Premises

Residential premises are comprised of:

- Single-family dwellings inhabited year round or seasonally⁶; and
- Multi-family dwellings including rental, co-operative, fractional ownership, time-share, condominium and seniors residences⁷.

Packaging and printed paper when generated as waste at residential premises can be:

- Transferred by the resident to a public easement, for example a rear lane or edge of a public street; or
- Stored on the residential premises, for example in a storage area at a multi-family building, with the collector being authorized to access the private property to pick up the material.

2.2 Municipal Property that is not Industrial, Commercial or Institutional

Municipal property that is not industrial, commercial or institutional property is comprised of:

- Sidewalks which are municipal property, which adjoin buildings in an urban commercial area and which are used for pedestrian traffic;
- Plazas or town squares which are municipal property and which are available to the public; and
- Parks which are municipal property.

These types of municipal properties are referred to as streetscape.

⁶ Vacation facilities, such as hotels, motels, cottages and cabins, are considered commercial businesses.

⁷ Residences at which medical care is provided, such as nursing homes, long-term care facilities and hospices, are considered institutions.

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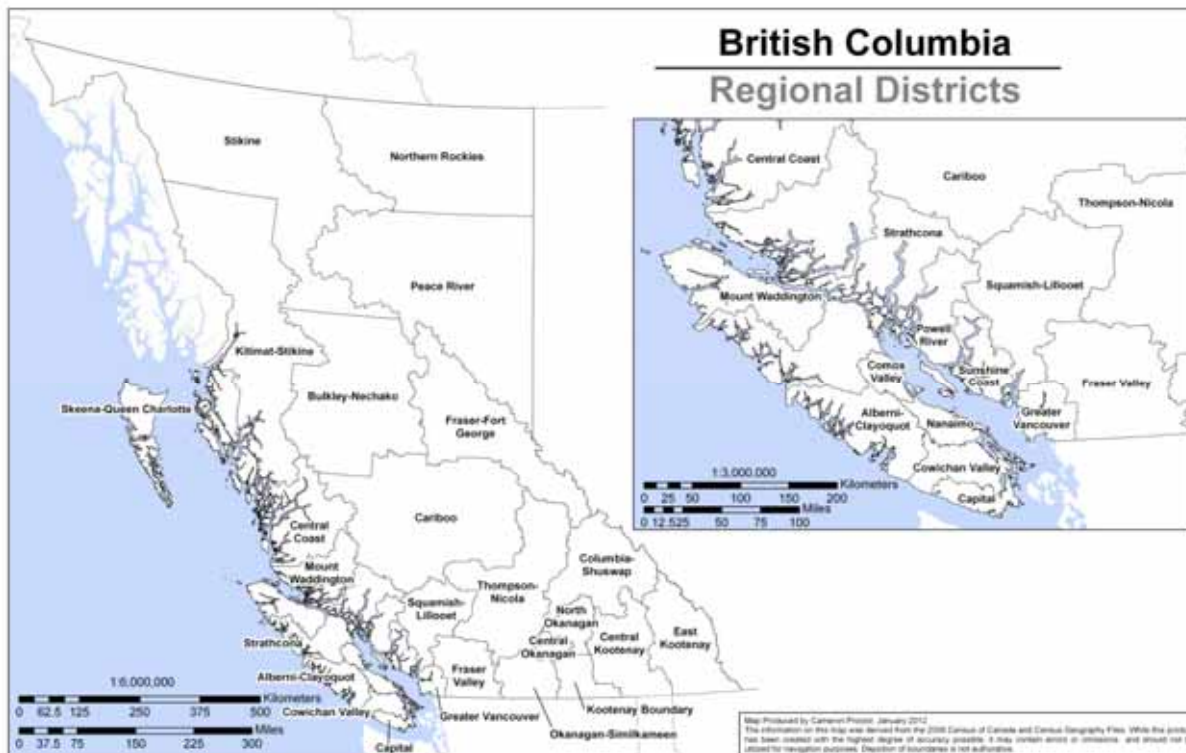
3.0 British Columbia Demographics

British Columbia includes 944,735 square kilometers (364,764 square miles) with 25,725 kilometres (15,985 miles) of coastline, including deep, mountainous fjords and about 6,000 islands, most of which are uninhabited. The largest island, at 460 kilometres (286 miles) long, is Vancouver Island.

A series of southeast-northwest running mountain ranges, from the Rockies in the east to the Coast Mountain and Vancouver Island ranges in the west, serrate British Columbia into a series of peaks, plateaus and valleys.

British Columbia is organized into regional districts as shown in Figure 3.1.

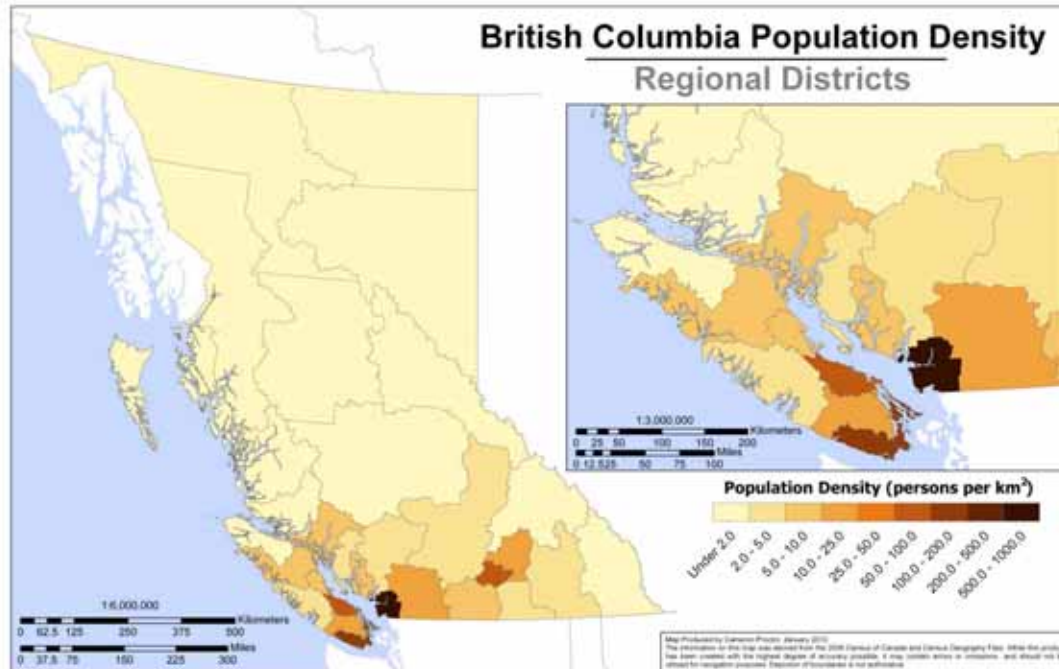
Figure 3.1 British Columbia Regional Districts



The BC population of approximately 4,535,600 is located primarily in the lower mainland. Figure 3.2 shows population density by regional district.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

Figure 3.2 – British Columbia Population Density – Regional Districts



The average population density of a regional district does not necessarily reflect the population density of the more urban municipalities within the regional district. Figure 3.3 shows the population density by municipality.

Figure 3.3 – British Columbia Population Density – Municipalities



Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

4.0 Data Gathering Process

Characterizing the current system for collecting and recycling residential PPP in British Columbia involved an extensive data gathering exercise. Reported data were used wherever possible and extrapolation methodologies were developed and applied where actual data were not available.

The following sets of information were utilized to describe the current PPP system and to calculate the current residential PPP collection and recycling rates:

- The amount of packaging and printed paper supplied into the BC market place;
- The existing PPP collection and processing infrastructure;
- The amount collected and recycled.

This section identifies the process implemented to collect available information.

4.1 Packaging and Printed Paper Supplied

The quantity of PPP supplied by producers⁸ to residential users that will be generated as waste has been estimated for purposes of determining current system performance.

The provinces of Quebec, Manitoba and Ontario currently operate stewardship programs for residential packaging and printed papers. Data on the quantity of PPP supplied by producers in Ontario and in Manitoba were available.

As beverage containers under deposit in BC differ from beverage containers under deposit in Ontario and Manitoba, data on the quantity of both deposit containers and non-deposit PPP were compiled for Ontario and Manitoba.

The following data were utilized to estimate the quantity of PPP supplied by producers to BC residents:

- Data from BC
 - Waste audits of the recycling stream and the garbage stream
 - Quantity of dairy containers collected
 - Estimated BC deposit containers supplied to residents of BC
- Data from Manitoba

⁸ Excerpt from BC Recycling Regulation: "producer" means

(b) in respect of the producer of a product within a product category other than the beverage container product category or the tire product category,

(i) a person who manufactures the product and sells, offers for sale, distributes or uses in a commercial enterprise the product in British Columbia under the manufacturer's own brand,

(ii) if subparagraph (i) does not apply, a person who is not the manufacturer of the product but is the owner or licensee of a trademark under which a product is sold, distributed or used in a commercial enterprise in British Columbia, whether or not the trademark is registered, or

(iii) if subparagraphs (i) and (ii) do not apply, a person who imports the product into British Columbia for sale, distribution or use in a commercial enterprise.

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- Data from Multi-Material Stewardship Manitoba on the estimated quantity of residential non-deposit PPP supplied by producers to residents of Manitoba
- Estimated beer non-refillable deposit containers supplied to residents of Manitoba
- Data from Ontario
 - Data from Stewardship Ontario on the actual quantity of residential non-deposit PPP supplied by producers to residents of Ontario
 - Reported wine and spirits deposit containers and estimated beer non-refillable deposit containers supplied to residents of Ontario

4.2 Collection and Processing System

PPP is collected by a number of entities including local governments, contractors providing PPP collection and processing services to local governments, not-for-profit organizations and for-profit companies offering PPP collection services directly to residents.

To understand the PPP collection system operating in BC and to compile data on the quantity of PPP being collected and recycled, the following information was requested from those involved in the existing BC system:

- From regional districts and municipalities providing PPP services
 - Number of single-family and multi-family households in the jurisdiction and number receiving PPP collection services
 - Collection system design including types of PPP accepted
 - Quantity of PPP collected and recycled
 - Costs associated with PPP services including communications to residents and program administration
- From not-for-profit organizations and for-profit companies offering PPP collection services directly to residents
 - Collection system design including types of PPP accepted and number of single-family and multi-family households served
 - Quantity of PPP collected
 - Costs associated with PPP services and/or prices charged to residents for services
- From processors of collected PPP
 - Residential PPP received
 - PPP marketed by commodity and average commodity revenue prices

Given the number of local governments in BC, the project team focused its efforts on BC municipalities that represent the majority of BC's population and that were expected to be able to provide reliable data that could be used for purposes of extrapolation.

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4.3 Data Reliability

Development of stewardship program plans has highlighted the challenges in compiling comprehensive and accurate data on the existing PPP system tonnages and costs prior to implementation of an industry-managed program.

These challenges are due to:

- Lack of a province wide tracking system based on consistent data systems and methodologies
- Differing types and levels of services
 - Some regional districts provide PPP services for some or all of the municipalities within their district while, in other regional districts, PPP services are provided by individual municipalities;
 - Some bottle depots actively collect PPP from residents;
 - Numerous private companies offer collection services;
 - Some retailers accept certain types and/or brands of packaging from customers;
- Bundled data
 - Private collectors do not typically track PPP from residential sources separately from PPP from ICI sources (which typically include garbage and yard waste collection and management); and
 - Some local governments purchase PPP services as one of a number of services under a single contract with a single quoted price, often expressed as a price per serviced household.

The data gathering process described in Sections 4.2 and 4.3 recognized these data gathering challenges. Differing types and levels of services were reflected in the survey questions and in data extrapolation methodologies. Bundled tonnage data were adjusted to remove estimated ICI tonnes and bundled cost data were not utilized.

Notwithstanding efforts to ensure that survey responses and data extrapolation reflect the best available data, data gathered prior to stewardship program implementation are always less reliable than data which will be compiled by MMBC through producer and service provider reporting systems established during program implementation.

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5.0 Current Packaging and Printed Paper System

5.1 Collection Services

Residential and streetscape PPP is collected by several different types of collectors in BC including:

- Local governments (regional districts and municipalities);
- Private collection companies;
- Non-for-profit organizations;
- Deposit container return depots; and
- Retailers

This section describes each of these collectors and the methods of PPP collection. A full list of collection service providers in each regional district and the type of collection services provided can be found in Appendix A.

5.1.1 Local Government Collection Services

In BC, PPP collection services are provided by both the regional district and the municipal level of government, often within the same geographic area. There are 86 local government PPP collection programs in the province.

An estimated 97% of households in BC are provided with some form of PPP collection service by their local government. Seventy-nine percent of single-family households receive curbside collection service and 79% of multi-family units have access to a PPP collection service within their building or complex. An estimated 17% of households have access only to a depot-style collection program.

Appendix B provides the estimated number of single-family and multi-family households serviced in each regional district and, where available, in municipalities, along with information on the type of collection service provided.

Single-Family Collection Programs

Curbside collection programs for single-family households typically service residential buildings with up to 6 units, townhouse complexes and mobile home parks. Approximately 973,000 single-family households receive curbside collection of PPP in BC provided by 56 local governments. As shown in Figure 5.1, the vast majority of these programs are in southern BC with only two municipal programs located in northern BC: Telkwa (450 households) and Williams Lake (3,450 households).

Many BC local governments contract for curbside collection services in a single commercial agreement that covers curbside collection services for PPP as well as for garbage and yard waste.

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Collection programs are either single-stream where all of the recyclables are commingled into the same container and collection vehicle (for subsequent sorting at a processing facility) or are multi-stream where recyclables are source-separated by the resident by the type of material and stored separately on the collection vehicle. In BC, a common multi-stream program has three separate streams: cardboard, mixed waste paper and containers. The number of households receiving single-stream collection has increased in recent years as local processing facilities were retrofitted to accommodate commingled materials and as cart-based collection programs were implemented. Of total single-family households receiving curbside collection, 45% are served by a single-stream program while 55% are served by a multi-stream program.

Figure 5.1 – Curbside PPP Service



Table 5.1 – Single-Family Households with Household Collection Service

Single-Family Households	# of SF Households	# of SF HH Served by Single-Stream	# of SF HH Served by Multi-Stream	# of SF HH Served	% of Total SF HH Receiving Collection
Totals	1,225,303	437,433	535,588	973,022	79%
% of HH Served		45%	55%		

A typical list of PPP collected in a curbside program includes: aluminum and steel food and beverage containers, cardboard, mixed waste paper, newspapers and plastic (resin codes # 1, 2, 4 and 5). Glass containers are commonly included, although in recent years many programs

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have stopped accepting glass in curbside collection systems to improve the quality of PPP and to reduce programs costs⁹.

Many programs include the full range of plastic packaging (1 to 7), including plastic bags, as well as aluminum foil packaging. A few programs accept aseptic containers. See Appendix C for a list of PPP materials accepted in each curbside program.

The specific list of materials accepted in a curbside collection system varies from program to program and is primarily determined by the community's primary objective e.g. maximizing waste diversion or minimizing recycling program costs. The most common variations are the range of plastics accepted and the inclusion of glass.

Multi-Family Collection Programs

There are an estimated 373,000 multi-family residential units receiving recycling collection service at their building through a program provided by 19 local governments, as shown in the following table.

Table 5.2 – Local Government Multi-Family Collection Programs

Regional District	Local Government Responsible for Service
Capital	Capital Regional District
Cariboo	City of Williams Lake
Fraser Valley	City of Chilliwack
	District of Mission
Metro Vancouver	City of Burnaby
	City of Coquitlam
	City of New Westminster
	City of North Vancouver
	City of Pitt Meadows
	City of Surrey
	City of Vancouver
	City of White Rock
	Corporation of Delta
	District of Maple Ridge
	District of North Vancouver
	District of West Vancouver
	Township of Langley
Kootenay Boundary	Regional District of Kootenay Boundary
Thompson Nicola	Thompson Nicola Regional District

⁹ Many communities that discontinued collection of glass at curbside continued to accept glass at depots or established glass collection depots as an alternative method of collection.

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In jurisdictions that provide multi-family collection services, recycling collection is often the only waste collection service provided by the municipality to the multi-unit buildings. It is common practice for garbage collection from multi-family buildings to be provided through a private waste collection service.

As with single-family collection, programs may be single-stream or multi-stream. Sixteen percent of multi-family households receiving collection services are served by a single-stream program while 84% are served by a multi-stream program.

Multi-stream programs typically utilize a collection container for cardboard, another for all other printed paper and another for containers. On-site storage bins may be plastic carts or front-end bins.

Table 5.3 – Multi-Family Households with Collection Service

Multi-Family Households	# of MF Households	# of MF HH Served by Single-Stream	# of MF HH Served by Multi-Stream	# of MF HH Served	% of Total MF HH Receiving Collection
Totals	474,460	60,261	313,065	373,326	79%
% of HH Served		16%	84%		

PPP collected in multi-family programs is generally identical to PPP collected in the community's single-family collection program. See Appendix C for a list of the PPP materials accepted in each multi-family program.

The Capital Regional District provides funding to multi-family buildings to hire a recycling collection company, rather than providing the service directly. In all other programs, the local government provides the collection service either with their own collection crews (e.g. City of New Westminster) or with a contracted service (e.g. North Shore Recycling Program).

Many jurisdictions do not provide recycling collection services to multi-family buildings even where recycling collection from single-family homes is provided, on the basis that multi-family buildings are commercial properties and are responsible for hiring private waste collection services. In some of these communities, local governments have encouraged recycling services at multi-family buildings through bylaws that ban recyclable materials at disposal or that mandate multi-family buildings to provide recycling services to their residents.

Local Government Recycling Depots

Depot-based collection of PPP is provided by 52 local governments in BC. Depots include unstaffed drop-off bins typically located in high traffic areas such as shopping mall parking lots, staffed recycling depots, or recycling areas at landfills and transfer stations.

There are 24 local governments that provide both depot and curbside programs for their residents and 28 local governments that provide depot-only programs. Locations of the depots are shown in Figure 5.2

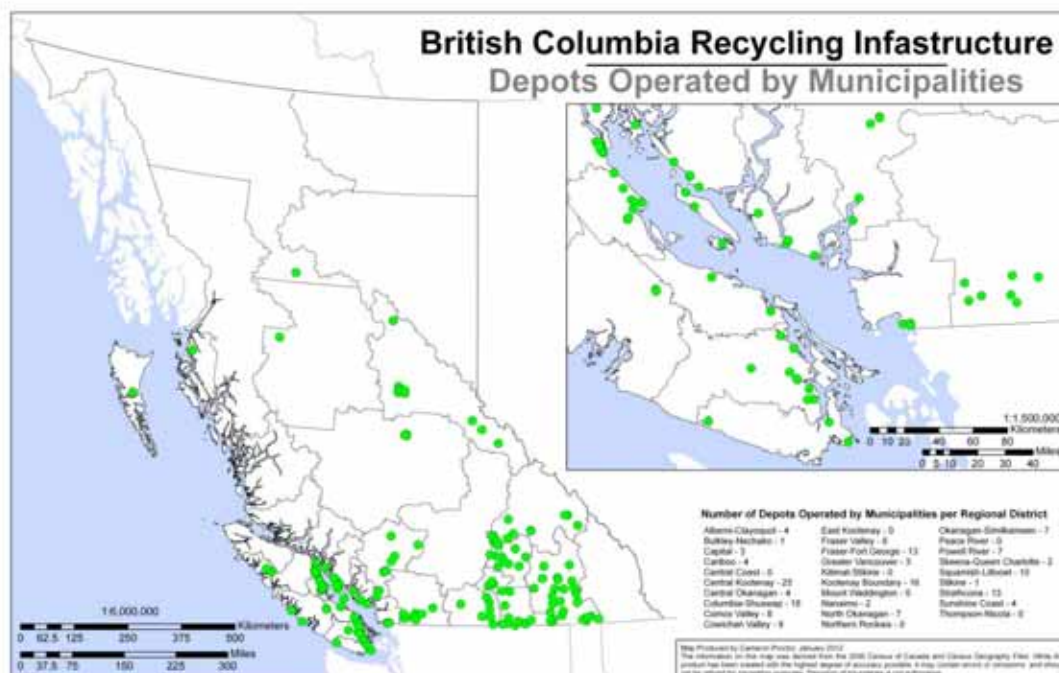
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Unstaffed drop off depots tend to collect the same materials that are accepted in the local curbside program (or in a typical curbside program where there is no local curbside program).

Staffed depots and recycling areas at landfills and transfer stations often collect a wider range of materials than drop off depots and curbside programs, including the more challenging materials such as glass and expanded polystyrene (EPS).

Expanded polystyrene is a recent addition to the list of materials considered recyclable in BC. At present, 4 regional districts accept EPS at one of their recycling depots¹⁰.

Figure 5.2 – Depots Operated by Municipalities



Streetscape Collection

Streetscape collection of PPP is limited to a small number of jurisdictions, as listed in the table below and shown in Figure 5.3.

Table 5.4 – Local Government Streetscape Programs

Regional District	Service Provider
Central Okanagan	Regional District of Central Okanagan
Fraser Valley	Chilliwack
	Mission
Kootenay Boundary	Kootenay Boundary Regional District
Metro Vancouver	Burnaby
	Langley

¹⁰ Alberni-Clayoquot, Cowichan Valley, North Okanagan and Sunshine Coast

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Regional District	Service Provider
	Lion's Bay
	Maple Ridge
	New Westminster
	Pitt Meadows
	Port Coquitlam
	Port Moody

Figure 5.3 – Streetscape Service



In many jurisdictions surveyed, the management of streetscape collection containers is handled separately from municipal waste collection services and may be managed by the staff responsible for parks or roads. As a result, there may be a weak linkage between municipal waste diversion objectives and management of streetscape PPP.

No data are available on the quantity of PPP collected through streetscape collection programs. A few jurisdictions reported that high levels of contamination are a challenge to the success of streetscape recycling efforts.

Collection of Soiled Paper Packaging in Food Waste Collection Programs

Collection of soiled paper packaging is encouraged in many residential food waste collection programs. Food waste collection programs are limited in BC at present but are expected to become more commonplace over the coming years. Table 5.5 provides a list of food waste collection programs that include soiled paper packaging in materials targeted for collection in either curbside or depot programs.

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**Table 5.5 – Local Government Programs for Soiled Paper Packaging
in Food Waste Collection**

Regional District	Municipality	Type of Collection
Cowichan Valley	Duncan	curbside
	Ladysmith	curbside
	other areas of RD	depot
Fraser Valley	Mission	curbside
Metro Vancouver	Coquitlam	curbside
	Langley	curbside
	Port Coquitlam	curbside
	Port Moody	curbside
Nanaimo	all areas of RD	curbside
Squamish-Lillooet	Squamish	depot
	Whistler	depot

Types of PPP targeted for collection include pizza boxes, compostable paper cups and take-out food packaging.

All of these programs are located in the southwest of the province, as shown in Figure 5.4.

No food waste collection programs for the multi-family sector were identified. .

Figure 5.4 – Soiled Paper Packaging in Food Waste Collection Systems



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First Nations Collection Programs

Some First Nations provide collection services for PPP. Those identified during the survey process include:

- Cowichan First Nation (Duncan), with 410 households, provides curbside collection;
- Namgis First Nation (Alert Bay) with more than 200 households, provides depot collection;
- Okanagan First Nation (Vernon), with 2,265 households, provides curbside collection;
- Sechelt First Nation (Sechelt), with 350 households, provides curbside collection; and
- Tseshaht First Nation (Port Alberni) has arranged with the Alberni Clayoquot Regional District to provide service to its 135 households.

Other First Nations communities likely also have curbside or depot collection programs for packaging and printed paper, although these were not identified during the survey process.

5.1.2 Private and Not-for-Profit Collection Services

Private or not-for-profit collection services may be available, either as a subscription collection service or through provision of a recycling depot, in areas of the province where the local government does not provide PPP collection and, in some cases, in areas that receive local government single-family and multi-family collection services.

Subscription Collection

In most urban areas, private collection companies providing subscription recycling services to the commercial sector will also service multi-family buildings. A total of 28 companies were identified as providing subscription recycling collection services to multi-family buildings. Some of these companies operate in multiple regional districts. However, there is generally limited or no access to subscription services for multi-family buildings in smaller communities.

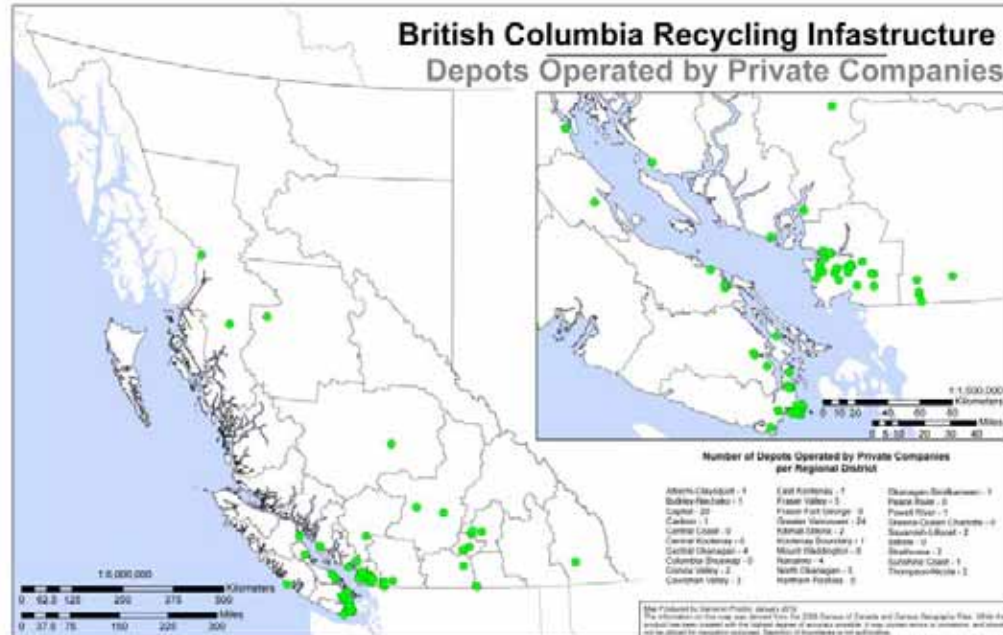
Subscription recycling collection services for single-family households are available in a limited number of communities and are generally provided by a local business to service a small geographic area. Examples of such services include Blue Jewel in the City of Prince George and White Disposal in the District of Kent. Residents in rural areas (located outside of communities) generally cannot access subscription collection services. A total of 15 companies were identified as providing subscription collection services to single-family households. Each of these companies is operating in a single regional district.

Private Sector Depots

A total of 81 private sector PPP collection depots (not acting as a beverage container deposit return location) were identified. The majority of these depots are associated with a PPP processing facility or are operated by a company that also provides curbside collection services. These depots generally receive the same types of recyclables as accepted in the local curbside collection program.

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Figure 5.5 – Depots Operated by Private Companies



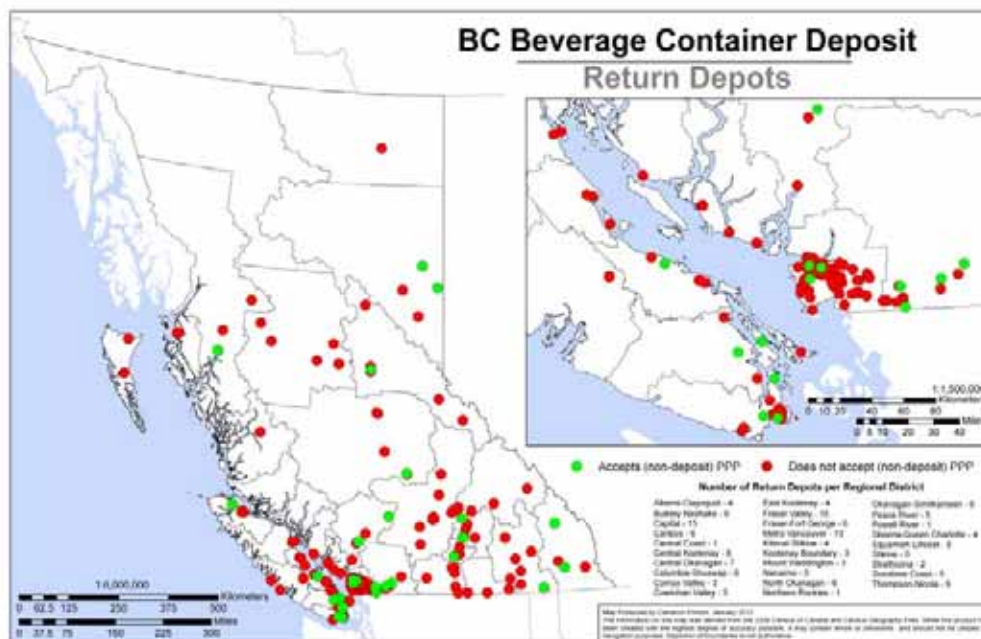
BC has over 200 deposit container return depots operated by Encorp Pacific. The locations of these depots are shown in Figure 5.6. Approximately 30 of the more than 200 beverage container return depots accept PPP from residents. Bottle depots generally do not solicit a broad range of PPP but rather target materials that have a positive market value.

Bottle depots also typically accept non-deposit PPP that accompanies deposit containers when returned by residents, such as cardboard and boxboard, as a service to users. Bottle depots also solicit and accept dairy and dairy substitute (e.g. soya milk) containers as part of a program funded by the BC Dairy Council¹¹.

¹¹ The 2010 annual report issued by the BC Dairy Council reports that 155 bottle depots collected 275 tonnes of plastic dairy containers and 308 tonnes of polycarbonate dairy containers.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

Figure 5.6 – Beverage Container Deposit Return Depots



Not-for-Profit Depots

BC is also home to 18 not-for-profit recycling depots as shown in Figure 5.7. Many of these depots have been established by active members of a community to provide recycling opportunities for residents.

Fourteen of these depots operate in ferry-accessed communities in the Gulf Islands, on Vancouver Island and on the Sunshine Coast. These depots typically accept a wide variety of PPP, including low value materials, as their primary objective is waste diversion. The depots manage the PPP in source-separated streams which are often baled on-site (to minimize transportation costs) for delivery to off-island markets.

A few depots are operated in conjunction with social development programs and provide employment and skills development opportunities.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

Figure 5.7 – Depots Operated by Not-For-Profit Organizations



Return to Retailer

Two large retail chains, London Drugs and Overwaitea, accept PPP from their customers. All forty-nine London Drugs retail stores will accept paper, cardboard and plastic packaging (including expanded polystyrene) associated with products they sell.

Overwaitea has set up 'Changes' return centres at eleven of their stores. These return centres accept:

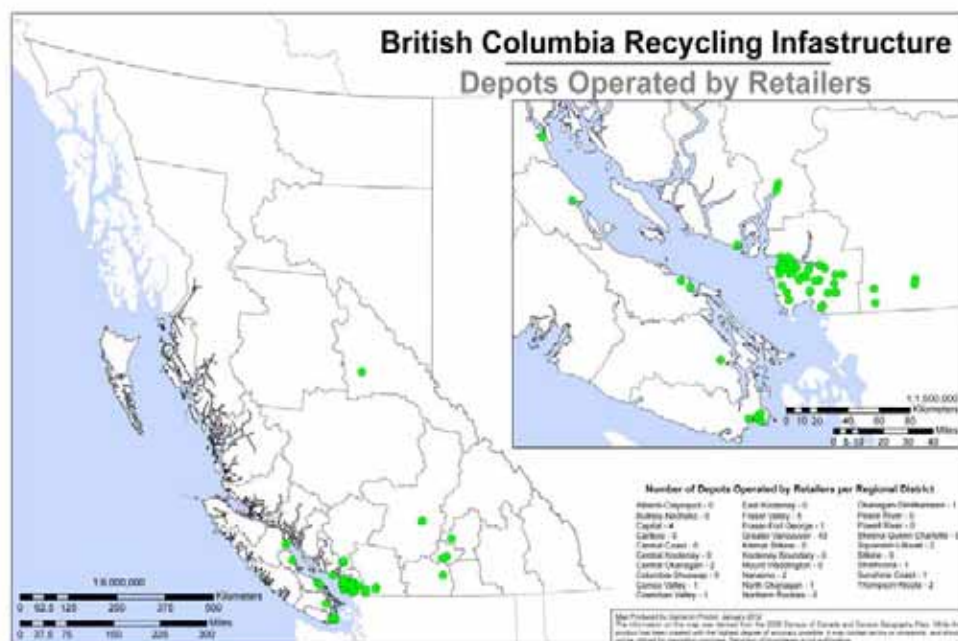
- packaging associated with Overwaitea store brand products;
- prescription bottles issued by Overwaitea pharmacies;
- carrier bags;
- packaging from Lipton, Nature's Path, High Liner and Unilver branded goods sold through their stores; and
- 4 litre milk jugs.

Both London Drugs and Overwaitea commingle PPP accepted from customers with recyclable materials generated by their own retail operations.

Other BC retailers accept carrier bags and may accept additional types of PPP. A complete list of these retailers was not available.

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Figure 5.8 – Depots Operated by Retailers



5.2 Public Education Initiatives

As part of the data compilation process, local governments were asked to identify the types of public education activities being implemented. Responses were provided by 19 regional districts and, in some cases, by municipalities within the regional districts.

Local governments were also asked to identify whether the public education activities were carried out in-house or by contractors. The following table identifies the public education activities implemented by local governments directly.

Table 5.6 – Public Education Activities Delivered by Local Governments Directly

Public Education Activities	In-house	% of Respondents
System website	13	68%
Print media	11	58%
Promotional items, hand-outs	11	58%
Presentations, booths,	10	53%
Media kits, releases, events	9	47%
Outdoor signage	8	42%
Paid electronic media	6	32%
PSAs	6	32%
Telephone hotline	6	32%
School curriculum/educators	2	11%
Collection calendar	1	5%

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The following table identifies the public education activities implemented by local governments through contractors.

**Table 5.7 – Public Education Activities Delivered by Local Governments
Through Contractors**

Public Education Activities	Through Contractors	% of Respondents
Print media	7	37%
Presentations, booths,	6	32%
Paid electronic media	6	32%
System website	5	26%
Promotional items, hand-outs	5	26%
Media kits, releases, events	5	26%
PSAs	5	26%
Telephone hotline	5	26%
Outdoor signage	3	16%
Collection calendar	3	16%
School curriculum/educators	2	11%

5.3 Processing Services

Following collection, packaging and printed paper requires processing prior to shipment to recycling markets. Processors receive, handle, sort, control quality, bale or densify PPP and ship the PPP to end users while also safely disposing of any residual and providing custody assurance.

Processors receive PPP in the form in which it was collected:

- Segregated material streams;
- Commingled fibres and commingled containers from multi-stream collection systems; or
- Completely commingled materials from single stream collection systems.

Some processing facilities are designed to process segregated PPP while other material recovery facilities (MRFs) are designed to sort and process commingled PPP. Given the trend towards co-collection¹², many of BC's PPP processing facilities, especially the larger MRFs, are capable of processing commingled fibres, commingled containers and completely commingled materials.

The PPP collected through the collection system described in Section 5.1 is processed by:

- Twenty organizations or companies that each operate one processing facility; and

¹² The shift to single stream collection has been driven, in part, by a desire to reduce the number of vehicle compartments dedicated to packaging and printed paper in order to accommodate co-collection with other materials on the same vehicle. Municipalities with single stream collection systems can:

- Collect PPP and organic waste on the same vehicle, thereby increasing diversion services to residents;
- Collect PPP and garbage on the same vehicle, thereby servicing a residence with a single vehicle; or
- Collect only PPP, thereby increasing collection vehicle capacity utilization.

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- Four companies that, together, operate 19 MRFs.

Table 5.8 presents information on the identified PPP processors with locations of their processing facilities.

Table 5.8 – PPP Processing Facilities

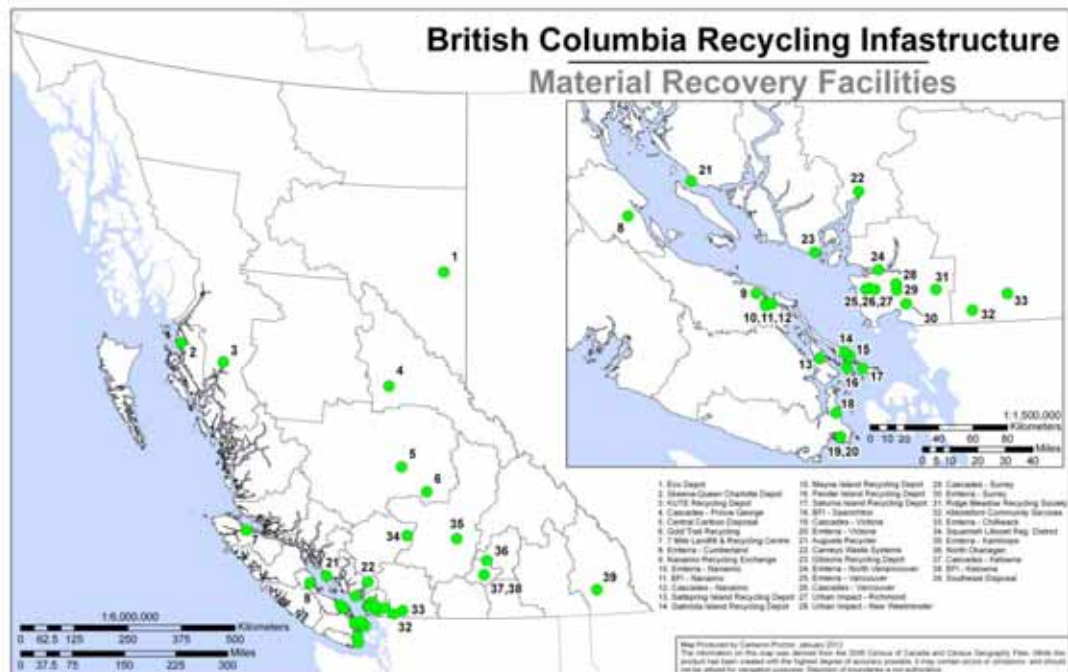
Facility Operator	Facility Location	Regional District
Abbotsford Community Services	Abbotsford	Fraser Valley
Augusta Recycler	Powell River	Powell River
BFI Canada	Saanichton	Capital
	Kelowna	Central Okanagan
	Nanaimo	Nanaimo
Carneys Waste Systems	Squamish	Squamish Lillooet
Cascades Recovery Inc.	Victoria	Capital
	Kelowna	Central Okanagan
	Prince George	Fraser-Fort George
	Vancouver	Metro Vancouver
	Surrey	Metro Vancouver
	Nanaimo	Nanaimo
Central Cariboo Disposal	Williams Lake	Cariboo
Eco Depot	Fort St. John	Peace River
Emterra Environmental	Victoria	Capital
	Cumberland	Comox-Strathcona
	Chilliwack	Fraser Valley
	North Vancouver	Metro Vancouver
	Vancouver	Metro Vancouver
	Surrey	Metro Vancouver
	Nanaimo	Nanaimo
	Kamloops	Thompson-Nicola
Gabriola Island Recycling Depot	Gabriola Island	Nanaimo
Gibsons Recycling Depot	Gibsons	Sunshine Coast
Gold Trail Recycling	100 Mile House	Cariboo Regional District
KUTE Recycling Depot	Kitimat	Kitimat-Stikine
Mayne Island Recycling Depot	Mayne Island	Capital
Mount Waddington Regional District	7 Mile	Mount Waddington
Nanaimo Recycling Exchange	Nanaimo	Nanaimo
North Okanagan Regional District	Vernon	North Okanagan
Pender Island Recycling Depot	Pender Island	Capital
Ridge Meadow Recycling Society	Maple Ridge	Metro Vancouver
Salt Spring Island Recycling Depot	Salt Spring Island	Capital
Saturna Island Recycling Depot	Saturna Island	Capital
Skeena-Queen Charlotte Regional Recycling Depot	Prince Rupert	Skeena Queen Charlotte
Southeast Disposal	Cranbrook	East Kootenay

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Facility Operator	Facility Location	Regional District
Squamish Lillooet Regional District	Lillooet	Squamish Lillooet
Urban Impact	Richmond	Metro Vancouver
	New Westminster	Metro Vancouver

The locations of the processing facilities listed above are shown in Figures 5.9.

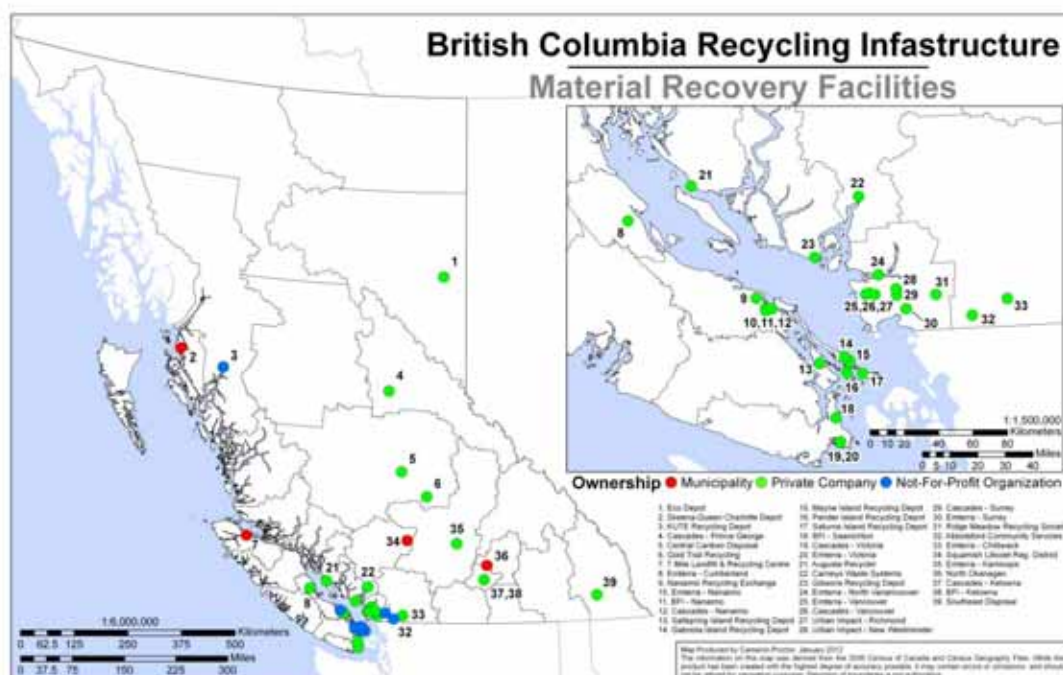
Figure 5.9 – Material Recovery Facilities



The 39 reported MRFs are operated by eleven private companies, four local governments and nine not-for-profit organizations as shown in Figure 5.10.

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Figure 5.10 – Material Recovery Facilities by Ownership



For nine of the 39 MRFs identified, MRF operators reported total MRF capacity as well as the quantity of residential and ICI PPP received annually. Of the 650,000 tonnes of total capacity in these nine MRFs, approximately 15% is being used for residential PPP, approximately 15% is being used for ICI PPP and approximately 70% of reported PPP processing capacity was not being utilized. Corresponding information was not obtained for the remaining 30 MRFs.

For these nine MRFs and an additional four MRFs, information was provided on the quantity of residential and ICI PPP received annually. The following table summarizes this information.

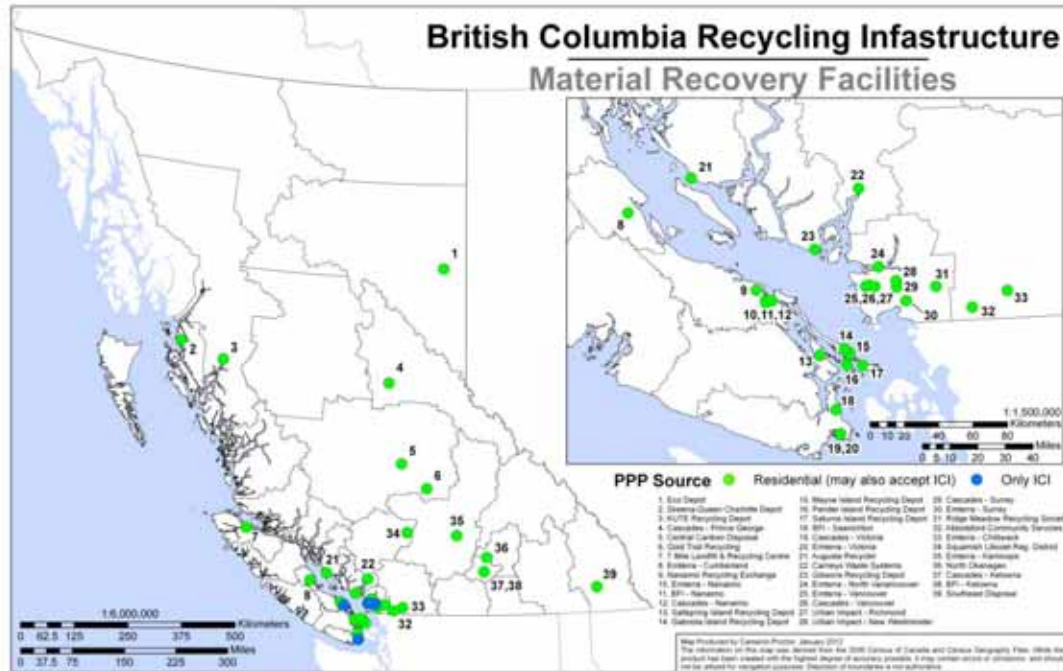
Table 5.9 – Residential and ICI Sources of PPP at Selected MRFs

# of Facilities Reporting Total PPP and Residential PPP Processed	Total PPP Processed in 2010	Residential PPP Processed in 2010	ICI PPP Processed in 2010
	tonnes	Tonnes	tonnes
13	293,500	130,084	163,416
As % of total processed in 2010		44%	56%

A number of the 39 MRFs reported processing only ICI materials but may be capable of processing residential materials should these materials be available.

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Figure 5.11 – Material Recovery Facilities by PPP Source



Prior to delivery to a processing facility, some collected PPP is first delivered to a transfer facility where it is reloaded for transport to a more distant MRF. The following facilities reported receiving and transferring residential PPP.

Table 5.10 – PPP Transfer Facilities

Facility Operator	Facility Location	Regional District
BFI Canada	Abbotsford	Fraser Valley
	Parksville	Nanaimo
City of Whiterock	Whiterock	Metro Vancouver
Columbia-Shuswap Regional District	Golden	Columbia-Shuswap
	Revelstoke	Columbia-Shuswap
	Salmon Arm	Columbia-Shuswap
Kootenay-Boundary Regional District	Trail	Kootenay-Boundary

The locations of the transfer facilities listed above are shown on Figure 5.12.

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Figure 5.12 – Transfer Stations by Ownership



5.4 Material Marketing

Recycling processors seek to sort packaging and printed papers collected from residences and streetscapes into grades acceptable to end users that offer the best net return. In some cases, the first processor may send PPP to a downstream processor, often called a reprocessor, for additional sorting and quality control prior to delivery to end users.

Based on responses to a survey of identified processors, four companies process approximately 60% of the residential PPP collected in BC.

Based on discussions with processors and tours of a number of BC processors, some general observations can be drawn from the survey responses:

- Transfer capacity is in place in some parts of the province;
- The larger processors positively sort old newspapers (ONP), generally to a #8 ONP grade;
- The larger processors generally sort old corrugated cardboard (OCC), although at least one is producing a hardpack mix (OCC and old boxboard) from its residentially collected materials;
- All of the larger processors also produce a mixed waste paper stream (for export).
- BC processors appear to have established effective commercial relationships with both local and export markets:
 - local end users for glass and some plastics;
 - export markets in Washington, California and Asia; and

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- Material reprocessing capacity is developing in areas of the province to further sort and clean collected materials prior to shipment to end users (e.g. for rigid, flexible and some specialty plastics).

The following table presents information from the surveys (and other sources as available) on the typical PPP materials marketed, typical processing activities, typical selling prices received in 2010, typical reprocessing activities, end user locations and typical end use applications.

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Table 5.11 – PPP Processing Activities and End Uses

Typical Material Categories Marketed	Typical Processing Activities	Typical Selling Price Range ¹	Typical Reprocessing Activities	End User Locations	Typical End Use Applications ²
Newspapers	Sorted to #6 or #8 grade (some also contained in the mixed waste paper stream); MRFs process inhouse for direct shipment to end users	\$100 to \$130 per tonne		Primarily US; some overseas	Recycled content newsprint, paperboard, insulation, roofing paper
Corrugated Cardboard	Sorted from boxboard and other printed papers manually and with screens	\$110 to \$160 per tonne	Where shipped as hardpack (mixed with OBB ³), may be subject to additional sorting	BC ⁴ , US and overseas	New card and container board, tissue, paperboard
Mixed Waste Paper	May include all types of papers or only papers remaining after sorting ONP and OCC	\$60 to \$120 per tonne; price depends on quality ⁵	Reprocessors located overseas	Virtually all exported overseas	OCC medium, roofing paper, drywall paper
Glass	Commonly separated into clear and mixed coloured streams	Value of material generally lower than cost of transportation	Reprocessing required for higher end applications (e.g. containers, abrasives and insulation)	BC (for abrasives and aggregate substitute); other parts of Canada (insulation) and the US	Clear glass can be used for containers; clean glass for abrasives and insulation; mixed glass as local aggregate substitute
Aluminum	Separated with eddy current systems; foils can also be sorted and marketed separately	\$1,500 to \$2,000 per tonne		Can sheet plants in the US	New can sheet
Steel	Steel containers separated with magnet systems	\$130 to \$200 per tonne	Materials may be baled in BC	US mills in Washington and California are major markets	Re-bar, rolled sheet and other steel applications

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Typical Material Categories Marketed	Typical Processing Activities	Typical Selling Price Range ¹	Typical Reprocessing Activities	End User Locations	Typical End Use Applications ²
PET Plastic	Can be separated with optical technologies	\$200 to \$400 per tonne for clean materials	BC reprocessors produce clean flake for end users	Some BC R-PET users, but major markets are US North West	New packaging, carpet, fleece clothing
HDPE Plastic	Highest value when clear HDPE is separated from coloured	\$200 to \$600 per tonne depending on degree of sorting	BC reprocessors produce clean pellets for recycled content applications	BC and Northwest US markets; some overseas for mixed PE	New packaging, plastic lumber applications, pipes, flower pots, trash cans
Other Rigid Plastic	Polypropylene (e.g. tubs and lids) can be sorted optically; foamed polystyrene (EPS) requires separate handling and is being densified	\$100 to \$400 per tonne depending on resin and quality	BC reprocessors produce clean pellets for recycled content applications	BC markets are developing; also exports to the US	PP can be used in battery casings, kitchenware, storage containers, etc. EPS is being used by BC product manufacturers
Plastic Film	Requires manual sorting	\$25 to \$75 per tonne depending on quality	Some BC reprocessors clean, sort and bale film for end users	Some BC and northwest US markets	Trash bags, grocery sacs and agricultural films
Mixed Plastic	May contain high percentage of polyolefins or only plastics remaining after sorting other grade	\$25 to \$75 per tonne depending on quality and resin mix	Some BC reprocessors sort and clean for local manufacturers	Some BC and overseas markets	Plastic lumber (e.g. for marine applications) is a common end use

- Processors were asked to provide the range of PPP revenues for materials sold in 2010. The ranges presented are based on those responses and on pricing information available through other market contacts.
- The list of end use applications is intended to identify the most common applications for PPP collected and processed. Not all listed applications may be available to BC program operators.
- OBB refers to old boxboard, which is commonly used in packaging applications such as cereal boxes and toy packaging. It is also sometimes called "paperboard" and generally represents a lower quality and value material than containerboard/old corrugated containers.
- Processors were asked to identify markets for PPP materials sold in 2010. During 2010, a BC market for OCC was available but has since ceased operations. .
- Mixed waste paper (MWP) prices fluctuate according to global demand for ONP and OCC. None of the processors surveyed reported sorting separate streams for old boxboard (OBB), household fine papers or tetra/gabletop containers. It has been assumed that those materials remain in the MWP stream (along with ONP and OCC not captured during fibre sorting processes).

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6.0 Collection and Recycling of Packaging and Printed Paper

6.1 Quantity of Packaging and Printed Paper Available for Collection

As outlined in Section 4.1, three sources of data were utilized to estimate the quantity of packaging and printed paper supplied into the residential market in BC and therefore assumed to be available for collection. The following table sets out two calculations for residential PPP supplied in BC based on these three sources of data:

- BC waste audit data; and
- The average of Manitoba and Ontario supplied data.

For both calculations, the estimated residential portion of deposit containers supplied in BC is deducted from the total estimated supplied to yield residential PPP supplied net of deposit containers. The resulting estimates were rounded to the nearest thousand tonnes to reflect the imprecision in these calculations.

Table 6.1 – Estimated Residential Packaging and Printed Paper Supplied

Category	Based on BC Waste Audit Data	Based on Average of Manitoba and Ontario Producer Reported Data
	Tonnes	Tonnes
Printed Papers	155,000	154,000
Paper Packaging	71,000	115,000
Plastic Packaging	65,000	71,000
Steel Packaging	22,000	22,000
Aluminum Packaging	15,000	11,000
Glass Packaging	22,000	27,000
Total	350,000	400,000

While the total estimated supplied tonnes from the two sources are generally within a reasonable range, the estimates vary significantly for specific categories of materials between the two calculations methodologies. While the sources of these discrepancies cannot be confirmed, the notable differences may arise from the categories utilized and limited sample sizes in the BC waste audits.

6.2 Quantity of Packaging and Printed Paper Collected

Data from twenty regional districts were compiled through surveys completed by regional districts and, in some cases, by municipalities within the regional districts.

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Surveys requested the quantity of PPP collected from single-family and multi-family households and from depot and streetscape¹³ collection systems. The surveys yielded data on the quantity of PPP collected from households within the twenty regional districts¹⁴. Extrapolation methodologies were developed to extrapolate the survey data to the remaining BC households receiving collection services to calculate an approximate value for the total tonnes of residential PPP collected in BC.

Data on total single-family and multi-family households were compiled from the local government surveys or from the Statistics Canada 2006 Census (StatsCan). Where local governments reported total households, these data were assumed to be more current and were used unless the number of households was less than the StatsCan value.

The number of single-family households receiving curbside collection service, the number of multi-family households receiving collection services and the number of households without collection services but with access to depots were derived from the local government surveys, public reports or conversations with local governments representatives¹⁵.

For single-family and multi-family households, the tonnes of PPP reported as collected by local governments were used without adjustment.

To estimate the tonnes of PPP collected from the remaining BC single-family households, the following methodology was utilized:

- The local governments reporting tonnes of PPP collected from single-family households were segregated by population density¹⁶;
- The average kilogram per household (kg/HH) collected from the single-family households served with curbside collection by the reporting local governments was calculated for each of the groups; and
- The average kg/HH was multiplied by the single-family households receiving curbside collection in the regional districts for which no tonnage data were available.

To estimate the tonnes of PPP collected from the remaining BC multi-family households, the following methodology was utilized:

- The average kg/HH collected from the multi-family households served with collection services was calculated for reporting local governments¹⁷; and

¹³ Where local governments provide streetscape collection systems, it is assumed that the PPP collected is included in the quantity of PPP reported as collected.

¹⁴ Information on soiled paper packaging accepted in food waste composting programs was requested. While a number of local governments reported accepting soiled paper packaging in food waste collection programs, no data were provided on the quantity of soiled paper packaging managed through these programs.

¹⁵ Refer to Appendix B Households Receiving Collection Services.

¹⁶ It was assumed that capture rates from single-family households may be affected by the type of jurisdiction. To reflect blends of urban and rural communities, three population density groupings were utilized: 10 people or more per square kilometer; 2 or more to less than 10 people per square kilometer; and, less than 2 people per square kilometer.

¹⁷ It was assumed that capture rates from multi-family households were similar in all jurisdictions.

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- The average kg/HH was multiplied by the multi-family households receiving curbside collection in the regional districts for which no tonnage data were available¹⁸.

As depots typically accept both residential and ICI PPP and manage these materials together, data reported by local governments were assumed to include both residential and ICI materials. The tonnes of PPP reported as collected at depots were adjusted to remove PPP from non-residential sources. Where data were reported by material, 80% of old corrugated cardboard was removed from the total reported, as it was assumed to come from the ICI sector. For other materials and for all commingled materials, 50% of reported tonnes were removed as an allowance for PPP received from ICI sources¹⁹. The remaining 20% of old corrugated cardboard and 50% of other materials were assumed to come from the residential sector.

To estimate the tonnes of PPP collected from the remaining BC households with access to depot collection, the following methodology was utilized:

- The local governments reporting tonnes of PPP collected from depots were segregated by population density²⁰ as well as by jurisdictions that also provide curbside collection services and by jurisdictions with only depot collection;
- The average kg/HH collected from the households served by depots was calculated for each of the groups; and
- The average kg/HH was multiplied by the households receiving depot collection in the regional districts for which no tonnage data were available.

The following table sets out the tonnes of PPP reported as collected from single-family households, multi-family households and depots as well as the tonnes of PPP estimated to be collected using the extrapolation methodology described above.

Table 6.2 – Reported and Estimated Tonnes Collected

	Single-Family Service	Multi-Family Service	Depot Service	Total
Reported tonnes	153,131	19,893	20,017	193,040
Reported tonnes as % of total tonnes for HH type	90%	93%	90%	90%
Estimated tonnes	17,206	1,517	2,229	20,951
Estimated tonnes as % of total tonnes for HH type	10%	7%	10%	10%
Total	170,336	21,409	22,246	213,992

¹⁸ The average is 57 kg per multi-family household served which is within the range of programs in other jurisdictions.

¹⁹ After adjusting the reported PPP from depots to remove PPP assumed to be received from ICI sources, the average residential PPP received is 75 kg per household served. This rate was cross-checked with depot programs in other jurisdictions to confirm the assumptions applied.

²⁰ It was assumed that capture rates from single-family households may be affected by the type of jurisdiction. To reflect blends of urban and rural communities, three population density groupings were utilized: 10 or more people per square kilometer; 2 or more to less than 10 people per square kilometer; and, less than 2 people per square kilometer.

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The following table provides reported and estimated tonnes collected in regional districts.

Table 6.3 – Reported and Estimated Tonnes Collected in Regional Districts

Regional Districts	Single-family Service	Multi-Family Service	Depot Service	Total
	Tonnes	Tonnes	Tonnes	Tonnes
Alberni Clayoquot	803	-	64	867
Bulkley-Nechako	36	-	282	318
Capital	19,490	3,997	784	24,271
Cariboo	386	35	222	643
Central Coast	-	-	36	36
Central Kootenay	512	-	366	878
Central Okanagan	9,850	-	1,122	10,972
Columbia-Shuswap	511	-	1,053	1,563
Comox - Strathcona	2,280	-	290	2,569
Cowichan Valley	3,794	-	1,080	4,874
East Kootenay	112	-	661	773
Fraser-Fort George	-	-	1,344	1,344
Fraser Valley	11,509	75	8,376	19,961
Kitimat-Stikine	-	-	12	12
Kootenay Boundary	980	121	622	1,723
Metro Vancouver	90,224	16,799	2,578	109,601
Mount Waddington	524	-	133	657
Nanaimo	6,871	-	126	6,997
North Okanagan	4,200	-	571	4,771
Northern Rockies	-	-	-	-
Okanagan-Similkameen	13,674	163	47	13,883
Peace River	-	-	1,000	1,000
Powell River	134	-	246	380
Skeena-Queen Charlotte	-	-	234	234
Squamish-Lillooet	1,006	-	159	1,165
Stikine	-	-	-	-
Sunshine Coast	335	-	734	1,070
Thompson-Nicola	3,105	219	106	3,430
Total	170,336	21,409	22,246	213,992

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	Single-family Service	Multi-Family Service	Depot Service	Total
Total Households Served	973,022	373,326	295,887	1,642,235
Kilogram/HH Served	175	57	75	130

Not-for-profit organizations also collect PPP, often in collaboration with local governments. In most cases, tonnes of PPP collected by these organizations were included in the quantity of PPP reported by the local government. In cases where data were not reported by either the local government or the not-for-profit organization, the methodology, described earlier, to estimate tonnes of PPP collected was applied. In a few cases, local governments reported tonnes of PPP collected but did not include tonnes collected by the local not-for-profit organizations. It is estimated that approximately 2,000 tonnes of residential PPP²¹ collected was collected by these not-for-profit organizations.

Private companies also provide collection of residential PPP, primarily in the form of drop-off depots. Appendix A Summary of Services by Regional District includes the private companies identified during the survey process that provide subscription single-family or multi-family collection services and/or operate depots. While a number of these companies were contacted during the survey process, data were limited or unavailable:

- As depots typically accept both residential and ICI PPP and manage these materials together, data on the quantity received specifically from residents were not available;
- Geographic areas served by private depots for purposes of determining households served may be uncertain;
- Private collectors typically know the number of multi-family buildings being serviced but do not compile data on the number of household units, which can vary significantly between multi-family buildings; and
- Private companies were often reluctant to share information on their operations given that they operate in a competitive marketplace.

For these reasons, insufficient data on PPP collected were available to support extrapolation to the list of private companies providing subscription single-family or multi-family collection services and/or operate depots PPP service.

Retailers accepting PPP from their customers typically commingle this material with their in-store recyclable materials (e.g. transport packaging) and were not able to identify the weight of materials recycled that were received from customers.

As outlined in Section 6.1, three sources of data were utilized to calculate a range of residential PPP supplied in BC and assumed to be available for collection. The quantity of PPP available for collection is the denominator in the collection rate calculation²². The following table sets out

²¹ As with other reported depot tonnes, 50% of reported tonnes were removed as an allowance for PPP received from ICI sources

²² Collection Rate - calculated as a percentage with the numerator representing the quantity of PPP collected and the denominator representing the quantity of PPP available for collection

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the collection rate based on both the high and low range of estimated residential PPP available for collection.

Table 6.4 – Calculated Collection Rate Range

Range of Estimated PPP Available for Collection	Reported and Estimated PPP Collected	Collection Rate Range
Tonnes	Tonnes	%
400,000 ¹	215,992 ²³	54%
350,000 ²		62%

1. High range of estimated available for collection

2. Low range of estimate available for collection

6.3 Quantity of Packaging and Printed Paper Recycled

Most of the local governments reporting the quantity of residential PPP collected did not have data on the quantity of these PPP tonnes that were marketed to end users following processing.

To determine the quantity of residential PPP recycled, a number of processors were surveyed to compile information on the local governments from which PPP is received, the quantity of PPP received and the quantity of sorted materials marketed. The quantity of each type of PPP marketed was calculated as a percentage of incoming tonnes and the percentages were applied to the total reported and estimated residential PPP tonnes to yield the reported and estimated residential PPP marketed.

The following table sets out the reported and estimated tonnes of PPP collected (215,992 tonnes as set out in Table 6.4) recycled by material category.

Table 6.5 – Reported and Estimated Tonnes Recycled

Material Category	Material Subcategory	Tonnes	%
Paper	Newspaper - ONP # 8	57,183	27.8%
	Newspaper - ONP # 6	13,975	6.8%
	Corrugated cardboard	35,682	17.4%
	OCC/OBB mixed (hardpack)	5,445	2.7%
	Mixed waste paper	41,672	20.3%
	Total paper tonnes	153,956	75.0%
Glass	Glass containers	3,291	1.6%
Metal	Aluminum food and beverage cans	2,039	1.0%

$$\text{Collection Rate \%} = \frac{\text{Amount Collected}}{\text{Available for Collection}} \times 100$$

²³ Total of reported and estimated PPP collected by local governments of 216,302 tonnes plus an estimated 2,000 tonnes of PPP collected by not-for-profit organizations that were not included in data reported by local governments.

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Material Category	Material Subcategory	Tonnes	%
	Aluminum foil and plates	3	0.0%
	Steel food and beverage cans	1,096	0.5%
	Other metal packaging	488	0.2%
	Total metal tonnes	3,919	1.9%
Plastics	Plastic code 1 - PET Bottles	28	0.0%
	Plastic code 1 - PET Other (including clamshells)	5	0.0%
	Plastic code 1 - PET Mixed	91	0.0%
	Plastic code 2 - HDPE Clear	130	0.1%
	Plastic code 2 - HDPE Coloured	2,803	1.4%
	Plastic code 2 - Milk Jugs	2,659	1.3%
	Plastic code 2 - HDPE Mixed	41	0.0%
	Plastic code 4	143	0.1%
	Plastic code 5	33	0.0%
	Soft plastics - film bags, wrap	1,293	0.6%
	Tubs & Lids (#2, #4, & #5)	18	0.0%
	Mixed plastics	4,493	2.2%
	Total plastic tonnes	11,738	5.7%
Commingled	Commingled fibres and aluminum, steel, plastic containers	28,443	13.8%
	Commingled including glass	4,028	2.0%
	Total commingled	32,472	15.8%
Total		205,375	100%

Residue ²⁴	10,617
as % of collected tonnes	4.9%

As outlined in Section 6.1, three sources of data were utilized to calculate a range of residential PPP supplied in BC and assumed to be available for collection. The quantity of PPP available for collection is the denominator in the recycling rate calculation²⁵.

The following table sets out the recycling rate based on both the high and low range of estimated residential PPP available for collection.

²⁴ Reprocessors and end users receiving mixed and commingled categories of PPP may generate additional residue.

²⁵ Recycling Rate - calculated as a percentage with the numerator representing the quantity of PPP recycled and the denominator representing the quantity of PPP available for collection

$$\text{Recycling Rate \%} = \frac{\text{Amount Recycled}}{\text{Available for Collection}} \times 100$$

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

Table 6.6 – Calculated Recycling Rate Range

Range of Estimated PPP Available for Collection	Reported and Estimated PPP Collected	Recycling Rate Range
Tonnes	Tonnes	%
400,000 ¹	205,375	51%
350,000 ²		59%

1) High range of estimated available for collection

2) Low range of estimate available for collection

7.0 Costs to Collect and Recycle Packaging and Printed Paper

The Phase 1 project's purpose is to understand the existing BC PPP collection and recycling system including the multitude of relationships among collectors (public, private, not-for-profit), transporters, processors and end-markets that currently manage residential PPP and to then identify options for delivering a PPP program in the context of these existing relationships.

Municipal costs data were also requested and, in many cases, were only provided to the study team contingent to an agreement that any data provided would not be disclosed in disaggregate form.

While the study team has calculated a province-wide cost estimate based on the individual municipal data sources, this high-level estimate is not only misleading but detracts from the more important objective of understanding the relationships described above.

Two key issues with regard to the municipal cost data are worth noting:

- Information provided by municipalities includes multiple cost components which makes interpreting the data difficult. As an example, municipalities often provided an “all-in” cost for services that include collection, transfer, processing and marketing. In some cases, reported costs also included garbage and/or yard waste services. As such, the reported data were not informative on the specific costs of each PPP system component.
- Unlike other Canadian jurisdictions, the BC PPP program will be an EPR program designed to achieve a 75% recovery rate, rather than a mechanism for municipal funding. Municipal program delivery is only one of several optional approaches for recovering PPP. The aggregate municipal cost may have little bearing on future EPR system costs.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

8.0 Recommendations for New or Shared Infrastructure

MMBC requested recommendations for new or shared infrastructure to optimize the management system for PPP under a province-wide program for which producers are responsible.

The following recommendations are based on the information submitted in the surveys and discussions with service providers and other stakeholders:

1. The types of PPP accepted in the collection system vary from one jurisdiction to another and from one collection system to another²⁶. Consistency in types of PPP accepted in residential collection systems would facilitate a cross-jurisdictional communication message to residents.

To accept the same types of PPP in all jurisdictions and in all collection systems, some of the BC collection infrastructure will need to be modified to accept those types of PPP not currently accepted. The types of modifications will vary depending on the type of collection system, the types of PPP currently accepted and the characteristics of the current system.

Examples of collection infrastructure modifications include:

- a. For curbside collection systems
 - i. Larger curbside set-out containers to accommodate a larger range of materials including lighter volume materials;
 - ii. Collection vehicles with compaction capability to manage lighter volume materials more effectively; and
 - b. For multi-family collection systems
 - i. On-site storage systems
 - c. For depot collection systems
 - i. On-site storage and handling systems, especially for lighter materials such as foamed polystyrene and plastic film
2. Collection infrastructure to deliver reasonable access²⁷ to single-family, multi-family, depot and streetscape collection services will be required:
 - a. Collection from the approximately 47,000 single-family households that currently do not have PPP collection service through curbside or depot collection;
 - b. Collection from the approximately 10,000 multi-family households that currently do not have PPP collection service which may require building retrofits and/or on-site storage containers; and
 - c. Collection systems for PPP generated in streetscape environments.

²⁶ Refer to Appendix C for a list of PPP accepted in collection services.

²⁷ Section 5(1)(c) of the Recycling Regulation requires that a stewardship plan provide reasonable and free consumer access to collection facilities.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

3. Surveys of existing PPP processors suggest that sufficient processing capacity is available. However, to support accepting the same types of PPP in all jurisdictions and in all collection systems, some of the BC processing facilities may require modification in order to effectively manage those types of PPP not currently accepted. Modifications would likely involve storage systems and sorting equipment.
4. Most of the processing capacity for PPP in BC is located in or around Metro Vancouver and the southern portion of Vancouver Island. PPP may be processed more cost-effectively if delivered by collection vehicles to local facilities for transfer to more-distant MRFs equipped to manage the broader range of PPP that will be accepted. Modifying smaller MRFs to act as transfer facilities and establishing additional transfer facilities may be a cost-effective alternative approach to prepare PPP for markets.

The manner in which this infrastructure is implemented will be determined, in part, by the program design utilized by MMBC. For example, if MMBC were to contract for collection or processing services, provision of the infrastructure could be included in the services provided under the terms of the contract.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

9.0 Summary

Key findings from the surveys and research on the current residential PPP collection and recycling system in BC include:

Collection Service

- An extensive residential PPP collection infrastructure currently exists
- 97% of BC households receive some level of PPP collection service
- 79% of single-family households receive collection service, with 45% single-stream and 55% multi-stream
- 79% of multi-family units receive collection service with 16% single stream and 84% multi-stream
- 17% of BC households receive only depot collection service
- An estimated 216,000 tonnes of residential PPP are collected in BC annually
 - An estimated 170,500 tonnes are collected from single-family households
 - An estimated 21,500 tonnes are collected from multi-family households
 - An estimated 24,000 tonnes are received at depots

Processing Infrastructure

- 39 PPP processing facilities were identified as operating in BC
- 4 companies operate 19 of the 39 MRFs and process approximately 60% of the residential PPP collected
- Of materials marketed
 - 75% is paper based comprised of 35% newspapers and 40% other printed paper and paper packaging
 - 15% is marketed in commingled form
 - Approximately 5% is plastic packaging
 - The remaining 5% is steel, aluminum and glass packaging

System Performance

Based on the data available during this research study

- the current collection rate for residential PPP is estimated at 54% to 62%
- the current recycling rate for residential PPP is estimated at 51% to 59%

Limitations of the Analysis

The information in this report, including the summary points above, should be considered preliminary and subject to modification as additional information becomes available during Phase 2 and 3 of MMBC's program development process. Actual system operating data will be available as MMBC establishes producer and service provider reporting systems as part of program implementation.

Current System for Collecting and Recycling Residential Packaging and Printed Papers in British Columbia

Data compiled during this research work represents the best data available from those PPP service providers willing to co-operate with the project team. The reliability of the data is affected by the following factors:

- Lack of a common data tracking methodology used consistently by all PPP service providers;
- Commingling of residential and ICI materials in some collection systems (e.g. depots) and in processing systems which required the use of assumptions to segregate residential and ICI PPP tonnes;
- Varying degrees of co-operation among service providers;
- Inconsistent types and level of data provided by co-operating service providers;
- While approximately 90% of the estimated 216,000 tonnes of PPP collected were reported by local governments, assumptions based on reported data were used to estimate the remaining 10%;
- Data reported by local governments was used as reported without verification due to the time available to complete the data compilation process; and
- Limited data were available from composition audits of the BC PPP recycling stream on which to base an estimate of the quantity of PPP supplied to the residential sector.

Appendix A

Summary of Services by Regional District

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
Alberni Clayoquot Regional District							
Alberni Clayoquot Regional District	x		x				
BFI					x		
Bulkley Nechako Regional District							
Bulkley Nechako Regional District			x				
Village of Telkwa	x						
Fraser Lake Bottle Depot			x				
Bulkley Valley Bottle Depot			x				
Smithers and Area Recycling Society			x				
Greening Up Fort			x				
Coop Grocery Store			x				
Capital Regional District							
Capital Regional District	x		x				
BFI			x		x		X
Alpine			x		x		
Capital City					x		
Sooke Disposal			x		x		
Super Save					x		
Salt Spring Garbage			x	x	x		
Emterra					x		x
Cascades					x		x
ReFuse			x				
Ellice Recycling			x				
DL			x				
Cowichan Recyclists					x		
Pacific Mobile Depots			x				
Salt Spring Island Recycling Depot			x				x
Saturna Island Recycling Depot			x				x
Mayne Island Recycling Depot			x				x
Galiano Island Recycling Depot			x				
Pender Island Recycling Depot			x				x
Cariboo Regional District							
Cariboo Regional District			x				
City of Williams Lake	x	x					
City of Quesnel			x				
Central Cariboo Disposal				x	x	x	x
Gold Trail Recycling			x				x

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
Central Coast Regional District							
Central Coast Regional District			x				
Co-op Store			x				
Central Kootenay Regional District							
Regional District of Central Kootenay	x		x				
City of Nelson	x						
City of Castlegar	x						
Waste Management					x		x
Central Okanagan Regional District							
Regional District of Central Okanagan	x		x				
Cascades							x
BFI					x		x
Alpine					x		
Blue Planet Recycling			X				
Columbia Shuswap Regional District							
Columbia Shuswap Regional District			x			x	
City of Salmon Arm	x						
Town of Golden	x						
City of Revelstoke	x						
Waste Management			x		x		
Winkler					x		
VP Waste Solutions					x		
Cheap Garbage					x		
Bills Bottle Depot			x				
Comox Valley Regional District							
Comox Valley Regional District	x		x				
City of Courtenay	x						
Town of Comox	x						
Town of Cumberland	x						
BFI			x		x	x	
Emterra					x		
Suncoast					x		
Hornby Island Recycling Depot			x				
Denman Island Recycling Depot			x				
Cowichan Valley Regional District							
Cowichan Valley Regional District	x		x				
City of Duncan	x						
District of North Cowichan	x						

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
Town of Ladysmith	x						
Town of Lake Cowichan	x						
BFI			x		x	x	
Alpine					x		
Haarsma					x		
Cowichan Recyclists					x		
Fisher Rd Recycling			x				
East Kootenay Regional District							
Regional District of East Kootenay			x				
District Municipality of Invermere	x						
Southeast Disposal							x
Fraser Valley Regional District							
Fraser Valley Regional District	x		x				
Chilliwack	x	x	x				
Abbotsford	x		x				
Mission	x	x	x				
Hope	x						
Kent			x				
Harrison Hot Springs	x						
BFI					x		
Emterra					x		x
Waste Management					x		
White Disposal (Kent)				x			
Grants Disposal (Mission)				x			
First Class Waste Disposal					x		
NSD Disposal					x		
Alpine Valley					x		
Waste Management					x		
Abbotsford Mission Community Services			x				x
Fraser Fort George Regional District							
Regional District of Fraser Fort George			x				
Blue Jewel				x			
R3				x			
Cascades							x
Kitimat Stikine Regional District							
Kitimat Stikine Regional District			x				
Private Sector Services							
KUTE (Kitimat)			x				x
Go Green Recycling (Kitimat)				x			

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
Do Your Part Recycling				x	x		
Waste Management Inc					x		
Kootenay Boundary Regional District							
Kootenay Boundary Regional District	x	x	x			x	
Metro Vancouver Regional District							
Metro Vancouver			x				
BIMBC (Bowen Island Municipality)			x				
City of Burnaby	x	x	x				
City of Coquitlam	x	x	x				
City of Langley	x	x					
City of New Westminster	x	x					
City of Pitt Meadows	x	x					
City of Port Coquitlam	x	x					
City of Port Moody	x	x					
City of Richmond	x	x	x				
City of Surrey	x	x					
City of Vancouver	x	x	x				
City of White Rock	x	x				x	
Corporation of Delta	x	x					
District of Maple Ridge	x	x	x				x ²⁸
City of North Vancouver	x	x	x				
District of North Vancouver	x	x					
District of West Vancouver	x	x					
Township of Langley	x	x					
University Endowment Lands	x		x				
BFI					x		x
Emterra					x		x
Cascades							x
Urban Impact							x
WCS					x		
NSD					x		
Smithrite					x		
Superior					x		
Recycling Alternatives					x		
Capital City					x		
AGM				x			
Pacific Mobile Depots			x				
Regional Recycling (Bottle Depots)			x				

²⁸ Operated by Ridge Meadows Recycling Society.

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
Mount Waddington Regional District							
Mount Waddington Regional District			x				x
Port Alice			x				
Port McNeill			x	x			
Alert Bay	x		x				
Woss			x				
Sointula			x				
Jenny in Port McNeill				x	x		
North Okanagan Regional District	x		x				x
Town of Spallumcheen	x						
Interior Freight and Bottle Depot			x				
Nanaimo Regional District							
Regional District of Nanaimo	x		x				
City of Nanaimo	x						
BFI			x		x		x
Alpine					x		
Haarsma					x		
Emterra					x		x
Cascades							x
Suncoast Waste Services					x		
Parksville Bottle Depot			x				
Waste Management					x		
Nanaimo Recycling Exchange			x				x
Gabriola Island Recycling Organization			x				x
North Okanagan Regional District							
North Okanagan Regional District	x		x				x
Town of Spallumcheen	x						
Interior Freight and Bottle Depot			x				
Spallumcheen	x						
Northern Rockies Regional District							
Northern Rockies Regional District							
Okanagan-Similkameen Regional District							
Regional District of Okanagan Similkameen	x		x				
Penticton	x	x					
Oliver	x	x					

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
Osoyoos	x						
Summerland	x	x					
Princeton	x		x				
BFI							
Blue Planet Recycling			x				
Peace River Regional District							
Peace River Regional District			x				x
Tumbler Ridge			x				
Hudson's Hope			x				
EcoDepot				x			x
DC Recycling			x				
Chetwynd Lions Recycling			x				
Powell River Regional District							
Powell River Regional District			x				
City of Powell River	x						
Augusta			x				x
Powell River Recycling Collection Services				x	x		
Skeena Queen Charlotte Regional District							
Skeena Queen Charlotte Regional District			x				x
Squamish Lillooet Regional District							
Squamish Lillooet Regional District			x				x
District of Squamish	x		x				
Resort Municipality of Whistler			x				
Carneys			x		x		x
Waste Control Services					x		
Stikine Lillooet Regional District							
Stikine Lillooet Regional District							
Strathcona Regional District							
Comox Strathcona Waste Management			x				
City of Campbell River	x						
Village of Gold River			x				
Village of Tahsis			x				
Village of Zeballos			x				
BFI					x		
Emterra					x		x
Suncoast					x		
Cortes Island Recycling Depot			x				
Sunshine Coast Regional District							
Sunshine Coast Regional			x				

Appendix A – Summary of Services by Regional District

Organization	Collection Services		Depot	Subscription Collection Services		PPP Transfer Station	MRF
	SF	MF		SF	MF		
District							
District of Sechelt	x						
Direct Disposal				x	x		
Second Hans Recycling				x			
Coastline Recycling					x		
Gibsons Recycling Depot			x				x
GRIPS			x				
Thompson Nicola Regional District							
Thompson Nicola Regional District	x		x				
City of Kamloops	x	x					
Logan Lake	x						
Village of Chase	x						
Emterra							x

Appendix B

Households Receiving Collection Services

Appendix B – Households Receiving Collection Services

Regional District	Municipality	Type of Households	# of Households	# of HH Served by Single-Stream	# of HH Served by Multi-Stream	% of Total HH Receiving Collection	# of HH Not Receiving SF/MF Collection with Depot Access	% of HH Not Receiving SF/MF Collection with Depot Access
Alberni-Clyoquot RD		SF	10,720	8,999	0	84%	1,721	100%
		MF	1,454	0	0	0%	1,454	100%
Bulkley-Nechako RD		SF	13,561	450	0	3%	13,111	100%
		MF	989	0	0	0%	989	100%
Capital RD		SF	129,653	0	118,051	91%	11,602	100%
		MF	47,700	0	41,533	87%	6,167	100%
Cariboo RD	Williams Lake	SF	23,484	2,450	0	10%	14,336	68%
		MF	1,741	1,000	0	57%	741	100%
Central Coast RD		SF	1,170	0	0	0%	1,170	100%
		MF	15	0	0	0%	15	100%
Central Kootenay RD		SF	22,977	6,400	0	28%	16,577	100%
		MF	1,703	0	0	0%	1,703	100%
Central Okanagan RD		SF	53,868	0	52,000	97%	1,100	59%
		MF	13,000	0	0	0%	13,000	100%
Columbia-Shuswap RD		SF	19,549	5,958	0	30%	9,496	70%
		MF	1,631	0	0	0%	1,631	100%
Comox - Strathcona RD		SF	37,994	28,496	0	75%	9,499	100%
		MF	4,986	0	0	0%	4,986	100%
Cowichan Valley RD		SF	27,982	24,125	0	86%	3,857	100%
		MF	3,283	0	0	0%	3,283	100%

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Regional District	Municipality	Type of Households	# of Households	# of HH Served by Single-Stream	# of HH Served by Multi-Stream	% of Total HH Receiving Collection	# of HH Not Receiving SF/MF Collection with Depot Access	% of HH Not Receiving SF/MF Collection with Depot Access
East Kootenay RD		SF	20,774	1,400	0	7%	19,374	100%
		MF	2,646	0	0	0%	2,646	100%
Fraser-Fort George RD		SF	36,375	0	0	0%	36,375	100%
		MF	4,739	0	0	0%	4,739	100%
Fraser Valley RD		SF	714	324	0	45%	390	100%
		MF	0	0	0	0%	0	0%
	Abbotsford	SF	34,185	25,000	0	73%	0	0%
		MF	21,765	0	0	0%	21,765	100%
	Chilliwack	SF	26,004	19,585	0	75%	0	0%
		MF	7,339	0	0	0%	7,339	100%
	Harrison Hot Springs	SF	584	584	0	100%	0	0%
		MF	120	120	0	100%	0	0%
	Hope	SF	2,189	2,189	0	100%	0	0%
		MF	221	221	0	0%	0	0%
	Kent	SF	1,694	0	0	0%	1,694	100%
		MF	250	0	0	0%	250	100%
	Mission	SF	10,991	9,239	0	84%	0	0%
		MF	2,815	1,813	0	64%	0	0%
Kitimat-Stikine RD		SF	13,335	0	0	0%	415	3%
		MF	1,035	0	0	0%	0	0%

Appendix B – Households Receiving Collection Services

Regional District	Municipality	Type of Households	# of Households	# of HH Served by Single-Stream	# of HH Served by Multi-Stream	% of Total HH Receiving Collection	# of HH Not Receiving SF/MF Collection with Depot Access	% of HH Not Receiving SF/MF Collection with Depot Access
Kootenay Boundary RD		SF	17,383	4,434	7,121	66%	4,922	84%
		MF	3,000	303	706	34%	500	25%
Metro Vancouver RD	Anmore	SF	260	0	0	0%	0	0%
		MF	0	0	0	0%	0	0%
	Belcarra	SF	535	0	0	0%	0	0%
		MF	0	0	0	0%	0	0%
	Bowen Island	SF	1340	0	0	0%	0	0%
		MF	0	0	0	0%	0	0%
	Burnaby	SF	42,276	0	42,276	100%	0	0%
		MF	35,646	0	35,646	100%	0	0%
	Coquitlam, City of	SF	29,280	0	29,280	100%	0	0%
		MF	11,960	0	11,960	100%	0	0%
	Delta	SF	28,388	0	28,388	100%	0	0%
		MF	5,134	0	5,134	100%	0	0%
	Langley, City of	SF	4,788	4,788	0	100%	0	0%
		MF	5,782	5,782	0	100%	0	0%
	Langley, Township of	SF	32,166	0	32,166	100%	0	0%
		MF	2,525	0	2,525	100%	0	0%
	Lions Bay	SF	450	0	450	100%	0	0%
		MF	45	0	45	100%	0	0%

Appendix B – Households Receiving Collection Services

Regional District	Municipality	Type of Households	# of Households	# of HH Served by Single-Stream	# of HH Served by Multi-Stream	% of Total HH Receiving Collection	# of HH Not Receiving SF/MF Collection with Depot Access	% of HH Not Receiving SF/MF Collection with Depot Access
	Maple Ridge	SF	23,698	20,929	0	88%	2,769	0%
		MF	4,965	4,965	0	100%	0	0%
	New Westminster	SF	9,197	9,197	0	100%	0	0%
		MF	17,880	0	17,880	100%	0	0%
	North Shore (North Van, West Van, Dist of North Van)	SF	44,389	0	44,389	100%	0	0%
		MF	23,233	0	23,233	100%	0	0%
	Pitt Meadows	SF	4,883	0	4,883	100%	0	0%
		MF	943	0	943	100%	0	0%
	Port Coquitlam	SF	14,848	14,848	0	100%	0	0%
		MF	3,852	2,311	0	60%	0	0%
	Port Moody	SF	7,594	7,594	0	100%	0	0%
		MF	2,531	2,531	0	100%	0	0%
	Richmond	SF	42,510	0	42,510	100%	0	0%
		MF	18,920	0	18,920	100%	0	0%
	Surrey	SF	100,978	100,978	0	100%	0	0%
		MF	30,293	30,293	0	100%	0	0%
	University Endowment Lands	SF	445	123	0	28%	322	100%
		MF	0	0	0	0%	0	0%
	Vancouver,	SF	104,141	0	104,141	100%	0	0%

Appendix B – Households Receiving Collection Services

Regional District	Municipality	Type of Households	# of Households	# of HH Served by Single-Stream	# of HH Served by Multi-Stream	% of Total HH Receiving Collection	# of HH Not Receiving SF/MF Collection with Depot Access	% of HH Not Receiving SF/MF Collection with Depot Access
	City of	MF	149,497	0	149,497	100%	0	0%
	Whiterock	SF	4,472	0	4,472	100%	0	0%
		MF	5,043	0	5,043	100%	0	0%
Mount Waddington RD Nanaimo RD		SF	4,319	0	260	6%	4,059	100%
		MF	371	0	0	0%	371	100%
	Regional District	SF	26,200	26,200	0	100%	0	0%
		MF	983	0	0	0%	983	0%
	Nanaimo, City of	SF	25,201	0	25,201	100%	0	0%
		MF	8,058	0	0	0%	8,058	0%
North Okanagan RD	Regional District	SF	28,974	28,974	0	100%	0	0%
		MF	4,781	0	0	0%	0	0%
	Spallumcheen	SF	1,833	1,833	0	100%	0	0%
		MF	0	0	0	0%	0	0%
Northern Rockies RD		SF	2,026	0	0	0%	0	0%
		MF	279	0	0	0%	0	0%
Okanagan-Similkameen RD		SF	29,038	29,038	0	100%	0	0%
		MF	6,202	4,652	0	75%	1,550	100%
Peace River RD		SF	19,632	0	0	0%	19,632	100%
		MF	2,703	0	0	0%	2,703	100%

Appendix B – Households Receiving Collection Services

Regional District	Municipality	Type of Households	# of Households	# of HH Served by Single-Stream	# of HH Served by Multi-Stream	% of Total HH Receiving Collection	# of HH Not Receiving SF/MF Collection with Depot Access	% of HH Not Receiving SF/MF Collection with Depot Access
Powell River RD		SF	12,671	5,038	0	40%	7,633	100%
		MF	1,141	0	0	0%	1,141	100%
Skeena-Queen Charlotte RD		SF	6,946	0	0	0%	6,946	100%
		MF	859	0	0	0%	859	100%
Squamish-Lillooet RD		SF	12,059	5,260	0	44%	6,799	100%
		MF	1,931	0	0	0%	1,931	100%
Stikine RD		SF	495	0	0	0%	0	0%
		MF	0	0	0	0%	0	0%
Sunshine Coast RD		SF	10,962	4,192	0	38%	6,770	100%
		MF	1,218	0	0	0%	1,218	100%
Thompson-Nicola RD		SF	43,121	38,809	0	90%	4,312	100%
		MF	7,254	6,270	0	86%	984	100%
Totals		SF	1,225,303	437,433	535,588	79%	204,882	81%
		MF	474,460	60,261	313,065	79%	91,005	90%
Total Households Receiving Type of Collection Service		Total	1,699,763	497,695	848,653		295,887	
% of Households Receiving Type of Collection Service		%		29%	50%		17%	

Appendix C

Packaging and Printed Paper Accepted in Local Government Collection Systems

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
Alberni Clayoquot RD	SF Curbside	√	√	√		√	√	√	√	√	√	√	√				√	√				√	√	√				
	MF Coll Service																											
	Drop-off Depot	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√		√	
	Recycling area (landfill/tx)	√	√	√		√	√	√	√	√	√	√	√				√	√				√	√	√			√	
	Collection Event																											
Bulkley-Nechako RD	SF Curbside (Telkwa)	√	√	√			√	√																				
	Drop-off Depot							√														√	√	√	√	√	√	
Capital RD	SF Curbside	√	√	√		√	√	√	√													√	√	√		√	√	
	MF Coll Service	√	√	√		√	√	√	√													√	√	√		√	√	
	Drop-off Depot (Port Renfrew)	√	√	√		√	√	√	√													√	√	√	√	√	√	
	Drop-off Depot (Oak Bay)	√	√	√		√	√	√	√	√												√	√	√	√	√		
	Drop-off Depot (Gulf Islands)	√	√	√	√	√	√	√	√	√									√			√	√	√	√	√	√	
	Recycling area (Hartland)	√	√	√	√	√	√	√	√	√												√	√	√	√	√	√	
	Collection event (Piers)	√	√	√	√	√	√	√	√	√									√			√	√	√	√	√	√	
Cariboo RD	Recycling area (landfill/tx)	√	√					√	√													√		√				
Williams Lake	SF Curbside	√	√	√	√	√	√	√	√	√												√	√	√	√	√		

²⁹ Not included in printed paper.
³⁰ Not included in printed paper.

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
	MF Coll Service	√	√	√	√	√	√	√	√	√												√	√	√	√	√		
	Drop-off Depot																										√	
	Recycling area (landfill/tx)	√	√	√	√	√	√	√	√	√												√	√	√	√	√		
Quesnel	Drop-off Depot	√	√	√	√	√	√	√	√													√	√	√	√	√	√	
	Recycling area (landfill/tx)	√	√	√	√	√	√	√	√													√	√	√	√	√	√	
Central Coast RD	Drop-off Depot														√							√	√	√	√	√	√	
Central Kootenay RD	SF Curbside	√	√	√			√	√			√	√	√	√	√		√	√			√	√						
	Drop-off Depot	√	√	√			√	√			√	√	√	√	√		√	√			√	√					√	
Central Okanagan RD		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	MF Coll Service	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	Drop-off Depot	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	Recycling area (landfill/tx)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	Collection Event																											
Columbia-Shuswap RD	SF Curbside	√	√	√	√	√	√	√	√	√												√	√	√				
	Drop-off Depot	√	√	√	√	√	√	√			√	√	√	√	√	√		√		√		√					√	
Comox - Strathcona RD	SF Curbside	√	√	√			√	√	√	√												√		√				√
	Drop-off Depot	√	√	√			√	√	√													√		√				
	Recycling area (landfill/tx)	√	√	√			√	√	√													√	√	√	√	√	√	
Cowichan Valley RD	SF Curbside	√	√	√			√	√	√	√												√	√	√				
	Drop-off Depot	√	√	√			√	√	√	√												√	√	√			√	

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
	Recycling area (landfill/tx)	√	√	√			√	√	√	√									√			√	√	√	√	√	√	
East Kootenay RD	SF Curbside (Invemere)			√				√			√	√	√	√	√	√	√	√		√		√						
	Drop-off Depot			√				√			√	√	√	√	√	√	√	√		√		√				√		
Fraser-Fort George RD	SF Curbside																											
	MF Coll Service																											
	Drop-off Depot	√	√	√		√	√	√							√							√		√				
	Recycling area (landfill/tx)	√	√	√		√	√	√							√							√		√				
Fraser Valley RD	SF Curbside	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√		√	√	√	√			√	√	
	Recycling area (landfill/tx)	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√		√	√	√	√			√	√	
Abbotsford	SF Curbside	√	√	√	√	√	√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√	√	√	√	√			√	√	√	√	√		√	√				√	√	√			√	
	Drop-off Depot	√	√	√	√	√	√	√			√	√	√	√	√		√	√				√	√	√			√	
Chilliwack	SF Curbside	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√		√			√	√
	MF Coll Service	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√		√			√	√
	Drop-off Depot	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√		√			√	√
	Recycling area (landfill/tx)	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√		√			√	√
Harrison Hot Spring	SF Curbside	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√		√			√	√
Hope	SF Curbside	√	√	√		√	√	√		√	√	√	√	√	√	√	√	√		√	√	√		√			√	
Kent	Drop-off Depot	√	√	√		√	√	√	√													√		√			√	

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
Mission	SF Curbside	√	√	√		√	√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√		√	√	√			√	√	√	√	√		√	√				√	√	√			√	
	Drop-off Depot	√	√	√		√	√	√			√	√	√	√	√		√	√				√	√	√			√	
Kitimat-Stikine RD	Recycling area (landfill/tx)														√							√	√	√	√	√	√	
Kootenay Boundary RD	SF Curbside	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√			√	
	MF Coll Service	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√			√	
	Drop-off Depot	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√			√	
	Recycling area (landfill/tx)	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	
	Collection Event																											
Metro Vancouver RD																												
Burnaby, City of	SF Curbside	√	√	√			√			√	√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√			√			√	√	√	√	√	√		√	√				√	√	√			√	
	Drop-off Depot	√	√	√	√	√	√	√		√	√	√	√	√	√		√	√				√	√	√			√	
Coquitlam, City of	SF Curbside	√	√	√			√				√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√			√				√	√	√	√	√		√	√				√	√	√			√	
	Drop-off Depot	√	√	√	√	√	√	√			√	√	√	√	√		√	√				√	√	√			√	
	Recycling area (landfill/tx)																											
	Collection Event																											
Langley, City of	SF Curbside	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	Drop-off Depot																											
	Recycling area																											

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
	(landfill/tx)																											
	Collection Event																											
Langley, Township of	SF Curbside	√	√	√	√	√	√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√	√	√	√	√			√	√	√	√	√		√	√				√	√	√			√	
Lions Bay	SF Curbside	√	√		√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	
	MF Coll Service	√	√		√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
Maple Ridge / Ridge Meadows	SF Curbside	√	√	√		√	√	√	√	√	√	√	√	√	√		√	√				√	√	√		√	√	
	MF Coll Service	√	√	√		√	√	√	√	√	√	√	√	√	√		√	√				√	√	√		√	√	
	Drop-off Depot	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√				√	√	√	√	√	√	
	Recycling area (landfill/tx)																											
	Collection Event																											
New Westminster	SF Curbside	√	√	√		√	√	√		√	√	√	√	√	√		√	√				√		√			√	
	MF Coll Service	√	√	√		√	√	√		√	√	√	√	√	√		√	√				√		√			√	
	Drop-off Depot	√	√	√		√	√	√		√	√	√	√	√	√		√	√				√		√	√	√	√	
	Recycling area (landfill/tx)																											
	Collection Event																											
North Shore	SF Curbside	√	√	√		√	√	√		√	√	√	√	√	√		√	√				√		√			√	
	MF Coll Service	√	√	√		√	√	√		√	√	√	√	√	√		√	√				√		√			√	
	Drop-off Depot	√	√	√		√	√	√		√	√	√	√	√	√		√	√				√		√	√	√	√	

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
	Recycling area (landfill/tx)																											
	Collection Event																											
Pitt Meadows	SF Curbside	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	MF Coll Service	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
Port Coquitlam	SF Curbside	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√				√	√	√	√	√		
	MF Coll Service	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√				√	√	√	√	√		
	Drop-off Depot																										√	
	Recycling area (landfill/tx)																											
	Collection Event																											
Port Moody	SF Curbside																		√					√				
	MF Coll Service																		√					√				
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
Richmond	SF Curbside	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	Drop-off Depot	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	Recycling area (landfill/tx)																											

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
	Collection Event																											
Surrey	SF Curbside	√	√	√			√	√			√	√	√	√	√		√	√				√		√			√	
	MF Coll Service	√	√	√			√	√			√	√	√	√	√		√	√				√		√			√	
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
University Endowment Lands	SF Curbside	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service																											
	Drop-off Depot	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	Recycling area (landfill/tx)																											
	Collection Event																											
Vancouver, City of	SF Curbside	√	√	√			√	√			√	√	√	√	√		√	√				√	√	√			√	
	MF Coll Service																											
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
Mount Waddington RD	SF Curbside (Alert Bay)			√				√	√													√	√	√				√
	Drop-off Depot																					√	√	√				
	Recycling area (landfill/tx)			√				√	√													√	√	√	√	√		√
Nanaimo RD	SF Curbside	√	√	√			√	√			√	√	√	√	√			√				√	√	√				
	MF Coll Service																											

Appendix C – Packaging and Printed Paper Accepted in Local Government Collection Systems

Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
	Drop-off Depot																										√	
	Recycling area (landfill/tx)	√	√	√			√	√														√	√	√	√	√		
	Collection Event																											
Nanaimo, City	SF Curbside	√	√	√		√	√	√	√													√	√	√				
	MF Coll Service																											
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
North Okanagan RD	SF Curbside	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√		√	√	√	√					
	MF Coll Service																											
	Drop-off Depot	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	Recycling area (landfill/tx)																											
	Collection Event																											
Spallumcheen	SF Curbside	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√					
	MF Coll Service																											
	Drop-off Depot																											
	Recycling area (landfill/tx)																											
	Collection Event																											
Northern Rockies RD	No PPP collection																											
Okanagan-Similkameen	SF Curbside	√	√	√		√	√	√	√	√												√		√				
	MF Coll Service	√	√	√		√	√	√	√	√												√		√				

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Regional District	Type of Service	Paper							Plastics													Metal					Glass containers	Aseptic containers
		Newspaper	Office paper	Mixed waste paper	Books hard cover ²⁹	Books soft cover ³⁰	Phone books	Corrugated cardboard	All rigids	All soft	1 - PET bottles	1 - PET other	2 - HDPE clear	2 - HDPE coloured	2 - Milk jugs	3- PVC	4 - LDPE	5 - PP	6 - PS foam	6 - PS (other than foam)	7 - other	Aluminum cans	Aluminum foil and plates	Steel cans	Metal paint cans (empty)	Other metal packaging		
RD	Recycling area (landfill/tx)	√	√	√		√	√	√	√	√												√		√			√	
Peace River RD	Drop-off Depot	√	√	√	√	√	√	√	√	√												√		√			√	
	Recycling area (landfill/tx)	√	√	√	√	√	√	√	√	√												√		√				
Powell River RD	SF Curbside	√	√	√		√	√	√	√	√												√		√			√	
	Drop-off Depot	√	√	√		√	√	√	√	√												√		√			√	
Skeena-Queen Charlotte RD	Drop-off Depot	√	√	√		√	√	√			√	√	√	√	√							√		√				
Squamish-Lillooet RD	SF Curbside	√	√	√		√	√	√			√	√	√	√	√	√	√	√				√		√				
	Drop-off Depot	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√		√			√	
	Recycling area (landfill/tx)	√	√	√		√	√	√			√	√	√	√	√	√	√	√				√		√				
Stikine RD	No PPP collection																											
Sunshine Coast RD	SF Curbside	√	√	√		√	√	√	√	√	√											√	√	√				√
	Drop-off Depot	√	√	√	√	√	√	√	√	√												√	√	√			√	
	Recycling area (landfill/tx)	√	√	√	√	√	√	√	√	√									√			√	√	√	√	√		
Thompson-Nicola RD	Drop-off Depot	√	√	√		√	√	√	√	√												√	√	√			√	
	Recycling area (landfill/tx)	√	√	√		√	√	√	√	√												√	√	√			√	
	SF Curbside (Kamloops)	√	√	√		√	√	√	√													√		√			√	
	MF Coll Service (Kamloops)	√	√	√		√	√	√	√													√		√			√	