MEMORANDUM

MORRISON HERSHFIELD

TO:	Erin Blaney, Regional District of Kitimat Stikine	**FROM:**	Veronica Bartlett and Eva Robertsson, Morrison Hershfield
		PROJECT No.:	190497600
RE:	Recycling Options to Consider for Inclusion in the Solid Waste Management Plan	**DATE:**	February 3, 2020

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Under the Environmental Management Act, regional districts are required to have a solid waste management plan (SWMP), which must be developed following the solid waste management planning guidelines provided by the Ministry of Environment and Climate Change Strategy (the Ministry) for content and process.

The Regional District of Kitimat Stikine (RDKS) is in the process of developing a new SWMP. The planning process was initiated in 2017 and steps 1 and 2 of the planning process were completed in 2018, resulting in the formation of the Public and Technical Advisory Committee (PTAC), assessment of the current system, development of the consultation plan and the development of six technical memos, which mainly focused on reduction and reuse of waste materials.

The RDKS commissioned Morrison Hershfield (MH) to support the last steps of the planning process and the final development of a new Solid Waste Management Plan (SWMP). In January 2020, MH produced a memo that presented a comprehensive summary of the potential reduce and reuse options highlighted in previous memos. These were discussed and prioritized by PTAC.

This is Morrison Hershfield's second technical memo in a series of five, each presenting potential management options on key solid waste related topics:

- Summary of Reduce and Reuse
- **Recycling and Composting**
- Residuals Management at Existing Facilities
- New Service Areas for RDKS
- Cost Recovery

The content of each memo will be presented to the PTAC. The feedback on these memos will be considered as MH develops a last final memo outlining Preferred Options to be included in the new draft SWMP, which will be brought to the public for consultation.

This memo provides context with respect to recycling and composting: current initiatives undertaken by the RDKS, key challenges and opportunities that should be considered. The memo outlines a number of potential strategies and options the RDKS may want to take to improve recycling and organics diversion through composting.

CONTEXT

This memo provides an overview of current recycling initiatives and challenges in the region and potential new strategies to improve and increase waste diversion through recycling and composting. The memo covers the third R of the 5R waste pollution prevention hierarchy (Figure 1).

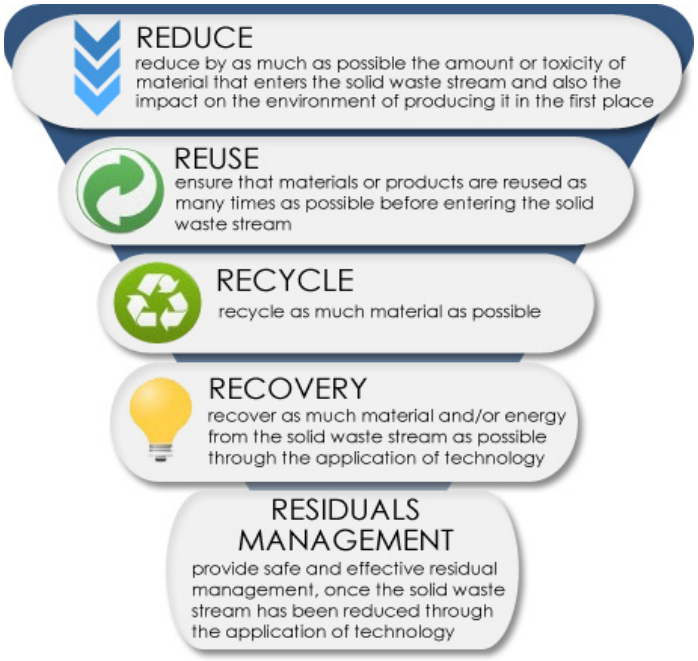

Figure 1 Pollution Prevention Hierarchy

The per capita disposal rate in the RDKS in 2017 was 562 kg[1], including waste from industrial camps. Approximately 50% of the total waste (garbage, recycling and organics) is generated by the ICI sector. The other 50% is divided between the residential and construction and demolition (C&D) sectors, and materials that are dropped off by generators (i.e. self-hauled).

Based on available data, the regional waste diversion rate was estimated at 22%[1] in 2017. When looking at the diversion performance of the different sectors, the residential sector had the highest diversion rate at 43%. The diversion rate for the ICI sector was 27%, and the diversion rate for materials dropped off at the transfer station by the generator was 21%. C&D materials had the lowest diversion rate at 5%. The 2018 overall diversion rate in the Terrace Service Area was estimated to 36%.

A waste composition study conducted at the Thornhill Transfer Station in 2017 showed that despite having disposal restrictions in place, paper and compostable organics each made up nearly 20% of the overall garbage stream, followed by plastic (15.3%). Approximately 54 % of the single family residential garbage, 42% of the ICI garbage and 14% of the self-haul garbage accepted at the Thornhill Transfer Station is either classified as restricted or prohibited waste. Some of these materials could be managed by the composting and recycling systems, indicating a need for more uptake of the existing diversion systems. There are significant opportunities for improvements to the solid waste management system to improve the recycling and diversion of many materials.

CURRENT RECYCLING INITIATIVES

Current recycling initiatives undertaken by the RDKS include:

- Drop-off options for select recyclables, select Extended Producer Responsibility (EPR) products[2] and other divertible materials (e.g. organic waste, metal, clean wood) at landfills and transfer stations. Materials accepted varies by facility based on alternative services available within the private sector.

[1] For more information, refer to the Background Information and Assessment of the Current Solid Waste System, 2019, RDKS.

[2] The Recycling Regulation requires producers of designated products to develop programs for their end-of-life collection and recovery of materials. Producers of designated products often appoint a stewardship agency to collect EPR products.

- Curbside collection of printed paper and packaging (PPP) recyclables for Electoral Area residents in the Terrace Solid Waste Service Area.
- Covering costs for transportation and processing of commercial cardboard collected at RDKS facilities in the Hazelton & Hwy 37 North Service Area.
- Promotion and education of drop-off and collection options for recyclables and EPR products in the region (e.g. Recycling Directory).

The RDKS is currently seeking to partner with Recycle BC to support the curbside collection of residential PPP from the Greater Terrace Area and to enlist the Kitwanga Transfer Station as a Recycle BC Depot. Recycle BC has indicated that it is willing to consider entering an agreement with the RDKS to provide recycling services to the residents of the Kitwanga area. This agreement would need to include the allowance of bulk drop off from First Nations communities including Gitsegukla, Gitwangak, Gitanyow and Iskut. Each of the First Nation communities use or are planning to use a mobile eco-depot to collect residential recycling as three streams. The operators of the mobile eco-depot further sort the materials into their individual Recycle BC-compatible streams and inspect materials for contamination.

Many member municipalities and First Nation communities currently provide curbside collection for recyclables. The City of Terrace is the only member municipality that receives financial compensation from Recycle BC for its curbside collection program. The District of Kitimat has indicated an interest to partner with Recycle BC, but there is currently no agreement in place.

Private companies offer subscription-based collection of residential recycling in some areas that are not serviced by local government collection programs. These services are offered to both residential and commercial customers.

There are also depots located throughout the RDKS that accept paper, cardboard, plastic and metal containers from residents. These include the bottle depots in New Hazelton and Kitimat, Do Your Part Recycling in Terrace, and the RDKS operated recycling center at the Stewart Transfer Station. The above four listed depots receive a financial subsidy from Recycle BC, and residents can drop off recyclables at no charge. The RDKS also operates a recycling center at the Kitwanga Transfer Station for PPP without the financial support of Recycle BC. This location is also free for residents to use.

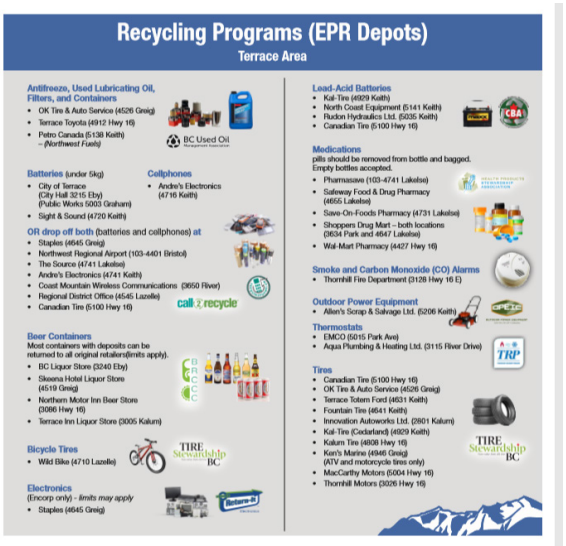

Figure 2 Example of information provided in RDKS recycling directory

The "Kitimat Understanding the Environment" or KUTE depot in Kitimat accepts cardboard and paper from Kitimat industrial projects and camps. Do Your Part Recycling is the only recycling facility that receive ICI paper and cardboard from the RDKS.

The RDKS promotes all collection options available via an electronic directory and via brochures for specific service areas (e.g. the Recycling Directory for the Terrace Area shown in Figure 2). These information sources are frequenty updated.

CHALLENGES WITH CURRENT RECYCLING IN THE REGION

In early 2017, China announced its National Sword program, resulting in import limitations and strict quality standards on specific recyclables entering the country. China previously recycled about half of the globe's plastics and paper products. The new strict requirements placed on recyclables left many collectors without end markets for certain collected materials.

RDKS pays for the collection, transportation, and processing fees for all PPP recycling services it offers, with the exception of the Recycle BC-supported depot at the Stewart Transfer Station. All commercial cardboard is managed without the support of Recycle BC, as the Recycling Regulation only mandates the stewardship covers cardboard coming from residential locations.

There is currently no recycling facility in the Hazelton and Highway 37 North service area that can manage the volumes of cardboard and paper products generated by the commercial sector. The Bottle Depot in New Hazelton does accept residential PPP in partnership with Recycle BC.

All commercial cardboard and paper accepted at RDKS waste facilities are transported to Do Your Part Recycling in Terrace for processing. Transportation costs are reduced by backhauling using the only readily available freight company in the region, but still the costs are significant. The RDKS pay a fixed fee for the backhaul of $68 per mega bag. In 2018, the RDKS paid approximately $15,000 to backhaul ICI cardboard from Stewart to Terrace and $2,500 to process these materials. The backhauling from Kitwanga Transfer Station (cardboard and PPP) cost almost $17,000 in 2018. Due to the density of the hauled material, the backhauling costs equate to $750 per tonne for Stewart and $930 per tonne for Kitwanga.

In Terrace, all cardboard and paper (both from the residential and ICI sectors) is consolidated and baled at one facility (Do Your Part Recycling). Materials covered by the Recycle BC program (i.e. by the City of Terrace via residential curbside collection and materials dropped off by residents at the depot interface) are kept separate from other materials at the processing facility. Do Your Part also receives recyclables from RDKS facilities, private service providers of collection ICI properties, and self-hauled recyclables from residential and ICI customers.

Haulers of commercial cardboard and paper pay the facility operator a tipping fee of $99/tonne, which is set by the RDKS and is lower than the tipping fee for garbage at the transfer station, to encourage waste separation. The RDKS tops up $26 per tonne to make the total payed to Do Your Part Recycling $125 per tonne and shares the revenue from the sale of the material and associated costs with the facility operator. This system only applies to commercial cardboard and paper generated in the Terrace Service Area. Commercial cardboard is not accepted at RDKS facilities in the Terrace Service Area.

Cardboard is, however, accepted with no tipping fees at RDKS facilities in the Hazelton and Hwy 37 North Service Area. The RDKS pays Do Your Part Recycling more to process cardboard and paper from the Hazelton and Hwy 37 North Service Area ($350/tonne as of July 2019).

In 2016 when the cost-sharing agreement was signed, there were always revenues to split equally between the RDKS and the contractor, however since 2018 the RDKS recyclables have not been generating revenue and only resulted in net costs. The contractor has asked for increased tipping fees to cover increased costs.

The current recyclables management model is increasingly financially unsustainable for both the RDKS and the private recycling facility, who take financial risks to manage these low-value recyclables.

The RDKS has been looking at ways to reduce recycling costs. Although not confirmed it appears likely that Recycle BC will add the Regional District's Greater Terrace Area curbside recycling collection to their Stewardship program. This will help to offset collection and processing costs currently borne by the RDKS and tax payers. The collection and processing of curbside materials from the Greater Terrace Area is currently costing approximately $6,000 -$7,000 per month in processing fees, plus the cost of collection.

The RDKS has explored other alternatives to recycling that can help to reduce costs. The potential to compost paper and cardboard is highlighted as part of Strategy 8 of this Memo. Another alternative that has been considered by the RDKS is burning. This may be suitable at Meziadin Landfill where burning of cardboard is permitted under the current operating certificate.

This section provides a summary of the 11 potential new strategies and initiatives that aim to further improve recycling and reduce the associated costs in the region.

STRATEGY 1. LOBBY FOR IMPROVED ACCESSIBILITY TO EPR PROGRAMS

There are currently over 20 regulated provincial EPR programs covering a wide range of material categories. Current EPR programs mainly focus on the residential sector and not the ICI sector. New product categories are continually being evaluated for inclusion into the Recycling Regulation.

The RDKS provides drop-off options for a number of EPR and stewardship products and assists in facilitating working relationships between private collection centers of EPR materials and their associated stewardship agencies. The RDKS aims to offer drop-off options where there are gaps in private collection services. Strategy 5 refers to how the RDKS can improve options for hazardous wastes.

In 2018 the RDKS provided input to the Stewardship Agencies of BC (SABC) together with other member regional districts from the BC Product Stewardship Council with regards to the rural accessibility standard used by stewardship associations. The letter articulated many concerns, such as stewards only prioritizing accessibility to EPR programs in communities that fall into a "City, Town, Resort Municipality, or District Municipality" and not rural communities in order to meet regulated definitions of accessibility. Recommendations included how the SABC can develop an acceptable rural accessibility standard that ensures improved accessibility to rural communities.

The RDKS conducted an audit report in 2018 to ensure that private depots and their partnerships with various stewards are functioning as they should. The audit identified the following issues:

- **Infrequent collection service offered by steward**, e.g. Tire Stewardship of BC, to collection site resulting in excess of tires stored on-site as illustrated in Figure 3.
- **Support is needed for increased public education on how to return EPR products** to depots via signage, printed material, etc. Many depots reported to the RDKS that consumers are returning their used tires on rims. Rims are note accepted by the Tire Stewardship of BC and become an added cost to the depots. For depots accepting used lubricating oil, antifreeze, oil filters, consumers often drop off materials in unlabeled containers or outside opening hours.
- **Increased public education on where to return EPR products.** The RDKS identified the need for better EPR signage at most of the pharmacies in the Greater Terrace Area to increase the awareness of drop-off options provided for unused medications. Bottle depots accepting alcoholic beverage containers have expressed their desire for more consumer education on

bottle return, and all depots have stated that they often need to redirect consumers trying to return materials such as pop and juice containers.

- **Increased access to more drop-off locations for some additional EPR products.** For example, Product Care, the steward for paints, flammable liquids, and pesticides, only has one location in the region at Do Your Part Recycling that accepts the flammable liquid / pesticide portion of materials covered.
- **Increased flexibility to accept PPP from rural communities at Recycle BC depots.** The RDKS is wanting commitment from the steward that it will always allow bulk drop-off by First Nation communities to Recycle BC depots, such as how the RDKS is allowing bulk drop-off at the Kitwanga Transfer Station.

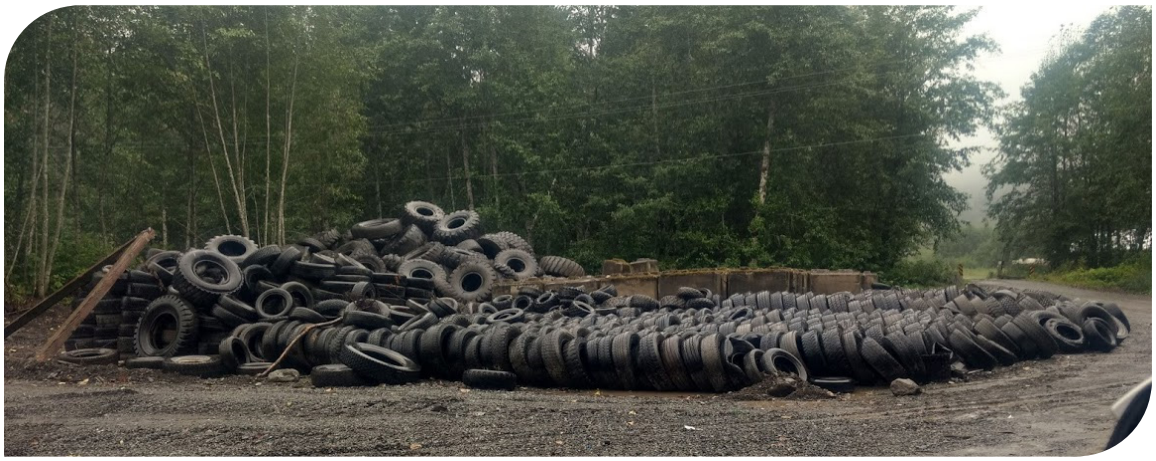

Figure 3 Tire build-up at Stewart Transfer Station

The RDKS has also identified the need to expand the list of regulated materials. For small rural communities in the Region, recyclables management could be simplified and made more efficient and more economical if PPP from the ICI sector is managed together with residential sources, which are currently regulated. The ICI sector, including small businesses, schools, hospitals, municipal offices, care homes, and tourism resorts are often left with no viable option for recycling of PPP resulting in recyclable material ending up in landfills. The RDKS is currently having to subsidize the recycling costs of some ICI PPP. The producers of these materials should be required to be part of the solution provided by stewardship organizations.

Specific materials that the RDKS would like to see regulated under the Recycling Regulation include:

- ICI PPP
- Hazardous wastes, such as mercury, diesel fuel, acid, household cleaners, garden products, and pesticides, which are currently not included as regulated materials.
- Tires on rims and oversize tires (large off-road tires and industrial tires)
- Bulky furniture and mattresses
- Drywall

The RDKS may want to bring up these specific issues with the Ministry of Environment and Climate Change Strategy.

Possible options to incorporate in the SWMP include:

1A. Lobby for better service levels for existing EPR materials in rural areas.

1B. Lobby for inclusion of new materials, regardless of the source (residential or ICI), under the Recycling Regulation, in particular ICI packaging and printed paper.

STRATEGY 2. PROVIDE CONTINUOUS DIVERSION EDUCATION AND OUTREACH PROGRAMS COUPLED WITH ENFORCEMENT

Education and outreach play a key role in waste reduction, diversion, and proper disposal of residual waste. The RDKS has made a wide range of waste management information available on its website, including information sheets on each solid waste facility, composting information, how-to guides for ICI recycling and organics collection, and links to various waste management planning initiatives. The RDKS also provide residents with recycling service information through the Recycle Coach desktop and smart phone apps of the "MyWaste™" platform.

In 2016, the RDKS undertook immense efforts to educate all stakeholder groups prior to the implementation of Bylaw No 671, introduction of three stream waste segregation, and new and/or upgraded facilities. Extensive education and outreach was completed to inform all stakeholders about the upcoming service and program changes. Every business that had collection service from either Geier Waste or Waste Management were contacted directly and provided with information through site visits or phone calls. There were also public open houses, newspaper ads, etc. (see Figure 4). All major organics producers received personalized letters providing information about material restrictions, and the new waste streams organics, cardboard/paper, recyclables and garbage. There was also an IC&I working group formed to obtain feedback from that stakeholder group.

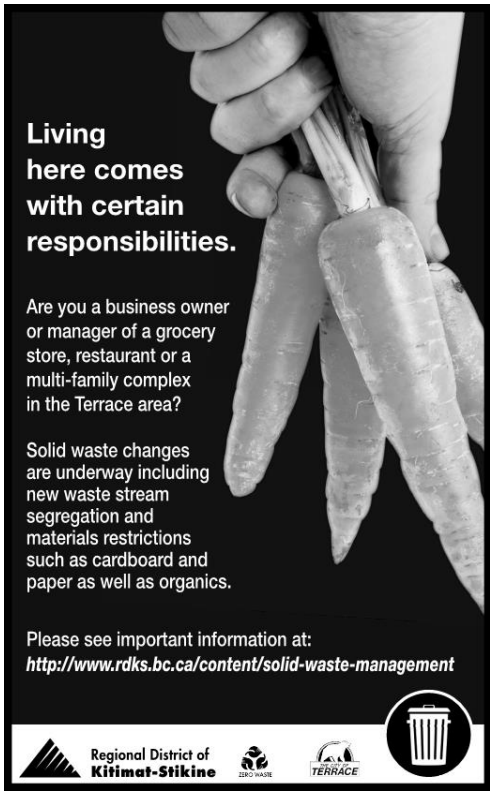

Figure 4 Example ad from organics diversion campaign.

The RDKS maintains a stakeholder registry which includes stakeholder information and the outreach and education provided. This allows the staff to track provided outreach and identify needs for additional support.

The waste composition results from 2017 showed that there is potential to divert more recyclables and compostable organics from the residential waste stream. The composition of waste from the City of Terrace and the Greater Terrace RDKS collection routes were similar, although residential garbage from the City contained more compostable organics than the residential garbage from the RDKS collection area (24.3% vs 19.6%). Paper, plastic and compostable organics make, on average, up 57% of the disposed single-family residential waste stream. The composition of residential MSW drop-off at Thornhill Transfer Station is slightly different from that collected curbside, however, paper, plastic and compostable organics made up a significant portion (43.4%) of the audited material.

Despite RDKS' major focus on public education and outreach, the diverted curbside recycling stream can still be more contaminated than acceptable. Contamination is often a result of "wishful recycling" when residents with good intent place materials not accepted under the current collection program in the recycling bin. MH understands that contamination of the curbside recycling stream, which is partially funded by Recycle BC, is an issue for the City of Terrace. Do Your Part Recycling reported an 8.5% contamination rate of the RDKS residential curbside recycling collected outside the Recycling BC program in 2018. Participation in the Recycle BC recycling program requires low recycling contamination rates (3% contamination threshold), which increases the importance of continued outreach and education, especially to those stakeholders receiving RBC funded services.

Improved and increased user education was requested through the April 2019 Public Solid Waste Survey, which aimed to identify key topics to consider in the SWMP update. Recycling can be confusing and the need for more public information about the recycling process was highlighted, including information about how the recyclables are processed and where. There is also a public interest in understanding the financials around recycling and how the system is funded. Given recent challenges with recycling in the region and recent media coverages that can cast doubt on responsible management of recyclables, it is important for the RDKS to reemphasize the benefits of recycling in order to maintain high public participation. More education is needed to clarify:

- who manages and pays for recycling
- where non-curbside materials can be recycled
- where the recyclables go and how they are processed

Contamination of the organics stream has been reduced since introduction of the program in 2016, however there is a need for continued education and outreach to further reduce contamination of organic waste going to the Terrace compost facility (e.g. bags and other products marketed as biodegradable, plastic bags and vegetable wraps). The product produced is currently too contaminated to be sold to the public or used in public gardens. The material is at present used as biocover for landfill closure, which allows the RDKS to beneficially use the product while optimizing the composting operations and address the contamination issue. The organic ICI waste stream, mainly from fast food restaurants, is generally the most contaminated. This stream is also the most challenging to address due to the corporate and internal nature of the businesses, the type and quantity of food packaging used, and the difficulty to reach the many different waste generators.

Continuous education and active stakeholder outreach is needed to ensure continued public participation in the diversion programs, improved diversion, and reduced contamination of the diverted material. This can be done by keeping the stakeholder registry up to date and developing an annual communication and education plan. The plan would link appropriate information, outreach and timelines with the right stakeholders. The plan would also include the development of new or updated material.

The RDKS has to date focused on education and outreach. Although, current bylaws allow the RDKS to issue fines for disposal of compostable organics (currently only in the Terrace service area) and recyclable materials, enforcement has not been applied to date. Hence, there is an opportunity to incorporate enforcement as part of education and outreach.

The RDKS has developed a non-compliance form for the facility operating contractors to use to report non-compliance. These reports could be used to provide outreach and issue fines as needed. Additional contractor information may be needed to highlight bylaw and contract requirements and to ensure reports are completed with supporting data, such as photos, and submitted to the RDKS in a timely manner. Collaboration with haulers will also be required to develop an approach to issue fines.

For example, fines issued for disposed contaminated waste loads from the multi-family residential and ICI sectors. It is also important that enforcement is performed on a continuous basis.

To address contamination of the curbside waste stream, the RDKS may want to inspect the waste composition of residential garbage when it is set-out for disposal, through curbside audits. The purpose of this enforcement approach is to encourage all residents to participate equally in the service, collect waste composition data, and to target education and outreach efforts effectively. Some residents may be uncomfortable with having their waste examined. However, the collection bylaw (RDKS Bylaw 674, section 17) allows the RDKS to inspect the waste set out for collection. This approach is seen as a final option, should diversion of materials remain low and garbage volumes high. As an alternative, the RDKS may want to conduct a set-out outreach program targeting households that do not set-out for organics or recyclables or have continually large garbage set-outs. This type of program would assess and address program participation without auditing the waste. Programs have demonstrated that direct one-on-one outreach can have very positive results in reducing contamination and encouraging participation in curbside diversion programs.

The RDKS may also want to consider changing the tipping fee structure to include a per tonne surcharge for contaminated loads. This is discussed further in as part of Strategy 9.

Possible options to incorporate in the SWMP include:

- 2A. Regularly update existing communication plan. Develop performance targets and monitor the performance of the implemented communication plan.
- 2B. Perform audits, such as set-out audits, to assess curbside participation rates or curbside audits to assess the waste composition of the different waste streams, coupled with in-person education and out-reach. Issuing of fines may be considered for repeat offenders.
- 2C. Provide contractor education pertaining to bylaw requirements, contract requirements and the importance of reporting of non-compliance and contaminated waste loads. Performance incentives through contract adjustments or other means might be warranted.
- 2D. In collaboration with waste haulers develop a common approach allowing haulers to pass down fines for contaminated waste loads to waste generator.

STRATEGY 3. SUPPORT ICI TO ENCOURAGE WASTE DIVERSION

The main economic activities within the RDKS include mining, forestry, energy, fishing, and transportation. The area is home to several mills and multiple hydro projects. The economic activities in the RDKS mean there are a number of industrial work camps in the area. These camps consist of buildings used for residential accommodations and support for industrial construction project workers. New mining, forestry, oil and gas and/or energy developments in the region may result in a significant increase in waste from industrial work camps and construction.

Recognizing that 73% of the waste generated by the ICI sector in the region is landfilled and only 27% diverted, the RDKS needs to address ICI with different approaches than the residential sector.

In 2016, before the RDKS implemented a bylaw that restricted organic waste[3] as part of landfilled waste, a consultant was hired to approach a large number of stakeholders from the ICI sector to

[3] Organic waste (including food waste) is classified as a Restricted Waste in the Greater Terrace Service Area, which means it must be delivered to the Thornhill Transfer Station in separated loads.

prepare them for the change. More information on the efforts undertaken was included as context to Strategy 2.

The tipping fee for separated food scraps and yard waste is lower than the tipping fee for garbage, which creates an incentive for commercial generators to separate their food waste.

The 2017 waste composition study showed that the largest component of ICI waste was paper (21.3%), followed by compostable organics (19.7%), plastic (14.9%), and household hygiene (14.0%). Compostable organics mainly comprised food waste (17.0%), of which 13.2% of food was avoidable and 3.8% was unavoidable and backyard compostable. Paper mostly comprised compostable and food-soiled paper (8.3%) and plastic mainly comprised other film and packaging (4.7%).

In 2018, a total of 560 tonnes of organics were captured from ICI sources (equivalent to 29 kg/capita). The capture rate in 2019 was similar but the RDKS noted less contamination of non-compostable materials. There is still room for improvements to capture more organics and to reduce contamination rates.

PTAC has previously discussed the need for the RDKS to develop a model bylaw for mandatory physical space allocation for recycling in new multifamily and ICI buildings in the region. Within Terrace some back alleys have limited space to accommodate more bins and the pick-up thereof.

The Local Government Act provides for local governments to regulate construction, alteration, repair and demolition of buildings. However, this section only applies to local governments that provide a building inspection service, which the RDKS currently does not. Within the Regional District, the City of Terrace and the District of Kitimat provide demolition permits. The RDKS cannot require more space for waste management in new construction that is located in a member municipality. Instead, the RDKS can encourage municipalities to amend existing building bylaws or adopt new bylaws to require waste management space in new construction. As the need for space allocation for recycling is not a prevalent issue amongst many member municipalities, it is recommended that each member municipality develop and implement such bylaw, as needed.

There are many potential options to encourage ICI waste diversion. The RDKS can focus on assisting private collectors to encourage better ICI recycling amongst its customers. This can, for example, include updating and distributing the current hauler information package, and providing support to haulers to clearly communicate waste segregation expectations to customers.

The RDKS may want to directly promote available waste diversion opportunities to commercial generators and offer on-site audits and coaching on waste diversion.

The RDKS may want to establish an ICI waste diversion working group. The focus can be on the biggest waste generators to help divert more waste and reduce business costs. High-priority generators include industrial camps, grocery stores, restaurants, hotels and large generators of cardboard (e.g. furniture stores). The working group can help to identify circular economy opportunities where one waste material can be used as a resource for another local business (for example surplus food from grocery stores or hotels to people in need via not-for profit organizations, or as animal feed).

Possible options to incorporate in the SWMP include:

3A. Support private collectors with an updated hauler information package to encourage better ICI recycling amongst its customers.

3B. Promote available waste diversion opportunities and provide or support diversion coaching to commercial generators.

3C. Establish an ICI waste diversion working group to focus on largest waste generators and find waste diversion solutions that can benefit many parties.

STRATEGY 4. REDUCE RECYCLING COSTS

The RDKS wants to emphasize the importance of stewardship organizations taking more responsibility for recycling in rural communities (refer to concerns and options as outlined in Strategy 1). In addition, the RDKS is actively working to increase the level of financial support provided by Recycle BC for residential recycling at the Kitwanga Transfer Station and for curbside collection in the Greater Terrace Area. This strategy focuses on managing recyclables more efficiently and identifying lower cost recyclable management options.

In addition to working to develop partnerships with stewards, the RDKS may want to undertake an efficiency review of how recyclables are collected, stored and transported within the region. The review can identify potential cost savings from using balers/compactors to minimize the hauling of loose materials in mega bags, as well as the increase of covered storage capacity at suitable facilities to reduce hauling frequencies. For example, the Peace River Regional District is planning to build large storage sheds at many of its transfer stations to reduce transportation costs.

The options for backhauling recyclables to Terrace can also be re-assessed as part of an efficiency review. The current contractor is very costly and it would be worthwhile for the RDKS to confirm if there are other collaboration partners that can provide backhauling services at lower costs.

To limit future cost increases to provide recycling services, the RDKS may also want to look for local alternatives to sending collected materials long distances for recycling while still diverting materials from landfills. The RDKS has already explored alternatives to recycling at sites (e.g. Stewart Transfer Station and the Meziadin area) such as composting or burning. These methods would target material streams the RDKS views as high-priority; residential and commercial cardboard and paper products. The RDKS looked into vermicomposting for this type of feedstock and submitted an expression of interest to the Ministry to access funding via the Organics Infrastructure Program. The request was unsuccessful since the identified feedstock is not listed as approved feedstock to composting facilities in B.C. under the Organic Matter Recycling Regulation (OMRR[4]).

The Ministry intends to amend Schedule 12 of the OMRR to include “non-recyclable paper material”, defined as “paper material contaminated with organic matter that cannot be reasonably recycled into a paper product, and is not contaminated with any substance harmful to humans, animals, plants or the environment”. The Ministry will update guidance with examples of paper and cardboard materials that may be considered suitable for composting. Morrison Hershfield interprets the wording as commercial cardboard not being acceptable feedstock under OMRR unless it is contaminated with organics. The

[4] The OMRR governs the construction and operation of compost facilities, and the production, distribution, storage, sale and use of biosolids and compost. It provides guidance for local governments and compost and biosolids producers, on how to use organic material while protecting soil quality and drinking water sources.

intended changes to the regulation may still prevent the RDKS from accessing infrastructure funding if recyclables such as paper products that are not contaminated are used in the process.

The Peace River Regional District is also struggling with high recycling costs and is planning to trial vermicomposting in 2020 using cardboard, mixed paper and food waste. This process has already been successfully adopted by the town of Fort Nelson in the cold climate of the Northern Rockies. The RDKS may still want to pursue composting of paper products without financial assistance from the province. Composting is further discussed as part of organics diversion strategy (Strategy 8).

As a last resort, the RDKS may want to set an upper cost threshold for acceptable recycling costs. If the cost threshold is exceeded, the RDKS would consider alternative lower cost options (e.g. composting, burning or landfilling). Once the recycling costs exceed the agreed threshold, alternatives to recycling are implemented until recycling costs can be reduced below the agreed threshold. A cost threshold should be revisited every year.

This is a cost-reduction approach that can have negative impacts that need to be carefully considered. For example, if landfilling is deemed as the only feasible option, the entire concept of source segregation is threatened. The public may struggle to see why anyone should continue to separate recyclables and this can undo the education and outreach efforts to date undertaken by the RDKS and member municipalities. If this is a cost reduction option that PTAC is interested in exploring further, it will be considered as part of MH's Memo for Cost Recovery options.

If the RDKS wishes to have the flexibility to landfill recyclables when recycling is cost prohibitive, the RDKS will need to consider amendments to the bylaws to allow this alternative practice.

Alternatively, the RDKS may simply want to consider charging higher tipping fees for other materials and/or raising taxes to sufficiently fund the true cost of recycling.

Possible options to incorporate in the SWMP include:

- 4A. Maximize the partnership opportunities with stewardship organizations, such as for residential recycling at the Kitwanga Transfer Station and for curbside collection in the Greater Terrace Area.
- 4B. Undertake an efficiency review of the management of recyclables within the region.
- 4C. Pursue composting of paper products at locations where deemed feasible.
- 4D. Set cost threshold when alternative lower cost options (e.g. composting, burning or landfilling) are pursued until recycling is no longer cost prohibitive.

STRATEGY 5. IMPROVE DROP-OFF OPTIONS FOR HOUSEHOLD HAZARDOUS WASTE WHERE GAPS EXIST

Although many household hazardous waste materials are regulated EPR materials, many of them still have limited drop-off options available in parts of the region, especially outside the Greater Terrace Area. Generally no liquids (e.g. used oils/antifreeze, paints, pesticides, flammables, fertilizer) are collected at any RDKS facilities. Stewart Transfer Station is an exception which accepts paint. RDKS does not have an agreement with Product Care or the B.C. Used Oil Management Association (BCUOMA), but promotes drop-off options available at private facilities. With the exception of Do Your Part Recycling , which is a Paint Plus depot which accepts pesticides, flammables, fertilizers for Product Care, there are no drop-off options for these hazardous wastes in the entire region.

The 2017 waste composition study showed that 4.7% of the overall garbage arriving at the Thornhill Transfer Station is made up of household hazardous waste[5]. Single family residential garbage contained 3.0%, ICI waste 6.7% and self-hauled garbage by the public 2.3% of household hazardous waste. Paint, solvents, pesticides and gasoline made up 2.3% of residual waste, while the ICI sector only had 0.3% of the same hazardous materials. Waste from single family residents in the Greater Terrace area contained a larger portion of hazardous wastes compared to that of residents in the City of Terrace (3.6% vs. 2.8%). The difference may result from the gap in service options available outside Terrace.

The Solid Waste Survey undertaken in the spring of 2019 included questions to understand the participation level in available EPR programs in the Terrace Service Area. Based on the survey results, respondents were most unsure where to drop off hazardous products such as smoke detectors and carbon monoxide alarms (27% of respondents), lightbulbs and fixtures (18%), tires (11%), used oil and filters (10%), small appliances (9%), paints, solvents, pesticides (9%), and batteries (6%). The respondents' were able to provide comments via the survey. Based on comments from the Terrace and Hazelton and Highway 37 North Service Areas, almost 8% of the comments related to more education for how to manage waste.

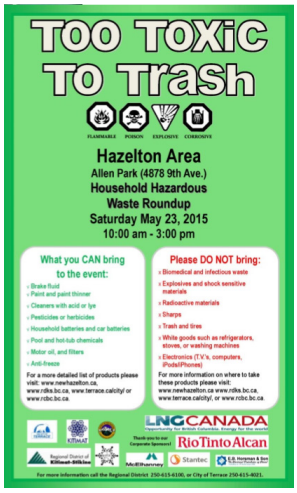

Figure 5 Poster used in 2015 to advertise the roundup event

In 2015 the RDKS undertook a two day roundup event for a large range of hazardous waste (not limited to EPR materials), including chemicals, oils, batteries, paints, cleaning products, and pesticides (Figure 5). The event took place without any partnership with the stewards. It was the first hazardous waste roundup held in 10 years and the collection was staged at sites in Kitimat, New Hazelton and Terrace. It was successful but costly. Participation generally exceeded expectations and the forecasted volumes were accurate apart from receiving a large amount of paints, used oils and industrial-type resins, which had local take-back options available to residents on a year round basis. The total roundup costs for the two day event, were estimated at $90,000. One of the key recommendation from the 2015 event was to look for opportunities to obtain financial contribution from stewardship organizations for future events. The RDKS may want to implement periodic roundup events to collect hazardous waste materials in locations where permanent drop-off options are not available or feasible to establish.

The RDKS may want to offer permanent drop-off options for targeted EPR materials of hazardous nature. The Stewart Transfer Station already accepts paint and has potential to expand to accept more EPR materials. The RDKS may also want to consider expanding the accepted EPR material at the Kitwanga Transfer Station to include used oil and antifreeze.

Figure 6 Modified containers designed for used oil storage on behalf of BCUOMA

Used oil is not collected at any of the RDKS transfer stations. Used oil is collected at three private facilities in the Hazelton and Hwy 37 North Service Area (Geraco Industrial Supplies in New Hazelton, Petro Canada in Stewart, and Charlie's Shop in Dease Lake) and thee

[5] Hazardous waste included batteries, light bulbs, oil & antifreeze, paint, pesticides, medications, biohazard, needles, solvents, other hazardous waste and other non-hazardous waste.

private facilities in the Terrace Service Area (OK Tire & Auto Service, Terrace Toyota and Petro Canada). Currently BCUOMA offers a $0.30/liter rebate for used oil and antifreeze, as well as infrastructure grants to cover the cost of facility upgrades related to the collection of used oil program material[6] (Figure 6). When partnering with Product Care, the stewardship organization would provide collection site guidelines, spill kits, weather proof containers for the collection of paint, pesticides and gasoline products[7]. The RDKS will need to increase training for the attendants to enable them to educate the facility users.

Whichever option the RDKS pursues (i.e. collection via roundup events and/or permanent drop-off at facility), there must be sufficient resources dedicated to educating and promoting consumers where there are available drop-off options.

The RDKS is also recommended to address non-EPR waste (such as mercury, diesel fuel, acid, household cleaners, garden products, and pesticides) by lobbying the province to expand the list of regulated products (refer to Strategy 1 of this Memo).

Possible options to incorporate in the SWMP include:

5A. Offer recurring roundup collection events for hazardous waste in potential partnership with stewardship organizations.

5B. Offer permanent drop-off options for targeted EPR materials at suitable transfer stations through partnership with stewardship organizations.

STRATEGY 6. CONSIDER OPTIONS FOR MATTRESS RECYCLING

Used mattresses are not accepted for recycling at any locations in the RDKS and are often undesirable with little to no second-hand market. Mattresses are currently landfilled throughout the region. It is unclear how many mattresses are disposed of per year.

There are numerous issues with managing mattresses as part of residual waste going to landfill. Due to their bulkiness, mattresses are hard to manage at the transfer stations and landfills. Their low density makes them undesirable landfill material, and the springs in mattresses have a tendency to impact facility equipment (e.g. potential puncture hazards).

Local governments across BC have reported that mattresses make up a significant part of illegally dumped materials and resulting in high clean-up and management costs. In recent years many local governments have pressured the MOE to include mattresses under the Recycling Regulation as a new EPR program.

Mattress recycling in rural parts of BC is not common but it does occur. Morrison Hershfield undertook research into current practices as part of assessing the economic and environmental impacts of mattress recycling in BC for Metro Vancouver in 2017. The study showed that often mattresses are locally disassembled and only parts of mattresses are recycled (typically steel and clean wood). The majority of recycled materials from mattresses (e.g. foam) in Metro Vancouver is sent to the US for recycling. The primary end use of the recycled foam is for use as carpet underlay. The two mattress

[6] Based on personal communication with Will Burrows, BC Used Oil Management Association, December 4, 2019.

[7] Based on personal communication with Mannie Cheung, Product Care, December 16, 2019.

recyclers in Metro Vancouver have experienced difficulties due to fluctuating markets for recycled commodities[8].

Dismantling of mattresses needs to be undertaken to a level that is acceptable to local scrap metal dealers and other recyclers. There is a potential need for specialized equipment and therefore this may not be an appropriate solution for every municipality. Generally, the mattress foam, individual pocket coil and soiled mattresses are still being disposed to landfill.

Strategy 1 (Lobby for improved accessibility to EPR programs) involves the RDKS continuing to pressure the Ministry on new materials that should be covered by the Recycling Regulation, such as mattresses. Until mattresses are managed under EPR, the RDKS may want to investigate the feasibility of recycling mattresses (or parts of them).

Possible options to incorporate in the SWMP include:
6A. Investigate feasibility of recycling mattresses (or parts of them) in the region, and implement pilot when deemed feasible.

STRATEGY 7. INCREASE DIVERSION OF C&D WASTE

Construction and demolition (C&D) waste commonly make up a large portion of the disposed solid waste stream. The waste may consume significant airspace due to its bulky nature and depending on the performance of the waste placement and compaction. The C&D sector is responsible for about 12% of the waste generated in the Terrace service area. However, the sector is responsible for 17% of the total amount of waste disposed, which means that the diversion rate of C&D waste is lower than that for the other waste sectors, especially the residential sector. Diversion of C&D waste (~ 5%) is currently achieved through segregation of clean wood waste and beneficial use of contaminated soil at the Forceman Ridge Landfill.

A waste composition study was performed for the waste accepted at Thornhill Transfer Station in September 2017. Waste is accepted from three main sectors - Single-family residential curbside collection; Industrial, commercial, and institutional (ICI); and public drop-off. The public drop-off waste accepted at the Thornhill Transfer Station is made up by two streams; MSW and C&D waste which are collected separately. The largest components of C&D waste were building material (33.9%), glass (23.3%), and non-compostable organics (21.6%). Roofing materials made up over 70% of the building material category.

No waste composition study has been performed for commercial C&D loads accepted at the Forceman Ridge Waste Management Facility. However, MH understands that some commercial C&D loads contain significant portions of compostable organics, such as clean wood (e.g. dimensional lumber and pallets) as well as asphalt roofing materials, identified through visual inspection.

Organic materials such as yard waste, tree branches and compostable structural wood waste is classified as restricted waste in the Terrace service area under Bylaw 671. Organic materials are not restricted in the Hazelton and Hwy 37 North service area (Bylaw 688) however segregation is encouraged at all RDKS facilities. All loads containing restricted waste are subject to a $100 fine. A reduced tipping fee is applied to loads containing clean organic materials. MH understands that the protocols and limited enforcement of clean wood waste segregation in the Terrance service area is

[8] Assessment of Economic and Environmental Impacts of Mattress Recycling in BC, report by Morrison Hershfield, on behalf of Metro Vancouver, June 14, 2017.

creating some confusion and frustration among local contractors. Clear segregation requirements should be applied and enforced to provide a level playing field for all stakeholders while incentivizing those who choose to segregate. To further enable enforcement of source segregation, clean wood waste could be specified as its own waste category in the applicable bylaw and classified as restricted waste. Alternatively, segregation of clean wood waste and an upper contamination limit could be added as a requirement under the RDKS issued disposal permits required for disposal of any C&D loads over $5m^3$, currently classified as controlled waste.

A viable use for the segregated clean wood waste has not been identified at this time. The RDKS is burning the waste on a regular basis, as approved under the applicable Operating Certificates. The RDKS has explored the option of grinding the wood for bulking in their composting process, however hog fuel can be sourced locally at a third of the cost, making grinding financially unviable.

Roofing materials such as asphalt shingles are recyclable and are most commonly ground and reused in pavement. Asphalt shingles can also be used in landfill operations either for alternative daily cover or as road base for access roads. Asphalt shingles are currently not segregated from disposal at RDKS waste management facilities, nor is the material category identified as controlled, restricted or prohibited under applicable bylaws. Based on the 2017 waste composition audit, roofing material makes up a significant portion of the disposed mixed waste stream. In addition, 43 tonnes of asphalt roofing were accepted at Forceman Ridge Waste Management Facility in 2018 as separate loads. The RDKS may want to explore viable options for segregation and recycling or beneficial use.

Approximately 5% of the building material portion of the self-haul C&D waste stream accepted at the Thornhill Transfer Station consists of drywall, gypsum and plaster. Gypsum, mud and tape commonly contain asbestos, especially if manufactured prior to the early 1990s. If inhaled, asbestos can cause serious long-term health issues. Asbestos is classified as controlled waste under Bylaws 671 and 688. Asbestos is accepted at the Forceman Ridge Waste Management Facility, the Hazelton Waste Management Facility, and Meziadin Landfill (but not Thornhill and Kitwanga transfer stations or Rosswood, and Iskut landfills). Disposal of gypsum together with biodegradable waste or under anaerobic conditions, can lead to the generation of hydrogen sulphide. Hydrogen sulphide is an odorous, poisonous, corrosive, and flammable gas which can be harmful to human health and surrounding environment. Special considerations and treatment may be required if collected landfill gas contain elevated levels of hydrogen sulphide. Gypsum can relatively easily be recycled into new drywall. If the RDKS were to implement gypsum segregation, two streams would be required, one for drywall produced prior to 1990 and one for drywall produced after 1990, as these streams would require separate processing.

Concrete is another common component of C&D waste. Crushed concrete can be used as road base at landfills or for other operational purposes. Broken concrete 300mm in diameter or smaller is classified as controlled waste under Bylaws 671 and 688 and disposal thereof requires an RDKS issued permit. Larger pieces are classified as prohibited waste and is charged double the tipping fee of that for smaller fraction concrete.

The amount of C&D waste being disposed could potentially further be reduced if the RDKS decides to explore options to encourage segregation of reusable building materials and deconstruction of buildings rather than demolition (as discussed in *Summary of Reduce and Reuse Options to Consider for Inclusion in the Solid Waste Management Plan*). Deconstruction would result in more segregated waste streams that either could be recycled or reused. Recycling and reuse infrastructure would first have to be established, including allocated segregation space for the solid waste management facilities, recycling capacity and/or reuse stores or share sheds.

Any changes to the bylaw and segregation activities should be coupled with changes to the material categories recorded through the scale software programs.

Changes to diversion programs and recycling should be implemented in conjunction with outreach and education measures. Communication material targeting specific stakeholders could be developed and distributed prior to changes being made. This would include updating the Construction Site Waste Management guide for Terrace Area. The Guide currently lists clean wood waste under controlled waste and it states that the material "should be kept separate from general garbage" which may cause unclear direction and confusion. Advanced distribution of information would allow stakeholders to change their operating procedures in advance to meet the updated segregation requirements.

If viable markets are established for any of the divertible materials, the RDKS could consider classifying these materials as prohibited, coupled with enforcement. Consideration should be taken to the implications on tipping fee revenue from the prohibited materials, and adjustment of the overall tipping fee structure may be warranted.

Possible options to incorporate in the SWMP include:

7A. Create a C&D waste working group with parties from the C&D sector and if suitable from industry.

7B. Perform a waste composition study of commercial C&D waste to identify and quantify recyclable waste streams.

7C. On a regular basis conduct research to identify local diversion options for asphalt shingles, dry wall and clean wood.

7D. Explore the need for operational material at the landfills and the options to use shingles and/or concrete for beneficial use.

7E. Under existing bylaws specify identified materials, such a clean wood waste and asphalt shingles, and classify these as restricted materials. Amendments to the tipping fee structure to encourage segregation of these materials may also be warranted.

CURRENT ORGANICS DIVERSION

Current organics[9] diversion initiatives undertaken by the RDKS include:

- Curbside organics collection to residents in the Terrace Service Area who live outside the City of Terrace.
- Operation of a composting facility at the Forceman Ridge Waste Management Facility using an in-vessel Gore™ cover system capable of processing 4,000 tonnes of organic material per year (see Figure 7).
- Production of compost, which will initially be used in the closure process of the Thornhill Landfill and Kitwanga Landfill to reduce costs of bringing in external material. Eventually the composting process will generate Class A compost, which may also be made available to the community for use on community gardens or parks.

[9] Organic waste includes yard and garden waste, food scraps (including cooked foods, meat, dairy, grains, fruits and vegetables), and food-soiled paper/cardboard.

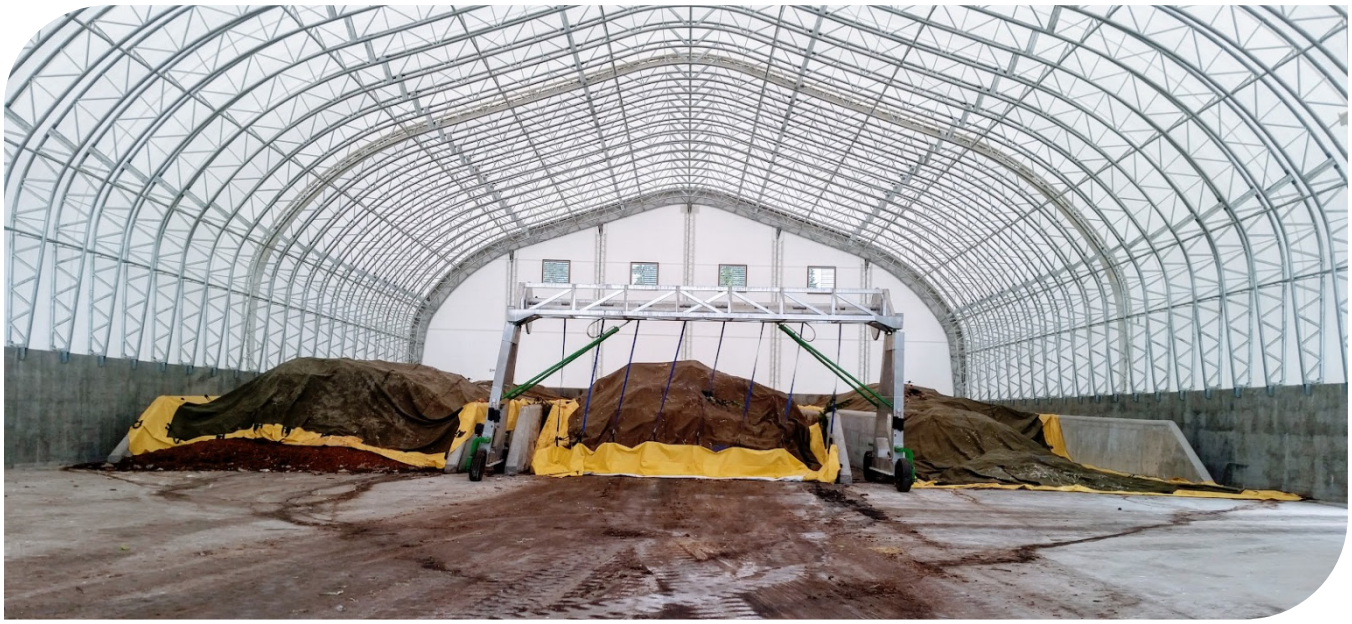

Figure 7 Comporting facility at Forceman Ridge Waste Management Facility.

A number of organics diversion initiatives are also underway by other parties in the region. The City of Terrace offers curbside organics collection to its residents and operates a yard waste composting facility at its public works yard. The compost is used by the City in parks and recreation sites, lawn application and for other purposes. The District of Kitimat operates a windrow compost at its landfill. It processes yard waste dropped off by customers. Approximately eight First Nation communities are currently trialing rotating drum composters within their respective lands.

Collection of organic waste from ICI properties and multi-family buildings in the Terrace Service Area is managed privately and the organics are processed at the composting facility at the Forceman Ridge Waste Management Facility.

The importance of diverting organic waste from disposal is reflected in the provincial goal of having organic waste disposal restrictions in place for 75% of the provincial population by 2020. Within the RDKS up to 50% of the population are covered by such restrictions. Disposal restrictions must be accompanied by alternative management solutions for organic waste generators. Composting is not available in some areas.

The RDKS has disposal restrictions on organic materials where there are organics diversion options available. The facility regulation bylaw in the Hazelton and Highway 37 North Service Area does not require segregation of organics nor are there centralized composting facilities within the service area.

This section provides one new strategy and associated initiatives for the RDKS to undertake to increase organics diversion in the region.

STRATEGY 8. ESTABLISH ORGANICS PROCESSING CAPACITY AT SUITABLE FACILITIES

The RDKS has identified the need to establish additional organics processing capacity in targeted areas. Organic waste is costly to transport long distances and the RDKS has identified composting as a potential additional service at the Hazelton Waste Management Facility. The design of the Hazelton Waste Management Facility includes a currently unused space for a potential future compost facility

with a leachate catchment system. RDKS staff has understood from local residents that there is a need for compost in local gardens.

Based on a survey of citizens conducted in March 2019, it is estimated that about half of the population currently divert some portion of their food and yard waste through backyard composting. Fifteen percent indicate that they use food scraps as animal feed, and about one third stated that they would use a public composting facility if available.

The RDKS estimated the total quantity of compostable organics available for processing at the Hazelton Waste Management Facility and applied capture rates recorded in the Greater Terrace Service Area. Depending on whether First Nation communities would participate and bring feedstock to the facility directly and via the Kitwanga Transfer Station, the estimated feedstock ranges from 200 – 500 tonnes of feedstock per year. The RDKS has undertaken research on suitable composting technologies for this estimated tonnage. The RDKS may want to issue a request for qualifications to seek technology suppliers who can provide high-level designs and costs for the facility. This will enable the RDKS to assess if a composting facility at the Hazelton Waste Management Facility is financially feasible. The submissions may reveal potential collaboration partners that are able to reduce overall costs.

As mentioned in Strategy 4 when reviewing options to reduce recycling costs, the RDKS will need to decide if the compost should process feedstock such as uncontaminated/clean paper products (e.g. commercial cardboard which is the main driver for RDKS' high recycling costs). MH understands that accepting this material may prevent the RDKS from accessing infrastructure funding.

The community of Stewart has looked at in-vessel composting options for the Stewart Transfer Station. Wildlife protection is the main concern for this area and the site currently does not have any suitable infrastructure (building to house the in-vessel compost and connection to electricity). The RDKS may want to support the District of Stewart to identify feasible options for the community.

The RDKS may want to lobby for the OMRR to also include uncontaminated paper products (including cardboard) as approved feedstock where these products are cost prohibitive to recycle. This would allow rural communities to compost cardboard and paper if it is cost effective.

Once processing capacity has been established in an area, the RDKS can also support the communities nearby to introduce an organics curbside collection service. This option is described further as part of Strategy 4.

Possible options to incorporate in the SWMP include:	
8A.	Issue a request for qualifications to assess suitable designs and costs to establish a composting facility at Hazelton Waste Management Facility, and implement if deemed feasible.
8B.	Support the District of Stewart to assess the feasibility of a small-scale compost facility and support implementation if deemed feasible.
8C.	Lobby for the regulation governing organics management to include uncontaminated paper products as approved feedstock where recycling is cost prohibitive.

SYSTEM EFFICIENCY IN THE CONTEXT OF WASTE DIVERSION

The RDKS' solid waste management system has undergone some major changes over the past few years through the construction of two new landfills, three new transfer stations, recycling depots, a compost facility, and closure of four landfills. The RDKS has also implemented a number of new programs, including three-stream curbside collection of garbage, recyclables and organics in the Terrace area, new disposal restrictions, and cost recovery models that considered taxes and tipping fees.

Users of the service, RDKS staff, and contractors providing services, must continue to become accustomed to new operations and expected standards of service. The RDKS has identified that optimizing operations to get maximum benefit from the infrastructure and services is a priority.

The current situation in terms of system performance and efficiency and the target operational objectives are presented in Technical Memo 1: Efficiency within RDKS solid waste management functions. Key consideration highlighted in the memo include:

- Contractor performance
- RDKS staffing and roles
- Operating roles, responsibilities and expected timelines
- Information availability
- Policies and guidelines
- Service standards and plans
- Internal and external communication and education

This section provides three strategies and associated initiatives for the RDKS to undertake to improve system performance and efficiency.

STRATEGY 9. AMEND SOLID WASTE BYLAW TO ENCOURAGE WASTE DIVERSION

Within the Region there are a number of bylaws in place to encourage waste diversion and responsible management of waste materials. Waste Regulation Bylaw 671 and 688 outlines the fees and regulations for the deposit of waste at the Regional District's facilities in the Terrace and Hazelton and Highway 37 North waste management facilities, respectively. Bylaw 682 outlines an updated fee schedule for the Terrace service area. The bylaws do not apply to the Dease Lake and New Aiyansh Landfills. Local municipalities have their own municipal bylaws.

Controlled, restricted and prohibited materials are identified in the RDKS bylaws. The materials included in these categories varies between the two service areas because access to service varies between the areas. The main difference between the bylaws is the classification of certain materials and the RDKS' ability to control and enforce the diversion thereof. For example, EPR materials are classified as prohibited in the Terrace service areas and restricted in the Hazelton and Hwy 37 North service area. Figure 8 shows the controlled, restricted and prohibited materials listed in the two bylaws. The differences between the two are highlighted in red. The waste classifications could be adjusted to create a more cohesive and fair system for those materials where services and recycling options exist in both service areas. There are currently no disposal restrictions on organic materials in the Hazelton and Highway 37 North service area nor are there centralized composting facilities within the service

area. In comparison to the Terrace Service Area, fewer households receive curbside collection of recyclables.

Terrace Service Area – Bylaw 671

Controlled materials	Restricted materials	Prohibited materials
• Animal carcasses > 50kg • Asbestos • Contaminated Soils • Land Clearing Waste or C&D Waste in excess of 5m3 • Clean Soils • Broken concrete • Broken asphalt • Waste ash from incinerators • Septage	• Metal • Organic Materials	**Class A** • Hazardous Waste • Radioactive waste • Slaughter Waste • Waste that is on fire or smoldering or highly flammable • Explosive or highly combustible materials • Other Sewage Waste **Class B** • Auto hulks • Broken concrete ≥300 mm • Broken asphalt ≥300mm **Class C** • EPR Materials • Tires • Cardboard and Paper Products

Hazelton and HWY 37 North Service Area – Bylaw 688

Controlled materials	Restricted materials	Prohibited materials
• Animal carcasses > 50kg • Asbestos • Contaminated Soils • Land Clearing Waste or C&D Waste in excess of 5m3 • Clean Soils • Broken concrete • Broken asphalt • Waste ash from incinerators • Septage • Garbage or Restricted Waste originating from Commercial Premises	• Metal • White goods • Cardboard and Paper Products originating from Commercial Premises • EPR Electronic products • EPR PPP • EPR Tires	**Class A** • Hazardous Waste • Radioactive waste • Slaughter Waste • Waste that is on fire or smoldering or highly flammable • Explosive or highly combustible materials • Other Sewage Waste • Waste that is not MSW **Class B** • Auto hulks • Broken concrete ≥300 mm • Broken asphalt ≥300mm **Class C** • EPR Materials (excl Restricted Waste) • Organic Materials that originate from Industrial Work Camps or from outside the Service Area • Tires that do not fall within the definition of EPR materials.

Figure 8 List of controlled, restricted and prohibited materials in the RDKS as set out by Bylaw 671 and 688. The differences between the two bylaws are identified and highlighted in red.

Clean wood waste is currently diverted at all RDKS sites. However clean wood waste, which falls into the definition of organic materials, is only classified as restricted in the Terrace service area. The current operating certificates allow the RDKS to burn clean wood waste at all their sites except the Thornhill Transfer Station. However, clean wood waste collected at the Thornhill Transfer Station is

transferred to Forceman Ridge Waste Management Facility where it is burnt. The RDKS may want to consider creating and defining a separate waste category for clean wood waste and classifying the new category as restricted in both bylaws, with the objective to encourage continued diversion from landfilling, while having the option to enforce through contaminated load inspections.

Schedule “G” in Bylaws 671 and 688 outline fines applicable to disposal offences. Depositing of a load containing controlled waste is subject to a $500 fine, whereas loads containing restricted materials is subject to a $100 fine. The fine for loads containing prohibited materials vary between $100 and $1,000 depending on the class (A, B or C) of the prohibited material The RDKS has developed a non-compliance form for the contractor to use and report back to RDKS. To date there has been limited follow up on reported non-compliances.

A relatively common alternative approach to issuing fines for contaminated loads is to apply surcharges. For example, in Peace River Regional District, unsorted loads are charged double the tipping fee compared to sorted loads. Application of surcharges would require visual inspection and an established level of acceptable contamination. Discounts could also be applied to materials that are of value or needed for operations, such as lower tipping fees for metal and organic materials in the Terrace service area.

Major appliances and other MARR products are currently accepted at the Thornhill Transfer Station, however this is done without an agreement with MARR. The RDKS is exploring the option to make an agreement with MARR, however to qualify for funding support a bylaw amendment is required where the current fee schedule is adjusted and MARR products are accepted for free.

Possible options to incorporate in the SWMP include:

- 9A. Amend the definition of organic materials and develop a separate category for clean wood waste. Include this new category under restricted material under both Bylaw 671 and 688.
- 9B. Amend the list of prohibited materials to be as consistent as possible between the two service areas, granted diversion options exist and are developed.
- 9C. Adjust the current fee schedule to encourage increased diversion. Consider surcharges on contaminated loads.
- 9D. Adjust the current fee schedule to allow agreements with stewards such as MARR.

STRATEGY 10. SUPPORT COMMUNITIES TO INTRODUCE CURBSIDE COLLECTION

Many communities offer curbside collection for recyclables, organics and residual waste (garbage). The RDKS may want to take on a facilitating role to encourage communities to offer consistent services, where possible.

The RDKS promotes fair and equitable access to recycling programs and has communicated with the stewardship organization responsible for residential PPP, Recycle BC, that the best way to eliminate the barriers to recycling is through a curbside collection program. In correspondence between the RDKS and Recycle BC, the Regional District has proposed areas in the Region for provision of Recycle BC curbside service.

The RDKS may want to facilitate the communication between member municipalities and Recycle BC to seek opportunities to form partnerships with the steward and obtain financial support to cover recycling costs.

In communities where organics processing capacity has been established, the RDKS can support member municipalities in the implementation of curbside organic waste collection that fits the selected organics processing technology. The RDKS can support with templates for request for proposal, tender documents, contracts, including sorting requirements for recyclables (compatible with Recycle BC) and outreach material for program roll-out. Consistent waste management labeling and universal colour coding across the region would help to reduce consumer confusion around sorting of recyclables and organic waste materials.

By providing support to communities who want to provide curbside collection of recyclables, the RDKS can facilitate consistent service across the region. This approach would enable a fast transition to RDKS if a region-wide service was to be implemented.

Possible options to incorporate in the SWMP include:
10A. Support the implementation of curbside collection of recyclables and/or organics in communities in the region.

STRATEGY 11. INCENTIVIZE IMPROVED CONTRACTOR AND DIVERSION PERFORMANCE

The RDKS facility contractors are currently bound to perform certain task under their contracts conditions. Additional incentives may be warranted to further increase the performance under these contracts and, in this context, increase diversion at RDKS facilities. Studies in the UK show that introduction of staff incentives have helped boost the diversion performance at drop-off facilities. Incentives may include increased staff/contractor involvement through meet and great procedures, shared monthly diversion reports, regular training but also direct financial payments, vouchers or charitable donations for reaching certain performance targets. Performance targets could include diversion of certain materials, site cleanliness, visitor satisfaction or maximizing container or skid loads.

A high-level cost benefit analysis may be warranted before an incentive based program is considered or implemented. The potential cost savings from increased diversion, improved contractor adherence to the standard operating procedures and contract expectations, and reduced need for RDKS supervision should be assessed. In addition, current contracts and local employment practices should be considered before any financial incentives are implemented.

Possible options to incorporate in the SWMP include:
11A. Explore the option of introducing an incentive based program to improve contractor and diversion performance through a combination of education, increased contractor involvement and potentially financial rewards.

IMPACTS OF POTENTIAL STRATEGIES TO INCREASE RECYCLING AND COMPOSTING

Table 1 provides an overview of the anticipated financial impacts if the strategies are implemented in the region. The table is followed by Table 2 which shows which stakeholder groups are affected by the strategies outlined in this memo.

Table 1. Anticipated financial impact related to the identified reductions and reuse strategies.

#	Strategy	Operational costs	Capital Costs	Comments
1	Lobby for improved accessibility to EPR programs	Low	Low	
2	Provide continuous diversion education and outreach programs coupled with enforcement	Low-Medium	Low	Cost depends on the extent of the education and outreach and if provided by in-house or contracted staff. Enforcement could generate revenue through fines and/or surcharges.
3	Support ICI to encourage waste diversion	Low-Medium	Low	Cost depends on the extent of the outreach and support provided to commercial generators.
4	Reduce recycling costs	Low	Low	Collaboration with stewards aims to reduce the net cost of the current recycling programs.
5	Improve drop-off options for household hazardous waste where gaps exist	Medium-High	Low-Medium	Cost depends on operating frequency for temporary collection service and number of depots with permanent collection options. Collaboration with stewards aims to reduce the net cost of the current recycling programs.
6	Consider options for mattress recycling	Low-Medium	Low	
7	Increase diversion of C&D waste	Low-Medium	Low-Medium	Cost depends on waste management option. Enforcement of segregation requirements could generate revenue through fines and/or surcharges.
8	Establish organics processing capacity at suitable facilities	Low-High	Low-High	Cost depends on technology selected.
9	Amend solid waste bylaw to encourage waste diversion	Low	Low	Required segregation of additional materials coupled with enforcement could generate revenue through fines and/or surcharges.
10	Support communities to introduce curbside collection	Low-Medium	Low	Costs to implement curbside collection will fall on member municipalities.
11	Incentivize improved contractor and diversion performance	Low-Medium	Low	Cost depends on approach taken. Financial incentives could be small, continuous contractor education and engagement would require some additional funds.

Table 2. Organizations and categories of individuals impacted by the identified recycling strategies.

#	Strategy	RDKS	Member municipalities	Residents	Waste haulers and recycling facilities	ICI sector	Non-profit organizations	Comments
1	Lobby for improved accessibility to EPR programs							
2	Provide continuous diversion education and outreach programs coupled with enforcement							Additional contractor involvement will likely be required to monitor accepted loads.
3	Support ICI to encourage waste diversion							
4	Reduce recycling costs							
5	Improve drop-off options for household hazardous waste where gaps exist							
6	Consider options for mattress recycling							
7	Increase diversion of C&D waste							All stakeholders generating, hauling or managing C&D waste are affected.
8	Establish organics processing capacity at suitable facilities							
9	Amend solid waste bylaw to encourage waste diversion							Amendments to bylaws are likely to affect all stakeholders and waste generators
10	Support communities to introduce curbside collection							
11	Incentivize improved contractor and diversion performance							