



TO: Patrick Donaghy
Operations Manager

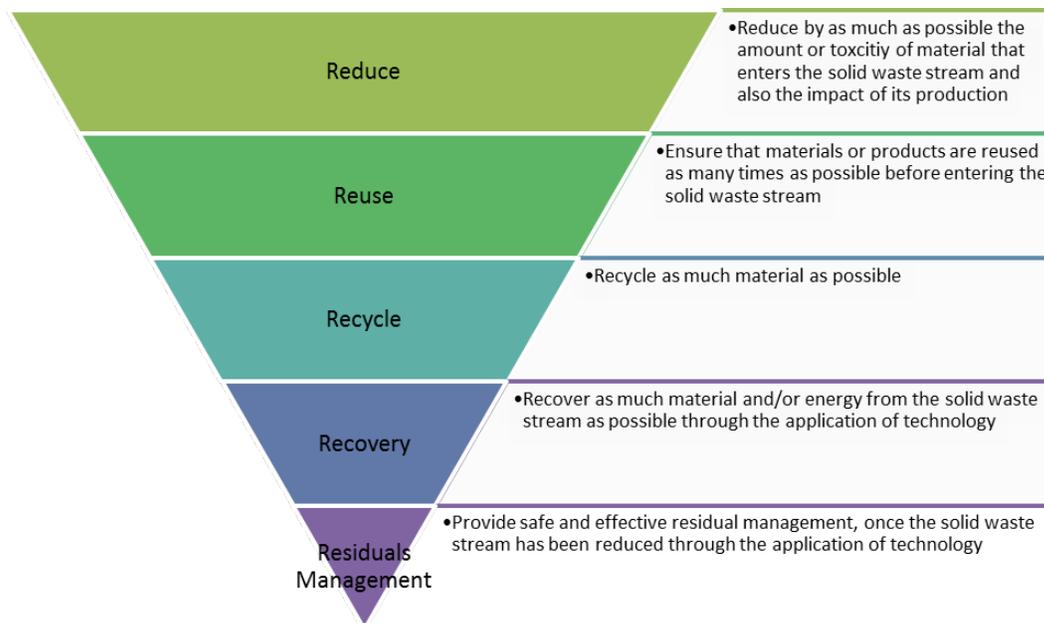
DATE: November 28, 2019

FROM: Maura Walker

SUBJECT: Options to Reduce the Amount of Waste Landfilled

This memorandum provides an overview of many the available options to reduce the amount of waste sent to landfill in the RDMW and is intended to introduce the members of the Regional Solid Waste Management Plan Advisory Committee (RSWMPAC) to a broad range of possible options in advance of their meeting on December 5th, 2019. At this meeting, each of these options will be presented and there will be an opportunity for committee members to ask questions, recommend additional options, and provide feedback on all of the options.

The options presented are associated with the first 4 tiers of the pollution prevention hierarchy (see figure below) and are intended to minimize the amount of residual waste that needs to be managed (the 5th tier). Readers of this memo are encouraged to refer to the Existing System Report (November 2019) for a description of the current waste management system in RDMW, and a list of the system's strengths, challenges and opportunities.





Key Opportunities for Waste Minimization

Based on the Existing System Report, there are three key areas of opportunity to reduce the per capita amount of waste sent for disposal:

- a. **Organic waste:** food scraps, yard waste and soiled paper (paper toweling, tissues, etc.) together represent the largest component, by weight, of the materials landfilled and also is the most significant contributor to the creation landfill gas.
- b. **Demolition Waste:** In 2018, loads of demolition waste represented one-third, by weight, of the waste landfilled at 7 Mile. These loads are typically composed of wood, metal, asphalt shingles and other materials that are potentially divertible to other uses.
- c. **Continuous Improvement:** The RDMW is well-served with recycling collection services and the population has, for the most part, embraced recycling both in terms of the amount of material recycled and the low level of contamination of the materials collected for recycling. It will be important to maintain the enthusiasm for recycling through financial signals, as well as promotion and education. In addition, as new opportunities for diversion are established, the population will need to be informed and engaged to take advantage of the current momentum.

Organic Waste Management

Diverting organic waste from landfill disposal is garnering a lot of attention by many BC communities. This is because organic waste, comprised primarily of yard waste, food waste and food-soiled paper from businesses and households, not only represents the largest component of landfilled waste by weight (35-40%), but also generates methane, a potent greenhouse gas, during decomposition in a landfill. Further, organic waste contributes to the generation of landfill leachate that must be managed as part of the operation of the landfill in order to ensure that this liquid is not released into the environment.

The options listed below target organic waste from homes, businesses and institutions. Currently, yard waste drop off options are available to most communities. Much of this material is ground at 7 Mile, along with wood waste, then composted with biosolids. The compost is used at the landfill site. Food waste and soiled paper is not collected and composted.

RDMW encourages yard waste to be separated from garbage by charging a significantly lower tipping fee on yard waste and allowing garden waste that does not require grinding ("fine garden waste") to be dropped off at 7 Mile for free.

Options to reduce the amount of organic waste landfilled include:

- a. Food waste reduction
- b. Food waste processing
- c. Food waste collection
- d. Support mechanisms: can limits, disposal restrictions, promotion/education, attractive tipping fee (lower than garbage rate)



Organic Waste Reduction

To avoid the costs associated with the collection and processing of organics many communities encourage reduction initiatives such as backyard composting and food waste avoidance programs. RDMW already promotes backyard composting by offering residents backyard composters at a subsidized rate and having compost-related educational materials available on their website. Other potential initiatives include:

a. Food waste reduction campaigns, like “Love Food Hate Waste”

Inevitably, some food waste is unavoidable – this is the food that can’t generally be sold or eaten, such as bones, vegetable peelings, egg shells, tea bags, and coffee grounds.

Avoidable food waste is the edible food that ends up in the compost or in the bin. Unfortunately, we often waste good food because we buy too much, cook too much, or don’t store it correctly.. In 2017 the National Zero Waste Council conducted research on household food waste in Canada, and the results were astonishing.

- 63% of the food Canadians throw away could have been eaten.
- For the average Canadian household that amounts to 140 kilograms of wasted food per year – at a cost of more than \$1,100 per year!

All types of food are wasted, but in Canada the most prominently wasted foods by weight are:

- Vegetables: 30%
- Fruit: 15%
- Leftovers: 13%
- Bread and Bakery: 9%
- Dairy and Eggs: 7%



Love Food Hate Waste (LFHW) is a proven behaviour change campaign that, in its first five years, helped cut avoidable food waste by 21 percent. LFHW Canada promotes simple steps to reduce food waste, from storing food so it stays fresh to using up leftovers to meal planning. Through Zero Waste Canada, all campaign materials and tools are available for free for any organization to use. The RDMW could implement either one of these programs at a relatively low cost.

b. Continue to support backyard composting but also promote other approaches to self-management of organic waste which can accommodate a broader range of organic wastes than backyard composters, e.g. Green Cone Digesters, Bokashi (pictured below). The Victoria Compost Education Centre promotes digesters as a means of on-site management of pet waste. They provide workshops and on-line resources on how to use Digesters. The Powell River Community Compost Centre gives free workshops on using Bokashi as a means of turning food scraps into a soil fertilizer, as well as how to turn an old chest freezer into a composter.



Green Cone Digester



Bokashi

c. Enhance education / outreach on self-management of organic waste, e.g.:

- At home Compost Coaching (see Case Study)
- Information booths at farmers markets, home shows and other appropriate venues



Case Study: Compost Coaching. The former North Shore Recycling Program focused on waste reduction, recycling and composting for three municipalities on the North Shore. In 2007 they developed a Compost Coaching program to reduce the organics in the collected garbage. In the first year they worked with 156 local residents at their homes to improve their composting through hands on coaching at their residences. Intended to be fun, informal and based on the residents' needs, the coach would base the conversation on participants' questions, level of knowledge and condition of their compost bin. The 30-45 minute session would cover basic composting as well as tips for coexisting with bears. This coaching resulted in an additional 36 kg of organic material composted on site per capita for households that were already composting, and 190 kg per capita for households that had not composted before.

- d. Promote grasscycling (leaving lawn clippings on a lawn) which reduces yard waste and reduce the need for watering
- e. Encourage and support fruit tree gleaning programs (typically a volunteer-run effort where homeowners allow the volunteers to harvest of excess fruit and vegetables for redistribution to the community, including food banks)
- f. Link the promotion of on-site management of organic waste with WildSafeBC education initiatives.
- g. Establish a mechanism to connect commercial and institutional food waste generators (e.g. grocers, bakeries, caterers, restaurants, hospitals) with potential users, to feed both people and/or animals



Collection of Organics

Once local processing capacity for organic waste is available (see the next subsection of this memo), local governments can provide organic waste collection services to residents and businesses currently receiving curbside collection services.

Residential collection opportunities include:

- a. Adding organic waste to existing curbside collection services that are within proximity of a composting facility. The targeted organic waste may be food waste only, or combined food and yard waste, depending on the type of composting facility available.
- b. Establishing drop-off depots for residents without curbside collection when the community is within reasonable transportation distance to a composting facility.

The table below provides some examples of organic waste curbside collection services in other BC jurisdictions. Residential curbside programs that collect recycling and food waste typically find that 60-65% of the total amount waste set out by homes is diverted (i.e. only one third is garbage).

Sample of BC Organic Waste Curbside Collection Programs

	Organic waste streams collected	Frequency of collection	Collection Container	Organics banned from garbage?	Bags allowed?
District of Squamish 6,500 homes	Commingled food and yard waste	Biweekly (Weekly in summer)	246L cart for SF homes; 120L cart available to townhouses only	Yes	Paper only
City of Terrace 3,500 homes	Commingled food and yard waste; plus yard waste only (April to Nov)	Weekly	120L fully automated carts	Yes	Paper only
Town of Comox 4,450 homes	Commingled food and yard waste	Weekly	Residents supply their own cans (max 77L) with a sticker supplied by the Town	Yard waste only	Paper only
District of North Cowichan 12,000 homes	Food waste only	Weekly	34L green bin	Yes	Compostable plastic and paper



Participation by the Industrial, Commercial and Institutional (ICI) Sector in Organic Waste Diversion



In many parts of BC, organics collection programs for the ICI sector are operated by private hauling companies and are limited to food waste only. In the RDMW, this would be the case for any organic waste generator whose weekly volume exceeds what can be collected through the municipally-provided service.

Depending on the quantity of food waste, generators use plastic garbage cans to collect food waste from kitchens while private haulers utilize plastic carts and metal bins to collect food waste outside of commercial establishments. Disposal bans on organic waste have driven strong participation in these collection programs in the Regional District of Nanaimo, Cowichan Valley Regional District and Capital Regional District. To drive ICI participation in organic waste diversion (once composting capacity is in place), the RDMW could ensure that the tipping fee for organics is much lower than the one for garbage, and make ICI organic waste a “controlled waste” like cardboard is currently.



Organic Waste Processing

Options to divert organic waste (yard waste and food scraps) from the residential and ICI sectors are described above. The approaches, however, can only be accomplished if there is the capacity to process the collected materials.

Decisions regarding the collection of organics from the residential and ICI sectors will impact the type and design of any associated processing facility, and vice versa. Options associated with food waste processing are:

- a. Establish a centralized composting facility that can manage food waste at 7 Mile. The selection of processing technology would be largely affected by:
 - Anticipated feedstocks;
 - Amount and location of available land;
 - Surrounding and uses available buffers;
 - Budget; and
 - Anticipated end markets for the compost product.
- b. Determine if there is private sector interest in providing food waste composting capacity through an RFP process
- c. For remote communities, assess the potential for establishing local composting facilities for yard waste, or commingled food and yard waste. Associated with this would be to undertake a needs assessment on a community by community basis. It is common for municipalities to collect yard





waste and then static pile compost the material in their municipal works yard or park facilities (e.g. City of Terrace). In recent years, the Regional District of Kootenay Boundary has set up a small windrow composting facility (low tech) at their Grand Forks landfill for food waste and yard waste. Community composting sites are also used as small scale options for food waste diversion. In the City of Powell River, the local composting demonstration garden (pictured right) receives food scraps from residents and small businesses for composting in one of their many demonstration compost bins. The garden is also used to provide free workshops on the many options for home management of organic waste.

Construction / Demolition Waste Diversion

The RDMW encourages the source separation of wood waste (the largest component of construction and demolition waste) through offering the incentive of a low tipping fee compared to regular garbage.

This section of the report outlines options to reduce the quantity of waste from construction, renovation and demolition projects that is sent to landfill.

1. **Expand the definition of “controlled waste” to include clean wood waste and asphalt shingles.**
2. **Require waste management plans for large construction, demolition and renovation projects.**
These plans would require contractors to pre-plan for how they will manage the wastes generated at the project site, and may require that specific materials are source separated for reuse or recycling as a condition of building/demolition permits. Contractors would be required to prepare a waste management plan and track materials throughout the project. An example of this approach is Port Moody, as described in the case study below.

Case Study: Port Moody mandatory solid waste management plans

Port Moody Waste Management Bylaw No.2822 regulates the amount of waste generated by new construction or demolition of structures sent to the landfill. A waste management plan is required for every building permit application. In addition to submitting a waste management plan in order to get a permit, contractors must pay a fee, like a deposit, that is refunded once the contractor has demonstrated that they implemented their plan. A Compliance Report must be submitted to the Building Official with attached receipts from recycling facilities and landfills indicating the amounts of each material recycled and disposed of. The following types of projects are exempt:

- Small renovations to Single Family Dwellings.
- Buildings under 50 square meters in area.
- Additions under 20 square meters in area.
- Buildings certified to LEED standard



5. **Restructure permit fees** to provide a financial incentive for building deconstruction (to maximize the recovery of reusable and recyclable components) over demolition.



7. **Provide a DRC waste management information**, including information on recycling and reuse options, as well tipping fees and disposal bans, to all persons applying for a building permit. This same information could also be posted on the regional district and municipal websites and hard copies could be available at building material suppliers and hardware stores.
8. **To assist in developing effective tools for C&D waste diversion, consult with local industry associations to determine diversion-related barriers and needs.**
9. **Lobby to have construction materials as part of an EPR program.** Encourage the Province to follow through with their EPR strategy that includes placing construction materials under the Recycling Regulation (i.e. requiring the manufacturers and retailers to establish a collection and processing program across BC).

Education and Outreach

The success of waste management programs and policies requires that people know and understand why and how to effectively participate. Promotion and education, therefore, are critical to all components of the solid waste management system, including those focused on waste reduction and diversion. In addition, introducing new services or changes to existing ones may also require a level of community consultation to ensure a smooth implementation.

Local governments in the RDMW that provide solid waste services provide information on their respective websites in regards to the services they provide.

The following options are proposed to enhance promotion and education in general:

- a. Working collaboratively with other key stakeholders provides the opportunity to benefit from economies of scale and better leveraging of public dollars. It can support municipalities and First Nations without dedicated solid waste or communications staff, and provide a more consistent message and brand identity for use by all parties.
- b. Shift use of traditional print media to use of on-line media, including apps, to take better advantage of the extensive use of smart phones by the public as a means of conveniently sourcing relevant, up-to-date information. See the RDCO case study below.
- c. Implement an educational outreach program targeting school children that focuses on the waste management hierarchy and individual responsibility. Targeting students can influence longer-term effectiveness as students bring home new ideas and practices that can impact others in the household. For example, Regional District's such as the Fraser Fort George Regional District, Regional District of Nanaimo and the Powell River Regional District contract with individuals or non-profit organizations to provide teachers with curriculum-based materials and to deliver classroom presentations on "zero waste," recycling, composting, hazardous wastes and more.



Case Study: RDCO My Waste App: IN recent years the Regional District of Central Okanagan implemented and promoted the My Waste app to residents. Once the app is loaded, the resident receives relevant information pushed directly to their mobile device or email. This includes reminders for ongoing services like waste, recycling and yard waste collection weeks as well as special events such as composter sale, repair cafes and trunk (reuse) sale. It is also used to report illegal dumping.

Be a
Better Recycler
with the
my-waste® app

You get:

- A personalized collection schedule
- Custom pick-up reminders
- A "What Goes Where?" Search tool
- And more!

Download on the App Store
 Get it on Google Play

Residential Recycling

The vast majority of RDMW residents have access to curbside or depot recycling collection. Data from Recycle BC (the EPR organization responsible for residential recycling in BC), indicates the people in RDMW are good recyclers, with an average amount of recyclables collected per capita (41 kg per capita, compared to the provincial average of 40 kg) and one of the lowest contamination rates in the province.

The table below shows how RDMW stacks up against some comparable regional districts in BC, and indicates that there may be some room to increase the amount of material recovered per capita. The second table, which shows the recycling rate by community, also supports this supposition, showing that there is some variation in the per capita recovery rates by area.

Regional District	Recycling / Capita (kg)
Mount Waddington	41
Central Coast	30
Strathcona	46
Comox Valley	52
Alberni Clayoquot	42

Community	Population (kg)	Curbside (kg)	Depot (kg)	Total (kg)	Recycling / Capita (kg)
Alert	1095	22916	10769	33685	31
Bay/Cormorant					
Port Hardy	4271	76198	49181	125379	29
Port McNeill	2337	61513	50046	111559	48
Port Alice	664	0	26553	26553	40
Malcolm Island	684	0	32187	32187	47
Comm of Quatsino	43	0	2679	2679	62
Coal Harbour	206	6069	0	6069	29
Woss	189	0	9172	9172	49
Winter Harbour	20	0	4363	4363	218
Electoral Areas	1570	0	90058	90058	57



To maintain and improve current residential recycling levels, the following options can be considered:

- a. On-going engagement with residents: Conduct annual engagement events (contests, rewards, campaigns) to raise and maintain awareness of the recycling services available in the community, tackle emerging issues, and ensure residents are aware of program changes
- b. Consider implementing curbside collection for homes near existing routes (assuming RBC is willing to pay incentives), if there is interest from residents in these areas.

ICI Recycling

To encourage businesses to engage in recycling the RDMW uses two approaches:

- Differential tipping fees that apply different per tonne charges to the various categories of waste materials delivered to a transfer station or landfill. Differential fees are used to encourage commercial waste generators and haulers to source-separate their waste materials for diversion.
- Designating cardboard as a “controlled waste”, which means that loads of garbage containing cardboard can be charged double the regular tipping fees.

For the most part these approaches have been successful and minimal cardboard is observable in the garbage sent to 7 Mile landfill. To maintain and expand the breadth of ICI recycling in the RDMW, the following options could be considered:

- a. As markets for recyclables improve and expand, RDMW should continue to apply the approach of differential tipping fees and the designation of “controlled waste” to encourage source separation of additional materials.
- b. Lobby the Province to include ICI-generated packaging and papers as a schedule in the Recycling Regulation (similar or the same as one for residential packaging and papers).

Harder to Recycle Items

In recent years, several local governments have looked to see what other materials could be targeted for diversion to recycling or some form of reuse. The most common materials have been mattresses, textiles and asphalt shingles. Asphalt shingles are currently being diverted at 7 Mile, however, the following options could also be considered:

- a. For mattresses, the following approaches could be implemented
 - i. Deconstruction of the mattress into its component parts (fabric, foam, wood, metal) and send to market
 - ii. Send to a recycler in Victoria or the Lower Mainland
 - iii. Encourage the Province to include mattresses under EPR
- b. For textiles, the following approaches could be implemented
 - i. Collect at RDMW facilities on behalf of a social service organization
 - ii. Collect at 7 Mile, bale, and ship to textile consolidator
 - iii. Encourage the Province to include under EPR



- c. RDMW receives large volumes of waste from large industrial generators that may be of value to other users and/or recyclers. RDMW could work with large industrial waste generators, such as the local aquaculture industry, to identify appropriate waste management solutions for key components of their waste (e.g. reduced tipping fees to support source separation, research funds to look at alternative materials that could be recycled rather than disposed, etc.)

Reduction and Reuse

Reduction and reuse prevent waste from entering the waste management system and ultimately conserve resources. Although reduction and reuse are at the top of the waste management hierarchy, they are generally given the least amount of attention as local government mechanisms to manage waste. In BC we have achieved some level of success in diverting a portion of the waste we generate to recycling and composting, but overall we are still discarding as much waste today per capita as we did ten years ago. The lack of local government resources dedicated to “reduce and reuse” is likely due to the daunting task of figuring out how a local government can effectively tackle the consumer lifestyle that many citizens have fully embraced, not to mention how to influence the environmental design of products and packaging that comes from all corners of the globe. Further, the impact of reduction and reuse programs can be difficult to measure (compared to recycling programs) and therefore it is challenging to rationalize public expenditures in support of reduction and reuse programs. Real change will ultimately have to be driven from the consumer level. This can be driven by consumer demand for more durable goods, and by the extended use of goods already in service.

The following options are put forward as means of supporting the reduction of waste and the reuse of materials (in addition to those listed under the Organic Waste Reduction earlier in the report).

- a. **Develop regional campaigns to encourage reduction and reuse behavior** (encouraging use of reusable bags and refillable mugs, green giving, etc.). Examples include Squamish’s “Take Back the Tap” campaign that aimed to reduce single-use water bottles, and Metro Vancouver’s annual campaign “Make Memories, Not Garbage” that promotes gifts of experience over material goods. These campaign materials are generally offered for free to other local governments.
- b. **Host or coordinate reuse events.** The RDMW could facilitate reuse events across the region to assist with the reuse of goods rather than the disposal of them. Many governments coordinate or host annual events additional events like:
 - The Regional District of Fraser-Fort George’s “Junk in the Trunk” sale that is held in parking lots across the region
 - Squamish’s Re-Use It Fair is similar to a giant yard sale except that everything is free and indoors.
 - The City of Nanaimo holds an annual Reuse Rendezvous where for one weekend each spring residents can put reusable goods out on the curb with a distinct tag for others to pick up for free. Leftover items must be taken back in by the resident. The cost of this program is limited to promotion and the printing of tags.





- c. **Support residents to reduce and reuse.** Support, promote or host events that support residents in learning how to reuse rather than discard. Examples include:
 - Holding repair cafes (“repair your stuff” training workshops)
 - Art classes using reused/salvages materials
 - Upcycling workshops
 - Establish lending libraries for tools, toys, etc. At the Pender Island Recycling depot, there is a full set of roughly 100 table settings (dishes, cutlery, glassware, coffee cups) for use by any member of the community. The materials are items that were donated to the depot (they don’t all match!) and are stored in plastic crates so that they can be lent out in a manner similar to borrowing a book from a library. Another example of an equipment library is the Vancouver Tool Library, a cooperative tool lending library that loans a wide variety of tools for home repair, gardening, and bicycle maintenance. They also offer low-cost workshops on tool related skills and projects.

- d. **Promote available repair, rental, thrift and other “reuse” oriented organizations/businesses.** This could be done by having an on-line listing that is updated annually.

Extended Producer Responsibility

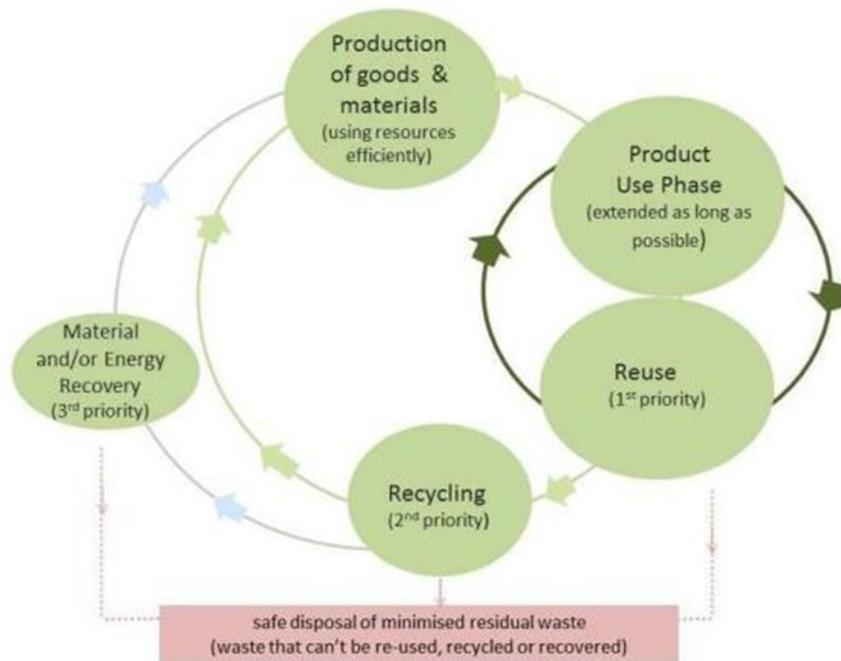
Extended Producer Responsibility (EPR) is a provincial policy tool that aims to shift the responsibility for end-of-life management of products (physically and economically) to the producer and away from local governments. In BC, the Recycling Regulation defines which materials and products are designated for EPR. The RDMW is reasonably well serviced with take back program for all of the materials designated under the Recycling Regulation, however there are additional actions that could be considered to improve EPR:

- a. Lobby the province to include ICI packaging and papers, mattresses, construction materials and textiles in the Recycling Regulation (as also recommended in other sections of this memo)
- b. Lobby the Province and stewards to provide full cost recovery to collectors and processors

Circular Economy

Using Wikipedia as a source of a succinct definition, a circular economy “is an economic system aimed at eliminating waste and the continual use of resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a close-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions. The circular economy aims to keep products, equipment and infrastructure in use for longer, thus improving the productivity of these resources. All ‘waste’ should become ‘food’ for another process: either a by-product or recovered resource for another industrial process, or as regenerative resources for nature, e.g. compost. This regenerative approach is in contrast to the traditional linear economy, which has a ‘take, make, dispose’ model of production.”

In recent years, many local governments have been considering what their role could be in moving towards a more circular economy. This planning process allows us to consider how our solid waste management system could better support a circular economy. BC Environment includes a diagram of the circular economy in their Guide to Solid Waste Management Planning (shown on the next page). Many of the existing services in RDMW, along with several of the options presented in this report definitively support a circular economy, including:



- Having a robust recycling system (curbside and depot)
- Closed loop systems such as composting (the inputs are locally sourced and the exports locally used)
- Promoting and supporting local reuse / repair / upcycling, etc.
- Encouraging systems for businesses and institutions with excess food to feed it to people as the most preferred option (e.g. food banks, soup kitchens), then animals (farmers), then finally composting.

A few additional options in support of a circular economy are:

- Develop purchasing policies that support a circular economy.** Local government purchasing policies for goods and services can include requirements that support a circular economy, including requirements for recycled content (material goods), compost content (for road works, parks, gardens and landscaping), and waste minimization (construction and renovation projects).
- Develop a fund that could seed local circular economy projects.** Create a fund, possibly with other community partners, where individuals, businesses, community groups and non-profit organizations, could apply for funding to assist with establishing initiatives that contribute to a local circular economy.

As noted in the introduction to this memo, the options described in this report will be presented and discussed at the RSWMP advisory committee meeting on December 5th. Additional ideas for minimizing waste sent to disposal are encouraged, as are modifications to any of the options included in this memo.