MORRISON HERSHFIELD

FINAL REPORT

SOLID WASTE MANAGEMENT PLAN
FIVE-YEAR PLAN EFFECTIVENESS REVIEW

Presented to:

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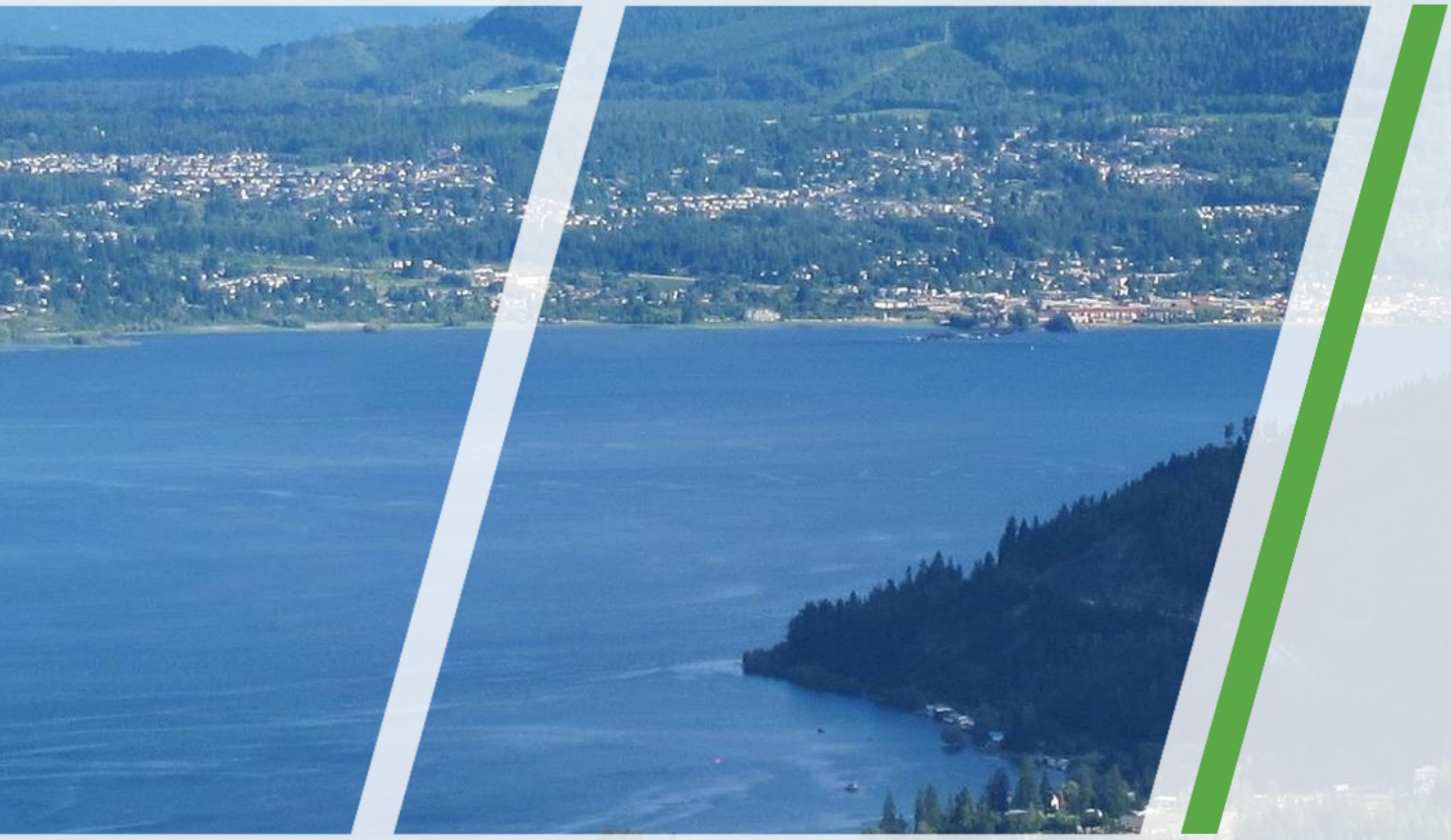

Report No.2022\220091300
November 15, 2022

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APPENDICES

1. BACKGROUND

The Environmental Management Act mandates for regional districts to prepare a Solid Waste Management Plan (SWMP). The Columbia Shuswap Regional District (CSRD) adopted its first SWMP in 1993, followed by an updated Zero Waste SWMP in 2009. The 2009 SWMP (or Plan) was reviewed in 2014, and the associated update was adopted by the CSRD Board of Directors in the spring of 2015. Three years later, in March 2018, the CSRD submitted the CSRD Solid Waste Management Plan Amendment: Salmon Arm Landfill Acquisition and Property Acquisition Guidelines, which was approved by the Ministry of the Environment and Climate Change Strategy (MoE) in 2019. The Amendment's main purpose was to facilitate a future Salmon Arm Landfill site expansion through the acquisition of the Mounce property adjacent to the Salmon Arm landfill. Until the SWMP is replaced by a full plan renewal, all three reports remain active and relevant SWMP documents.

The 2015 Plan Update noted that since the 2009 Plan was prepared, legislative changes in BC have altered the waste management landscape, in particular with the emergence of mandated Extended Producer Responsibility (EPR) programs. The 2015 Plan Update identified 26 priority options (recommended options), which fell into overall themes. The recommended options were brought forward for public consultation before they were finalized. The Plan Update process included a stakeholder consultation program that provided opportunities for input from municipal representatives, residents, and community stakeholders. Community input was sought through a Plan Monitoring Advisory Committee (PMAC), the CSRD web site and social media support, as well as an online survey and in-person open houses. The MoE did not regard the Plan Update as a full Plan renewal process since it did not identify significant changes to the 2009 SWMP. The Update simply revisited the 2009 strategies/initiatives and provided priorities for actions based on feedback from engagement with the public and other stakeholders.

The CSRD is required to submit a full plan renewal to the MoE before December 31, 2028. The first step is to undertake a five-year effectiveness review of the SWMP and the related documents developed by the CSRD.

Summary of MoE Requirements for the CSRD

- The CSRD shall develop a dispute resolution process in accordance with the MoE Guide to Solid Waste Management Planning (September 2016). The dispute resolution process must be submitted to the director by March 31, 2023.
- The CSRD shall submit a Five-Year Effectiveness Review in accordance with the MoE Guide, by March 31, 2023. The review must also include any waste composition studies completed during the plan's implementation.
- The CSRD shall submit a full plan renewal to the MoE by December 31, 2028, or earlier, as applicable

1.1 Morrison Hershfield's Review Scope

Morrison Hershfield (MH) has been commissioned to undertake the five-year effectiveness review in accordance with the MoE Guide. The main objective of the review is to analyze the Plan's implementation and effectiveness. The review findings will help to set a clear path forward for implementing outstanding actions and achieving Plan goals over the next five years.

This report describes the Plan's implementation status of initiatives identified in the 2015 SWMP Update, as of September 2022.

2. POPULATION AND GROWTH ESTIMATES

2.1 Population

The CSRD is home to 57,021 people[1] living in four member municipalities (the City of Salmon Arm, the City of Revelstoke, Town of Golden and the District Municipality of Sicamous) and six electoral areas, as well as many First Nations communities, such as the Neskonlith Indian Band, Little Shuswap Lake Band, and Adams Lake Indian Band. According to the 2021 Census, the region's population increased 11% between 2016 and 2021.

In the region's 2022 Housing Needs Assessments, a growing and aging population were identified as affecting Electoral Areas B, D and F[2]. Electoral Area F (North Shuswap) has seen a sharp (30%) increase in population between 2016 and 2021, along with a significant increase in full-time residency of secondary homes.

Growth Estimates

Population growth estimates for the region are regularly published from the BC Stats PEOPLE (Population Extrapolation for Organizational Planning with Less Error) model. The latest annual

[1] Statistics Canada 2021 Census of population

[2] Information from URL: https://www.csrd.bc.ca/news-notices/news/2022-04-14/reports-review-housing-needs-electoral-areas-b-d-f

population projection was published in 2020 and covered the years from 2020 to 2041, with information available for numerous provincial geographies, including the development region of Thompson Okanagan, to which the CSRD belongs. The average population growth rate for the Thompson Okanagan development region is 0.9% per year[3].

In a full plan review, the CSRD would analyze population growth in more detail to ensure that future needs can be met by the region's solid waste management infrastructure and services.

3. CSRD'S SOLID WASTE MANAGEMENT SYSTEM

3.1 System Overview

The CSRD has a network of solid waste management facilities shown in Figure 1. There are 18 recycling depots, which are registered Recycle BC depots. The recycling of residential Packaging and Paper Product (PPP) is undertaken in partnership with the stewardship agency (Recycle BC).

[3] BC Stats - Sub-Provincial Population Projections - P.E.O.P.L.E. 2020, accessible via URL: https://www2.gov.bc.ca/assets/gov/data/statistics/people-population-community/population/people_population_projections_highlights.pdf

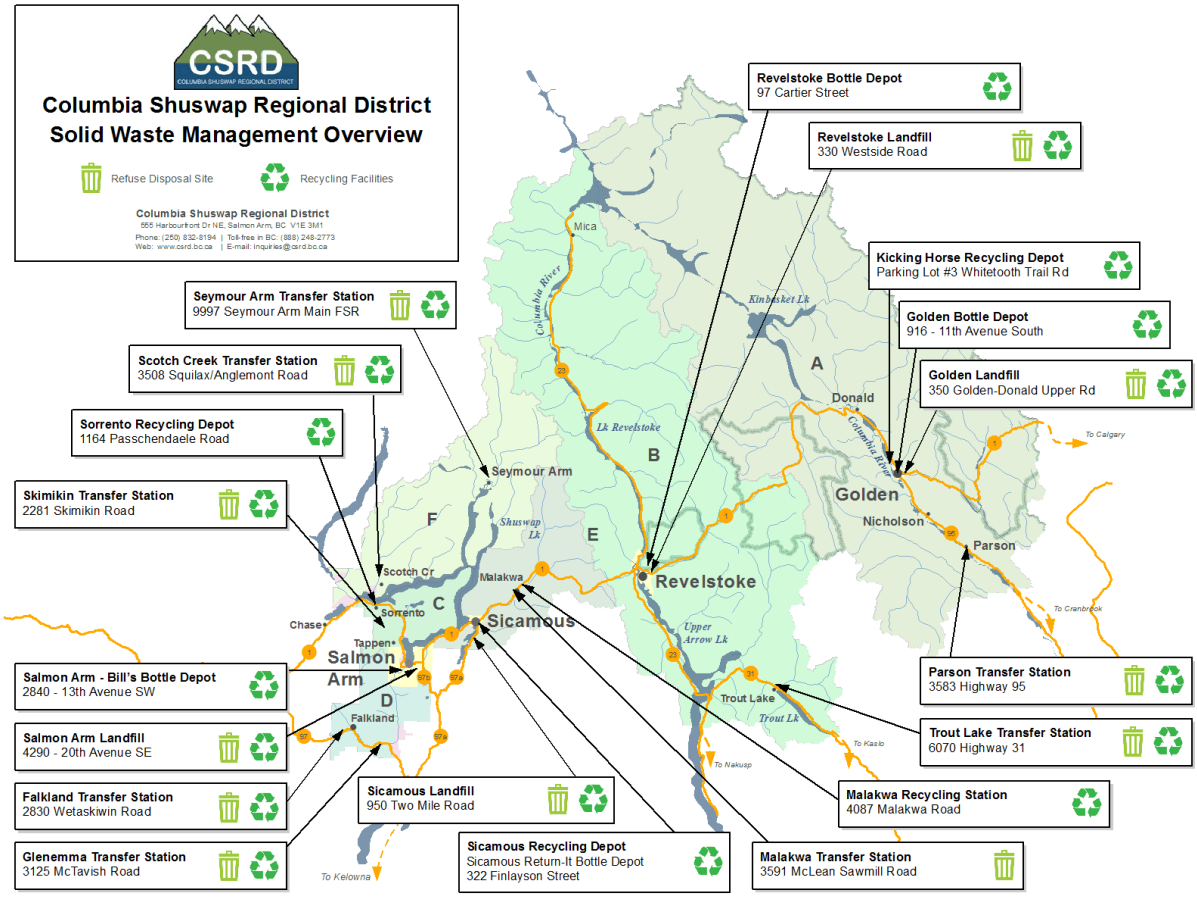


Figure 1 Map of Solid Waste Management Facilities with the CSRD

Some of the recycling depots are located at a disposal location (a landfill, transfer station or stand-alone recycling depots), while others can be found at private recycling facilities (e.g., Bill's Bottle Depot in Salmon Arm, Sicamous Recycling Depot, Golden and Revelstoke Bottle Depots), where PPP are collected on behalf of the CSRD.

The CSRD is responsible for four landfills and eight transfer stations, which are facilities located across four different waste sheds with one landfill servicing each waste shed. Table 1 outlines the main characteristics of each waste shed. This information helps with understanding the region's waste disposal trends, which are presented in subsequent sub-section.

Table 1 CSRD's Waste Sheds

Waste Shed	Characteristics
Golden	▪ Serves the municipality of Golden, where residents have curbside collection of garbage and recycling (food waste collection is planned), and Electoral Area A. ▪ The service area has a combined service population of approximately 7,300 people. ▪ Includes the Golden Landfill and one unscaled transfer station (Parson Transfer Station)
Revelstoke	▪ Serves the City of Revelstoke, where residents have curbside collection of garbage and recycling (food waste collection is planned in near future), and Electoral Area B. ▪ The waste shed has a combined service population of approximately 8,900 people, however the population fluctuates throughout the year with tourism. ▪ Includes the Revelstoke Landfill and one unscaled transfer station (Trout Lake Transfer Station)
Salmon Arm	▪ Serves the City of Salmon Arm, where residents have curbside collection of garbage, recycling and organics, Electoral Areas C, D and F, as well as the community of Malakwa located in Electoral Area E. ▪ The Salmon Arm waste shed is the largest waste shed in the CSRD and has a combined service population of approximately 36,400 people. ▪ Includes the Salmon Arm Landfill, two scaled transfer stations (Skimikin, Scotch Creek) and four unscaled transfer stations (Falkland, Glenemma, Malakwa, and Seymour Arm)
Sicamous	▪ Serves the District of Sicamous and Electoral Area E (except the community of Malakwa). ▪ Includes the Sicamous Landfill ▪ The waste shed has a combined service population of approximately 3,400 people. The waste shed sees a large increase in summer-time population (often tripling). ▪ No municipal curbside collection is available, but some residents have private collection through subscription ▪ Exclusively self-haul to landfill (some small commercial businesses, but mainly residential users of the landfill)

At the waste facilities managed by the CSRD, the regional district offers drop-off options for a range of materials. Table 2 presents an overview of materials accepted at each facility for recycling or recovery.

Table 2 Materials Accepted at CSRD's Facilities for Recycling or Recovery

Facility	Electronics	Small Appliances	Used Oil/Antifreeze	Paint	Smoke Alarms	HHW[4]	Household Batteries	MARR Appliances	Thermostat Recycling	Auto Batteries	PPP	Commercial Cardboard	Commercial Mixed Containers	Scrap Metal	Propane tanks	Shingles	Yard & Garden Waste	Wood waste	Concrete	Food Waste	Used Clothing	ReUse Centre	Used Book	Mattress / Child Car Seat
Golden LF		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X*	X			X		X
Sicamous LF	X	X					X	X	X	X	X	X		X	X	X	X*	X*	X		X	X	X	X
Revelstoke LF			X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	2022		X		X
Salmon Arm LF			X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Skimikin TS	X	X					X	X	X		X			X	X		X	X				X	X	X
Scotch Creek TS							X	X	X		X	X		X	X	X	X	X				X	X	X
Falkland TS	X	X					X	X	X		X			X	X	X	X*	X*	X		X	X	X	X
Glenemma TS	X	X					X	X	X		X			X	X							X	X	
Malakwa TS	X	X					X	X	X		X			X	X		X*	X*			X	X		
Parson TS							X	X	X		X			X	X		X*	X*						
Seymour Arm TS							X	X	X		X			X	X									
Trout Lake TS							X	X	X		X			X	X									
Sorrento Recycling Depot											X													
Malakwa Recycling Station											X													
Kicking Horse Recycling Depot											X													

Explanatory Notes:

LF – Landfill
TS – Transfer station
PPP – residential packaging and paper product (PPP)
* Yard/Garden and Wood Waste are combined
Materials covered by EPR programs are shown in green.
No sites accept lighting products or tires.

[4] HHW includes flammables, pesticides and aerosols in partnership with the stewardship agency Product Care. CSRD also collects non EPR-program material, incl. corrosive, toxic, flammable or reactive materials.

3.2 CSRD's Disposal Performance

3.2.1 Waste Stream Characterization

Waste Characterization Trends for All Waste Sheds 2013 & 2018

The CSRD has conducted two comprehensive waste characterization studies since the 2009 SWMP was prepared. In 2013 and in 2018, the CSRD retained a waste auditing firm to undertake solid waste characterization studies for the four waste sheds (Golden, Revelstoke, Salmon Arm, and Sicamous). Figure 2 to Figure 5 show the average composition of waste disposed in the four waste sheds in 2013 and 2018, as well as the increase or decrease in composition for specific waste categories. The waste characterization studies were completed for waste disposed from the residential curbside; residential self-haul; and industrial, commercial, and institutional (ICI) sources. The following trends should be noted:

- **Golden:** The proportion of electronic (4.0%) and household hazardous waste (4.8%) being landfilled decreased notably across all sources (residential curbside, residential self-haul, and ICI). While the compostable organics portion increased slightly across all sources between 2013 and 2018 (2.1% as shown in Figure 2), the composition of the residential curbside waste stream had a significant decrease (12.6%) in compostable organics during the same period. Figure 2 only shows average waste composition across all sources and not individual waste streams.
- **Revelstoke:** The proportion of compostable organics disposed in Revelstoke increased significantly between 2013 and 2018 (14.3% as shown in Figure 3). This trend was seen in all three waste sources (curbside and self-haul residential as well as the ICI sector).
- **Salmon Arm:** The most significant changes in waste composition were seen in the Salmon Arm waste shed, shown in Figure 4, with an increase in proportion of compostable organics (9.0%) and a decrease in building material (3.4%) and electronic waste (4.0%). Further analysis of this waste shed is presented in the comparison of 2018 and 2021 waste characterization results (See Figure 6 to Figure 9).
- **Sicamous:** Between 2013 and 2018, the waste disposed in the Sicamous waste shed decreased in the proportion of disposed compostable organics (3.7%), metals (3.5%), glass (6.9%) and bulky objects (3.2%).
- **All Waste Sheds:** When focusing on the curbside collection stream in all waste sheds (results not illustrated by any figures), the proportion of compostable organics decreased in all waste sheds except Revelstoke, which showed an increase of 7%. The proportion of paper, plastic and metal in the curbside collection stream generally decreased between 2013 and 2018.

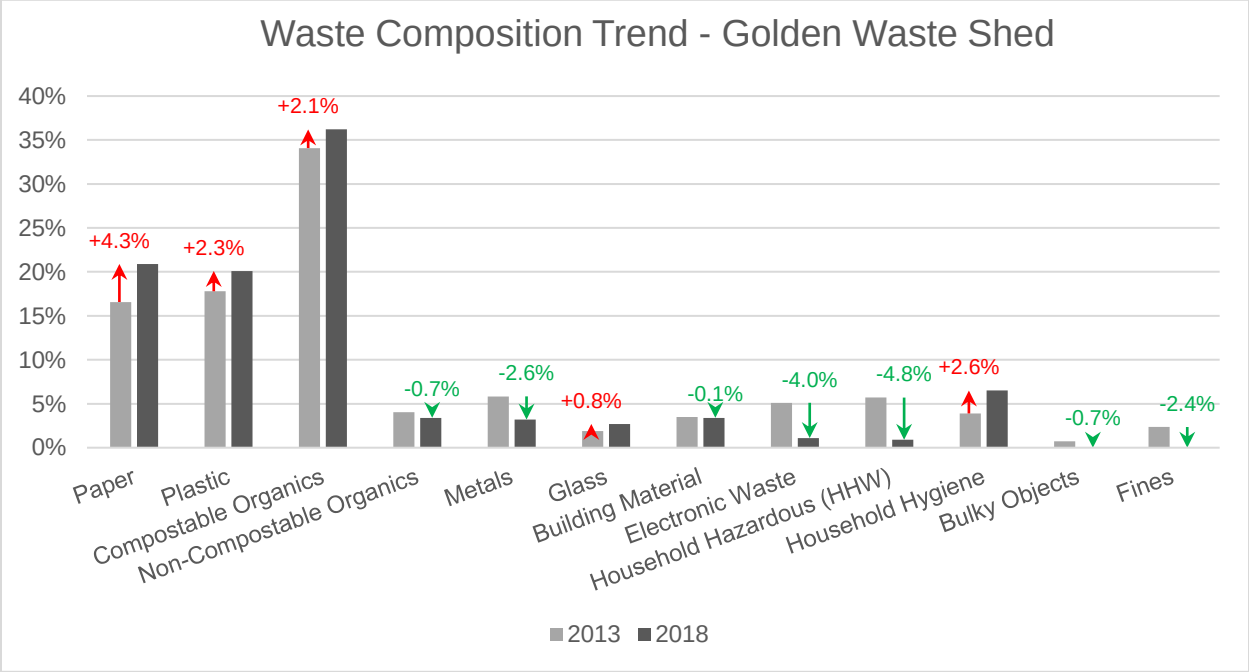


Figure 2 Average composition waste disposed in the Golden waste shed in 2013 and 2018.

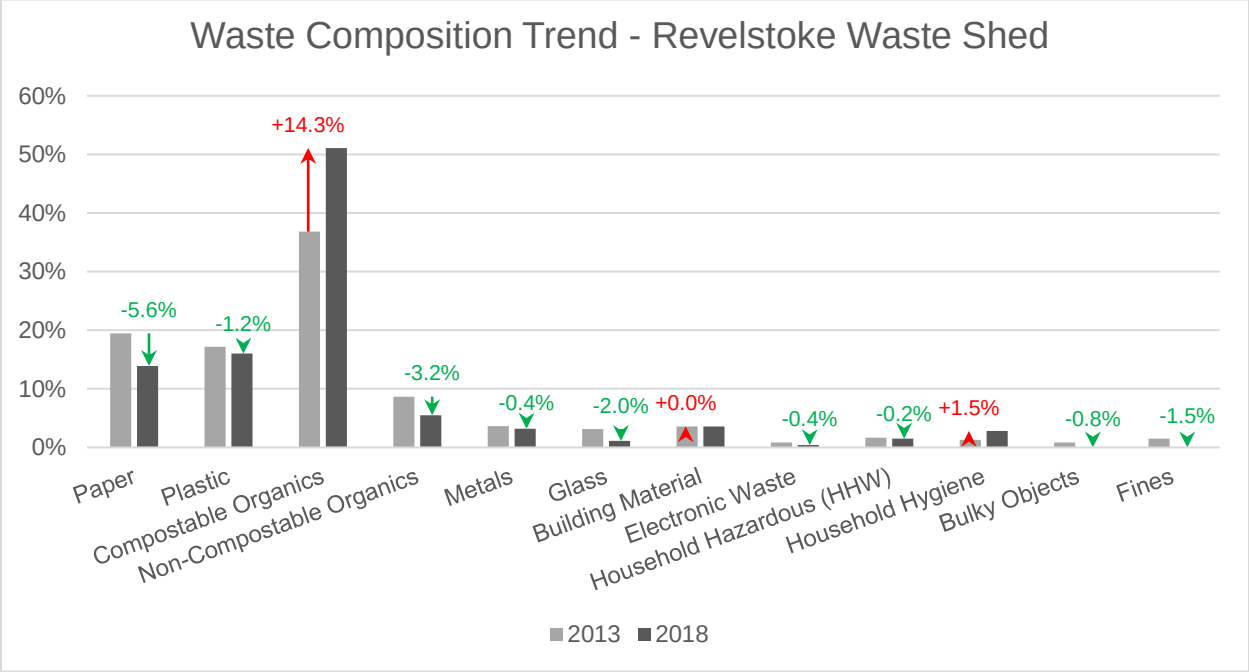


Figure 3 Average composition waste disposed in the Revelstoke waste shed in 2013 and 2018.

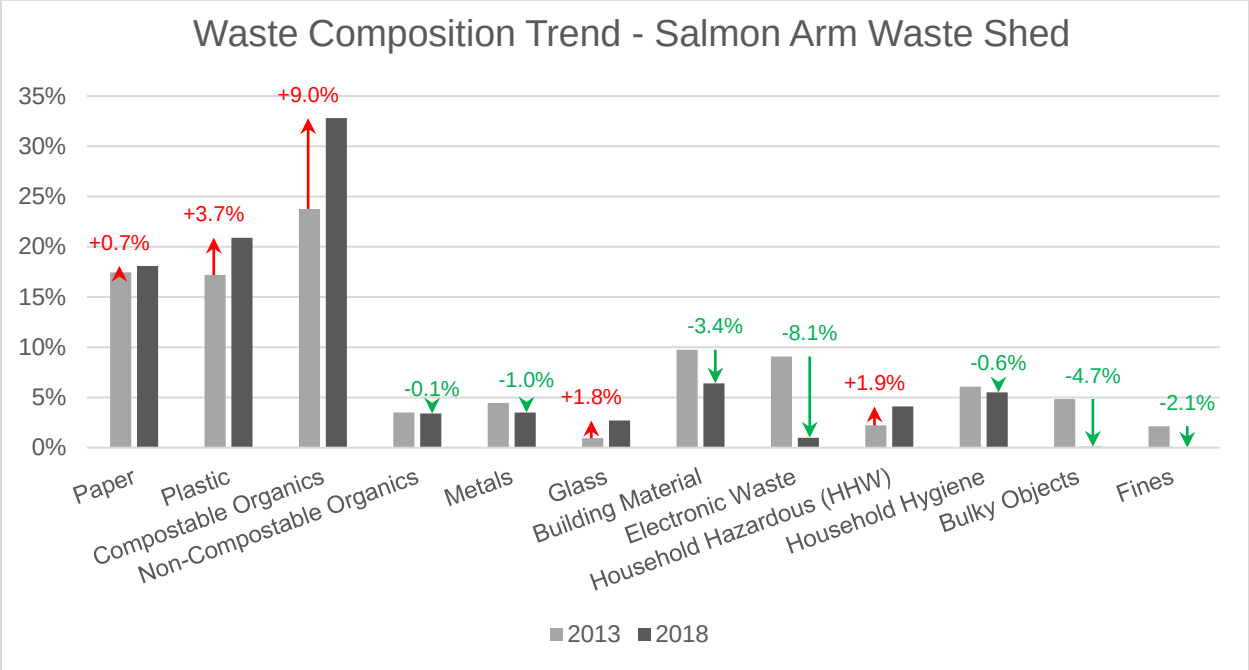


Figure 4 Average composition waste disposed in the Salmon Arm waste shed in 2013 and 2018.

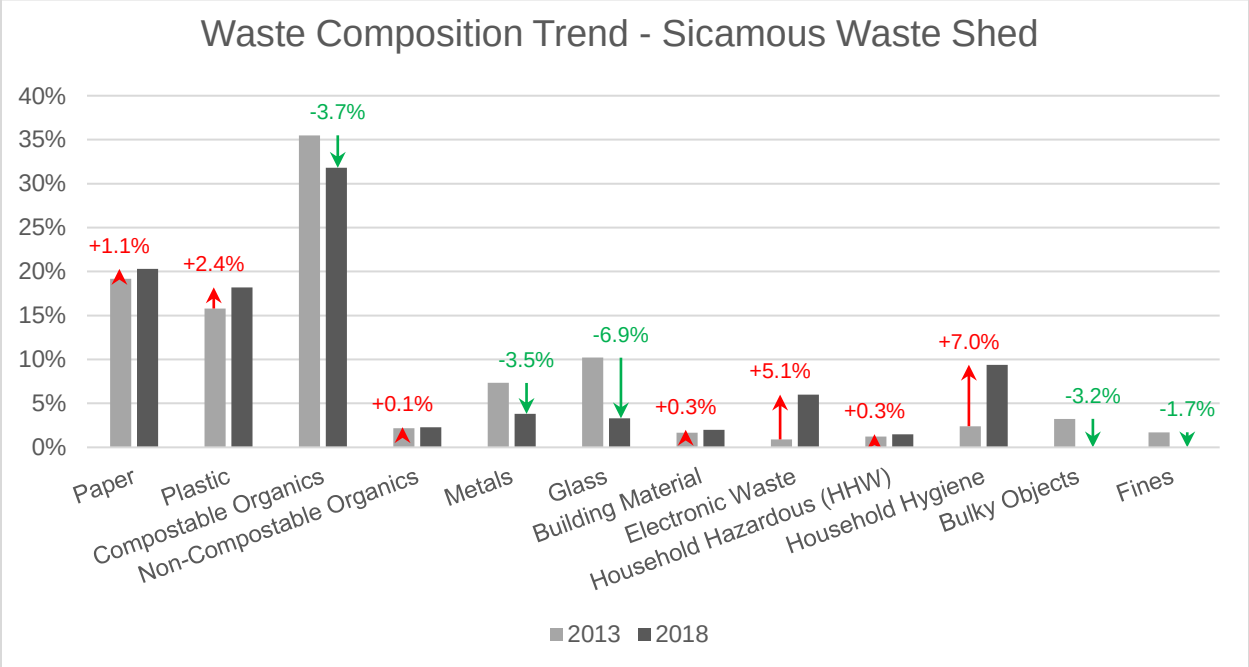


Figure 5 Average composition waste disposed in the Sicamous waste shed in 2013 and 2018.

Waste Characterization Trends for Salmon Arm Waste Sheds 2018 & 2021

In 2021, the CSRD completed an additional waste characterization study for the Salmon Arm waste shed with the objective of assessing the effectiveness of the residential curbside food waste collection program and waste diversion initiatives targeting the ICI sector. As shown in Figure 6 to Figure 9 below, the study revealed that organics collection is working and has helped to reduce the amount of food waste being landfilled. The proportion of food waste in the single-family sector garbage stream decreased from 31.6% in 2018 to 20.3% in 2021. At the same time food waste in the residential self-hauled garbage decreased from 24.9% to 14.5%. ICI garbage had a decrease in food waste from 24.6% to 13.7%. Only garbage accepted at the Salmon Arm Landfill via the transfer stations did not see any significant improvement in terms of detected food waste.

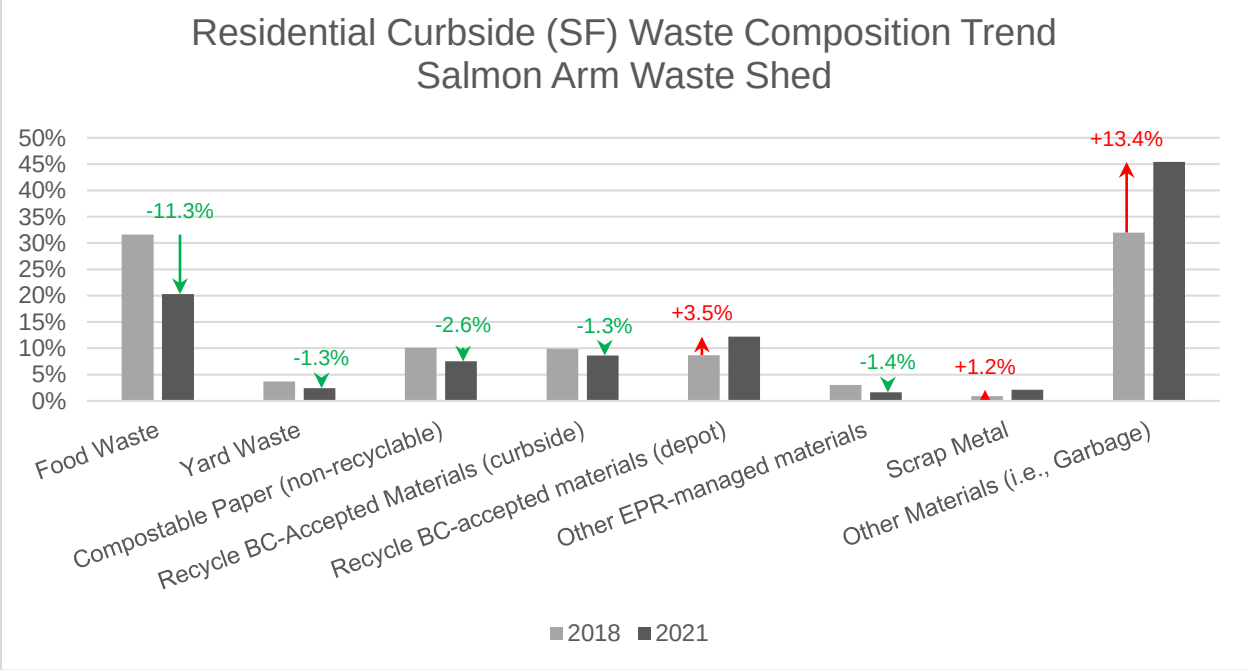


Figure 6 Composition of residential curbside waste disposed in the Salmon Arm waste shed in 2018 and 2021.

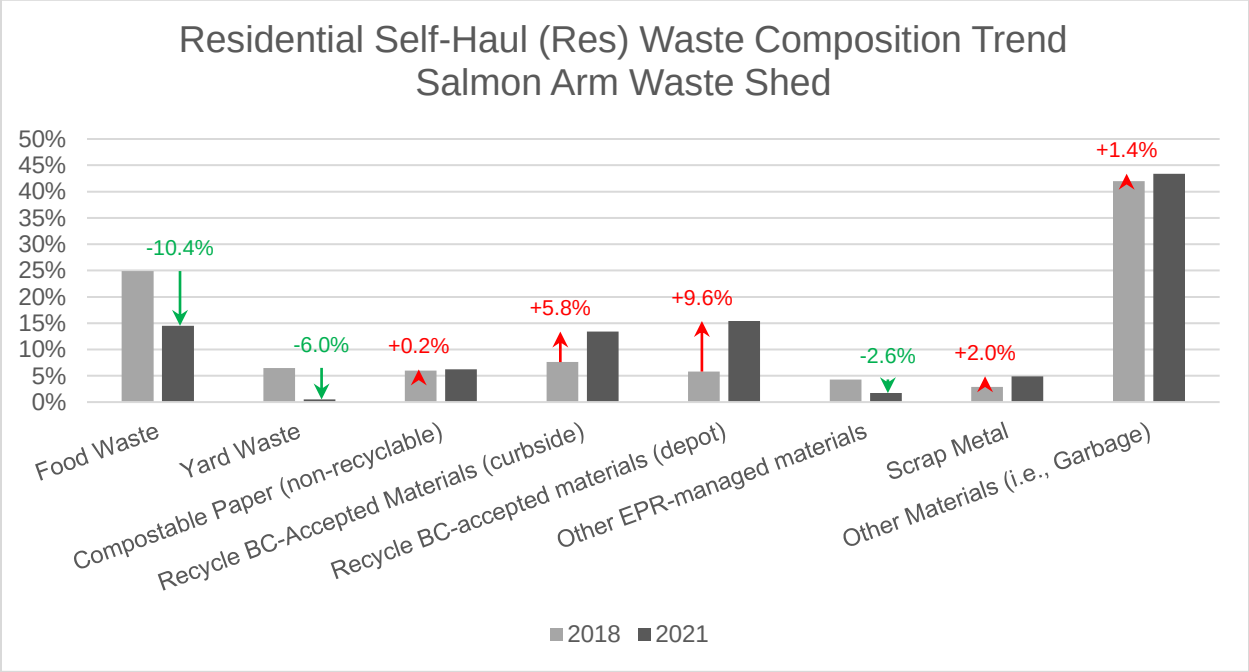


Figure 7 Composition of residential self-haul waste disposed in the Salmon Arm waste shed in 2018 and 2021.

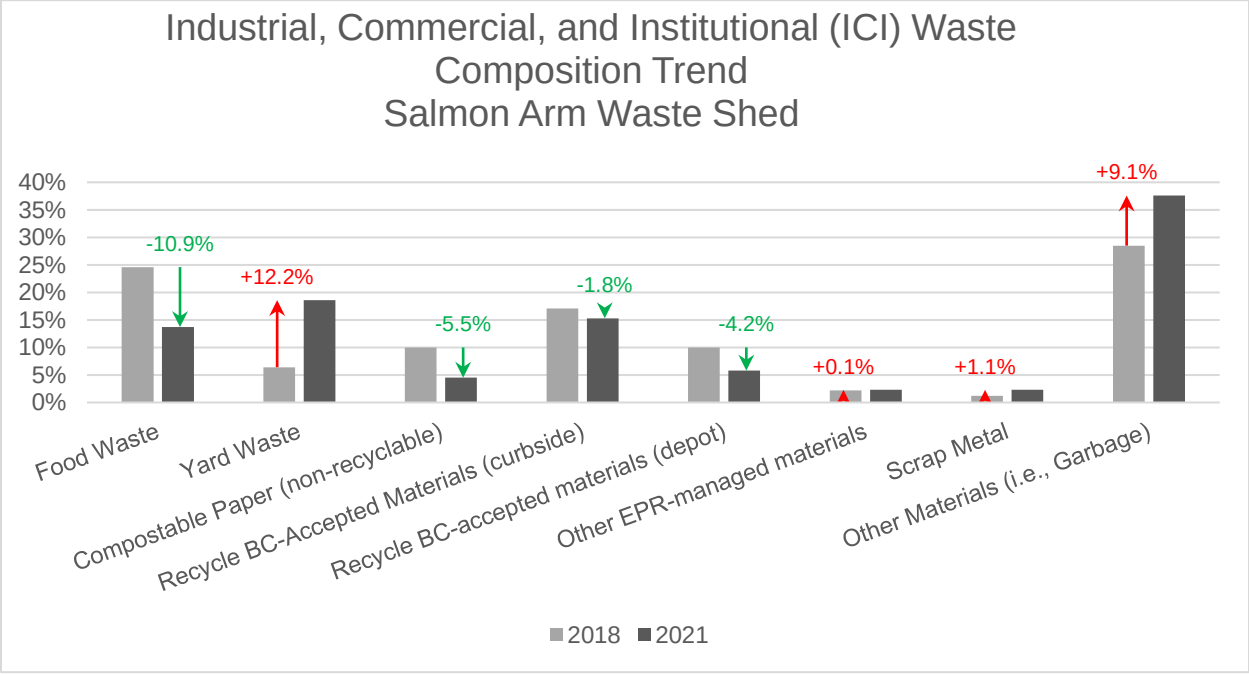


Figure 8 Composition of ICI waste disposed in the Salmon Arm waste shed in 2018 and 2021.

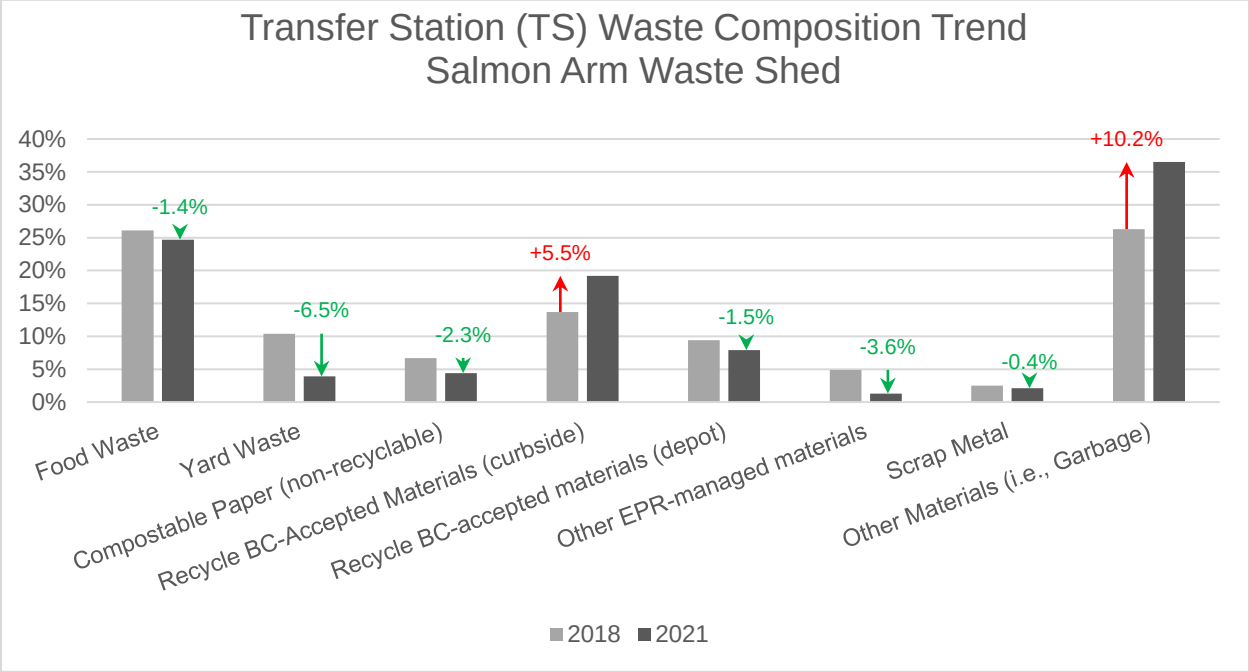


Figure 9 Composition of waste accepted at transfer stations and disposed in the Salmon Arm waste shed in 2018 and 2021.

Although improvements are seen in the diversion of food waste within the Salmon Arm waste shed, up to a third of the waste still comprises compostable organics (e.g., food, yard waste, and compostable paper). This represents an opportunity to further improve organics diversion.

The CSRD has no plans to conduct additional waste characterization studies without significant changes to a community's waste disposal/collection program.

3.2.2 Disposal Rate Trends

As described in Section 3.1, refuse (garbage) collected throughout the reginal district is disposed in four landfills, one located in each waste shed. Waste is transferred to the disposal sites from eight transfer stations.

For the purpose of assessing the effectiveness of implemented waste prevention and diversion programs, the disposal rate is used instead of the diversion rate, as it is difficult to measure and account for all avoided and diverted materials.

The disposal rate in the CSRD was calculated using scale data for waste disposed at the four landfills between 2016 and 2021. Statistics Canada Census data for population from 2016 and 2021 was used to calculate the per-disposal rate assuming a linear trend for 2017-2020.

According to the MoE, the average British Columbian disposed of 501 kg of waste in 2019. The average per-capita disposal rate in the CSRD has remained steady over the past 5 years. The average disposal rate per capita was 659 kg in 2016 and 658 kg in 2021 (refer to Figure 10), peaking in 2018 in all four waste sheds, partially due to increased disposal of ICI waste in Golden and Revelstoke.

The per-capita disposal rate for Revelstoke and Golden waste sheds showed a decrease over the five-year period, whereas Sicamous and Salmon Arm showed an increase. The seasonal population contributes significantly in Sicamous and in the areas serviced by Scotch Creek and Skimikin Transfer Stations. Assuming the population doubles in June-August in the Sicamous waste shed, the five-year average disposal rate would be reduced to 757 kg/capita. Applying the same assumptions to Scotch Creek and Skimikin populations would reduce the average annual disposal rate by 18kg/capita (from 548 to 530kg/capita) in the Salmon Arm waste shed.

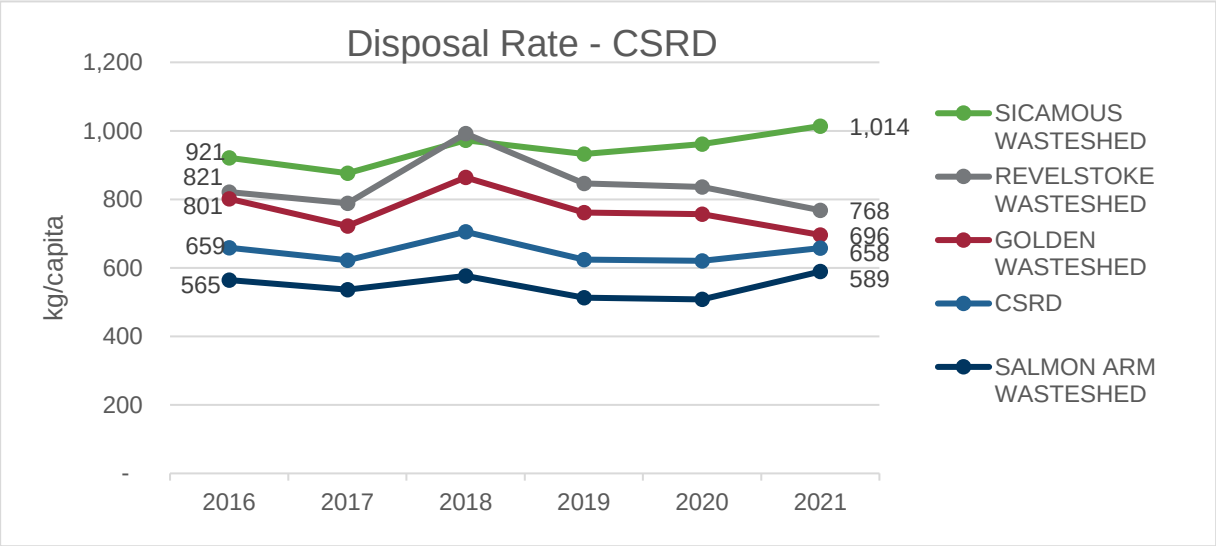


Figure 10 Average waste disposal (kg/capita) in the CSRD 2016-2021.

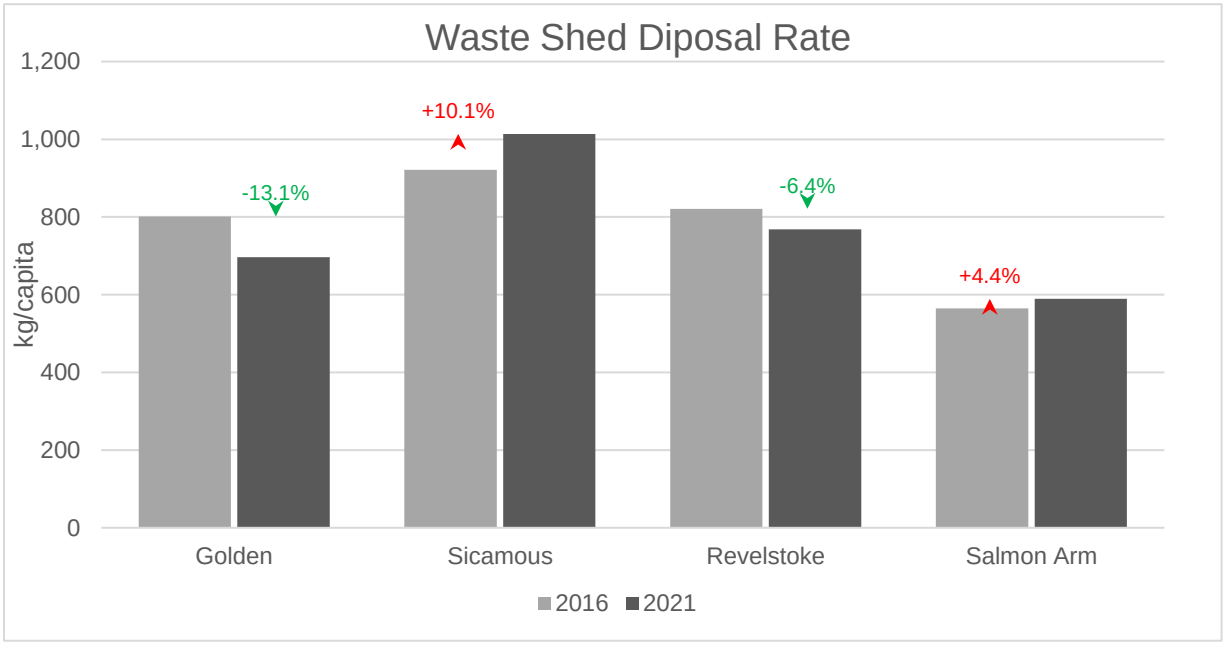


Figure 11 Waste shed average disposal rate in 2016 and 2021.

The per-capita disposal rate for Golden's curbside (single family SF) waste and self-hauled residential waste (Res) has seen a small decrease over the past five years, whereas the disposal rate of waste from the ICI sector has decreased by 15% (refer to Figure 12).

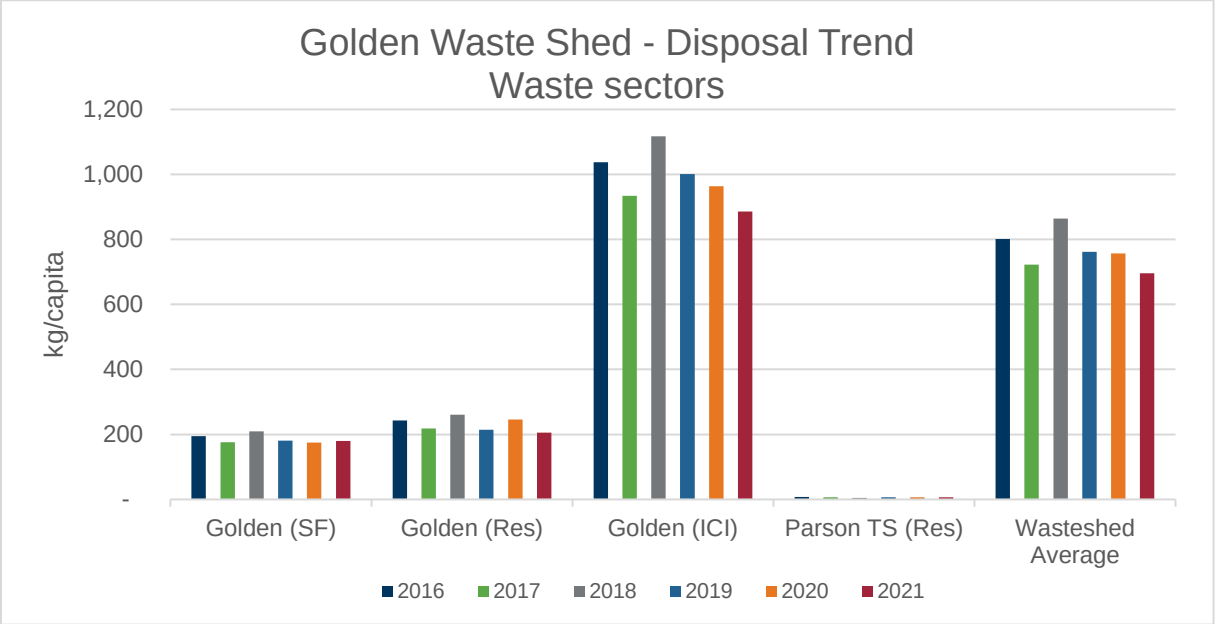


Figure 12 Disposal per capita for the different waste sectors in the Golden waste shed.

The residential waste disposal rate in the Revelstoke waste shed has remained steady over the past five years. The disposed ICI waste per capita has decreased over the same period, with a notable peak in 2018 (refer to Figure 13).

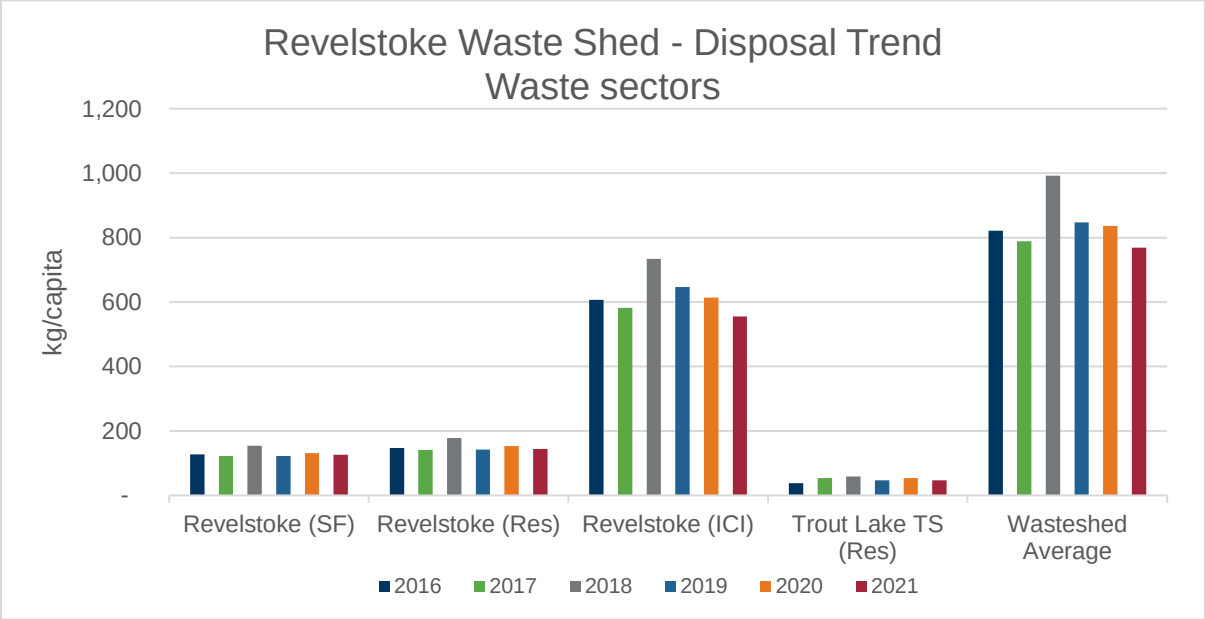


Figure 13 Disposal per capita for the different waste sectors in the Revelstoke waste shed.

The Salmon Arm disposal rate for curbside (SF) waste and self-hauled residential waste has decreased over the past five years, which can be attributed to the diversion of compostable organics. The disposal rate for the areas serviced by the transfer stations on the waste shed has increased (refer to Figure 14). The ICI waste stream has fluctuated, with a dip in 2019, likely due to the economic slowdown during the first the of the COVID-19 pandemic.

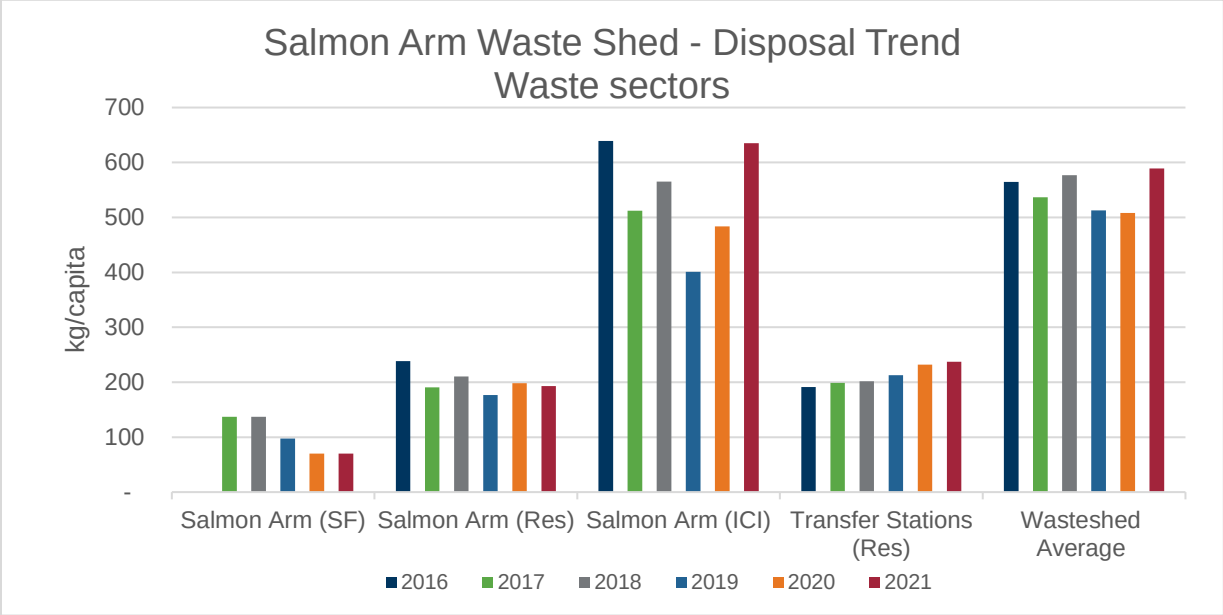


Figure 14 Disposal per capita for the different waste sectors in the Salmon Arm waste shed.

The Sicamous disposal rate for curbside (SF) and ICI waste has been stable over the past five years. Self-hauled residential waste per capita has increased by 10% over the period (see Figure 15).

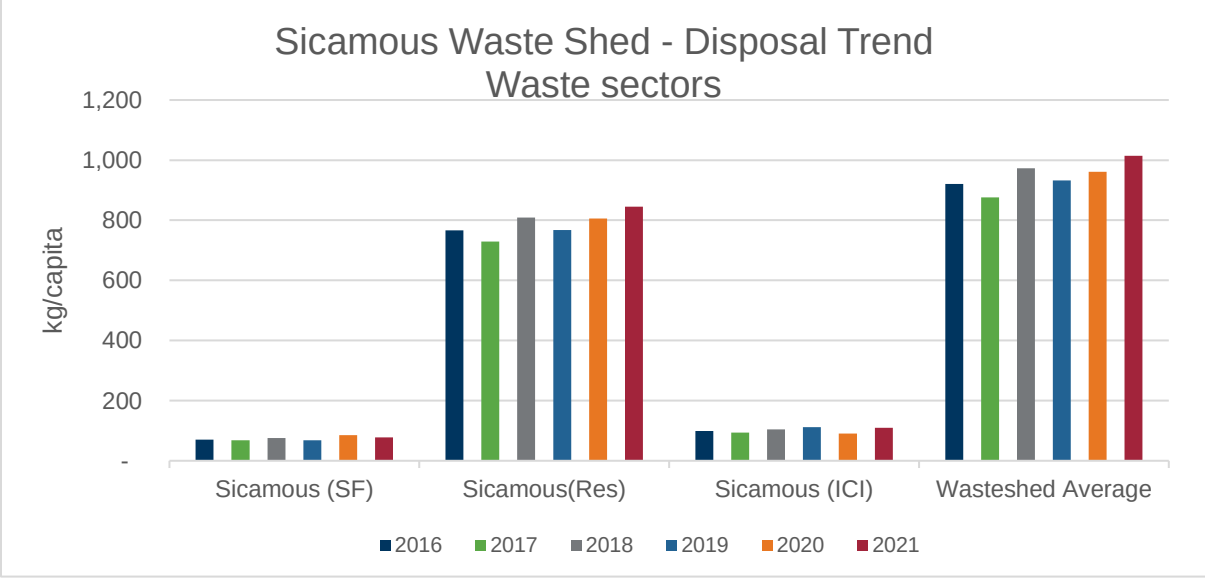


Figure 15 Disposal per capita for the different waste sectors in the Sicamous waste shed.

4. GREENHOUSE GAS EMISSIONS RELATING TO SOLID WASTE MANAGEMENT

In 2010, the CSRD published its 2010 Corporate Climate Action Plan. On an annual basis, the CSRD calculates and publishes its corporate emissions through the Climate Action Revenue Incentive Program (CARIP) Public Report as required by the Province of BC. The funding program recently closed (end of 2021). The CARIP reports summarized actions planned and taken to reduce corporate/community-wide energy consumption and GHG emissions, and reported on progress towards achieving carbon neutrality.

The CSRD has been carbon neutral since inception of this monitoring program. GHG offsets are obtained using verified credits from the CSRD's biogas upgrade initiative (described below), or by purchasing additional verified GHG credits.

The CSRD has explored offset methods to achieve a carbon neutral waste management system and two noteworthy projects have been implemented since the 2009 SWMP.

The Salmon Arm Landfill Biogas Upgrade and production started in 2011 and on average has reduced GHG emissions by about 6,000-8,000 tCO_2e per year. Biogas captured from the landfill site is upgraded by FortisBC to pipeline-quality natural gas that is fed to the FortisBC infrastructure, where it displaces the need for FortisBC to use fossil-based natural gas. Every year the CSRD has achieved verified carbon credits through the BC Climate Action Secretariat.

The second noteworthy project involves the installation of a biofilter in 2016 at the closed Skimikin Landfill. The CSRD has used a third-party consultant to quantify GHG offsets for the annual corporate emission reporting.

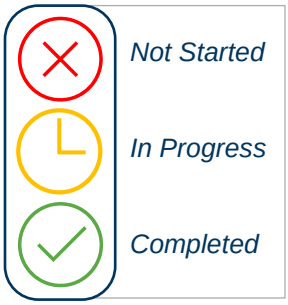
In 2022 the CSRD will establish an LFG collection system at the Revelstoke Landfill as part of the $1.5 phase 1 closure project. The design is still being developed, but the system will either comprise a biofilter or LFG flaring.

In the CARIP reports, the CSRD emphasized its continued work to implement its organics diversion strategy aimed to divert food waste from landfill disposal.

5. SWMP IMPLEMENTATION STATUS

The SWMP establishes a zero-waste vision and nine main themes targeting different focus areas. It lays out a clear suite of strategies for rethinking waste, waste reduction, reuse, recycling, recovery and residual waste management.

The CSRD presented a report card in the 2015 SWMP review and update, in which the status of the 2009 recommendations were summarized. This section provides a continuation of the 2015 status reporting - the figures below provide a snapshot of the implementation status of the various strategies. The strategies are shown in a traffic light format as either completed, in progress or as not started. Appendix A provides further details on the status of each strategy component.



Rethinking Waste

- Develop a ticketing bylaw to assess fines for solid waste management disposal bylaw infractions
- Develop a comprehensive Illegal Dumping Strategy and Toolkit that includes facilitation, education, and legislation to complement an Illegal Dumping Policy (include current policy for having strong anti-litter laws)
- Create radio, newspaper, and/or billboard advertisements that discourage illegal dumping, burying, or burning, including reports of successful prosecutions, and that encourage member municipalities to support similar campaigns
- Implement a facility licensing bylaw (waste stream management bylaw) and administrative structure, complete with enforcement resources to enforce standards for solid waste facilities. Also consider hauler licensing, as well as how to prevent the improper disposal of MSW
- Review departmental initiatives to identify windows of opportunity to incorporate a solid waste policy
- Initiate a business award system to recognize businesses that champion the principles of sustainability with efforts to reduce their solid waste
- Incorporate current Plan institutional, commercial, and light industrial (ICI) waste policies into a comprehensive ICI Waste Reduction Strategy and Toolkit that includes facilitation, education, and legislation programs

- Explore ways First Nations can be included as a full partner within the Solid Waste Management Plan through agreement on the overall Plan Vision, Mission, and Guiding Principles
- Review all infrastructure and equipment life to develop long-term reserves to provide initial capital for the upgrade to new facilities

- Launch an education and promotion campaign to discourage the burning of MSW in backyards and fireplaces
- Work with the Neskonlith Band and the Thompson Nicola Regional District (TNRD) to explore the provision of convenient waste management services to the Band and local regional district residents
- Conduct a literature review and interview staff of other resort communities to determine how best to provide solid waste services for local resorts in keeping with the Vision Statement and Guiding Principles of the Plan
- Work with municipal representatives and their respective Building Departments in addition to internal departments to identify a method for encouraging the proper management of demolition and land clearing (DLC) within member municipalities and Electoral Areas (e.g., proof of proper disposal prior to the issuance of an Occupancy Permit)

Reducing Waste

- Prepare a regional Organics Management Strategy
- Develop an information resource to educate residents on the how-to's of grasscycling and natural landscaping

- Partner with municipal planners to encourage identification of eco-industrial parks in Official Community Plans (OCPs) to not only encourage economic development, but to provide space for additional, nearby companies that transform waste into resources

Reuse

- Provide areas within select transfer stations and landfills for a waste to resource exchange area, following a review of potential risks

- Promote and link up with the Recycling Council of British Columbia (RCBC) Industrial Materials Exchange to encourage reuse amongst industry

Recycling

- Partner with waste shed-specific stakeholders (adjacent regional districts, member municipalities, private sector, community groups) to deliver a regional Organics Management Strategy
- Develop a procurement policy and a Procurement Guide similar to that in the City of Richmond, to encourage and require the purchase of products and services that have a reduced negative environmental impact. Staff will be educated on the use of this Guide

- Work with member municipalities to set standards for multi-family dwellings to provide sufficient space for recycling
- Ban items specified within the Recycling Regulation from the CSRD recyclable collection system, provided there is sufficient opportunities to dispose of the listed material
- Conduct a feasibility study to determine the viability of having a barge provide solid waste services to remote residences and communities along water ways

Recovery

- Where collection facilities for EPR-related items are not available or sufficient, provide depot space at select landfills and/or transfer stations to accommodate this material on a short-term basis, provided all costs are borne by the steward
- Consider private unsolicited proposals for waste-to-energy (WtE) on a case-by-case basis after completing a CSRD application form

Residual Management

- Conduct annual household hazardous waste (HHW) round ups in conjunction with recycling fairs in Salmon Arm, Revelstoke, and Golden, while considering the costs and benefits of having permanent HHW drop off facilities at each landfill
- Address the immediate concern associated with the potential closure of the private DLC site located in Salmon Arm, which may result in a substantial increase in this type of waste received at CSRD facilities. Develop a short-term strategy for the management of this material ahead of the proposed DLC Waste Reduction Strategy

- Determine costs and benefits of providing a curbside garbage collection system within higher density electoral areas as well as facilitating the provision of curbside collection of garbage in all high-density areas, whether they are in the electoral areas of the CSRD or member municipalities
- Review existing bylaws and the Building Code to see where solid waste management diversion and disposal controls can be implemented to require the proper disposal or diversion of DLC wastes

System Funding (recommendations from 2015 SWMP Review and Update)

- Conduct an in-depth financial review of the waste system that includes the following elements:
  - Establishing a more formal policy about which programs will be funded through tipping fees and taxes (or allowing for flexibility to meet the CSRD decision maker stakeholder preferences)
  - Preparing a refined disposal forecast that reflects plan recommendations
  - Refining the assumptions associated with the closure/post-closure fund and consider various phasing scenarios
- Developing and testing a series of funding scenarios that include relatively more or less

5.1 Major Achievements

The current SWMP establishes a bold vision for zero waste and nine main themes targeting different focus areas. It lays out a clear suite of strategies for rethinking waste, waste reduction, reuse, recycling, recovery, and residual waste management. The CSRD has made significant progress on many of the aspects covered by the SWMP. Improved organics diversion and increased accessibility to recycling of wide-ranging materials are some of them. Diversion has been incentivized through the implementation of differential tipping fees, which began in 2018 through CSRD's Bylaw No. 5835, 2021. Once a waste stream is deemed "marketable" in an area, the waste generator pays a significant surcharge for bringing marketable wastes in a load of waste destined for landfilling. Marketable waste means the waste can be directed to a Provincial Product Stewardship Program, a regional district program or a commercial market through waste reduction, reuse or recycling opportunities (including composting). An in-depth discussion on the strengths of the region's solid waste management system is included in section 10.2 of this report.

Organics Diversion

The CSRD has made great strides in the area of organic waste diversion. The efforts are underpinned by the Organics Diversion Strategy, developed in 2015, which outlines how the region plans to divert organic wastes (food waste, yard waste, clean wood, and compostable

paper) from landfilling. The organics diversion efforts started earlier. Since 2009, the CSRD has been working with the communities of Salmon Arm, Revelstoke and Golden to investigate the potential for developing source separated organics (SSO) collection and processing programs to complement existing yard and wood waste diversion programs.

Salmon Arm: In 2016, a three-month trial of curbside food waste collection was conducted for 200 Salmon Arm homes. In the same year, a food waste collection program was implemented at the main CSRD office building, followed by the implementation of a curbside collection in the entire City of Salmon Arm in July 2019.

Figure 16 Curbside containers for food waste with City of Salmon Arm branding

The City of Salmon Arm provides weekly curbside collection of residential food waste (Figure 1), and yard waste collection twice a year (in the spring and the fall). All organics from Salmon Arm residents are processed at the Spa Hills Composting Facility.

The CSRD undertook significant outreach and education with the ICI sector in Salmon Arm, when organics diversion became an option and a “marketable waste”. The CSRD started charging commercial loads containing food waste a landfill disposal fee of $240/tonne,. CSRD staff supported business owners to help implement organics diversion driven by the differential tipping fees. In June of 2022, the CSRD sent letters to all commercial food waste haulers in Salmon Arm to educate them and their customers on acceptable materials for food waste composting. The haulers are notified that the CSRD will start to perform regular audits of incoming loads to ensure compliance.

Revelstoke: In July 2022, the CSRD will open its new food waste composting facility at the Revelstoke Landfill and the facility will start accepting food waste for processing. Federal and provincial government funding helped to reduce the overall cost of this facility by $300,000. This new facility is separate from the yard and garden waste composting process, which is already established at the landfill.

Figure 17 Compost bunkers for receiving and mixing at the Revelstoke composting facility

The CSRD has secured a grant to establish an educational staffing position to promote food waste reduction and diversion in Revelstoke in partnership with the Revelstoke Local Food Initiative. The new position will be appointed in May of 2022 and focus on food recovery and diversion.

Once the composting facility is accepting food waste, the CSRD will start ICI outreach and

education around differential tipping fees. The CSRD will apply the differential tipping fee for waste containing food, as food waste will be considered a marketable waste.

The City of Revelstoke is currently identifying the most suitable curbside collection design option. Considerations include the need to upgrade the existing manual curbside collection program, as well the aim to become certified “Bear Smart” community by the BC Conservation Foundation. No preferred collection design or schedule for the organics curbside collection roll-out has been determined.

Golden and Sicamous: These communities do not provide residential food waste collection, and there is no local food waste processing facility. The Town of Golden offers free residential yard waste pickup twice annually, in spring and fall. Sicamous offers yard waste collection annually (typically in spring). The yard waste is directed to the local CSRD landfills where it is chipped and beneficially used onsite.

The CSRD is planning to look at suitable organics processing options for Golden. There is a potential to partner with the municipality to secure a suitable site for a facility, review options that include a transfer station with hauling to Revelstoke for composting, or to engage a private processor to accept residential curbside organics. Golden is also trying to find suitable options for biosolids management.

Rural Communities: A rural food waste collection program was trialled in by the regional district in 2017. The CSRD established centralized drop-off bins within targeted rural communities (e.g., at a transfer station or other centralized locations). Residents who registered received access using a key to the secure drop-off bin. Only 50 residents signed up and the trial was discontinued after some time. This form of rural food waste collection was deemed too expensive and ineffective to pursue further. Rural residents are currently encouraged to divert organics through backyard composting. Composters have been offered to residents at subsidized rates over the last 10 years and the CSRD also offers Master Composter workshops.

Increased Accessibility to Reuse and Recycling

In addition to organics diversion, the CSRD has worked hard to increase residential access to reuse and recycling services at landfills and depots. All CSRD facilities have Reuse Centers to encourage reuse.

Figure 18: Hazardous waste drop-off at a CSRD landfill

The CSRD has been very progressive in developing partnerships with stewardship agencies to be able to offer recycling options for a wide suite of regulated EPR products and materials. Residential PPP is collected at 18 recycling depots

operated by the CSRD in partnership with Recycle BC. Partnerships are currently also formalized with MARR (Major Appliance Recycling Roundtable), Call2Recycle, Product Care, TRP Thermostats, ElectroRecycle[5], EPRA (Electronic Products Recycling Association) and BCUOMA (the BC Used Oil Management Association).

Figure 19: Advertisement for CSRD's Car Seat Recycling Program

The CSRD offers a free year-round residential disposal option for hazardous materials at the Salmon Arm, Revelstoke and Golden Landfill sites. HHW includes used oil, paint, pesticides, and flammable (Figure 18).

For any EPR products that cannot be accepted, the CSRD promotes drop-off alternatives on its website where links to individual Stewardship Programs helps residents to locate a depot near them.

At most of the CSRD facilities, residents can drop-off many difficult-to manage materials, which are not yet covered by EPR programs. Used clothing, books, mattresses, and children's car seats are accepted and recycled in an environmentally responsible way. All child car seats (e.g., infant and booster seats) can be recycled for a fee of $5 per seat while used mattresses cost $15 per mattress to recycle.

5.2 Initiatives Still Outstanding

The majority of recommendations were noted as completed earlier in Section 5. There are a range of reasons why some strategy components were not initiated and are still outstanding. The following summarizes the overarching reasons why specific SWMP strategies have not yet been initiated.

Changed Priorities

Some strategies were not initiated as the CSRD has either experienced a shift in priorities or conditions have changed, making specific strategies irrelevant. Backyard waste burning and the need to cater to resort waste communities along waterways have not been regarded as significant and urgent issues. There is no active Industrial Materials Exchange currently, but the regional district has been encouraging reuse through other means. Lastly, instead of banning

[5] Run by the Canadian Electrical Stewardship Association (CESA), which is a stewardship organization.

materials, the CSRD is encouraging source segregation of divertible materials through differential tipping fees.

SWMP strategies yet to be started:

- Launch an education and promotion campaign to discourage the burning of MSW in backyards and fireplaces
- Conduct a literature review and interview staff of other resort communities to determine how best to provide solid waste services for local resorts in keeping with the Vision Statement and Guiding Principles of the Plan
- Promote and link up with the Recycling Council of British Columbia (RCBC) Industrial Materials Exchange to encourage reuse amongst industry
- Ban items specified within the Recycling Regulation from the CSRD recyclable collection system, provided there is sufficient opportunities to dispose of the listed material
- Conduct a feasibility study to determine the viability of having a barge provide solid waste services to remote residences and communities along water ways
- Conduct an in-depth financial review of the solid waste system.

Significant Collaborative Effort Required

Over the last five years, the main focus of the CSRD's solid waste staff has been on collaboration with member municipalities and key stakeholders to increase organics diversion. Some other strategy components requiring significant collaboration within CSRD functions and with external parties (e.g., member municipalities and Electoral Areas) were postponed, for example, collaborative efforts to manage DLC wastes, defining the role of the OCPs to manage waste as resources, and standardizing recycling space requirements across MF buildings. These strategies are still important, and CSRD staff will focus on DLC waste diversion initiatives in 2022. There has not been any specific collaboration with the Neskonlith Band or the TNRD; however, the CSRD has worked with other First Nation communities to introduce recycling programs and wishes to initiate stronger collaboration partnerships as part of developing a new SWMP.

SWMP strategies yet to be started:

- Work with municipal representatives and their respective Building Departments in addition to internal departments to identify a method to encourage the proper management of DLC within member municipalities and Electoral Areas (e.g., proof of proper disposal prior to the issuance of an Occupancy Permit)
- Partner with municipal planners to encourage identification of eco-industrial parks in Official Community Plans (OCPs) to not only encourage economic development, but to provide space for additional, nearby companies that transform waste into resources
- Work with member municipalities to set standards for multi-family dwellings to provide sufficient space for recycling

- Review existing bylaws and the Building Code to see where solid waste management diversion and disposal controls can be implemented to require the proper disposal or diversion of DLC wastes
- Work with the Neskonlith Band and the Thompson Nicola Regional District (TNRD) to explore the provision of convenient waste management services to the Band and local regional district residents

Uncertain System Costs

The CSRD has not started the initiatives related to funding of the solid waste management system. The CSRD has updated the Design, Operation and Closure Plans (DOCPs) for each of the four landfills between 2017 – 2019, but the regional district has not had them all approved by MoE. Therefore, it has been challenging to develop an accurate disposal forecast and estimates for closure/post-closure fund requirements. The strategies relating to system funding are still very important, and the CSRD wants to continue to focus on system funding.

SWMP strategies yet to be started:

- Establishing a more formal policy about which programs will be funded through tipping fees and taxes (or allowing for flexibility to meet the CSRD decision maker stakeholder preferences)
- Preparing a refined disposal forecast that reflects plan recommendations
- Refining the assumptions associated with the closure/post-closure fund and consider various phasing scenarios
- Developing and testing a series of funding scenarios that include relatively more or less emphasis on tipping fees and tax-based funding

6. LANDFILL REGULATORY CONFORMANCE AND COMPLIANCE

Significant changes have been made to the regulatory requirements for design and operation of landfills since the CSRD's SWMP was reviewed and updated in 2015. This section summarizes the regulatory conformance and compliance activities undertaken at the regional landfills since then. Currently, there are four documents published by the MoE that regulate landfill design, operations, and monitoring:

- Landfill Criteria for Municipal Solid Waste (second edition, June 2016),
- Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills (January 1996),
- Environmental Management Act (July 2004), and
- Landfill Gas Management Regulation (December 2008).

The Landfill Criteria for Municipal Solid Waste (Criteria) was issued by MOE in 1993 and last updated in 2016. The Criteria outline recommended design, operations, and closure practices

for MSW landfills. Criteria requirements are not mandatory or legally binding but are intended to be taken into consideration when setting the commitments specified in SWMPs, permits and operational certificates.

The Criteria specify that the conformance status of existing landfills should be evaluated against the new (2016) Criteria, and a Landfill Conformance Review prepared by the authorized holder of the landfill permit or Operational Certificate (OC) for all existing landfill sites. Conformance with the 2016 Criteria should be reviewed only for those requirements applicable to a particular landfill site. If a need for upgrades is identified then the Conformance Review and Landfill Criteria Upgrading Plan, if needed, shall be submitted to the MoE during the next SWMP review or within 5 years of the date of issuance of these Criteria (June 2021), whichever time period is shorter.

In 2018, when the MoE approved the SWMP Amendment: Salmon Arm Landfill Acquisition and Property Acquisition Guidelines, the approval letter specified that by August 24, 2021, the CSRD is required to submit Landfill Criteria Conformance Reviews for the landfills in Golden, Revelstoke and Salmon Arm. The Landfill Criteria Conformance Reviews must be done in accordance with Section 2.2 Conformance of Existing Landfills in the 2016 Landfill Criteria for Municipal Solid Waste.

The CSRD operates four landfills in the region. Table 3 summarizes landfill types, timing of the conformance reviews for each landfill, status of the Design and Operations Plan (DOCP) and OC, and remaining landfill capacity.

Table 3: Compliance status of CSRD's Landfills

Landfill	Landfill Type	Conformance Review	Current DOCP	Current OC	Remaining Lifespan
Golden	Natural attenuation	Completed Dec 2019 by Golder	Amendment approved May 2020	OC 17006 (issued Jun 2021)	<5 years
Revelstoke	Natural attenuation	Completed Jan 2019 by XCG	Completed and submitted Jan 2019. MoE acknowledged receipt in the 2021 OC Amendment	OC 15821 (issued Sept 2021)	16 years + 20 years
Salmon Arm	Natural attenuation and engineered landfill[6]	Completed Oct 2019 by Sperling Hansen Associates	Amendment approved Jan 2021	Not yet approved – application submitted in Mar 2020	73 years
Sicamous	Natural attenuation	Completed Dec 2017 by XCG	Completed and submitted Dec 2017. MoE acknowledged receipt in the 2021 OC Amendment	OC 514 (issued Jun 2021)	13-21 years

[6] Phase 1 (about 5.0 Ha) is a natural attenuation landfill. Phase 2 is an engineered landfill with a liner and leachate collection, which is closed with intermediate cover. Phase 3 is fully engineered, which is active.

The CSRD completed conformance reviews for all four landfills. The DOCPs were updated for each landfill between 2017 and 2019, but the Sicamous Landfill and Revelstoke Landfill have not yet had their DOCPs approved by MoE.

In 2020, the CSRD submitted applications to update each OC to accommodate for the updated DOCPs. The Salmon Arm Landfill still has not had the OC update approved by the MoE (submitted in 2020).

In summary, the CSRD is awaiting MoE decisions in regard to the Sicamous, Revelstoke and Salmon Arm landfills.

6.1 Summary of DOCP Updates

As indicated in Table 3, the Golden, Revelstoke and Sicamous Landfills are natural attenuation sites. To improve environmental protection, the updated Landfill Criteria contains recommendations to improve the performance of these sites.

The updated Landfill Criteria identifies the installation of an engineered liner and leachate collection system for any of the following scenarios:

- A new landfill,
- Lateral expansion of an existing landfill beyond the approved waste permit, or
- A new landfill phase the extends the limit of waste within the approved waste footprint.

Golden Landfill

For the Golden Landfill, the current Phase 1 fill area has less than 5 years of capacity remaining, and the 2019 DOCP recommends that the CSRD plan for future development phases with an engineered liner and leachate collection system. The DOCP provides preliminary cost estimates for the Phase 1 closure ($1.3 Million in 2019 dollars) and for Phase 2 expansion ($1.8 Million in 2019 dollars). Due to community concerns regarding ongoing operation of the Golden Landfill and the cost of meeting the new Landfill Criteria, the CSRD is reviewing future options with respect to expanding the landfill or transferring waste to another location. Any decisions regarding the future of this site should be considered during the plan renewal process. Changes to the site will require a full SWMP update and renewal process with public and stakeholder engagement.

Revelstoke Landfill

The Revelstoke Landfill consists of two separate properties—the North Site and the South Site. The 2019 DOCP estimates that the North Site will reach design capacity in late 2038. At present, there are no leachate controls at this site. As the North Site will continue operating within the existing waste footprint (i.e., without lateral expansion) and there is a lack of municipal infrastructure to support leachate collection (nearby sanitary sewer), the 2019 DOCP recommends that the site continue operating as a natural attenuation landfill, with the primary focus being on source control / surface water management to reduce leachate generation

potential. If the South Site is developed as a landfill in future, it is anticipated that it will be an engineered landfill with a base liner and leachate collection system.

The 2019 DOCP for the Revelstoke Landfill also includes a long-term capital plan for the development of the Site. This plan outlines the key infrastructure projects associated with implementation of the DOCP for the site. This long-term capital plan provides cost estimates for capital projects to develop the North Site within the existing limit of waste, which has capacity for 20 years. In 2022 the CSRD will establish an LFG collection system at the Revelstoke Landfill as part of the $1.5 phase 1 closure project.

Salmon Arm Landfill

The 2020 DOCP for the Salmon Arm Landfill indicates that the Site will reach design capacity in 2095 in a series of engineered phases. The 2020 DOCP also includes a detailed cost analysis for developing, maintaining, and closing the Salmon Arm Landfill.

Sicamous Landfill

The 2017 DOCP for the Sicamous Landfill indicates the Site will reach design capacity in 2035 or 2043 if additional filling is completed. The proposed final limit of waste (landfill footprint) will remain consistent with the existing limit of waste and, therefore, will not trigger the need for an engineered expansion. A Long-Term Capital Plan and a summary of closure and post-closure costs associated with the Site are included in the 2017 DOCP.

6.2 Summary of Compliance Issues

The CSRD has experienced ongoing issues maintaining compliance at its landfills. One compliance issue that applies to all four landfills is the exceedance of groundwater quality limits at or beyond the landfill property boundaries. The CSRD is working to improve monitoring through the use of additional offsite groundwater monitoring wells. In the long term, the regional landfills are likely to need major capital upgrades to become engineered landfills. A discussion about compliance issues is also included in section 10.2, where solid waste management challenges in the region are identified.

Golden Landfill

The major compliance issues at the Golden Landfill include groundwater quality at the property boundary exceeding guidelines. To address these compliance issues, the CSRD completed a hydrogeological study in 2018 and updated the study in 2021, which included proposed locations for offsite groundwater monitoring wells in 2021.

The CSRD had some delays undertaking surface water management works due to construction materials shortages. However, the CSRD completed all related works associated with the surface water management plans and MoE staff inspected the works in 2021.

There has been a compliance issue at Golden Landfill related to litter, and the CSRD was subject to a lawsuit from neighbouring property owners linked to this issue. This may potentially be an ongoing issue. A Board resolution in late 2021 solidified the regional district’s commitment

to finalizing and implementing a litter, drainage, and wildlife management plan that includes measures such as improved litter fencing, application of sufficient intermediate landfill cover, bird control and monitoring.

Revelstoke Landfill

The main compliance issue at the Revelstoke Landfill is exceedance of ground or surface water quality limits at or beyond the landfill property boundary. This landfill has had unauthorized disposal of septage. MoE required the CSRD to close the septage disposal facility at the Revelstoke Landfill, but the authorization to accept septage was re-established.

At the Revelstoke Landfill, the CSRD has worked on addressing neighbours' concerns about dust, odour, and litter.

In 2022 the CSRD will establish an LFG collection system at the Revelstoke landfill. The design is still being developed, but the system will either comprise a biofilter or LFG flaring

Salmon Arm Landfill

The main compliance issue at the Salmon Arm Landfill is the exceedance of groundwater quality limits at or beyond the landfill property boundary.

Sicamous Landfill

Similar to the other three landfills, the main compliance issues at the Sicamous Landfill include groundwater quality at the property boundary exceeding guidelines. Other non-compliances relate to not monitoring surface water or landfill gas as required.

7. FIRST NATIONS LINKAGES

Although this is not listed in the MoE Guide, the MoE is placing increasing emphasis on regional districts' efforts to collaborate and partner with local First Nations communities with respect to SWMP implementation.

In February 2021, the CSRD and the Little Shuswap Lake Band signed a service agreement that outlines how the Band will operate a recycling depot on reserve land, as a satellite location to the Scotch Creek Recycling Depot to collect recycling material related to the Recycle BC program.

The CSRD must continue to ensure engagement with local First Nations communities takes place. The success of many regional waste diversion strategies relies on close collaboration for the effective application of waste bylaws, promotion, and public education on waste prevention and diversion initiatives.

When the SWMP is being renewed, it will be important to adequately involve First Nation communities to ensure that their waste management needs are met.

8. EXTERNAL FACTORS IMPACTING PLAN IMPLEMENTATION

The CSRD has seen significant population growth since the adoption of the Plan and projections (Section 2.1) and population projections show continued growth. The CSRD will need to consider how its solid waste management system is able to handle increasing demand related to population growth.

Primary industries, such as trades, manufacturing, and accommodations / food services, as well as agriculture and forestry, represent a large portion of the region's local economy.

Waste generation is closely tied to the economy and the region saw increased tonnages in 2018 as a result of developments and specific infrastructure projects. For example, in Golden, the CP Rail cleanup projects generated 8,000 tonnes of materials. Revelstoke also had a significant project.

Recent climate-impact-related weather events in BC involving forest fires and flooding can also cause a surge in waste materials to manage.

It is crucial to ensure that the region's solid waste management infrastructure is able to handle pressures from population growth, infrastructure projects and ICI sector activities, as well as fluctuating waste quantities relating to natural disasters.

9. SOLID WASTE SYSTEM FINANCIALS

The MoE's 1994 Guide to Solid Waste Management Planning provided high-level direction regarding funding / cost recovery mechanisms for the diversion programs and residual management facilities contained within a regional district's solid waste management plan. For residual management facilities, the 1994 Guide recommended that plans provide an estimate of the total capital and operating costs of these facilities over their anticipated lifespan, including closure and post-closure stages. However, the Guide provides no direction on how to incorporate these costs into the regional districts' long-term operating and capital plans, which for many regional districts, did not exist at that time.

By 2009, the Province of BC required that municipalities and regional districts must annually adopt, by bylaw, a five-year financial plan that includes operating and capital expenditures. The 2009 SWMP outlined a high-level strategy for program funding; however, there was no assessment of the financial and administrative implications of the plan to the CSRD 5-Year Financial Plan.

CSRD's 2009 SWMP: The CSRD commits to continuing the 100% user-pay system for residual solid waste disposal by providing a regional user fee structure for CSRD refuse sites. Incentive-based user fees will be applied to all waste discards managed within a recycling, reduction, or reuse framework. Disincentive fees will be applied to recyclable material destined to be buried in landfill.

Costs incurred to fund services related to recycling, composting, and other waste recycling, reduction, and education program will be recovered through a blend of user fees and taxation, while the provision of curbside programs will be funded through utility service fees.

The CSRD's 2015 SWMP Review and Update addressed funding mechanisms and policies. At that time, the CSRD funded its solid waste system through a combination of tipping fees and taxes. Generally, disposal-related activities were funded through tipping fees and waste diversion programs through property taxes.

The 2015 Review included an initial financial analysis of the solid waste system, which comprised of estimates of the cost and diversion impacts resulting from the SWMP and establishment of a closure/post-closure fund that would include annual fund contributions sufficient to provide for care of all CSRD's landfills after closure.

The financial analysis done in 2015 considered impacts on the CSRD 2016-2019 Financial Plan. The analysis indicated that more revenue would be required to adequately fund the solid waste system. Consequently, as discussed in Section 5 of this report, the 2015 Review recommended that the CSRD conduct a more in-depth financial review of its system. This type of detailed review has been done by others for their SWMP updates. Regional districts use the planning process to provide a framework for increasing revenues to support the objectives of their specific SWMPs and to meet the regulatory obligations for the operation of solid waste management systems.

Many recently updated SWMPs incorporate ten-year financial plans that show both current and proposed capital and operating expenditures, funding gaps, and any increases to taxes or tipping fees required to implement the plan. During a plan renewal process, a regional district is now expected to outline financial and administrative implications from all planned SWMP strategies, initiatives, policies, and solid waste management facilities.

Current Solid Waste System Funding

In accordance with the 2009 SWMP, the CSRD solid waste service is divided into two regional functions: Regional Recycling and Regional Solid Waste Management. The Regional Recycling function is funded from taxation, tipping fees on marketable materials, and recycling recovery fees and sales, while the Regional Solid Waste Management function is funded primarily through tipping fees.

A summary of the 2022-2026 Financial Plan for these functions is provided in Table 4 and Table 5.

Table 4 Regional Recycling 2022-2026 Financial Plan

	2022	2023	2024	2025	2026
REVENUES					
Property Taxes	$953,934	$993,787	$968,358	$987,298	$1,009,054
Tipping Fees	$522,500	$532,500	$520,000	$520,000	$522,500
Recovery & Sales	$555,000	$555,000	$429,000	$429,000	$555,000
Other	$156,821	$27,347	$42,300	$27,600	$38,991
Total Revenues	**$2,188,255**	**$2,108,634**	**$1,959,658**	**$1,963,898**	**$2,125,545**
EXPENSES					
Operating	$2,118,255	$2,108,634	$1,959,658	$1,963,658	$2,125,545
Capital	$45,000	$0	$0	$0	$0
Transfer to Reserves	$25,000	$0	$0	$0	$0
Total Expenditures	**$2,188,255**	**$2,108,634**	**$1,959,658**	**$1,963,658**	**$2,125,545**

Table 5 Regional Solid Waste Management 2022-2026 Financial Plan

	2022	2023	2024	2025	2026
REVENUES					
Property Taxes	$0	$0	$0	$0	$0
Tipping Fees	$3,850,000	$3,840,000	$4,136,000	$4,136,000	$3,850,000
Transfer from Reserves	$297,000	$0	$0	$0	$0
Other					
Total Revenues	**$5,400,000**	**$3,925,000**	**$4,216,000**	**$4,216,000**	**$3,937,020**
EXPENSES					
Operating	$3,839,058	$3,699,031	$3,835,731	$3,845,465	$3,798,690
Closure	$1,200,000	$0	$0	$0	$0
Expansion	$0	$0	$0	$0	$0
Capital	$290,000	$20,000	$0	$0	$0
Transfer to Reserves	$70,942	$205,969	$380,269	$370,535	$188,330
Total Expenditures	**$5,400,000**	**$3,925,000**	**$4,216,000**	**$4,216,000**	**$3,987,020**

With respect to the Regional Solid Waste Management function, the CSRD will either need to lower its costs or increase the revenue to fund the residual waste management system. As discussed in Section 6.1, the CSRD has completed landfill conformance review and upgrade plans for all four landfills under its jurisdiction. However, the capital costs associated with each specific upgrade plan are not identified in the current 5-Year Financial Plan.

In particular, costs associated with closing Phase 1 of the Golden Landfill are estimated at $1.3 million and the engineered Phase 2 expansion at $1.8 million. This will result in a significant funding gap that cannot filled by the current $1 million in reserves. Given this funding gap and other associated landfill upgrade costs required over the next 5-10 years, it is imperative that the CSRD undertake an in-depth review of solid waste system funding.

10. EVALUATION OF STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT

10.1 Performance Comparison to Neighbouring Regions and BC-Wide

Although not required as part of an effectiveness review, MH compared the CSRD's disposal to those of the neighbouring regional districts of North Okanagan, Central Kootenay, and Thompson Nicola, as well as the provincial average. The figure below shows 2019 municipal solid waste disposal rates[7]. The CSRD's rate of 749 kg/capita in 2019 was higher than its neighbouring regional districts and above the BC-average (501 kg/capita (2019).

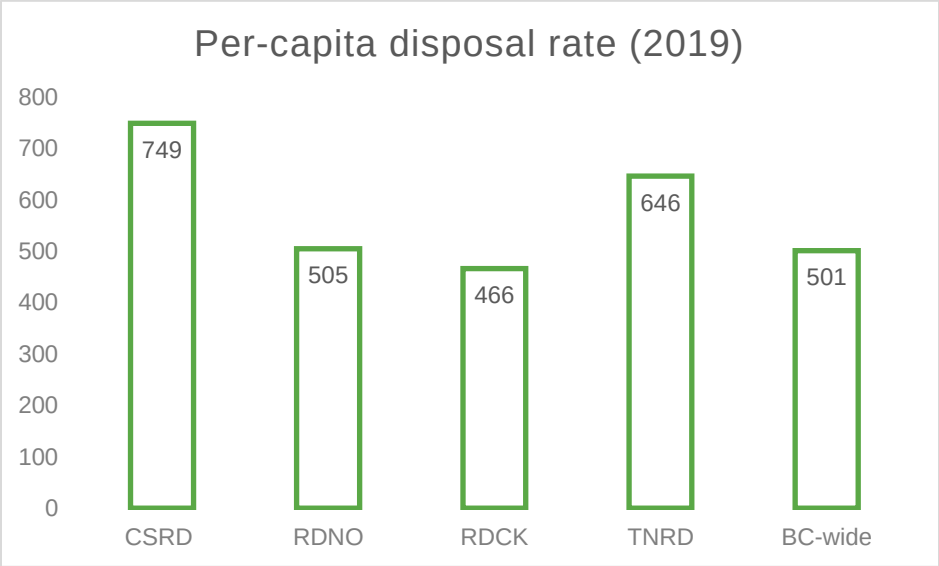


Figure 20 Per-capita disposal rates of CSRD and neighbouring regions

Although the CSRD's per-capita disposal rate has improved since 2019 to 658 kg/capita, it is still above BC's average. Significant waste reduction and diversion efforts are required to reach the current provincial goal of 350 kilograms per capita by 2023, as expressed in the MoE's current service plan.

Recycle BC

The CSRD is performing better than the provincial average in terms of residential recycling. According to Recycle BC's most recent annual report for 2020[8], residents in the CSRD have access to 18 depots that are approved to accept residential packaging and paper product (PPP). In addition, residential curbside collection of PPP is provided in Revelstoke (including

[7] Environmental Reporting BC. 2021. Municipal Solid Waste Disposal in B.C. (1990-2019). State of Environment Reporting, BC MOE.
[8] 2020 Annual Report available on Recycle BC's website via URL: https://recyclebc.ca/about-recyclebc/program-overview/annual-reports/

multifamily), Salmon Arm, and Golden. In 2020, an average of 52.3 kg PPP was collected per capita serviced, which is slightly above the provincial average of 48.1 kg per capita.

10.2 Strengths and Challenges for Meeting Plan Goals and Targets

MH has analyzed and evaluated the CSRD's current waste management system's performance and opportunities for improvement.

10.2.1 Strengths and Opportunities

Organics Diversion

The CSRD has made great strides in organic waste diversion through implementing its organics waste diversion strategy. Specific achievements are summarized in Section 5.1. Supported by federal and provincial funding, the regional district has established a food waste composting facility at the Revelstoke Landfill, which will start accepting compostable organic waste in July 2022. One member municipality already collects food waste (Salmon Arm) and one is planning to collect organics in the near future (Revelstoke).

The 2021 waste characterization of garbage in the Salmon Arm waste shed revealed that the organics diversion collection program is reducing the amount of food being landfilled. For example, the proportion of food waste in the single-family sector garbage stream decreased from 31.6% in 2018 to 20.3% in 2021.

Still, up to a third of the region's waste currently comprises compostable organics (e.g., food, yard waste and compostable paper), which presents an opportunity to further improve organics diversion in the region to optimize the CSRD's capital investment in collection and processing infrastructure.

Residents of Golden and Sicamous do not receive residential food waste collection. Residents in Golden have access to garbage and recycling collection, while Sicamous residents do not have curbside collection of garbage or recycling. In 2018, single family garbage contained close to 30% compostable organics in Golden and over 40% in Sicamous. The CSRD has no further plans to conduct more waste characterization studies without significant changes to the curbside collection programs in these communities.

Another higher density electoral area that does not have curbside collection for any waste streams (garbage or recycling) is Sorrento, located in Electoral area C. However, significant public engagement undertaken by the regional district in 2018 showed that interest in curbside collection was low amongst residents, and the majority were satisfied with only having access to a transfer station. The 2021 waste characterization study conducted on the Salmon Arm waste shed showed that the garbage accepted from the six transfer stations contained significantly higher proportions of food waste than the garbage self-hauled to the Salmon Arm landfill (24.7% compared to 14.5%). Transfer station users are typically residents who do not have curbside collection of food waste.

Expansion of Recycling Options

While many regional districts in BC chose to only collect recyclables that are easy to recycle and covered by EPR programs, the CSRD has chosen to expand recycling options to also include what many local governments consider hard to recycle materials. The CSRD is accepting HHW, used books, children's car seats, clothing, and mattresses for recycling.

A couch recycling pilot was undertaken in 2021 and the regional district was able to divert most materials into the mattress stream. The pilot showed that couches were hard to transport and labour intensive to dismantle (e.g., one couch took on average 1.5 hours to dismantle). The regional district calculated that the recycling cost would be $60 per couch and the pilot was discontinued.

Collaboration with Member Municipalities

The development and implementation of the region's organics strategy required collaboration with key stakeholders, including member municipalities, waste haulers, major organic waste generators and existing processors. The CSRD's waste management initiatives are underpinned by close collaboration with stakeholders and the next focus area is DLC wastes, which has not yet been addressed in a comprehensive manner yet.

A building demolition generates large quantities of waste often destined for landfilling. The Local Government Act provides for local governments to regulate construction, alteration, repair and demolition of buildings. Some municipalities in BC require all construction and demolition projects to develop waste management plans to meet specified recycling targets. Municipalities have been using fees associated with the permit application process to help fund bylaw enforcement.

The CSRD cannot set specific requirements for waste management in new construction and demolition projects that are located in a member municipality. The CSRD is only able to set such requirements in electoral areas where the regional district is responsible for the building permit and inspection service. The CSRD may want to lead the way and develop a model bylaw that member municipalities can adapt for their own use. There is an opportunity for the CSRD and its member municipalities to address DLC waste and related issues together.

One strategy which has yet to be initiated is, to work with member municipalities to set standards for multi-family dwellings to provide sufficient space for recycling. The CSRD may want to simplify this process by developing a model bylaw for mandatory physical space allocation for recycling in new multifamily and ICI buildings in the region. The CSRD may also want to review the possibility of adopting mandatory recycling bylaws similar to the Regional District of Nanaimo and Thompson Nicola Regional District.

Partnerships with Stewardship Agencies

A range of EPR products and materials are currently collected in the region at the CSRD's transfer stations and landfills, often in partnership with stewardship agencies. These formal partnerships enable the regional district to receive financial compensation to cover the cost to collect and manage the EPR products. Despite these financial incentives, the CSRD believes

that the compensation is often not sufficient to cover the true EPR management costs. In the future the approach of managing products will need to be revisited as the CSRD may want to consider if / when to offer collection of EPR products.

10.2.2 Challenges

User Pay to Encourage Waste Prevention and Diversion

Instead of implementing landfill ban on divertible materials, the CSRD has instead opted to encourage source segregation of divertible materials through the use of differential tipping fees.

In 2019, the CSRD completed a review of its Tipping Fee Bylaw to support the SWMP objectives and the organics strategy. The Solid Waste Disposal Tipping Fee and Regulation Bylaw No. 5824, 2020 was amended to include new definitions and fees to encourage the separation of recyclable and organic materials from the residual waste stream. This amended bylaw, referred to as Bylaw No. 5835, 2021, gives the CSRD the ability to impose higher tipping fees if divertible waste is not separated prior to landfill disposal. The CSRD supports the user-pay principle and has developed this bylaw to encourage waste generators to divert waste streams when options exist.

Under the current differential fee structure, loads of waste that do not contain marketable materials are charged a tipping fee of $80 per tonne, while loads that contain marketable materials are charged at $240 per tonne. At a 2021 per-capita disposal rate of 658 kg, it would appear that this tipping fee differential may be ineffective incentivizing diversion.

In the Regional District of North Okanagan, the differential tipping fee is $108 for loads that do not contain regulated (marketable) materials and $260 for loads that do contain regulated materials. In the Regional District of Central Kootenay, the fee differential is $125 for loads that do not contain marketable materials and double the user fee that do contain marketable materials ($250 per tonne). Both these regional districts have lower per capital disposal rates that the CSRD.

The CSRD wants to focus on improving enforcement and is interested in understanding the tipping point when the tipping fees can more effectively drive improved per-capita disposal rates.

Access to Curbside Collection

Approximately 60% of the region’s population have access to curbside collection. The service levels are different between the three member municipalities (Salmon Arm, Revelstoke, and Golden) and the curbside services are delivered using different service models. For example, Salmon Arm and Revelstoke use in-house staff for its curbside collection (although recycling collection Revelstoke is undertaken directly by Recycle BC). Golden contracts out the garbage and recycling collection.

Having effective curbside collection services are key to improving waste diversion and decreasing the region’s disposal rates. The CSRD is noting that member municipalities are not

well resourced to manage curbside collection. In the future, there may be an opportunity for the regional district to play a more central role in undertaking curbside collection.

Diversion of Demolition and Land Clearing Wastes

A construction and demolition waste reduction program and toolkit were developed in 2010 and a supporting brochure published in 2017. This DLC toolkit was not used to its full potential, and the CSRD wants to update the materials to a different format and distribute more widely. There are a range of opportunities to partner with member municipalities to address DLC wastes (refer to Section 10.2.1 for Strengths and Opportunities relating to these partnerships).

Across many of CSRD's waste facilities, DLC materials like shingles, concrete, and yard and wood waste can be accepted for diversion. Waste segregation is incentivized through the use of differential tipping fees.

The CSRD undertook a wood waste diversion pilot where they tried to separate three streams of wood (e.g., yard waste, dirty wood waste and clean wood waste). Unfortunately, there were no realistic co-gen opportunities to manage dirty wood, and the CSRD is now back to separating only yard waste and clean wood waste.

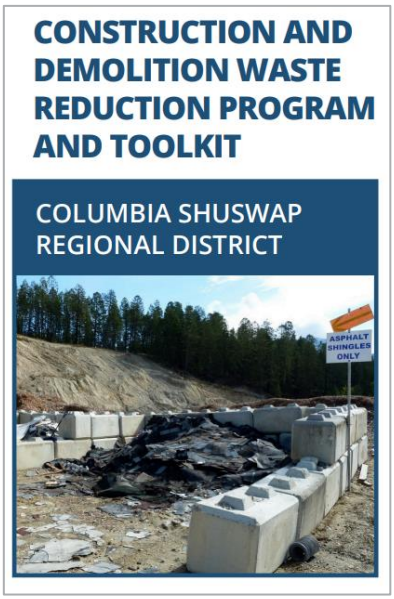


Figure 21 CSRD's DLC Brochure (2017)

Compliance

The role of the regulator, MoE, has changed over the years, along with its resourcing. When MoE had more resources, their staff would often attend CSRD's PMAC meetings and worked more closely with regional district staff in the development of OCs for the landfills. In 2018-2019 MoE changed its approach to be compliance and authorization focused. MoE staff currently involved in OC approvals are separate from staff in charge of enforcement of OC requirements, and CSRD staff are findings this challenging. MoE enforcement staff have shown to have become stricter, and the CSRD is not the only regional district in BC that may be facing significant costs to operate landfills in compliance with all requirements.

The CSRD has experienced ongoing compliance issues at its landfills. One significant compliance issue that applies to all four landfills is exceedances of groundwater quality limits at or beyond the landfill property boundaries. This is not an uncommon issue for natural attenuation landfills. In the short term, the CSRD is working to improve monitoring through the use of additional offsite groundwater monitoring wells. In the long term, the CSRD will likely require major capital upgrades to upgrade its landfills to engineered landfills.

The regional district is likely to experience significant costs, either through large fines from the MoE or costs to address non-compliances. With escalating compliance costs, the CSRD may need to consider which landfills to continue operating. In a third-party 2020 financial audit report,

it was noted that the estimate of landfill and post closure liability is significant. If the risks are perceived as too large, the CSRD may want to consider the option of closing one or more landfills and hauling to one or several engineered landfills within reasonable hauling distance to the current facilities (e.g., Cache Creek). Alternatives can also include the potential for waste-to-energy technologies.

Funding of Waste Management Costs

Historically, the CSRD had one budget for solid waste-related services. For many years, solid waste disposal services had been subsidizing recycling services. The functions were split into recycling and solid waste management to distinguish disposal from recycling costs.

In 2015, the CSRD accepted the offer from the newly established stewardship agency, Recycle BC, to deliver recycling services for residential packaging and printed paper (PPP) at the CSRD's depots. The costs associated with operating the recycling depot network dropped significantly, as the CSRD was no longer responsible for PPP hauling and processing, while at the same time the CSRD began to receive revenues from Recycle BC for the collected PPP. In addition, financial incentives and recycling revenues for scrap metal recycling and from other stewardship agencies have grown and currently the recycling services are now subsidizing the solid waste disposal services. Although the functions of recycling and solid waste disposal services are separate, they are still considered part of the same service area and can be used to fund one another.

With respect to the Regional Solid Waste Management function, there is insufficient revenue to fund the residual waste management system in the long term. As discussed in Section 6.1, the CSRD has completed landfill conformance reviews and updated all DOCPs for all four landfills under its jurisdiction. These updates reflect MoE policy and guidelines for landfilling (i.e., the MoE Landfill Criteria) and have resulted in significant design changes, namely moving away from naturally attenuating landfills to fully engineered facilities. The proposed changes outlined in the updated DOCPs require significant capital investments which are not identified in the current Five-Year Financial Plan.

In particular, the costs associated with closing Phase 1 of the Golden Landfill (estimated at $1.3 million) and the engineered Phase 2 expansion ($1.8 million) will result in a significant funding gap that cannot filled by the current $1 million in reserves. Given this and other associated landfill upgrade costs required over the next 5-10 years, it is imperative that the CSRD undertake an in-depth review of solid waste system funding.

The Regional Solid Waste Management function is mostly funded by tipping fees and less so from taxes. Under the current differential tipping fee structure, loads of waste that do not contain marketable materials are charged a tipping fee of $80 per tonne, while loads that contain marketable materials are charged at $240 per tonne. At a 2021 per-capita disposal rate of 658 kg, it would appear that this tipping fee differential may be ineffective at incentivizing diversion. This is also supported by waste characterization results from self-hauled residential waste and ICI waste at CSRD's disposal sites, as there are still a large portion of divertible materials found in landfilled waste.

A more detailed analysis is recommended to assess how all tipping fees can be better used to fund the Regional Solid Waste Management function.

Upcoming Regulatory Changes in BC

In September 2021, the MoE announced that new products will be added to the Recycling Regulation and be covered by EPR programs. Electric-vehicle batteries and chargers, mattresses, single-use fuel canisters, fire extinguishers, electronic products (e.g., solar panels, and e-cigarettes) are among the products that will be eligible for province-wide recycling as part of a five-year action plan 2021-2026. The Province has also expanded the number of products to be recycled through residential recycling programs by adding milk and milk-alternative containers to the deposit-refund system (effective February 2022). In 2023 more single-use items are added to the packaging part of the Recycling Regulation. By 2025, the MoE will evaluate options to ensure improved recovery and recycling of ICI packaging and paper[9].

The MoE is addressing plastic pollution through its CleanBC Plastics Action Plan. In 2021 local governments can institute bans on plastic bags and certain single-use plastics without provincial approval. More than 20 municipalities in BC are developing bylaws banning single-use plastics (e.g., Esquimalt, Nanaimo, Richmond, Rossland, Saanich, Surrey, Tofino, Ucluelet and Victoria)[10]. There are currently no regulations to restrict or ban the use of single-use plastics within the CSRD, but member municipalities may want to consider this in future, and the CSRD's role can be clarified during a plan renewal process.

The CSRD currently collects used mattresses for local recycling. Mattresses and foundations are materials that will be regulated, and this regulatory change may impact CSRD's mattress recycling. The CSRD will likely be eligible for a financial incentive to accept the materials, but may also be limited as to how the mattresses are managed and where they are sent for recycling.

There are still many problematic materials not identified in the MoE's action plan. Used couches, clothing and textiles, and agricultural plastics are some identified materials that the regional district is finding particularly challenging to manage. Agricultural plastics are currently only covered by a voluntary program with collection limited to an annual event in Salmon Arm. It will be valuable for the CSRD to identify which specific materials it would like the regulator to focus on in the future.

Emergency Debris Management

As BC is experiencing more frequent climate-related weather events leading to emergencies such as forest fires and flooding, the CSRD has identified the need to develop a debris management plan to manage a surge in waste materials. The MoE has published Debris Waste

[9] Advancing Recycling in B.C: EPR Five-Year Action Plan 2021-2026 available via URL: https://www2.gov.bc.ca/assets/gov/environment/waste-management/recycling/recycle/extended_producer_five_year_action_plan.pdf
[10] Information available via URL: https://news.gov.bc.ca/releases/2021ENV0046-001455

Management Guidance in December 2021[11]. Emergency debris management will need to be addressed when the CSRD updates its SWMP.

Solid Waste Performance Tracking

The current SWMP has no "hard" performance targets (i.e., linked to planned improvements to per-capita disposal rates). Therefore, the CSRD has not been able to effectively measure its performance against targets. A new SWMP should be developed with specific targets and more details that can guide priorities for budgeting and implementation.

Accurate performance tracking relies on access to accurate and trustworthy waste data. The Waste Stream Management Information Reporting Bylaw No.5662 was established in 2013 to identify businesses involved in waste diversion and enable data collection on materials and quantities diverted. However, the CSRD still has not established an administrative structure to enable bylaw enforcement. As of 2022, there are still no facilities registered under this bylaw.

The current bylaw is limited to a reporting system and it does not fulfill the purpose of the intended strategy to also enforce standards for solid waste facilities to prevent the improper disposal of MSW.

In the future, the CSRD may want to update the bylaw to fulfill the original intent. The Regional District of Nanaimo (RDN) has a Waste Stream Management Licensing (WSML) Bylaw for the management of private licensed facilities that handle waste and recyclable material. The RDN's bylaw is actively enforced and has helped the region to increase waste diversion significantly to one of the lowest in the province (389 kg/capita in 2019). The WSML bylaw requires a high standard of operation, promotes waste diversion, minimizes nuisance, and requires reporting so waste diversion can be tracked region-wide. Licensed haulers also assist the RDN in ensuring commercial customers have a system in place for separating and collecting organics, recycling and garbage.

If the CSRD makes changes to the existing bylaw, these must be approved by the MoE.

Collaboration with First Nation Communities

The CSRD has invited representatives from the five Bands (Little Shuswap Indian Band, Neskonlith Indian Band, Spallumcheen Indian Band, Adams Lake Indian Band and Okanagan Indian Band) within the region to participate in the PMAC. Band members have not taken up the offer, and the First Nations communities have not had representation at the meetings.

In a full Plan renewal process, the CSRD will need to plan for specific consultation and interactions with First Nation communities during Plan development. The engagement techniques may need to be somewhat different to engagement activities used with the wider

[11] Available via URL: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/land/flood-response/debris_management_guidance.pdf

public. The five Bands can be invited to initial interviews, with the goal of identifying how they would like to be involved in a Plan renewal process.

Some regional districts have recently appointed a specific First Nation liaison person on behalf of the organization. This may be a suitable option for the CSRD, as there is no specific facilitating liaison role currently.

Engagement with PMAC

A Plan Monitoring Advisory Committee (PMAC) was established to monitor Plan implementation and effectiveness. The PMAC was set up to provide multi-stakeholder advice to CSRD staff on related issues identified through the implementation of the SWMP, including: policy, new initiatives, plan amendments, community feedback, staff reports, program performance, public consultation and future updates.

The committee meets twice per year, but CSRD staff are concerned that only member municipalities and one member from the public are actively involved. There are no representatives on behalf of First Nations communities currently involved. The CSRD is interested in revisiting the PMAC's Terms of Reference and exploring what PMAC can look like in the future and how the committee be more engaged in a Plan renewal process and future Plan implementation. When it is time for the CSRD to renew its SWMP, the PMAC will transition to a Public and Technical Advisory Committee (PTAC). There will be opportunities to solicit and select new members to be part of setting plan objectives and exploring waste management options. Existing PMAC members can be encouraged to apply to participate on the PTAC.

11. NEXT STEPS

The MoE recommends that regional districts renew their solid waste management plans every 10 years. The CSRD is required to submit a full plan renewal before December 31, 2028. However, MH recommends that the CSRD commence the plan renewal process before then, since the region is likely to require some significant changes to the current solid waste management facilities; for example, changes to the CSRD's landfills (e.g., closures or expansions).

There is potential for a new SWMP to call for major changes to current policies and waste management infrastructure. This five-year effectiveness review has identified some topics that should be addressed as part of a new Plan. Many have been identified as challenges with the region's solid waste management today. Section 10.2 is designed to stimulate discussion about the content of the new SWMP.

When the SWMP is due for renewal, there is a need to create a list of all waste management facilities in the region, including those owned by the CSRD, member municipalities and the private sector. These facilities can be listed in a schedule that can be updated if minor amendments are needed, for example, if new facilities open or existing facilities implement changes to the facility's status.

As a separate deliverable to the CSRD, MH will identify a suitable roadmap for a full SWMP review and update process.

12. CLOSURE

The Columbia Shuswap Regional District retained Morrison Hershfield to conduct the work described in this report, and this report has been prepared solely for this purpose.

This document, the information it contains, the information and basis on which it relies, and factors associated with implementation of suggestions contained in this report are subject to changes that are beyond the control of the author. The information provided by others is believed to be accurate and may not have been verified.

Morrison Hershfield does not accept responsibility for the use of this report for any purpose other than that stated above and does not accept responsibility to any third party for the use, in whole or in part, of the contents of this document. This report should be understood in its entirety, since sections taken out of context could lead to misinterpretation.

We trust the information presented in this report meets CSRD's requirements. If you have any questions or need addition details, please do not hesitate to contact one of the undersigned.

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APPENDIX A: CSRD's SWMP Implementation Status

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Table 1 Current Status of 2009 SWMP Recommendations for Rethinking Waste

Strategy Component	Status
Rethinking	
Develop a ticketing bylaw to assess fines for solid waste management disposal bylaw infractions	Completed The CSRD has established a ticketing bylaw (Ticket Information Utilization Bylaw No. 5776), which specifies the fines for contraventions to the Solid Waste Disposal Tipping Fee and Regulation Bylaw No. 5835, 2021. The CSRD has sent letters to bylaw offenders, but no fines have been issued under the ticketing bylaw.
Develop a comprehensive Illegal Dumping Strategy and Toolkit that includes facilitation, education, and legislation to complement an Illegal Dumping Policy (include current policy for having strong anti-litter laws)	Completed The illegal dumping regulation bylaw No. 5615 was established in 2011. It requires waste and recyclables to be disposed of at authorized facilities. The CSRD is supporting community clean-ups and waiving tipping fees associated with these events if the waste clean-up is conducted on Crown land. Signs for No Dumping/ Area Under Surveillance are placed at common dumping sites. Illegal dumping incidents are tracked, but the CSRD has not experienced many incidents. Many waste items are accepted for free at the transfer stations.
Create radio, newspaper, and/or billboard advertisements that discourage illegal dumping, burying, or burning, including reports of successful prosecutions, and will encourage member municipalities to support similar campaigns	Completed Educational campaigns to prevent illegal dumping are on-going.
Implement a facility licensing bylaw (waste stream management bylaw) and administrative structure complete with enforcement resources to enforce standards for solid waste facilities. Also consider hauler licensing, as well as how to prevent the improper disposal of MSW	Completed A pilot program was implemented to inform a waste stream management bylaw and in 2011, the CSRD initiated a registration process. The Waste Stream Management Information Reporting Bylaw No.5662 was established in 2013 to identify businesses involved in waste diversion. The process enables data collection on materials and quantities diverted. However, although the bylaw is in place, the CSRD has not yet established an administrative structure to enable bylaw

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Strategy Component	Status
	enforcement. As of 2022, there are still no facilities registered under this bylaw. The CSRD has decided to hold off a full implementation and enforcement of the existing bylaw. Bylaw education and enforcement needs to be adequately resourced.
Review departmental initiatives to identify windows of opportunity to incorporate a solid waste policy	Completed The CSRD has a purchasing policy (Policy No. F-32) that gives preference to the purchase of goods that minimize adverse environmental impacts and that promote recycling, re-use and reduction of waste ("sustainable purchasing"). The CSRD is looking into how a solid waste policy can be incorporated into the planning department as part of building and demolition permits and inspections. The CSRD would like to collaborate with member municipalities to change their permitting processes to encourage the segregation and recycling of waste streams.
Launch an education and promotion campaign to discourage the burning of MSW in backyards and fireplaces	Not started The regional district has not received many complaints relating to waste burning and have no reasons to address this as a separate campaign at this time.
Work with the Neskonlith Band and the Thompson Nicola Regional District (TNRD) to explore the provision of convenient waste management services to the Band and local regional district residents	Not started The CSRD is interested in working more closely with first nations communities and neighbouring regional districts when the SWMP is due to be renewed.
Explore ways that First Nations can be included as a full partner within the Solid Waste Management Plan through agreement with the overall Plan Vision, Mission, and Guiding Principles	In-progress There has not been any specific collaboration with the Neskonlith Band. However, the CSRD has worked with Little Shuswap Lake Band to introduce a Recycle BC program.
Review all infrastructure and equipment life to develop long-term reserves to provide initial capital for the upgrade to new facilities	In-progress Long term management of solid waste infrastructure will be considered as part of the CSRD's Asset management plan. Currently the CSRD does not consider the landfills (and landfill airspace) as assets. However, there is a growing sense that

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Strategy Component	Status
	there is value in the airspace and maybe in the future, as asset management evolves, landfills will be considered.
Initiate a business award system to recognize businesses that champion the principles of sustainability with efforts to reduce their solid waste	Completed To support the implementation of differential tipping fees designed to encourage ICI organics diversion, the CSRD launched an educational food waste diversion program for businesses. A participating business was able to place a branded window cling (sticker) in its shop window that recognizes the business for diverting food waste and supporting waste reduction. This program is evolving and the CSRD is planning to expand it.
Conduct a literature review and interview staff of other resort communities to determine how best to provide solid waste services for local resorts in keeping with the Vision Statement and Guiding Principles of the Plan	Not started The CSRD decided not to pursue this initiative. The extension of curbside services to resorts principally affects the local municipalities who provide the curbside collection (Revelstoke and Golden). The decision on the service level is made by the local municipalities.
Incorporate current Plan institutional, commercial, and light industrial (ICI) waste policies into a comprehensive ICI Waste Reduction Strategy and Toolkit that includes facilitation, education, and legislation programs	Completed A construction and demolition waste reduction program and toolkit were developed in 2010, and a supporting brochure was published in 2017. The easy-to-read brochure contained background information on the importance of demolition and land clearing (DLC) reuse and recycling, recommended steps for salvage, reuse, and recycling, as well as a summary of the tipping fees for common DLC materials.
Work with municipal representatives and their respective Building Departments in addition to internal departments to identify a method to encourage the proper management of DLC within member municipalities and Electoral Areas (e.g., proof of proper disposal prior to the issuance of an Occupancy Permit)	Not started The CSRD wants to partner with member municipalities to develop and implement bylaws that require source segregation when a building is demolished. The CSRD wants to review its own permitting process and potentially develop a model bylaw for use by member municipalities. DLC diversion is one of the main focus areas of 2022 and coming years.

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Table 2 Current Status of 2009 SWMP Recommendations for Reducing Waste

Strategy Component	Status
Prepare a regional Organics Management Strategy	Completed A regional organics diversion strategy was developed in 2015 through collaboration with key stakeholders. The CSRD started implementing the organics diversion initiatives. A summary of the main organics diversion initiatives is providedin section 5.1 Major Achievements.
Develop an information resource to educate residents on the how–to's of grasscycling and natural landscaping	Completed Composters have been offered to residents at subsidized rates over the last 10 years. The CSRD will continue supporting backyard composting, although organics curbside collection is becoming more common. Backyard composting is especially suitable for rural residents with limited access to solid waste collection services. The CSRD offers Master Composter workshops throughout the CSRD with the goal of training "ambassadors" in all aspects of the three Rs (Reduce, Reuse and Recycle). Ambassadors need to complete a minimum of 35 volunteer hours teaching others what they have learned through the program. Volunteer activities range from setting up composting displays, participating at community events, hosting workshops on backyard composting and helping to provide composting and recycling opportunities for apartments and businesses. More than 50 Master Composter/Recyclers have been trained since the program began seven years ago. The in-person workshops were put on-hold due to the COVID-19 pandemic. Instead, the CSRD has offered virtual information sessions once a year.
Partner with municipal planners to encourage identification of eco-industrial parks in Official Community Plans (OCPs) to not only encourage economic development, but to provide space for additional, nearby companies that transform waste into resources	Not started Over the SWMP implementation period, the CSRD has not considered this to be a higher priority. The regional settings are changing and this will become a focus of the next plan. There is a need to look for suitable sites for waste management facilities in Sicamous and Area C. Sicamous currently has zoning issues and the CSRD wants to partner to find suitable land for a transfer station. Area C needs a new larger facility but has limited options. There is interest

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Strategy Component	Status
	from Area C to explore options to improve waste collection in Sicamous.

Table 3 Current Status of 2009 SWMP Recommendations for Reuse

Strategy Component	Status
Provide areas within select transfer stations and landfills for a waste to resource exchange area, following a review of potential risks	Completed All CSRD facilities have Reuse Centers to encourage reuse.
Promote and link up with the Recycling Council of British Columbia (RCBC) Industrial Materials Exchange to encourage reuse amongst industry	Not started This material exchange has not been actively promoted and used by RCBC or other local governments in BC.

Table 4 Current Status of 2009 SWMP Recommendations for Recycling

Strategy Component	Status
Partner with waste shed-specific stakeholders (adjacent regional districts, member municipalities, private sector, community groups) to deliver a regional Organics Management Strategy	In-Progress The CSRD works closely with the member municipalities to implement the organics diversion initiatives. The regional district also engaged proactively with the private sector. In some of the municipalities, ICI collection services are limited to only one service provider, for example, in Revelstoke and in Golden. Salmon Arm has two ICI organics collectors in total and the CSRD is working with other waste collection haulers to increase the organics collection capacity. Spa Hills is contracted by the City of Salmon Arm to compost organics from the municipal curbside collection and the CSRD transfer station. The CSRD is committed to working with these private service providers to encourage organics diversion.
Develop a procurement policy and a Procurement Guide, similar the City of Richmond's, to encourage and	In-progress

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Strategy Component	Status
require the purchase of products and services that have a reduced negative environmental impact. Staff will be educated on the use of this Guide	The purchasing policy (Policy No. F-32) gives preference to the purchase of goods that minimize adverse environmental impacts and that promote recycling, re-use and reduction of waste ("sustainable purchasing"). The policy is not supported by any guide or staff training at this point.
Work with member municipalities to set standards for multi-family dwellings to provide sufficient space for recycling	Not started The CSRD has not yet worked on setting recycling space requirements for new multi-family (MF) developments. The City of Revelstoke has some MF buildings which are serviced by Recycle BC's curbside recycling collection. MF buildings in Salmon Arm are not serviced by Recycle BC. Due to recent developments of MF/strata units in Salmon Arm, the CSRD wants to prioritize MF recycling in the future. This requires an internal focus initially before the CSRD can encourage member municipalities to follow suit.
Ban items specified within the Recycling Regulation from the CSRD recyclable collection system, provided there are sufficient opportunities to dispose of the listed materials	Not started Instead of banning materials, the CSRD is encouraging source segregation of divertible materials through differential tipping fees. In 2019, the CSRD completed a review of its Tipping Fee Bylaw to support the SWMP objectives and the organics strategy. The Solid Waste Disposal Tipping Fee and Regulation Bylaw No. 5824, 2020 was amended to include new definitions and fees to encourage the separation of recyclable and organic materials from the residual waste stream. This amended bylaw, referred to as Bylaw No. 5835, 2021, gives the CSRD the ability to impose increased tipping fees if organic waste is not separated in curbside collection.
Conduct a feasibility study to determine the viability of having a barge provide solid waste services to remote residences and communities along water ways	Not started This management option has not been explored - the CSRD has not received any feedback from residents or communities to suggest that this needs to be a priority right now.

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Table 5 Current Status of 2009 SWMP Recommendations for Recovery

Strategy Component	Status
Where collection facilities for EPR-related items are not available or sufficient, provide depot space at select landfills and/or transfer stations to accommodate this material on a short term basis, provided all costs are borne by the steward	Completed The CSRD accepts a wide range of EPR items across the collection facilities (refer to section 3.1), depending on available private collection facilities nearby, available space to accept EPR items and operational considerations. Information on the location of all recycling facilities (CSRD and private) is available on the CSRD website, however regional district staff has struggled to update the information on a regular basis. EPR management costs are in most cases covered by stewards as per partnership agreements. Although generally the CSRD has good partnerships with stewards, the regional district does not believe that the collection costs are fully borne by the stewards.
Consider private unsolicited proposals for waste-to-energy (WtE) on a case-by-case basis after completing a CSRD application form	Completed Over the last ten years, the CSRD have been approached twice by WtE technology providers, however no formal proposals were submitted.

Table 6 Current Status of 2009 SWMP Recommendations for Residual Management

Strategy Component	Status
Conduct annual household hazardous waste (HHW) round ups in conjunction with recycling fairs in Salmon Arm, Revelstoke, and Golden, while considering the costs and benefits of having permanent HHW drop off facilities at each landfill	Completed After organizing HHW round ups for many years, the CSRD established permanent HHW collections at three landfills in Salmon Arm, Revelstoke, and Golden. These facilities collect Product Care materials (Flammables, Pesticides and Aerosols) and non-EPR program material - corrosive, toxic, flammable or reactive materials used oil, paint, pesticides and flammables.
Determine costs and benefits of providing a curbside garbage collection system within higher density electoral areas as well as	In-progress One of the higher density electoral areas that does not have curbside collection is Sorrento, but the interest in a curbside program has been low. The CSRD's 2015 Solid Waste

APPENDIX A: CSRD's SWMP IMPLEMENTATION STATUS

Strategy Component	Status
facilitating the provision of curbside collection of garbage in all high-density areas whether they are in the electoral areas of the CSRD or member municipalities	Management Plan (SWMP) Review identified the establishment of a curbside collection program in Area C as a priority. During 2018 CSRD staff developed cost estimates and servicing options for the entire electoral area as well as servicing options for the more densified areas only. Staff proposed an education and engagement strategy and were authorized to proceed with engagement in 2019. Feedback from residents was gathered through an online survey, which received almost 1,000 responses, and at four well-attended open houses. The CSRD concluded that there was not enough support amongst residents for a mandatory curbside service as residents were satisfied with having access to a transfer station at a lower cost. The District of Sicamous is another relatively populated area that does not have curbside collection. This municipality declined the Recycle BC offer to have recycling and no municipal curbside collection of garbage and recycling is currently available to residents.
Review existing bylaws and the Building Code to see where solid waste management diversion and disposal controls can be implemented to require the proper disposal or diversion of DLC wastes	In-progress The implementation of differential tipping fees began in 2018 through CSRD's Bylaw No. 5835, 2021. Once a waste stream is deemed "marketable" in an area, the waste generator pays a significant surcharge for bringing marketable wastes (e.g., divertible DLC materials) in a load of waste destined for landfilling. DLC diversion is one of the main focus areas of 2022 and coming years. The CSRD wants to review its own permitting process and look at developing a bylaw that potentially can be tailored by member municipalities.
Address the immediate concern associated with the potential closure of the private DLC site located in Salmon Arm, which may result in a substantial increase in this type of waste received at CSRD facilities. Develop a short-term strategy for the management of this material ahead of the proposed DLC Waste Reduction Strategy	Completed In March 2018, the CSRD submitted the Solid Waste Management Plan Amendment: Salmon Arm Landfill Acquisition and Property Acquisition Guidelines, which was approved by MoE in 2019. The Amendment's main purpose was to facilitate a future Salmon Arm Landfill site expansion through the acquisition of the Mounce property adjacent to the Salmon Arm landfill. The neighouring property was a DLC disposal site, which has now been closed by the CSRD.