Resource Recovery Plan

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Summary of the Plan

In British Columbia, regional districts develop Solid Waste Management Plans (referred to as a Resource Recovery Plan in the RDCK) under the provincial *Environmental Management Act* that are long-term visions of how the regional district would like to manage its solid waste. This plan is an update of the Regional District of Central Kootenay's 2010 Resource Recovery Plan (RRP).

From 1996 to Now

Since the RDCK prepared its first Resource Recovery Plan in 1996, there has been significant improvements to how solid waste is managed in the region. This includes:

- User fees were introduced for materials brought to RDCK facilities.
- Community dump sites were closed and many were replaced with transfer stations.
- Remaining landfills were properly engineered and received appropriate authorizations from the Province.
- Environmental monitoring programs were established at open and legacy landfills.
- The open burning of waste was eliminated at all RDCK facilities.
- Reasonable access to recycling depots was provided region wide.
- Curbside collection programs were introduced in larger municipalities.
- The RDCK established several waste reduction outreach and education initiatives.

Resource Recovery services are delivered through three established sub-regional service areas. Each sub-region is operated as a completely independent service with separate waste transfer and disposal facilities, recycling programs, and a mix of contracted and in-house service provisions. Annual budgets and tax requisitions are entirely separate for each sub-region and governance is provided by three sub-regional Resource Recovery Committees.

Today the RDCK system includes three active landfills, thirteen waste transfer stations, twenty-three recycling depots and two organics composting facilities (to be constructed in 2021).

This system services a population of almost 60,000 people who lives in an area of long, mountainous valleys. Approximately 48% of the population live within municipalities and 52% live in the electoral areas.

Since beginning the process to update this plan in 2017, the RDCK has moved forward with an Organic Waste Diversion Strategy. Specifically, the RDCK will be constructing two composting facilities in 2021 (as noted above), and the municipalities of Castlegar, Creston and Nelson will begin curbside collection of organics in 2022. Commercial and institutional generators are also expected to contribute organic waste to these new composting facilities.

Another major shift that has occurred since 2017 is the RDCK's participation in the Recycle BC EPR program for packaging and paper products. This shift was necessitated by the demise of the global marketplace for recyclables, which affected the value of recyclables collected at RDCK recycling depots; the program allows RDCK to continue to offer recycling to residents but has increased the operating costs for the recycling depots and decreased access to recycling by RDCK businesses.

As regulatory requirements for disposal facilities have become more stringent and recycling has become a larger feature of the RDCK's waste management system, the costs to manage the RDCK resource recovery system have increased substantially. This year (2021), the annual Resource Recovery budget is $22 million. These costs are largely covered by tipping fees and taxes, although financial reserves, borrowing and grants are also used to pay for capital works.

In 2020, RDCK disposed of 490 kg per capita of waste, less than the provincial average of 505 kg per capita. It is estimated that 48% of the waste disposed comes from commercial and institutional sources, 11% comes from residential curbside collections programs and 41% is self-hauled (delivered directly from an individual's home or business).

A New Resource Recovery Plan

This RRP, to be implemented over the next ten years, is largely focused on:

- Increasing awareness of waste reduction and reuse.
- Proactively addressing the climate change emergency through reducing the amount of organic waste landfilled.
- Securing landfill capacity for the long-term future and maintaining compliance with increasing regulatory requirements.
- Completing the final closure works at legacy landfills (landfills that are no longer operating)
- Improving the septage management system.
- Identifying opportunities to increase the efficiency of the RDCK resource recovery system.
- Establishing a cost recovery system that is fair and sustainable, while also incentivizing waste minimization and diversion.

Strategies in Pursuit of Zero Waste

This plan includes several strategies, listed below, to drive the reduction of RDCK's per capital disposal rate from 490 kg per capita to 350 kg per capita. Each of these strategies is supported by a list of actions that are presented in the body of the plan.

1. Build opportunities for and awareness of reduction and reuse through events and campaigns that encourage behaviors that minimize waste.
2. Optimize organic waste diversion to reduce greenhouse gas emissions and save landfill capacity.
3. Increase resident participation in recycling while reducing direct costs to the RDCK.

4. Encourage businesses and institutions to maximize their participation in recycling and waste reduction.
5. Encourage and support the diversion and highest end use of construction, demolition and renovation waste.
6. Continue to ensure that EPR collection services are available in the RDCK and to support the expansion of EPR programs.
7. Support the establishment of a circular economy.
8. Support all aspects of the resource recovery system through effective and efficient application of education and outreach.

Strategies for Residual Waste Management

This plan also presents strategies associated with the management of residual waste (the waste remaining after application of reduction, reuse and recycling initiatives).

1. To be open to the application of future recovery technologies and to monitor opportunities that could contribute positively to RDCK's resource recovery system.
2. Ensure that the RDCK's waste transfer and disposal system is efficient, meets regulatory requirements and ensures the protection of the environment now and into the future.

To support the strategies, there are dozens of actions planned. An overview of the key actions is provided below.

Key Zero Waste Actions

The key zero waste actions, in addition to the construction of composting facilities and curbside organics collection described above, include:

- Consider the establishment of a regional curbside garbage and food waste collection service for electoral areas (and organics collection in municipalities that request the service).
- Assess the cost/benefit of establishing a composting facility in Nakusp following the closure of the landfill.
- Facilitate the reduction and self-management of organic waste by RDCK residents.
- Assess the potential to expand residential curbside recycling.
- Lobby to have ICI Recyclables as an EPR program.
- Establish additional Eco Depots (one-stop locations for a broad range of EPR programs)
- Provide seed funding for local circular economy projects in concert with other community partners.
- Encourage high rates of effective participation and long-term behavior changes; collaborate with community partners in community-based social marketing projects.

Key Residual Waste Actions

The key residual waste actions are presented below by sub-region.

West Sub-region:

- The RDCK has identified a landfill design for the Ootischenia Landfill, referred to as "the optimized footprint" that will provide an estimated 94 years of life (beyond 2021) at this landfill. The design approximately doubles the lifespan and capacity of the landfill and represents the lower cost per cubic metre of landfill airspace relative to the current design. To achieve this, RDCK will need to acquire some adjacent land to ensure that the landfill remains well-buffered from surrounding land uses. The final design height of the optimized footprint design is 2 metres higher than the current design's final height and stays within the current landfill operating boundaries.
- The Nakusp landfill will be closed, and a transfer station will be constructed.
- The Nakusp, Rosebery and Slocan Transfer Stations will be upgraded with stationary compactors and roll-off bins.
- Closure planning will occur for four legacy landfills. Final closure works at each of these sites is planned.

Central Sub-region:

- The Nelson legacy landfill will undergo final closure works.
- Closure planning will occur for four other legacy landfills. Final closure works at each of these sites is planned.

East Sub-region

- The RDCK wishes to request an exemption from BC's landfill criteria for the Creston Landfill. Under current Provincial landfill criteria, a footprint expansion of this site would require the installation of a liner and leachate collection system with an estimated $9 million capital cost; considered prohibitive for the scale of the landfill and the community it serves.
- The RDCK has applied for additional lands surrounding the Creston Landfill for adequate buffer lands.
- Closure planning will occur for two legacy landfills. Final closure works at each of these sites is planned.

Financial Implications and Actions

The strategies, actions and costs associated with this updated RRP represent significant changes and improvements to the resource recovery system in the RDCK. The cost implications are as follows:

- To implement and support these actions on an on-going basis, the RDCK will need to hire roughly four additional permanent full-time equivalent (FTE) positions over the next five years, 1.2 short-term temporary FTEs, and 2.75 long-term temporary FTEs to implement new or expanded RRP strategies.
- For the ten-year period of the Plan, the increase in operating expenditures for the West Sub-Region is significant, ranging from 0.6% in 2021 to 11.9% in 2025 and 14.3% in 2030. The West Sub-Region will need to consider increasing revenues to build reserves and lessen borrowing costs in the future.
- For the Central Sub-Region, the increase in operating expenditures is not significant, averaging less than 1.2% from 2021 to 2027. However, this increases to 4.8%, 5.0% and 4.5% for 2028, 2029 and 2030 respectively and will require an increase in revenues at that time.
- For the East Sub-Region, the increase in operating expenditures over the plan period is not significant, averaging less than 1.5% from 2021 to 2027. However, this increases to 5.3%, 5.1% and 5% for 2028, 2029 and 2030 respectively and will require an increase in revenues at that time.

To address these financial implications the following actions are planned:

- **Consider an alternative administrative model for the Resource Recovery system.** The operation of three distinct sub-regional resource recovery services within the RDCK can pose economic and administrative challenges to optimal service delivery. Unlike most regional districts in BC that have regionalized solid waste management services, the RDCK, with its three separate sub-regional service areas and associated committees, operates almost like three separate regional districts. The plan recommends that RDCK staff assess the cost-benefit of regionalization vs. the current sub-region model. Minimally, the following services should be assessed for regional delivery: organics diversion, recycling, and septage management.

- **Undertake a resource recovery system efficiency study and identify options to improve its cost effectiveness and equitability.** This would entail benchmarking system costs in comparable regional districts to determine whether service levels in the RDCK are adequate and identify potential areas for cost efficiencies. This would also include a review of transfer station and recycling depot requirements if curbside collection services are expanded to portions of electoral areas that are beyond municipal boundaries. The cost recovery models in each sub-region should also be assessed. Starting with the measurement of cost recovery through tipping fees the RDCK can ensure that the balance between taxation and tipping fees remains fair and equitable.

Acknowledgement

This Resource Recovery Plan was developed with the assistance of a volunteer advisory committee called the Resource Recovery Plan Advisory Committee. Members of this committee spent innumerable hours reviewing reports and attending meetings. They shared their insights and offered valued opinions to help shape a vision and road map for how solid waste can be managed in the RDCK over the next decade. We offer our sincere thanks for their participation in the development of this Plan.

Glossary

Advisory Committee	The Resource Recovery Plan Advisory Committee (see description below).
Board	RDCK Board of Directors.
Disposal	Landfilling.
Diversion	Activities that divert waste materials away from disposal as garbage to alternatives such as recycling or composting. Does not include combustion of garbage to produce energy.
CBT (Columbia Basin Trust)	The Columbia Basin Trust is a regional Crown corporation that manages its assets for the ongoing economic, environmental and social benefit of the Columbia Basin region.
CDR	Construction, demolition and renovation waste (garbage and recyclable materials generated by construction, demolition and renovation projects).
Circular Economy	An economic system aimed at eliminating waste and the continual use of resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a close-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions.
EMA	*BC Environmental Management Act*.
EPR	Extended producer responsibility.
FTE	Full time equivalent employee.
(Waste) Generation	The sum of all materials discarded that require management as solid waste, including garbage, recycling and composting. Does not include organic waste composted at home.
ICI	Industrial, commercial and institutional (does not include heavy industry).
Legacy Landfill	A former dump or landfill site that is no longer operating as a landfill. These sites typically require proper closure works and ongoing monitoring and maintenance.
Ministry	BC Ministry of Environment and Climate Change Strategy.
MSW	Based on BC's *Environmental Management Act*, municipal solid waste is refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources, or refuse specified by a director to be included in a waste management plan.
Organic Waste / Organics	Refers to kitchen scraps, food waste, yard and garden waste. In the RDCK, biosolids from wastewater treatment facilities and dewatered septage are also processed as a form of organic waste.

Plan	RDCK's Resource Recovery Plan (a regional plan for managing solid waste).
Producer Responsibility Organization	A "producer responsibility organization" (PRO), is usually a not-for-profit organization or an industry association, that is designated by a producer or producers to act on their behalf to administer an extended producer responsibility or product stewardship program (e.g., Encorp, Product Care, Recycle BC).
RDCK	Regional District of Central Kootenay.
Residual waste	The waste remaining after application of reduction, reuse and recycling initiatives. This is the portion of the waste stream that is ultimately landfilled.
RRP	Resource Recovery Plan.
Resource Recovery Plan Advisory Committee (RRPAC)	The multi-stakeholder committee established to support the development of the Resource Recovery Plan. Includes representatives of the RDCK, member municipalities, electoral areas, the local waste management industry, and other key stakeholders.
Recycle BC	Formerly MMBC (Multi-Material BC), the producer responsibility organization established to manage the residential printed papers and packaging EPR program.
Recycling Regulation	BC's Recycling Regulation, under authority of the *Environmental Management Act*, sets out the requirements for extended producer responsibility (EPR) in B.C.
Residuals / Residual Waste	Residual waste refers to discarded materials that are not diverted to reuse, recycling or composting and therefore require landfilling.

1 Introduction

In British Columbia, regional districts develop Solid Waste Management Plans (referred to as a Resource Recovery Plan in the RDCK) under the provincial *Environmental Management Act* that are long term visions of how the regional district would like to manage its solid wastes in accordance with the pollution prevention hierarchy (see Figure 1-2).

Solid Waste Management Plans should be updated once every ten years to ensure that the plan reflects the current needs of the regional district, current market conditions, technologies and regulations. This plan is an update of the Regional District of Central Kootenay's 2010 Resource Recovery Plan (RRP). The final RRP, once approved by the Province (along with any approval conditions), becomes a regulatory document for solid waste management in the RDCK, and will serve to guide solid waste management related activities and policy development in the RDCK. In conjunction with provincial regulations and operational certificates that may apply, the approved RRP will regulate the operation of sites and facilities that make up the region's waste management system.

1.1 Guiding Principles and Plan Goals

The provincial Guide to Solid Waste Management Planning (the Guide), not only recommends that plans be developed in accordance with the pollution prevention hierarchy but also that there should be guiding principles developed early in the planning process to assist with identifying and selecting options for the future.

At the February 2019 meeting of the RRP Advisory Committee (RRPAC) committee, members reviewed the guiding principles developed for the 2010 RRP as well as the principles proposed in the Guide. The following set of guiding principles were subsequently adopted based on input received from the RRPAC.

1. **Zero Waste.** The RDCK will support a shift away from the traditional mindset surrounding waste and recycling and will move towards a new paradigm that focuses on maximum resource recovery to the greatest extent feasible.
2. **Carrying Capacity.** To support ecological sustainability, the consumption of natural resources shall be minimized. Resources will be managed in a manner that avoids exceeding the capability or capacity of the natural environment to mitigate the negative impacts that can result from resource recovery and residual management activities.
3. **Moving up the Waste Management Hierarchy.** The regional solid waste stream shall be reduced to the extent practically possible, in accordance with the five R's hierarchy of Reduce, Reuse, Recycle, Recover and Residuals management. The RDCK will continually strive towards a higher "R" in waste management practice.
4. **Informed Planning and Decision-Making.** Regional waste management policies and strategies shall be developed through dialogue with the public and stakeholders and with consideration of the input received. Additionally, program and service design should aim to understand current behaviours, incorporate tools for effective behaviour change, while maintaining a focus on those aspects of behaviour that can be changed.

5. **Climate Change.** Greenhouse gas emissions associated with resource recovery and residual waste management activities shall be minimized wherever possible.
6. **Tools for Change.** Education, communications, incentives, regulation and enforcement are integral components to the successful implementation of the Plan.
7. **Consistent and Equitable Servicing.** Provision of service shall be consistent and equitable throughout the RDCK to the extent reasonably possible.
8. **User Pay.** The promotion of the user pay principle shall be incorporated into RDCK programming, where feasible, to reduce the portion of Resource Recovery system funding coming from tax requisition.
9. **Extended Producer Responsibility (EPR).** The RDCK will advocate for the expansion of EPR programs as an effective means of managing the waste stream and moving towards a user pay system.
10. **Partnerships.** Collaborate with other partners, including member municipalities, community groups, the private sector, EPR organizations, First Nations, and other Regional Districts, wherever practical to achieve Plan objectives. Such partnerships can help achieve consistent and equitable servicing, build relationships and improve economies of scale.
11. **Local Solutions.** Encourage local solutions to waste management issues. Look to remove barriers or encourage opportunities that will contribute to the establishment of a circular economy.
12. **Level the Playing Field.** To the greatest extent possible, implement solutions that are fairly applied to all affected stakeholders.
13. **Safety.** The RDCK will operate and maintain solid waste facilities to ensure the safety of staff and customers.

At the February 2019 meeting of the RRPAC committee, members discussed goals for the plan update. The discussions resulted in adoption of the goals listed in Figure 1-1. These goals were used by the RRPAC, staff, and consultants to assist in the identification and selection of options.

Figure 1-1: Plan Goals

1.2 Pollution Prevention Hierarchy and Targets

This plan adopts the 5-R pollution prevention hierarchy as illustrated in Figure 1-2. The Plan's strategies and actions are presented in the order of the hierarchy, Reduce, Reuse, Recycle, Recover and Residuals Management.

The implementation of the strategies and actions over a 10-year timeframe is expected to reduce the annual per capita disposal rate from 490 kg per capita in 2020 to 350 kg per capita over the next ten years (by 2030) through a phased approach. This reduction aligns with the BC Ministry of Environment and Climate Change Strategy's (Ministry) provincial target disposal rate of 350 kg per capita per year, as well as the Ministry's target that 80% of the population in BC be covered by an organic waste disposal restriction by 2023 (70% of the population is currently covered by organic waste restrictions). [1]

In April 2019, the RDCK declared a climate action imperative for all orders of government to take a low carbon resilience lens into building construction, energy systems, resource recovery, land use and transportation. This imperative obliges the RDCK to pursue opportunities that will further catalyze the RDCK as a climate leader.

From June to October 2019, an annual reporting tool – *the State of Climate Action in the RDCK* was created, which identifies climate action goals, pathways, objectives, tools and indicators. With respect to Resource Recovery, the goal of the report was to reduce the RDCK's impact by assessing and diverting waste from landfills with an objective of aligning with CleanBC and an aim to divert 95% of organic waste from landfills by 2030.

Figure 1-2: Solid Waste Management/Pollution Prevention Hierarchy[2]

[1] The Ministry of Environment and Climate Change Strategy describes organic waste as: "biodegradable, compostable waste from homes, businesses, institutions, and industrial sources. Examples include food scraps, yard and garden trimmings, food-soiled paper products and biosolids."
From: https://www2.gov.bc.ca/gov/content/environment/waste-management/food-and-organic-waste

[2] Source: BC Ministry of Environment and Climate Change Strategy

1.3 Process to Update the Plan

In 2017 the RDCK commenced a comprehensive update to the Resource Recovery Plan to address emerging challenges, improve services to the RDCK public and consider options in pursuit of Zero Waste. The process to review the plan was conducted in three phases as indicated in Figure 2-1. The first phase consisted of the establishment of the Regional RRP Advisory Committee as well as an assessment of the current solid waste management system and a status report on the implementation of the 2010 Plan. This work was completed by RDCK staff in 2017.

The second phase entailed a review of options to address the region's future solid waste management needs, the selection of preferred options (2018-2020) and the preparation of the 2021 RRP.

The third phase consisted of a community and stakeholder consultation process to obtain input on the plan. This input was used to finalize the 2021 RRP.

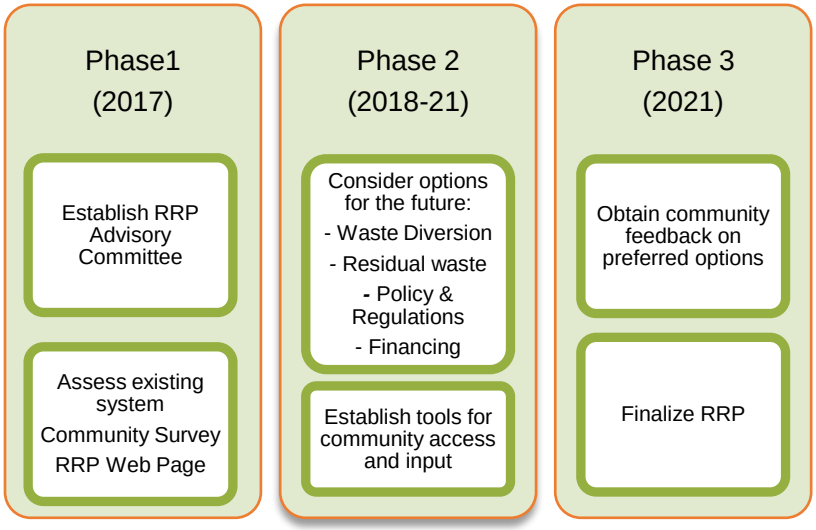

Figure 1-3: Plan Review Process

1.3.1 Resource Recovery Plan Advisory Committee

The RRP Advisory Committee (RRPAC) is a multi-stakeholder committee that received, reviewed and provided feedback on options for the RRP. The RRPAC combines community and technical interests, and included the following participants during the process to prepare this plan:

- Regional District of Central Kootenay:
  - The Chair of each of the West, Central, and East Resource Recovery Committees of the RDCK
  - The Chair of the RDCK Board of Directors
  - RDCK Staff
- City of Castlegar
- City of Nelson
- Town of Creston

- Gray's Contracting
- GFL Environmental Inc.
- Community representative, Bruce Edson

Terms of reference for the RRPAC can be found in Schedule A.

1.3.2 Technical Documents

Several reports and technical memoranda were prepared by staff and consultants to support the development of the new RRP. These documents include:

- Resource Recovery System Overview Report (2017)
- Public Consultation Program (2017)
- Regional Organic Waste Diversion Strategy (2017)
- Options Discussion Paper #1 (2019) – This document discusses options for:
    - Reduction and reuse
    - Residential Recycling
    - Industrial/Commercial/Institutional Recycling
    - Construction, Renovation and Demolition Waste Diversion
    - Extended Producer Responsibility
    - Education and Outreach
- Options Discussion Paper #2 (2019) – This document includes an overview of the Organic Waste Diversion Strategy and options for:
    - Illegal Dumping Mitigation
    - Household Hazardous Waste (HHW)
    - Specified Risk Material (SRM)
- Discussion Paper #3: Recommended Options for Diversion (2019)
- Technical Memorandum: Resource Recovery Administration, Bylaws and Policies (2020)
- Technical Memorandum: Regional Curbside Organics Collection Program Feasibility Study (2020)
- Committee Report: West Transfer Station Upgrade Costing Model (2020)
- Committee Report: RRP 2020 Costing Model Overview (2020)
- Committee Report: Septage Strategy Management Update (2020)
- Committee Report: Landfill Criteria Conformance Review – Creston (2017)
- Committee Report: Landfill Criteria Conformance Review – Ootischenia (2017)
- Committee Report: Ootischenia Landfill Design & Operations Plan Update (2019)
- Staff Memorandum: Resource Recovery Plan Financial Assessment (2020)

These documents can be found on the RDCK's website (https://rdck.ca/EN/main/services/waste-recycling/resource_recovery_plan.html).

2 Background

2.1 Plan History

Prior to the 1990s, the disposal sites in the RDCK were mostly dumping grounds located on the edge of each community. Often this was the place where the garbage was burned, and where the public could gather to watch the local bears. There were minimal environmental controls at these sites, and nothing resembling organized recycling. In the early 1990's the Ministry started enforcing higher standards for solid waste management, and a regional approach to solid waste was advanced with a focus on environmental protection and material recovery.

In 1995, the RDCK developed its first Solid Waste Management Plan (SWMP) which incorporated the Province's goal for all regions to reduce the total volume of waste being buried at area landfills by at least 50% by the year 2000. A major focus of the 1995 Plan was on the closure of non-compliant community dump sites and the introduction of programs and facilities to help achieve the provincial waste reduction targets.

Many important accomplishments came out of the 1995 Plan, among them:

- User fees were introduced for materials brought to RDCK facilities.
- Many community dump sites were closed and replaced with transfer stations.
- Remaining landfills were properly engineered and covered under appropriate authorizations from the Ministry.
- Environmental monitoring programs were established at open and retired landfills.
- The open burning of waste was eliminated at all RDCK facilities.
- Reasonable access to recycling depots was provided region wide.
- Curbside recycling programs were introduced in Nelson and Castlegar.
- The RDCK established several waste reduction outreach and education initiatives.

In 2005 the RDCK committed in principle to pursuing Zero Waste and directed staff to incorporate Zero Waste principles when updating the Resource Recovery Plan.

Recognizing that the Zero Waste goal was not an immediately achievable objective; the RDCK intended to accomplish steady, incremental gains towards this goal by continually integrating Zero Waste principles into the regional Resource Recovery system planning. In pursuit of the Zero Waste goal, the RDCK emphasizes waste reduction initiatives appropriate for the RDCK context that are practical, fiscally responsible, and realistically achievable, with the goal of shifting the focus of regional waste management from residual disposal to reducing waste in accordance with the pollution prevention hierarchy.

In 2009, the RDCK Board commenced development of a Resource Recovery Plan amendment (an update of the 1995 Solid Waste Management Plan) which included a full review of the solid waste management system. The core challenges facing the RDCK Resource Recovery services at that time were:

- Containing the rising costs of delivering solid waste services and achieving long-term financial sustainability.
- Renewing and replacing aging infrastructure and equipment and developing more efficient material handling systems.
- Addressing 'legacy' issues related to historic contamination and deferred landfill capping projects.
- Achieving compliance within an increasingly complicated and stringent regulatory environment for managing solid waste.
- Building capacity within the RDCK to address the immediate challenges and position the RDCK to pursue Zero Waste initiatives more aggressively in the long term.

The Plan was approved in 2010 and implementation of the Plan is ongoing. While some of the challenges the RDCK faced in 2009 are still present, much progress has been made and RDCK is now better positioned to pursue the Zero Waste agenda.

2.2 Plan Area

The RDCK is in the southern interior of BC and covers 23,000 km^2. The RDCK is bounded by the Regional Districts of North Okanagan and Columbia Shuswap to the north, the Regional District of East Kootenay to the east, the United States to the south and the Regional District of Kootenay-Boundary to the west. The region consists of eleven unincorporated electoral areas and nine member municipalities: Castlegar, Creston, Kaslo, Nakusp, Nelson, New Denver, Salmo, Silverton and Slocan as shown in Figure 2-1.

Figure 2-1: Map of the Regional District of Central Kootenay

The RDCK is a mountainous region with many rivers, lakes, hot springs and valleys. The climate in the Kootenay varies but summers are generally hot and dry while winters mild and snowy.

2.3 Population, Economic and Housing Data

The total population of the RDCK was 59,405 according to the 2016 Census; 2% more than 2011. BC Stats estimates the 2020 population at 63,911. The RDCK is one of the most rural regional districts in the province with over half of its residents living in unincorporated electoral areas outside of municipal boundaries as indicated in Table 2-1.

Table 2-1: Municipal and Electoral Area Population (2016 Census)

Member Municipalities	Population	Electoral Areas	Population
Town of Creston	5,351	Electoral Area A	1,930
City of Nelson	10,572	Electoral Area B	4,657
Village of Salmo	1,141	Electoral Area C	1,482
Village of Kaslo	968	Electoral Area D	1,343
City of Castlegar	8,039	Electoral Area E	3,772
Village of New Denver	473	Electoral Area F	3,963
Village of Silverton	195	Electoral Area G	1,623
Village of Nakusp	1,605	Electoral Area H	4,667
Village of Slocan	272	Electoral Area I	2,534
		Electoral Area J	3,137
		Electoral Area K	1,681
Total	**28,616**		**30,789**

In the Kootenays, three out of ten workers are employed in goods-producing industries such as forestry, mining and agriculture. As is the case in the rest of the province, service industries employ the biggest share of the workforce. Tourism is also a significant economic activity in the region.

The 2016 census data reported by Stats Canada reports that in 2016 there were 27,015 private dwellings occupied in the RDCK. Single detached houses or equivalent represents 94% of private dwellings in the region in 2016. A summary of the distribution of dwelling types presented in Table 2-2.

Table 2-2: Distribution of Dwelling Types in the RDCK

Occupied Dwelling Type	Proportion	Number
Single Detached Homes	76%	20,525
Row Houses, Duplex and Semi-Detached Homes	11%	2,915
Apartment Buildings	6%	1,765
Other (mobile homes and other single detached houses)	7%	1,810
Total	**100%**	**27,015**

3 Existing Solid Waste Management System Overview

A detailed description of the existing system for solid waste management in RDCK can be found in the report *Resource Recovery System Overview Report (May 2017)*, which can be accessed through the RDCK's website. The following is a high-level overview of the current system that includes new programs or facilities implemented since 2017.

3.1 Participants in the Solid Waste Management System

Many organizations contribute to the outlay of a successful solid waste management system. Roles and responsibilities of the key organizations in the RDCK's Resource Recovery Service are outlined in Table 3-1.

Table 3-1: System Participants

ORGANIZATION	ROLES IN SOLID WASTE MANAGEMENT
Provincial government	• Various ministries have regulatory authority related to waste management (primarily Ministry of Environment and Climate Change through the BC *Environmental Management Act*) • Authorization of and compliance oversight of Permits and Operational Certificates • Approval of regional district Solid Waste Management Plans (e.g., RDCK's Resource Recovery Plan) • Oversight and compliance of Extended Producer Responsibility Programs through the Recycling Regulation
Regional District (Board and staff)	• Develops plan to provide big picture oversight of waste management in the region • Through plans and plan implementation (including bylaws and policies), works to meet waste disposal goals and targets and ensures that community has access to waste management services that are environmentally sound and cost effective • Ensures that legislative and policy requirements are followed, including monitoring and reporting • Coordinates with member municipalities in service delivery • Operates transfer stations, residential recycling depots, and landfill facilities, and transfers materials between facilities
Municipalities (council and staff)	• Operates municipal waste collection system including curbside waste collection and litter collection • May provide / coordinate additional waste management services • May make bylaws dealing with waste collection
First Nations	• The Lower Kootenay Band provides waste management services to their community through contracted services.
Product stewardship producers and producer responsibility organizations	• Ensure reasonable and free consumer access to collection facilities • Collect / process product stewardship products • Coordinate local government delivery as a service provider where applicable • Provide and / or fund education and marketing • Provide deposit refunds to consumers (where applicable) • Monitor / report on key performance indicators such as recovery rates

ORGANIZATION	ROLES IN SOLID WASTE MANAGEMENT
Private sector involved in waste management (e.g., haulers, facility operators)	• Provide recycling and waste management services, operate landfilling facilities and some transfer stations • Provides curbside service in rural areas, and service multi-family residential buildings, commercial and institutional sources, and construction, demolition and land-clearing sectors • May be regulated by municipalities through licensing bylaws
Neighbouring jurisdictions	• Cooperation and consistency in waste management with neighboring jurisdictions (Regional District of Kootenay Boundary and Regional District of East Kootenay)
Residents and businesses	• Responsible for carrying out proper waste reduction, recycling and disposal activities

3.2 System Administration

Resource Recovery services are delivered through three established sub-regional service areas as indicated in Table 3-2. These sub-regions are managed under one common Resource Recovery Facilities Regulatory bylaw.

Table 3-2: Sub-Regional Service Areas in the RDCK

Sub-Region	Population	Establishing Bylaw and Service Area
West	22,603	West Waste Management Subregion Municipal Solid Waste Disposal/Recycling Local Service Area Establishment Bylaw No. 1070, 1994 City of Castlegar, Villages of New Denver, Silverton, Nakusp and Slocan RDCK Electoral Areas H, I, J & K
Central	23,382	Central Waste Management Subregion Municipal Solid Waste Disposal/Recycling Local Service Area Establishment Bylaw No. 1071, 1994 City of Nelson, Village of Salmo, and Village of Kaslo , Electoral Areas D, E, F & G
East	13,420	Creston and Electoral Areas A, B and C Municipal Solid Waste Disposal Local Service Area Establishment Bylaw No. 924, 1992 Town of Creston, Lower Kootenay Band, Electoral Areas A, B & C,
Total	**59,405**	

Each sub-region is operated as a completely independent service with separate waste transfer and disposal facilities, recycling programs, and a mix of contracted and in-house service provisions. Annual budgets and tax requisitions are entirely separate for each sub-region and governance is provided by three sub-regional Resource Recovery Committees. There also is a Joint Resource Recovery Committee, with representation from each sub-region, which applies governance over issues and initiatives affecting all three sub-regions. All of these are Committees of the RDCK Board of Directors.

3.3 Collection Services

The RDCK does not provide any residential curbside garbage or recycling collection services. These services are provided by incorporated member municipalities. In the unincorporated electoral areas, residents typically self-haul their garbage and recyclables to RDCK operated recycling depots, transfer stations or landfills, or may hire a private collection service. Residents in areas with municipally provided curbside collection also self-haul their garbage and recycling on occasion.

Table 3-3 provides a summary of residential collection service levels in the RDCK. Approximately 42% of RDCK residents receive curbside collection as a local government service and 58% do not.

Tables 3-4, 3-5 and 3-6 provide more details on the curbside collection services provided in each sub-region. For these tables, the Census Population and Census Households is from Statistics Canada Census Profile (2016 Census), and the Curbside Households data was provided by member municipalities.

Table 3-3: Residential Collection Service Levels in the RDCK

Description	West Sub-Region	Central Sub-Region	East Sub-Region
Households with Residential Curbside Collection	43%	55%	33%
Households without Residential Curbside Collection	57%	45%	67%

Table 3-4: Regular Curbside Collection Services in the West Sub-Region

				Regular Curbside Collection Services		
West Sub-Region	**Census Population**	**Census Households**	**Curbside Households**	**Garbage**	**Recycling**	**Organic waste**
City of Castlegar	8,039	3,499	3,000	Yes	Yes	2022
Village of New Denver	473	243	305	Yes	No	Seasonal
Village of Silverton	195	107	152	Yes	No	No
Village of Nakusp	1,605	761	750	Yes	Yes	Seasonal
Village of Slocan	272	140	200	Yes	No	Seasonal
EA H	4,667	2,128		No	Yes	No
EA I	2,534	1,107		No	Yes	No
EA J	3,137	1,345		No	Yes	No
EA K	1,681	831		No	No	No
TOTAL	**22,603**	**10,161**	**4,407**			

Table 3-5: Regular Curbside Collection Services in the Central Sub-Region

				Regular Curbside Collection Services		
Central Sub-Region	**Census Population**	**Census Households**	**Curbside Households**	**Garbage**	**Recycling**	**Organic waste**
City of Nelson	10,572	4,822	3,857	Yes	Yes	2022
Village of Salmo	1,141	547	474	Yes	No	Seasonal
Village of Kaslo	968	469	520	Yes	Yes	Seasonal
EA D	1,343	653		No	No	No
EA E	3,772	1,736		No	No	No
EA F	3,963	1,707		No	No	No
EA G	1,623	747		No	No	No
TOTAL	**23,382**	**10,681**	**4,851**			

Table 3-6: Regular Curbside Collection Services in the East Sub-Region

				Regular Curbside Collection Services		
East Sub-Region	**Census Population**	**Census Households**	**Curbside Households**	**Garbage**	**Recycling**	**Organic waste**
Town of Creston	5,351	2,590	2,000	Yes	2021	2021
EA A	1,930	967	-	No	No	No
EA B	4,657	1,922	-	No	No	No
EA C	1,482	654	-	No	No	No
TOTAL	**13,420**	**6,133**	**2,000**			

Currently, in the RDCK, there are several organizations involved in providing residential recycling services:

- Recycle BC contracts with RDCK to provide residential recycling depots in each of the sub-regions. The transition to a Recycle BC system was completed in 2020. Remuneration by RBC to RDCK represents only 15% of the cost to operate the recycling depots.
- Recycle BC (RBC) contracts with the municipalities of Castlegar, Nelson, Kaslo and Nakusp to provide curbside recycling collection to residents in these communities. These communities receive a per-household financial incentive to provide this service. RBC provides direct service to residents in Electoral Areas I and J and a few households in area H. The Town of Creston will be providing curbside collection to its residents, as part of the Recycle BC program, as of 2021.
- There are private contractors in the RDCK who provide curbside recycling collection to residences without a local government-provided collection program. These contractors have typically brought the collected materials to RDCK recycling facilities. However, under the conditions of RDCK's contract with RBC, private collection contractors are not allowed to use the RBC residential recycling depots, which puts the future of these collection services in jeopardy.
- RDCK provides opportunities to recycle other materials at their transfer stations and landfills, including, automotive batteries, propane tanks, tires, scrap metal and appliances. It should be noted that all these items, except for propane tanks and scrap metal, have associated EPR programs.

Waste and recyclables generated by the ICI sector are either collected by private haulers or self-hauled to one of the RDCK recycling depots that accepts ICI cardboard.

3.4 The Organic Waste Diversion Strategy

In 2017 the RDCK adopted an Organics Waste Diversion Strategy focussed on the diversion of food waste and food soiled paper; systems were already in place to manage yard and garden waste. The objective of the strategy was to provide a financially sustainable road map that would lead to a robust organic waste diversion program that would reduce the RDCK disposal rate, save landfill space and reduce GHG emissions. The strategy is presented in Figure 3-1.

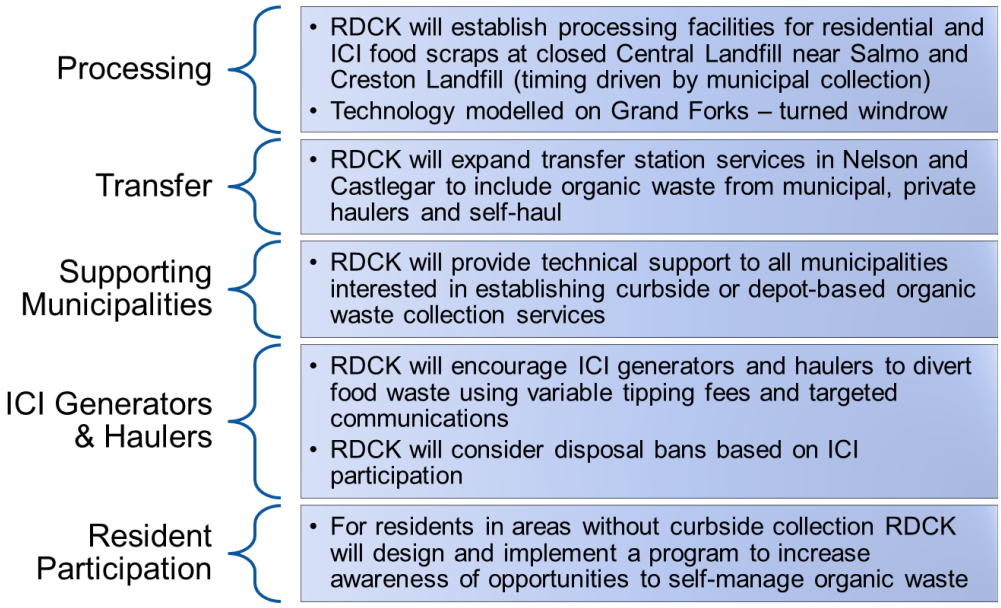

Figure 3-1: 2017 Regional Organic Waste Diversion Strategy

Since 2017, the RDCK has initiated strategy components related to processing, transfer, and support to municipalities. In 2018 the RDCK engaged MWA Environmental Consultants (MWA) to prepare curbside collection program cost estimates for Castlegar, Nelson and Creston. In 2019, the RDCK held a Municipal Curbside Organics Collection Workshop to provide municipal partners with the information required to make an informed decision regarding implementation of curbside organic waste collection in their respective municipalities.

As a result of this workshop Castlegar, Creston and Nelson provided RDCK with an Agreement in Principle stating that they will collect organic waste by 2022. Based on these agreements, the RDCK submitted applications to the Organics Infrastructure Program in May 2019, to construct two organics composting facilities: one at the Central Landfill and the other at the Creston Landfill. In January 2020, the Province notified the RDCK that their application was successful.

In March 2020, the RDCK held another Regional Compost Workshop with participation from the RDKB as well as the municipalities of Castlegar, Nelson and Creston. This networking session was designed to share and gather information, learn about what is being done elsewhere and discover potential synergies that will ensure the launch of successful municipal collection programs.

Since that time, the RDCK has begun the process to build the regional composting facilities at the Central Landfill and Creston Landfill, and the required upgrades at the Grohman Narrows Transfer Station and Ootischenia Landfill. The current schedule anticipates the construction of these facilities to be complete by October 2021.

Curbside organic waste collection programs are expected to begin in Creston, Castlegar and Nelson in 2022. Additional residential curbside collection services may come online in the future, including collection in other RDCK municipalities and in some parts of the electoral areas. The expansion of curbside services will be based on the feasibility of providing the service and level of public support. Expanding curbside collection would increase the region's food waste diversion rates and the corresponding climate changes benefits.

In 2020 the RDCK had MWA investigate the feasibility of optimizing diversion and GHG emissions reductions by implementing a residential curbside organics collection service for residents in electoral areas adjacent to municipal boundaries and within reasonable distances of organic processing facilities. The results of the study indicated that a regional program was feasible and could increase the number of households receiving curbside collection from 42% to 83%.[3] As a result, this plan outlines the steps that will be undertaken to potentially expand curbside collection to portions of the electoral areas.

3.5 RDCK Facilities

The primary purpose for RDCK Resource Recovery services is to ensure that RDCK residents and businesses have access to safe, efficient and comprehensive facilities for recycling, organics processing and waste disposal. This is accomplished through the operation of a facility network of three active landfills, thirteen waste transfer stations, twenty-three recycling depots and two organics processing facilities (to be constructed in 2021).

Figure 3-2 illustrates the current location of facilities within the three sub-regions. Note that the new organics processing facilities are located at the closed Central Landfill near Salmo and at the Creston Landfill.

[3] MWA Environmental Consultants Ltd. (2020). Technical Memorandum: Regional Curbside Organics Collection Program Feasibility Study.

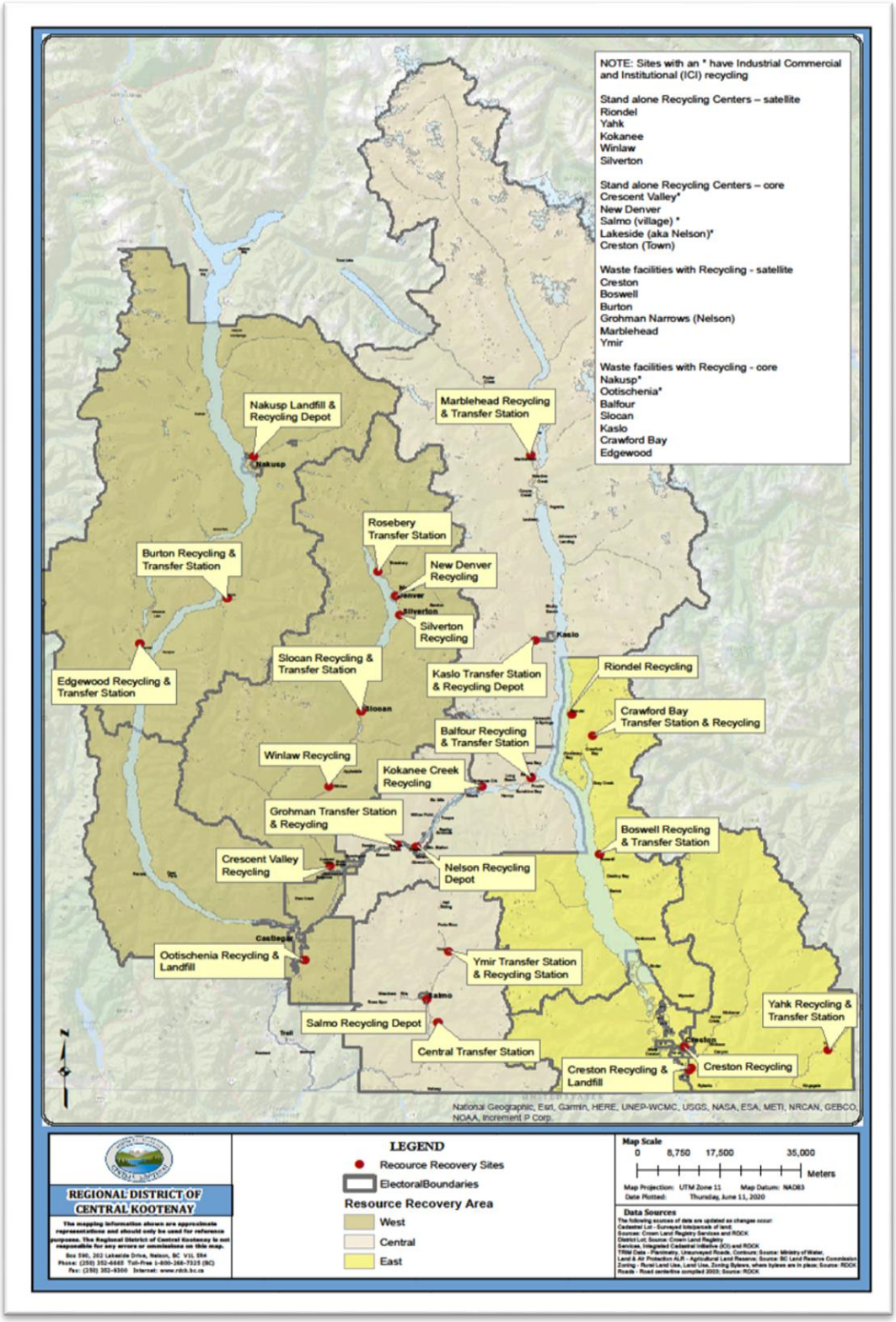

Figure 3-2: Resource Recovery Sub-Regions and Facilities

Table 3-7 provides a breakdown of facilities by sub-region. As indicated, not all facilities have scales, which means that some sites charge by weight while others charge by volume. This makes accurate tracking of material quantities difficult. The number of facilities requires a high level of staffing as indicated in Figure 3-3.

Table 3-7: Resource Recovery Facilities by Sub-Region

West Sub-Region	Central Sub-Region	East Sub-Region
•**Recycling & Landfill (2)** •Ootischenia - Scale •Nakusp - Scale •**Recycling & Transfer Station (3)** •Edgewood - No Scale •Burton - No Scale •Slocan - No Scale •**Transfer Station (1)** •Rosebery - No Scale •**Recycling Depot (4)** •Crescent Vallery •Winlaw •Silverton •New Denver	•**Recycling & Transfer Station (5)** •Grohman - Scale •Balfour - Scale •Kaslo - No Scale •Marblehead - No Scale •Ymir - No Scale •**Transfer Staton and Composting Facility (1)** •Central - Scale •**Recycling Depot (3)** •Salmo •Nelson •Kokanee Creek	•**Recycling, Landfill & Compost Faciltiy (1)** •Creston - Scale •**Recycling & Transfer Station (3)** •Yahk - No Scale •Boswell -No Scale •Crawford Bay - No Scale •**Recycling Depot (2)** •Creston •Riondel

3.6 Resource Recovery System Costs

The total cost to manage, supervise and operate the current resource recovery system in 2021 is $22 million as indicated in Table 3-8.

Table 3-8: Resource Recovery System 2021 Financial Plan by Sub-Region

	West	Central	East	Total
Revenues				
Taxation	$675,631	$2,990,378	$1,200,610	$4,866,619
Tipping Fees	$2,270,766	$1,536,729	$928,361	$4,735,856
Grants		$1,549,506	$992,313	$2,541,819
Borrowing		$1,889,559	$510,745	$2,400,304
Reserves	$671,963	$4,035,124	$871,931	$5,579,018
Other	$936,334	$582,106	$483,875	$2,002,315
Total Revenue	**$4,554,693**	**$12,583,402**	**$4,987,835**	**$22,125,930**
Expenditures				
Operating	$3,882,760	$4,933,722	$2,974,731	$11,791,213
Capital	$671,963	$7,649,680	$2,013,103	$10,334,746
Total Expenditures	**$4,554,723**	**$12,583,402**	**$4,987,834**	**$22,125,959**

To meet regulatory requirements such as the new 2016 Landfill Criteria and service expectations, the RDCK has made and will continue to make significant capital investments in the Resource Recovery system. Figure 3-3 shows the increase to capital and operating costs within the last 5 years.

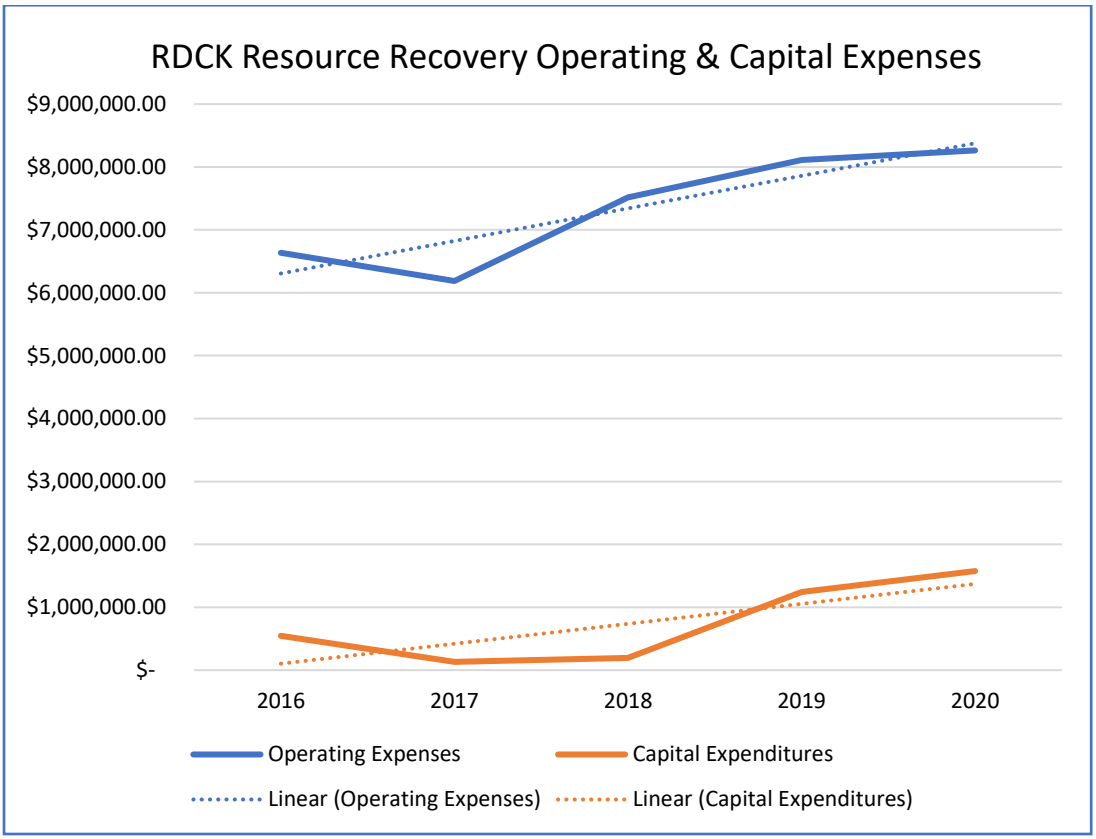

Figure 3-3: Resource Recovery Expenses 2016 - 2020

The staffing demands associated with managing, supervising, and operating a facility network of three active landfills, thirteen waste transfer stations, twenty-three recycling depots, and two organics processing facilities (planned for 2021), have increased significantly. The current staffing structure is shown in Figure 3-4. While there are only seven managerial, technical or supervisory positions associated with the resource recovery system, there are 83 positions associated with operating the recycling depots, transfer stations, landfills and transfer systems. Although landfill operations are a contracted service, these contracts also require management and oversight.

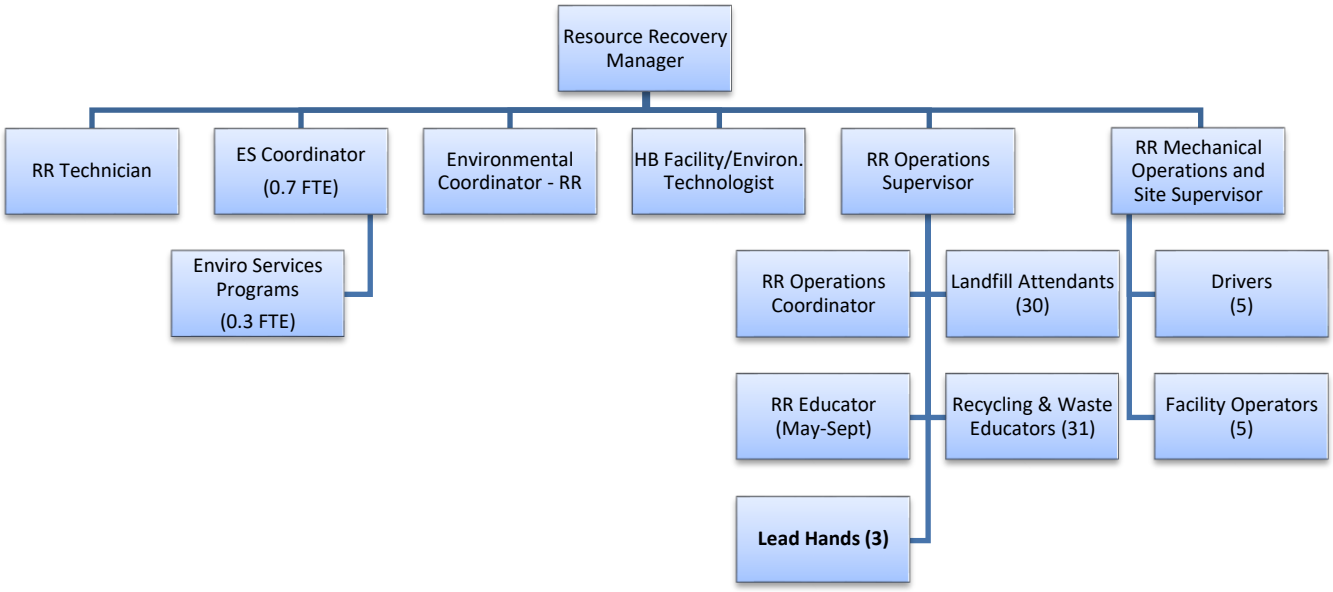

Figure 3-4: Resource Recovery Facilities Staff Establishment

3.7 System Performance

Based on a review of scale data from landfills and transfer stations, Table 3-9 provides a summary of disposal in 2020 for the region. In 2020 RDCK disposed of 490 kg per capita, less than the provincial average of 505 kg per capita.[4]

Table 3-9: Summary of Disposal in 2020

Disposal	31,097 tonnes
Estimated 2020 Population	63,911
Disposal Rate	490 kilograms per capita

Scale data was also analyzed to determine the sources of waste disposed in three categories: residential curbside; self-haul, and commercial (account holders). Table 3-10 provides the estimated proportion of waste disposed from each of these three sources.

Table 3-10: Source of Waste Disposed

Source	Tonnes	Percentage
Residential Curbside	3,421	11%
Self-Haul	12,750	41%
Commercial (account holders)	14,927	48%
Total	31,097	

[4] Ministry of Environment Disposal Calculator, 2018 data. (The most recent data available in March 2021.) http://www.env.gov.bc.ca/soe/indicators/sustainability/municipal-solid-waste.html

Figure 3-5 presents an estimate of the composition of the waste disposed in the RDCK. The RDCK has not conducted any waste composition studies to date. However, waste composition studies conducted in other jurisdictions with waste management policies and service and population distribution can provide a reasonable indicator of what is disposed in the RDCK. Data from a 2018 study waste composition study conducted at for the Regional District of Columbia Shuswap at their Salmon Arm landfill[5] was used to create Figure 3-5. This landfill receives waste from municipal and electoral areas, including regional transfer stations. In support of future planning exercises, RDCK intends to undertake waste composition studies as described in Section 11.

Based on data from this composition study, roughly 37% of waste disposed could be recycled or is acceptable through an EPR program, and an estimated 40% of waste disposed could be composted (food waste + yard waste + the portion of paper that is appropriate for composting).

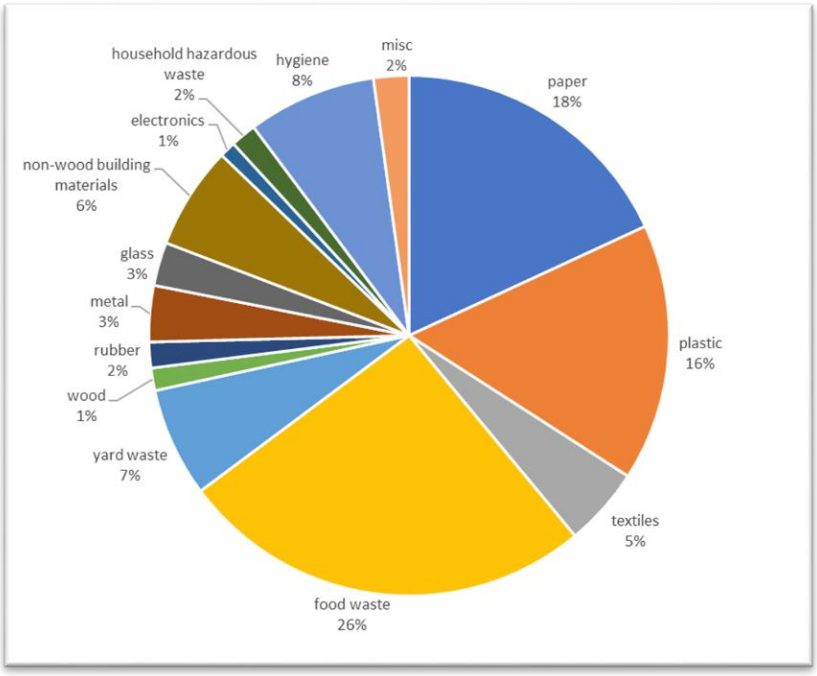

Figure 3-5: Estimated Composition of Waste Landfilled

3.8 Key Issues/Areas for Improvement

During the development of the plan, the issues detailed below, emerged. These issues, along with the Plan's goals (identified in Figure 1.1) were key drivers in the selection of options for this plan.

- There are not sufficient programming and behavior change resources to support the first levels of the pollution prevention hierarchy (rethink, reduce and reuse) as well as addressing the climate imperative.
- Food waste represents the largest component of the waste currently disposed (26%).

[5] Tetratech. 2018 Waste Characterization Study: Salmon Arm Refuse Disposal Site.

- Only 42% of households in the RDCK receive curbside collection for waste and/or recycling. Based on data from other regional districts, curbside collection programs have higher recycling and organics recovery rates than drop-off programs. Expanding curbside collection to households in the electoral areas, where practical, would have a positive impact on food waste diversion rates and corresponding processing capacity at the two composting facilities.
- The RDCK recycling depot system for packaging and paper is not well funded by Recycle BC and has limited access for the ICI sector. Residential curbside collection has a much higher level of Recycle BC funding.
- The RDCK resource recovery system is complex, expensive, and with many moving parts, making it difficult to oversee. A system efficiency study could identify opportunities to streamline the system.
- Landfill conformance reviews and Landfill Upgrading Plans completed to meet the requirements of the new Landfill Criteria for Municipal Solid Waste issued in 2016 will require increased operating and capital costs to meet these new regulatory requirements.
- The recovery of costs associated with the RDCK resource recovery system needs to be fair and sustainable, while also incentivizing waste minimization and diversion.

3.9 A New Plan for the RDCK

Through the work undertaken over the past four years to consider the current system and assess new approaches and opportunities, a new plan for managing solid waste has been drafted that builds on current successes and continues to move the RDCK towards Zero Waste. The remaining sections of this document present the system for managing solid waste in the RDCK over the next 10 years.

- **Section 4** presents the Zero Waste strategy and outlines the actions that will be undertaken to move the RDCK toward Zero Waste over the next decade.
- **Section 5** describes how recovery fits in the long-range plan for managing solid waste.
- **Section 6** outlines the recommendations associated with landfills and transfer stations located within the RDCK.
- **Section 7** presents the recommendations associated with other elements of the solid waste management system including illegal dumping mitigation, human-wildlife conflict mitigation, and the management of specified risk material.
- **Section 8** presents the financial model for the RDCK-managed part of the solid waste management system and identifies actions to improve the long-term financial sustainability of the system.
- **Section 9** provides estimates of plan effectiveness in reducing the quantity of waste going to landfill and presents the targets that this plan expects to achieve over the next 10 years.
- **Section 10** describes the tools that will be used to monitoring the plan's progress.
- **Section 11** describes how the RDCK will seek opportunities to collaborate with other agencies.
- **Section 12** speaks to the flexibility of the Plan to deal with contextual changes.
- **Section 13** describes a dispute resolution process that can be applied should a disagreement regarding the implementation of this plan emerge.

Throughout the plan there are cost estimates provided. These estimates are in 2021 dollars.

4 In Pursuit of Zero Waste

The first goal of this RRP is to continue to strive for Zero Waste. In 2005 the RDCK Board committed in principle to pursuing Zero Waste. Zero Waste is defined as follows:

> *"Zero Waste is a concept that embraces social, economic, and environmental considerations. When it is achieved, Zero Waste relieves pressure on the natural environment, reduces the financial burden placed on local taxpayers, as well as decreases the amount of liability shouldered by local governments. Zero Waste promotes moving beyond the traditional five R's hierarchy and instead adopts a more holistic approach to the traditional linear flow of resources. Zero Waste encourages the full integration of raw materials with the aim of eliminating the idea that waste is a necessary part of the economic formula…."*

Zero Waste is also consistent with addressing the climate imperative. Climate change is driven by energy use. The products we consume and then dispose of as garbage contribute to climate change. That is because of the energy required to extract, harvest, process, and transport raw materials and then the additional energy required to manufacture and transport consumer products and finally to dispose of them after use.

Recognizing that the Zero Waste goal is not an immediately achievable objective, the intention has been to achieve steady, incremental gains by continually integrating Zero Waste principles into regional Resource Recovery system planning. In pursuit of the Zero Waste goal, the RDCK emphasizes waste reduction initiatives appropriate for the RDCK context that are practical, fiscally responsible, and realistically achievable with the goal of shifting the focus of regional waste management from residual disposal to reducing waste in accordance with the five R's hierarchy.

This plan pursues Zero Waste by building on the current Zero Waste initiatives already in place within the region and focusing new initiatives on reducing the quantity of organic waste landfilled. Organic waste is the largest component by weight of what continues to be disposed of as garbage. Reducing the amount of organic waste landfilled will not only save landfill space but will also be a substantial action for mitigating the climate crisis.

4.1 Reduction and Reuse

Strategy: Build opportunities for and awareness of reduction and reuse through events and campaigns that encourage behaviors that minimize waste.

Actions: The actions to achieve this are:

1. Maintain existing Reuse Sheds.

2. Promote and facilitate "reduce and reuse" by making it a key part of RDCK's resource recovery communication and outreach program. This could be done through:
   - Use social media to promote local reuse events including garage sales, flea markets, swaps, etc.
   - Promote existing reuse services (thrift shops, repair shops, rental) by creating and maintaining an online directory.

- Encourage upcycling and repair events through establishing a fund that can be used to help offset the cost of holding the events.
- Encourage the sharing economy by piloting an online service for the sharing of goods like lawnmowers, ladders, cement mixers, etc.

3. Continue to promote reuse through holding community events like "Trash to Treasure". To mitigate the issue of abandonment of goods associated with these events, coordinating organizations will be encouraged to provide guidelines to participants, such as quality standards (i.e., no "garbage"), weather protection, deadlines for removing unclaimed items, respecting private property, etc.

4. A year-round campaign instructing residents on how to properly donate and give away goods will be developed to mitigate the issue of abandonment of goods and burdening social service organizations with donation of non-saleable goods.

5. The RDCK will endeavor to work with community partners to undertake the above reuse activities.

Table 4-1 provides an estimate of the additional costs to the RDCK (beyond what is currently budgeted) for undertaking the Reduction and Reuse actions listed above.

Table 4-1: New Costs for Reduction and Reuse

	Description	Cost
New Annual Operating Costs	Promote and facilitate reuse activities in the RDCK	$5,000
New Staffing	Technical Staff	0.1 FTE
	Seasonal Staff	0.2 FTE

4.2 Organic Waste Diversion

Organic waste is the largest component by weight of what continues to be disposed of as garbage. Reducing the amount of organic waste landfilled will not only save landfill space but will also be a substantial action for mitigating the climate crisis. The Organic Waste Diversion Strategy adopted in 2017 has been revised in parallel with the review of the RRP. The RDCK has initiated actions related to processing, transfer, and support to municipalities that are described in Section 3.3. These, plus additional planned actions that constitute the updated RDCK Organic Waste Diversion Strategy are presented below.

Strategy: Optimize organic waste diversion to reduce greenhouse gas emissions and save landfill capacity.

Actions: The following are the key actions associated with optimizing organic waste diversion.

1. **Establish organic waste processing facilities at the Central, Creston and Nakusp Landfills.** In 2021 the RDCK will establish two organic waste processing facilities for residential and ICI food waste: one at the Creston Landfill and the other at the closed Central Landfill. These sites have space for a composting facility and are well-buffered from surrounding land uses. RDCK successfully applied for a grant to assist with the capital costs of constructing these two composting facilities.

This application was done with the support of the municipalities of Castlegar, Creston and Nelson, as well as the Regional District of Kootenay Boundary. All of these local governments are expected to support these facilities through the delivery of organic waste.

In 2021 the RDCK will also complete the pre-design of an organics processing facility at the soon to be closed Nakusp landfill. The pre-design cost estimate will allow the RDCK to apply to anticipated future grant funding opportunities aimed at reducing GHG emissions.

2. **Prepare for Organic Waste Transfer.** To support the collection of food waste in Nelson and Castlegar, the RDCK will expand their transfer station services to these communities to include a food waste transfer area at the Grohman Narrows and Ootischenia Resource Recovery Facilities in 2021. These facilities will be able to receive food waste from municipal collection programs, as well as from commercial collection providers servicing customers in the municipalities and in the surrounding electoral areas; and residents and businesses that wish to self-haul their food waste.

   The RDCK will investigate the feasibility of expanding organic transfer facilities at other transfer stations based on feasibility and community interest in the provision of organic waste collection.

3. **Implement curbside collection of food scraps in Castlegar, Creston and Nelson.** Since 2017 the RDCK has worked with the municipalities of Castlegar, Creston and Nelson to design and implement curbside collection of residential food scraps once the composting and transfer infrastructure is in place.

   In February 2021, the RDCK applied for funding to the Clean BC Organic Infrastructure and Collection Program (OICP) to support the delivery of residential curbside organics collection services in Creston, Castlegar and a proposed curbside collection program for electoral area residents living adjacent to municipal boundaries. The funding, if granted, will pay for two-thirds of the cost to purchase and distribute collection containers and the development and distribution of communication and education outreach programs. s. This application did not include the City of Nelson as they submitted a separate application for a pre-treatment organics collection service based on the FoodCycler.

   Under this project, Creston and Castlegar will directly deliver organics collection services to their residents while the service proposed for the electoral areas will be operated by the RDCK. For Creston, manual curbside collection of food waste will coincide with the introduction of manual curbside recycling collection under contract to Recycle BC. For Castlegar, automated collection of food and yard waste will be in addition to the current curbside recycling program funded by Recycle BC. These two programs are expected to begin in 2022. For the electoral areas, the proposed new program will initially consist of garbage and organics collection services, however curbside collection of recyclables under contract to Recycle BC may be implemented in 2024 based on the results of public consultation.

4. **Establish a regional curbside garbage and food waste collection service for electoral areas and municipalities that request the service.** Provision of curbside collection in portions of the regional district, where such as service is deemed reasonable (based on household density and access to organic waste management infrastructure), could increase the number of households receiving curbside collection from 42% to 83% and significantly increase organic waste diversion. During the process of finalizing this Plan, RDCK consulted with residents in the electoral areas to determine if there was interest establishing curbside collection of garbage and food waste. This consultation involved the development of a map showing potential service areas, which formed the basis for this first step in determining if there is interest in the service. This map is shown as Figure 4-1.

Figure 4-1 Potential Curbside Collection Areas

The results of consultation indicated that there is enough interest to continue to explore the potential service. Consequently, the following steps are planned in consideration of a RDCK-provided collection service:

- Following submission of the Final RRP to Ministry for approval, the RDCK will obtain more detailed and localized information related to households, densities, and accessibility to allow for more refined service area boundaries and cost estimates.
- Based on the information obtained, the RDCK will undertake a second phase of public consultation based on refined service area boundaries, service levels and costing. The results of this consultation should provide Electoral Area Directors with sufficient feedback to determine whether they would support the establishment of a curbside collection service in portions of their respective electoral areas.

- Subject to Ministry approval of the Final RRP and the results of Phase 2 consultation, the RDCK may proceed with preparing the service establishment bylaw and issue an RFP or, if an RFP was already issued, award a contract for the service.

5. **Support organics diversion in other communities.** The RDCK will support municipalities interested in joining the potential regional collection program or establishing their own organic waste management solutions. Support could include:
    - Providing technical advice on collection and small-scale processing option.
    - Assisting with the identification of appropriate processing technologies that can be installed and operated locally. There are several options available to small communities that can manage food waste including in-vessel composters and fermenting kits.
    - Assisting with the design of the collection program.
    - Identification of grant funding opportunities.
    - Providing templates for communication and educational materials.

    The level of support that RDCK will be able to provide to individual municipalities will be dependent on staff availability. It is anticipated that the municipalities that are early adopters of organic waste diversion will be able to assist other municipalities in the design and implementation of their organic waste diversion services.

6. **ICI sector participation in organic waste diversion is expected to be voluntary.** ICI organic waste generators include all businesses and institutions that generate food waste, with the largest generators being grocers, restaurants, food and beverage manufacturers, institutions with kitchens, and caterers. Using variable tipping fees and targeted communications, RDCK will encourage commercial waste haulers and generators to establish collection services for source-separated food waste (including soiled papers, cardboard and waxed cardboard) that can be delivered to organic waste receiving facilities.

    ICI sector participation in organic waste diversion would not be limited to diverting food waste to the composting facilities. ICI participation in organic waste diversion could also include:
    - Participating in food re-distribution,
    - Giving food waste to farmers for use as animal feed, and
    - On-site management techniques (composting, fermentation or digestion).

    In areas where ICI organic waste collection services are well-established, the RDCK will assess the level of ICI participation in organic waste diversion. If participation levels are low, RDCK will consider options to increase participation, including:
    - A disposal restriction on ICI organic waste,
    - Municipal requirement to source-separate organic waste at ICI locations,
    - An increased price differential between the garbage and organic waste tipping fees,
    - More promotion and education targeting the ICI sector, and
    - Establishment of a service to link food waste generators to potential users.

7. **Facilitate the reduction and self-management of organic waste by RDCK residents.** If the RDCK proceeds with the establishment of a regional curbside garbage and food waste collection service for rural areas and municipalities that request the service, there will still be roughly 15-20% of households that will not have access to this service. In all areas of the regional district, but most importantly for residents in areas without curbside organic waste collection, the RDCK will implement a program to increase the awareness of opportunities to self-manage organic waste, including reducing the generation of food waste. This is likely to include:
    - A food waste reduction campaign, like "Love Food, Hate Waste,"
    - A financial incentive for purchase of a composter, fermentation kit, or other acceptable equipment that supports on-site management (e.g., a mail-in rebate),
    - Workshops on on-site management techniques, e.g., Vermicomposting, fermentation, how to compost in areas with bears,
    - Support of gleaning programs (a type of food recovery where food that would otherwise go to waste is harvested directly from where it is grown), and
    - A media campaign done in concert with WildSafe BC.

8. **Conduct a cost-benefit analysis of yard waste management at RDCK facilities.** The RDCK will assess how it receives yard waste, the effectiveness of the seasonal free yard and garden waste program, and the associated tipping fees charged with consideration of the following:
    - the desire to offer an alternative to burning yard waste,
    - the need to support homeowners wanting to reduce the threat of wildfires by removing brush around structures,
    - the need for yard waste as a feedstock for the composting facilities, and
    - the costs associated with chipping yard waste.

Table 4-2 shows the new capital and operating costs associated with the above organic waste diversion recommendations. All costs associated with the compost facility noted below can be fully or partially recovered through tipping fees from organic waste, however the education and self management costs would likely be funded through taxation.

Table 4-2: Existing and New Costs for Organics Diversion

	Description	Cost	Schedule
Capital	Composting facility at Central Landfill*	$2,289,802	2021
	Composting facility at Creston Landfill*	$1,343,531	2021
	Composting facility at Nakusp Landfill Pre-Design	$40,000	2021
	Proposed composting facility at Nakusp Landfill Construction	$500,000	2025
	Grohman Narrows Transfer Station Upgrades	$133,000	2021
	Ootischenia Transfer Station Upgrades	$256,612	2021
	Clean BC OICP Application**		
	Regional Collection Service Consultation and Design	$36,840	2021-22
	Curbside Containers and Kitchen Catchers	$1,007,750	2022-23
	Program Launch Communications and Outreach	$440,382	2022-23
	Contingency at 20%	$296,994	
	Subtotal of capital costs	**$6,344,911**	
	*RDCK has received a grant that will cover 2/3 of these expenditures		
	**RDCK has applied for a grant that, if awarded, will cover 2/3 of these expenditures		
Operating	Composting facility at Central Landfill	$305,000	
	Composting facility at Creston Landfill	$125,000	
	Organic Waste Transfer	$86,000	
	Support organics collection and processing in other communities (for studies, facility designs, etc.)	$5,000	
	ICI Promotion and Education	$2,500	
	Facilitate the reduction and self-management of organic waste by RDCK residents	$5,000	
	Subtotal of annual operating costs	**$528,500**	
New Staffing	Program development and coordination	1.0 FTE	Technical Staff
	Program management	0.1 FTE	Management
	Operations Central	1.0 FTE	Operator
	Operations Central	0.5 FTE	Driver
	Operations Creston	0.5 FTE	Operator
	OICP Regional Program Coordination (2 yr term)	1 FTE	Technical Staff
	OICP Ambassador Program (temporary contractors for 12 weeks)	1 FTE	Technical Staff

4.3 Residential Recycling

Having robust and functional recycling programs within the RDCK is an essential component of pursuing Zero Waste. Each year thousands of tonnes of material are diverted from RDCK landfills through various recycling programs, including residential curbside collection programs, RDCK recycling depots, and services offered by the private sector, non-profits and Extended Producer Responsibility agencies.

Over the past decade there has been a significant reduction in the role of local governments in BC in directly delivering recycling services, and greater involvement of the private, non-profit and EPR sectors. This trend is expected to continue in the upcoming Plan update period. As part of this change, there has also been a significant expansion to the range of items and materials that can be recycled, making participation in recycling more complex and therefore establishing a need for greater education.

In the years since the last RRP was completed, the Province added residential packaging and printed paper (basically household recyclable materials) to the Recycling Regulation, thereby making their collection and recycling an EPR program. In 2014, the primary responsibility for residential (not ICI) recycling shifted from local governments to the stewardship agency, Recycle BC (RBC). In the RDCK, the provision of residential recycling services is still largely provided by local governments, however, some of the costs for these services are paid by RBC.

Currently, in the RDCK, there are several organizations involved in providing residential recycling services:

- RBC contracts with the municipalities of Castlegar, Nelson, Kaslo and Nakusp to provide curbside recycling collection to residents in these communities. These communities receive a per-household financial incentive to provide this service. Recycle BC provides direct service to residents in Electoral Areas I and J and a few households in area H. The Town of Creston will be providing curbside collection to its residents, as part of the RBC program, as of 2022.
- RBC contracts with RDCK to provide residential recycling depots in each of the sub-regions. These depots collect the same materials collected at curbside plus material categories not collected in curbside programs, specifically glass containers, plastic film, polystyrene foam and flexible packaging.
- There are private contractors in the RDCK who provide curbside recycling collection to residences without a local government-provided collection program. These contractors have typically brought the collected materials to RDCK recycling facilities. However, under the conditions of RDCK's contract with RBC, private collection contractors are not allowed to use the RBC residential recycling depots, which puts the future of these collection services in jeopardy.
- RDCK provides opportunities to recycle other materials at their transfer stations and landfills, including, automotive batteries, propane tanks, tires, scrap metal and appliances. It should be noted that all these items with the exception of propane tanks and scrap metal have associated EPR programs.

Strategy: Increase resident participation in recycling while reducing direct costs to the RDCK.

Actions: The following actions will be undertaken to ensure that residents have access to recycling opportunities throughout the region and to work towards minimal contamination of the residential recycling stream.

1. **Maintain Recycle BC (RBC) residential recycling depots in each of the sub-regions.** Participation in the Recycle BC program ensures consistency with the residential recycling services in most of the Province and puts the responsibility of processing and marketing the collected recyclables on the producers of residential packaging and paper. The following locations have RDCK-operated RBC depots: Nelson, Castlegar, Nakusp, Slocan, Salmo, Kaslo, Creston, New Denver, Edgewood, Crescent Valley, Balfour and Crawford Bay. RDCK will continue to operate "satellite depots", meaning that RDCK funds the operation of these depots and transports the recyclables collected at these sites to the RBC-funded depots so that they can then be incorporated into the recyclables that are managed by RBC (i.e., the subsequent transportation, processing and marketing).

2. **Encourage resident use of depots or private curbside recycling contractors.** Residents that are outside of Recycle BC's curbside collection areas will have the option of using a depot or contracting with one of the private contractors that provide curbside recycling collection to both residences and businesses.

3. **Lobby the Province and Recycle BC** to allow private residential collection service providers access to RBC collector incentives, and/or allow them to use RBC recycling depots in locations where the depot collector is supportive.

4. **Continue providing recycling opportunities at disposal facilities.** RDCK will continue to provide opportunities to recycle other materials at their transfer stations and landfills. Expanding the list of items collected will be considered on a case-by-case basis and include an assessment of space available, the availability of other local collection options, and the resources (staff and financial) to provide the service.

5. **To tackle the issue of contamination in the residential recycling:**
    - All RBC depots are staffed. Staff can provide information on proper sorting to residents using the depots.
    - Using audit data from Recycle BC, targeted education campaigns will be undertaken to address problem materials and/or areas.
    - Take-home information on what can and cannot be recycled and how to sort it is available at all recycling depots and on-line.
    - Municipalities with curbside collection are encouraged to implement a monitoring and enforcement procedure for contamination found in curbside recycling containers.
    - RDCK and member municipalities will aim to collaborate and coordinate their residential recycling education efforts with the objectives of creating consistent messaging, ensuring that all residents are aware of the available recycling opportunities, and more efficient use of local government resources (staff and budget). This collaboration is further discussed as part of the Education and Outreach recommendations (Section 4.8).

6. **Assess the potential to expand residential curbside recycling.** RBC has drafted criteria for the inclusion of electoral areas homes in an RBC curbside collection service. In addition to building density criteria, another criterion is for homes to have had a curbside garbage collection service provided by the local government for at least 2 years. None of RDCK's electoral areas homes currently has government-provided collection. However, as part of assessing the electoral areas for the feasibility of residential organic waste and garbage collection (see section 4.2 for details), RDCK will also assess the feasibility of providing curbside recycling collection in the future.

7. **Maximize participation in available recycling and organics collection services.** Municipalities with curbside collection are encouraged to consider implementing and reviewing available policy tools to maximize participation in available recycling (and organics) collection services. This includes:
   - Reducing the weekly allowable number of cans collected, and
   - Restricting recyclables (and organics, when and if applicable) from disposal in the garbage collected at curb.

With the exception of Recommendation #6, implementation of the above actions is not anticipated to require additional RDCK budget. Sufficient RDCK staffing is already in place to manage these recommendations. Costs to undertake Recommendation #6 are incorporated in the costs to implement Recommendation #4 of the Organic Waste Diversion Strategy (refer to page 25).

4.4 Industrial, Commercial and Institutional (ICI) Recycling

In the RDCK, ICI recycling services have been provided through two primary means: commercial collection services and RDCK recycling depots.

In 2019, RDCK opted to join the Recycle BC (RBC) program, which is an EPR collection service for residential recyclables (not ICI recyclables). To continue to provide a recycling option for the ICI sector, the RDCK has established separate recycling bins for ICI sector cardboard at the depots that are believed to have a significant use by the local ICI sector, specifically at the Nelson, Ootischenia, Creston, Crescent Valley, New Denver, Nakusp, Kaslo and Salmo depots. RDCK is in the process of implementing this new system and anticipates that the depot system for the ICI sector will be refined over time based on demand, usage and the recycling marketplace.

RDCK incentivizes the ICI sector to recycle through their tipping fee structure. The Resource Recovery Facilities Regulatory Bylaw #2771 and amendments thereto, states that loads containing more than 10% recyclable materials will be subject to a doubling of the applicable tipping fee.

Strategy: Encourage businesses and institutions to maximize their participation in recycling and waste reduction.

Actions: The actions associated with ICI Recycling are:

1. **Establish an ICI Sector Liaison Group** comprised of business sector representatives, major institutions and haulers. Such a group can provide valuable feedback on existing and proposed services and policies, help identify current and emerging issues, and assist with identifying solutions. Subjects to be discussed with this group would include potential policies to encourage ICI participation in recycling (such as disposal restrictions on organic waste) or potential services (such as promotion and education campaigns) that target ICI sector waste management behaviours.

2. **Lobby to have ICI Recyclables as an EPR program.** Having residential and ICI paper and packaging as part of the singular schedule in the BC Recycling Regulation would reduce the operational challenges and redundancy of having separate RDCK collection systems. This will require on-going lobbying by RDCK and other BC local governments.

There are no new costs associated with the above recommendations, however some staff resources will be required to establish and facilitate an ICI Sector Liaison Group.

4.5 Construction, Demolition and Renovation (CDR) Waste Diversion Opportunities

Significant volumes of MSW are generated by Construction, Demolition and Renovation activities. The largest material component of these activities is typically wood, but other recyclable materials such as metal and cardboard are also commonly generated.

Currently wood waste accepted at RDCK landfills and transfer stations is ground. The chips produced are used as daily cover material, road surfacing, and blended with septage and biosolids for composting, which in turn can be used to help establish vegetation on closed parts of the landfill. To maximize diversion, all wood waste is accepted, including wood with contaminants such as nails, paint and stains, and glues.

Strategy: Encourage and support the diversion and highest end use of CDR waste.

Actions: The following are the actions associated with CDR waste diversion.

1. **Continue to use differential tipping fees to encourage separation of CDR waste into recyclable components.**

2. **Continue to distribute CDR waste management information.** RDCK has a handout for CDR contractors and "do-it-yourselfers" that includes information on CDR recycling, reuse and disposal options, as well tipping fees and disposal restrictions. This handout will be updated regularly as new diversion opportunities become available and as management policies evolve. RDCK Building Department staff provide renovation and demolition permit applicants with the handouts; RDCK works with municipal partners to ensure the same or similar information is distributed as part of the municipal permit process. The handout is also distributed to hardware and building supply retailers every spring for increased exposure to the residential sector.

3. **Continue to grind wood waste and blend it with septage and biosolids** to produce a soil amendment for daily and intermediate cover and assisting in establishing vegetation as part of landfill final cover projects.

4. **Research alternative options for wood waste (clean and dirty).** The RDCK receives a large volume of wood waste and the ratio of clean to contaminated wood waste is not currently known. However, there is more wood waste than can be reasonably used for blending with biosolids/septage (for cover material) and for food waste composting (in the future). Consequently, the RDCK will explore alternative uses for both clean and contaminated wood waste, including the biomass project that is being developed in Fruitvale (anticipated opening of 2021).

5. **Consider differential tipping fees for clean and dirty wood.** Typically, there are more options available for the beneficial use of clean (untreated/uncoated) wood waste than "dirty" wood waste. As RDCK identifies alternatives for the wood waste received at their facilities, there may be a need to implement a mechanism to encourage the separation of clean from dirty wood waste. For example, a significant tipping fee differential between clean (uncoated or treated wood) and contaminated wood, e.g., $25/tonne for clean wood waste and $75/tonne for contaminated wood or mixed wood waste loads would create a financial incentive to segregate out clean wood from dirty wood waste. For segregation to be successful, RDCK will need to undertake an education campaign targeted at CDR wood waste generators to ensure that there is proper segregation of wood waste. Additionally, new infrastructure (e.g. bin walls, transfer bins) would be required to collect and transfer two types of wood waste. At this time, capital and operating costs for this have not been included in the costs presented in Table 4-3.

6. **Establish a CDR Liaison Group.** Similar to the idea of an ICI working group, a CDR waste management liaison group comprised of contractors, haulers, building inspectors and retailers could assist RDCK in identifying issues and solutions associated with CDR waste management, including challenging issues such as asbestos disposal. A liaison group is expected to provide valuable feedback on current services and policies, and be a sounding board for new ideas.

7. **Participate in Contractor Conferences.** RDCK Resource Recovery staff will seek out and participate in conferences for the local CDR industry to share information and gain insights into the challenges and opportunities associated with managing CDR waste. Participation may include attending, speaking and sponsoring such events.

8. **Request hazardous materials assessments.** In recent years, the awareness of the potential for exposure to hazardous materials in waste, such as asbestos from CDR projects has increased significantly. WorkSafe BC requires hazardous materials assessments conducted prior to commencing work on demolition and renovation projects. Some municipal building departments are now requiring this prior to issuing permits and more regional districts are now requiring hazardous materials assessments prior to disposing of CDR waste. To ensure the safety of collectors, Resource Recovery facility staff and downstream processors, RDCK will propose a formal requirement for hazardous materials assessments prior to disposal of demolition or renovation waste at RDCK facilities. Such a requirement will need to be implemented by both RDCK (Resource Recovery Program and Building Inspections) and member municipalities.

Table 4-3 shows the new capital and operating costs associated with the above recommendations.

Table 4-3: New Costs for Construction, Demolition and Renovation Waste Diversion

	Description	Cost
New Annual Operating Costs	Promote and facilitate CDR waste diversion (to be applied to the liaison group, development and distribution of information, and participating in contractor conferences)	$5,000
New Staffing	Technical Staff (1 year period)	0.1 FTE

4.6 Extended Producer Responsibility (EPR) & Household Hazardous Waste (HHW) Management

EPR is a provincial policy tool that aims to shift the responsibility for end-of-life management of products (physically and economically) to the producer and away from local governments. This policy is intended to create an incentive for producers to include environmental considerations in design of products.

In November 2015, the RDCK Board endorsed an Interest Statement on EPR that sets out the RDCK's position on the provision of EPR services in the RDCK, as provided in Appendix A. This policy statement acknowledges that the most effective collection system for most EPR materials would be to have "one stop shop" Eco Depots that collected a wide variety of products.

EPR depots are the main collection mechanism for collection of HHW (paints, pesticides, motor oil, batteries, etc.) Although there are several depots throughout the Regional District that collect EPR products, the RDCK feels that the current number and location of depots for the collection of EPR products remains inadequate and intend to establish Eco Depots in each sub-region.

Currently, the RDCK organizes Household Hazardous Haste (HHW) collection events each fall throughout the region. For these events, they solicit and receive financial and operational support from the various EPR organizations that have responsibility for various HHW products. These events also collect HHW not covered under a current EPR program.

In support of existing EPR programs and to ensure that these products do not enter the landfill, the RDCK has prohibited the following products from disposal (as per Schedule D of RDCK Bylaw 2771):

- Gasoline
- Lead-acid batteries
- Rechargeable batteries
- Pesticides
- Pharmaceuticals
- Solvents and flammable liquids
- Paint
- Used oil and oil filters
- Used oil containers

In September 2020, the Ministry released a Recycling Regulation Policy Intentions Paper. This paper seeks input on the potential of adding new products and packaging to the regulation through the addition of new or amended Schedules and associated Product Categories. Items under consideration are:

- Adding mattresses and foundations as a new product category.
- Expanding the residual product category to include more moderately hazardous products, such as single-use propane canisters.
- Expanding the electronic and electrical product category to include more items, such as electric vehicle batteries.
- Expanding the packaging and paper product category beyond residential sources.

The RDCK submitted a letter to the Ministry in response to the Intentions Paper. This letter can be viewed in Appendix B.

Strategy: Encourage the broad availability of EPR collection services are available in the RDCK and support the expansion of EPR programs.

Actions: The following are the actions associated with EPR and HHW:

1. **Lobby the Provincial Government.** The RDCK will continue lobbying the Provincial Government to:
    i. Ensure that stewards are achieving a reasonable level of service in all areas of BC.
    ii. Ensure that stewards fully compensate their collectors.
    iii. Include ICI paper and packaging as a schedule in the Recycling Regulation.
    iv. Expand the Recycling Regulation to include all HHW.
    v. Expand the recycling regulation to include mattresses.

    Items iii, iv, and v are addressed to some extent in the Province's Recycling Regulation Intentions Paper.

2. **Establish additional Eco Depots.** The RDCK, member municipalities, local private and non-profit organizations should work together with the Producers Responsibility Organizations (EPR organizations) to continue to improve regional EPR/HHW collection services and convenience for the consumer through the establishment of additional Eco Depots (one-stop return locations). Assessing the need for additional Eco Depots could be done through waste composition studies and tracking the usage of existing Eco Depots.

3. **Advocate for Producers Responsibility Organizations to commit to providing a reasonable level of service in all areas of BC.** This commitment must be monitored and enforced by the Province.

4. **Participate in key stakeholder groups such as the BC Product Stewardship Council and other product stewardship working groups.**

5. **Be proactive in identifying local service gaps in EPR Programs and work with product stewards to address these gaps.**

6. **Expand the disposal restrictions to all products covered under an EPR program.** Such disposal restrictions will only be applied where collection services are available.

7. **Promote existing EPR collection sites.** To ensure broad awareness of the diversion opportunities associated with EPR programs, RDCK will promote existing EPR collection sites (refer to the Education and Outreach recommendations).

8. **Maintain annual HHW events in communities without reasonable access to permanent sites.**

There are no new RDCK costs associated with EPR and HHW unless there is a need identified in the future for additional RDCK-funded Eco Depots and/or HHW collection events. No additional staffing is required to undertake the above recommendations.

4.7 Circular Economy

A circular economy "is an economic system aimed at eliminating waste and the continual use of resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a close-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions. The circular economy aims to keep products, equipment and infrastructure in use for longer, thus improving the productivity of these resources. All 'waste' should become 'food' for another process: either a by-product or recovered resource for another industrial process, or as regenerative resources for nature, e.g., compost. This regenerative approach is in contrast to the traditional linear economy, which has a 'take, make, dispose' model of production."[6]

There are many components of this RRP that support a circular economy, including:

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

Strategy: Support the establishment of a circular economy.

Actions: In addition to the above, there are other actions that will be undertaken in support of a circular economy:

1. **Develop purchasing policies that support a circular economy.** Local government purchasing policies for goods and services can include requirements that support a circular economy, including requirements for recycled content (material goods), compost content (for road works, parks, gardens and landscaping), and waste minimization (construction and renovation projects).

[6] Wikipedia definition of Circular Economy (https://en.wikipedia.org/wiki/Circular_economy)

2. **Lobby for progress towards a more circular economy at a national and provincial level**.

There are no new RDCK costs associated with supporting a circular economy.

4.8 Education and Outreach

The success of waste management programs and policies requires that people know and understand why and how to effectively participate. Education and outreach are therefore critical to all components of the solid waste management system, including those focused on waste reduction and diversion.

Strategy: Support the resource recovery system through effective and efficient application of education and outreach.

Actions: The following are the actions associated with education and outreach:

1. **Maintain the current education activities:**
    i. **Resource Recovery Educator Program**: The RDCK hires an educator and "spotters" to undertake the Resource Recovery Educator Program over the summer season. The staff rotate among RDCK sites to screen loads of waste arriving at RDCK disposal facilities for prohibited, controlled and recyclable items. They educate and inform customers on resource recovery policy and initiatives, waste diversion and Zero Waste practices, and to act as a communication point for the public on general resource recovery questions.
    ii. **Beyond Recycling Education Program**: Recognizing the importance of the younger generation to influence the direction of waste reduction and related environmental impact, the RDCK contracts for delivery of their *Beyond Recycling* education program. In this program students look critically at the ecological footprint of their schools, homes and businesses and investigate the full lifecycle of products.
    iii. **WildSafe Program:** The RDCK provides financial support to the BC Conservation Foundation to facilitate the WildSafeBC (Bear Aware) program throughout the regional district. WildsafeBC's program objectives are to reduce human-wildlife conflict through education, innovation and cooperation. WildsafeBC programming allows for the continuation of successful "backyard" composting: an important waste reduction method.
    iv. **Ongoing Communications:** The RDCK provides information on various waste reduction and environmental initiatives and events through various media outlets (e.g., newspapers, radio, social media), through mail-outs and poster/brochure distribution, through communications with member municipalities and on the RDCK website.
    v. **Partnerships:** The RDCK partners with other organizations for community outreach programming, including the Central Kootenay Invasive Species Society, to develop information on invasive species disposal techniques (ongoing); and with the Regional District of Kootenay Boundary (RDKB) in the delivery of a waste reduction outreach program (Zero Waste Campaign). As appropriate, similar partnerships will be pursued to enhance RDCK's outreach efforts.

2. **Leverage collaboration and coordination.** Working collaboratively with other key stakeholders such as member municipalities, First Nations and Columbia Basin Trust (CBT), provides the opportunity to benefit from economies of scale and better leveraging of public dollars. Collaboration can support municipalities and First Nations without dedicated solid waste or communications staff and provide a more consistent message and brand identity for use by all parties. Increasing this collaboration can also help with communication and program delivery by taking advantage of the closer relationships that may be had at the local level between municipalities/First Nations/CBT and their constituents.

3. **Develop an overall education and outreach strategy.** The RDCK will undertake a review and update of current education and outreach efforts with an aim to increase appeal and effectiveness, incorporate the above recommendations, and possibly re-brand Resource Recovery communications.

4. **Apply community based social marketing principles to foster long-term behaviour change.** Community-based social marketing (CBSM) is an approach to program promotion and education that encourages high rates of effective participation and long-term behavior change. The community-based social marketing process centres on uncovering barriers that inhibit individuals from engaging in sustainable behaviours, identifying effective tools for fostering and maintaining behaviour changes, piloting the tools on a small portion of the community, followed by ongoing evaluation once the program has been implemented community-wide. Therefore, as new behaviours are identified as desirable to achieve waste reduction objectives, CBSM should be employed and should include:
    - Identification of existing barriers to desired behaviours,
    - Research on successful approaches in other jurisdictions,
    - Pilot projects to confirm that a selected approach will be effective in the RDCK, and
    - Monitoring and measuring to confirm that objectives are being met.

    Because CBSM projects are significant undertakings, they are well-suited for partnerships with other organizations such as CBT, member municipalities and neighbouring regional districts.

Table 4-4 shows the new capital and operating costs associated with the above recommendations.

Table 4-4: New Costs for Education and Outreach

	Description	Cost
New Annual Operating Costs	Community-based social marketing (annual contribution to a CBSM projects done in collaboration with other partners)	$10,000
New Staffing	Technical Staff Technical Staff – launch of composting program (up to one year), transition to 0.05-0.1 FTE for on-going	0.2 FTE

5 Residual Waste Processing Technologies

Residual waste refers to the material discards that remain after the application of initiatives to reduce, reuse and recycle. In the RDCK, all residual municipal solid waste is presently landfilled. During the process to develop this plan, technologies that recover energy from residual waste were reviewed. These technologies, such as waste-to-energy and gasification are highly complex and require high upfront capital costs and long-term contracts, typically 20 to 30 years, that guarantee a specific quantity of MSW. There are four WTE incineration facilities currently operating in Canada all located in highly populated areas with sufficient volume to sustain the economics of incineration.

The application of residual waste processing technologies was determined to be not financially viable at this time due to the small volumes of waste generated in the RDCK generated over a large area.

Strategy: Be open to the application of recovery technologies in the future and to monitor opportunities that could contribute positively to RDCK's resource recovery system.

Action: Review studies undertaken by senior governments on the feasibility of resource recovery technologies following completion of the five-year effectiveness review scheduled for 2026. The RDCK does not have the resources to undertake its own studies and will rely on work done by agencies with more capacity to undertake this research.

There are no new costs associated with the above action.

6 Residual Waste Management: Landfills and Transfer Stations

Improving the RDCK's landfills and transfer stations was the focus of the 2010 RRP. Although most of the work outlined in that RRP has been completed, there are still improvements to be made to landfill-transfer station system and to individual facilities. This section presents what is planned for the RDCK's landfills and transfer stations by Sub-region. For reference, a map showing the location of each facility is provided as Figure 3-2 on page 26.

Strategy: Ensure that the RDCK's waste transfer and disposal system is efficient, meets regulatory requirements and ensures the protection of the environment.

6.1 West Sub-region

The West Sub-region has two landfills, Ootischenia and Nakusp, and four transfer stations: Burton, Edgewood, Rosebery and Slocan.

6.1.1 Ootischenia Landfill (OC 17126)

The Ootischenia Landfill is a natural attenuation site situated southeast of Castlegar. In 2020 the site received 21,812 tonnes of waste for disposal. Following closure of the Central Landfill in 2014, Ootischenia became a regional landfill site accepting material for disposal from the West and Central Sub-region. With the anticipated closure of the Nakusp landfill in 2024, all the Central Sub-region's garbage will be landfilled at the Ootischenia landfill. The regionalization of landfill services allows the RDCK to maximize cost efficiency and ensure regulatory compliance across the RDCK.

Several initiatives have been completed since the 2010 Resource Recovery Plan was approved, including:

- Upgraded and paved public tipping area (2011)
- Acquired additional land around Ootischenia Landfill to act as a buffer from neighboring land uses (2012)
- Evaluated feasibility of alternative access route for Ootischenia Landfill (2012)
- Obtained new Operational Certificate for the site (2013)
- Constructed soil bioremediation facility (2013)
- Added turning lane off Columbia Road and completed other improvements to site entrance (2014)
- Completed Landfill Criteria Conformance Review (2017)
- Installation of a new attendant building (2020)
- Borrow area development (2020)

Future New Cell Development

The new Landfill Criteria for Municipal Solid Waste issued by the Ministry in 2016 (the Criteria) requires use of liners and leachate management systems for all lateral expansions of landfills. Expenses associated with liners and leachate systems created a strong case for improving economies of scale through maximizing volume of garbage that can be received at the site. As a result, the RDCK engaged Wood Environment Ltd. (Wood) to complete a preliminary analysis of the site's volumetric capacity and investigate options for optimizing the landfill. In their report[7], Wood presented a concept for an optimized footprint, which could significantly extend the lifespan and capacity of the landfill. Wood was also tasked with preparing conceptual designs and costs for both the current design for the Ootischenia Landfill (Option 1) and the optimized design (Option 2).

The Wood report compares the capital costs and cost per unit volume for each option. These cost estimates considered earthworks, liner, leachate management and capping requirements for the two options. Table 6-1 provides a summary of each of the options.

[7] Wood Environmental. (2019). Ootischenia Landfill Design and Operations Plan Update.

Option 2, the "optimized" footprint design was selected as the preferred option and was approved by the RDCK Board as it approximately doubles the lifespan and capacity of the landfill and represents the lowest cost per cubic metre of landfill airspace. Suitable landfill sites are exceedingly difficult to locate in the RDCK, making the 95-year option desirable for the RDCK. The final elevation of this design is only two metres higher than the 45-year alternate option.

Table 6-1: Ootischenia Landfill Design Options

Option 1: Continue with Current Landfill Design	Option 2: Adopt Optimal Landfill Design (*preferred option*)
Approximate lifespan of **45 years**	Approximate lifespan of **94 years**
Estimated remaining airspace of **1,455,500 m^3**	Estimated remaining airspace of **2,955,400 m^3**
Estimated construction costs of **$11,544,987**	Estimated construction costs of **$18,167,300**
Cost per m^3 of landfill capacity/airspace = **$11.70 for 45 years.** New landfill capacity/ airspace for following 58 years estimated at $22.00/$m^3$	Cost per m^3 of landfill capacity/airspace = **$9.07 for 94 years**
Total footprint of **118,000 m^2**	Total footprint of **141,000 m^2**
Total estimated capital cost $17,028,787 (Additional estimated $31,980,000 for new landfill after closure, would result in a combined capital cost of **$49,008,787**.)	Total estimated capital cost **$26,798,700**
Pros • Shorter term impact on residents surrounding current location • Short term costs for earth works are less expensive than Option 2	**Pros** • Approximately double the lifespan and capacity • Lowest cost per m^3 of landfill airspace • Comparable final elevation as Option 1 • Makes use of existing infrastructure • Secures long term landfilling location • No significant change to users • Provides source of interim and final cover • Makes efficient use of previously developed areas • Lower capital costs over lifespan than Option 1 and new landfill combined
Cons • Highest cost per m^3 of landfill airspace • Shorter lifespan • Acquiring a suitable new landfill site would be difficult and costly • Cover soil for construction and operation via planned development would require additional borrowing beyond the existing boundaries • Inefficient use of existing and proposed infrastructure	**Cons** • Regulatory approval required • Longer term impact on local residents

Landfill expansion for the Optimized Footprint will require the Province to amend the License of Occupation to add additional Crown lands to the existing license area to allow for buffer zones around the new footprint. Two boundaries will be requested for amendment:

- The northern boundary be extended northwards by approximately 100 meters following the centerline of Cai Creek to allow for additional buffer from neighbouring land uses. Staff may explore the option of connecting the buffer to the nearby RDCK Waterloo Eddy Park allowing for the development of trails.
- The southern boundary be extended approximately 125 meters southward to allow for compliant slopes in the excavation area and a 50-metre vegetated buffer beyond any soil disturbance. Waste filling activities will be contained to at least 50 m of the current lease area boundary.

Figure 6-1 shows the additional Crown land (adjacent to the existing landfill property) that will be requested to allow for expansion. Discussions with the Province and First Nations, and consultation with the public will continue to determine the appropriate land-uses for tenure approval.

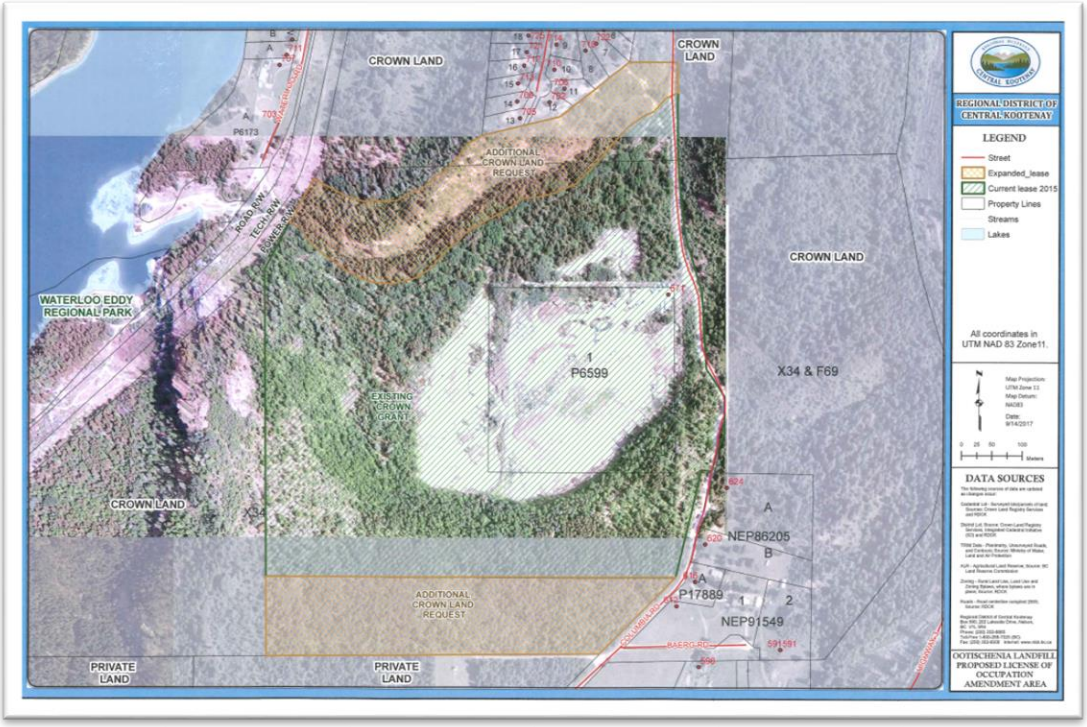

Figure 6-1: Ootischenia Landfill Additional Crown Land Required

Conformance Review

The 2016 Landfill Criteria also identified the need for a Conformance Review at active landfills to evaluate conformance with the new Criteria. In 2017, AMEC Foster Wheeler conducted this analysis for the RDCK. The main recommendation from this report was that future expansions of new cells should meet the requirement for base liners and leachate collection systems. The "optimized footprint" described above will maximize compliance with the Criteria across the RDCK. An upgrading plan to meet requirements in the Criteria will be fully addressed in the next Design, Operations and Closure Plan (DOCP) update.

Landfilling will continue at the Ootischenia landfill within the current footprint until approximately 2026. Future new cell development will include a fully engineered liner and leachate collection system, as per regulatory guidelines. An updated DOCP will guide future cell development and closure works. Updating the DOCP will proceed after public consultation for the RRP is complete.

Additional plans for this site include:

- Improved tipping area and second scale;
- Acceptance of compost material, which will be transferred to nearby processing facilities;
- Improved septage handling;
- Increased diversion efforts;
- Improvements to the asbestos receiving area;
- Acquisition of additional neighbouring lands to allow for future buffer zones; and
- Investigation of feasibility of landfill gas capturing including methane destruction or use.

6.1.2 Nakusp Landfill (OC 16521)

The Nakusp landfill is a small natural attenuation site located north of the Village of Nakusp. In 2020 the site received 1,868 tonnes of waste for disposal. Works completed since the 2010 RRP include:

- Installation of a bin wall for public tipping of waste (2011); and
- Installation of a weigh scale and new public drop off recycling area (2016).

Closure of the Nakusp Landfill is planned for 2024. The timing for closure is dependent on construction of transfer station infrastructure at the site to ensure capacity for accepting the volumes of waste normally landfilled for transfer to the Ootischenia Landfill. The engineering consultant is developing a “fill until closure” plan, scheduled for completion in 2021.

Despite plans to fully close the Nakusp Landfill, the RDCK intends to keep the Operational Certificate active to keep options for stockpiling materials, future composting, or future landfilling open if required. A compost facility is also under consideration for this site. A compost facility design is budgeted for 2021, so that the Nakusp site can be ready to begin construction, should grant funds become available.

A Conformance Review to the 2016 Ministry of Environment Landfill Criteria for Municipal Solid Waste was not completed in Nakusp. The 2010 Resource Recovery Plan stated that closure was previously expected during the 10-year period of the plan. Now, with the imminent closure of the landfill and an updated DOCP to be completed in 2021, there is no plan to submit a Conformance Review.

6.1.3 West Sub-region Transfer Stations

In 2020, RDCK staff undertook an exercise to determine the most cost-efficient waste management system for the operation of the West Sub-region's waste transfer system, including an assessment of options to replace the aging infrastructure. They prepared a West Sub-region Transfer Cost Model that examined the upfront capital costs of different collection infrastructure scenarios, ongoing transportations costs, feasibility and environmental impact of different transfer station equipment and hauling scenarios to transport waste from Nakusp, Rosebery and Slocan Transfer Stations to the Ootischenia landfill. The table below summarizes the key costs for the different scenarios examined in the model. Based on this model, the Board approved the Staff recommendation to upgrade the sites to stationary compactors and roll-off bins in 2020.

Table 6-2: Summary of West Sub-region Transfer Cost Model

Collection Infrastructure Scenario	Capital costs (2023/24)	Annual transportation costs	Capital and Ongoing Operational Costs (25 yr)	Transportation Costs (25yr)	10 Year Cost	TOTAL OUTPUT (25-year cost)
Transtors & Roll-off Bins	$6,625,383	$105,768	$8,099,006	$2,524,362	$7,869,160	$10,623,368
Stationary Compactors & Roll-off bins *(selected option)*	$3,815,806	$114,452	$5,581,156	$2,731,623	$5,299,679	$8,312,778

The actions planned for the West Sub-region transfer stations are:

- To upgrade the Rosebery and Slocan transfer stations in 2023; and
- To develop a transfer station at the Nakusp Landfill site to replace the landfill operation. Construction of this facility is anticipated in 2023, in advance of the anticipated closure of the landfill in 2024.

No changes are planned for the Edgewood and Burton transfer stations as they receive very small volumes of waste. The operation of these transfer stations is a contracted service, and MSW is hauled to the Nakusp landfill for disposal.

6.1.4 West Sub-region Cost Estimates

Table 6-3 shows the estimated costs (in 2021 $) for the major projects in the West sub-region as described in Section 6.1, as well as the anticipated new staffing requirements to support these projects.

Table 6-3: Estimated Costs for West Sub-region Landfills and Transfer Stations

	Description	Cost	Year
Estimated Capital Costs	Nakusp Landfill closure works	$1,000,000	2024
	Rosebery Transfer Station Upgrades	$108,144	2023
	Slocan Transfer Station Upgrades	$1,626,808	2023
	Nakusp Transfer Station Construction	$1,195,402	2023
	Ootischenia Landfill Expansion	$9,082,268	2026
	Legacy landfills closures (Burton, Edgewood, Rosebery, Slocan)	$4,000,000	2027
	Subtotal of estimated capital costs	$17,012,622	
Other Estimated Costs	Ootischenia Landfill DOCP Update	$80,000	2021/22
	Nakusp Landfill closure plan	$100,000	2022
	Legacy landfills assessments (4)	300,000	2022
	Subtotal of other estimated costs	**$480,000**	
Estimated New Staffing Requirements	Project Management / Technical	1 FTE	2022-2027

6.1.5 West Sub-region Legacy Landfills

The RDCK historically operated several small community landfills that are no longer actively used but which have not received closure to Ministry of Environment standards. All these sites, in all three sub-regions, have acceptable interim cover in place and are not known to have outstanding water quality issues.

In the West Sub-region the legacy landfill sites for which permanent closure remains an outstanding RDCK commitment are Slocan (PR-2197), Rosebery (License 340803), Burton (PR-5065) and Edgewood (PR-4366). A closure assessment for these sites will be undertaken in 2022. Closure works for the historic landfills are tentatively planned for 2027 pending the outcome of the closure assessments.

6.2 Central Sub-region

There are six transfer stations in this sub-region: Balfour, Central (Salmo), Grohman Narows, Kaslo, Marblehead and Ymir. There is also the Central Landfill site which was closed to landfilling in 2014.

6.2.1 Central Landfill (OC 16519 - Closed)

The Central Landfill near Salmo received all waste in the Central Sub-region from 1981 to 2014. In 2015-16, the RDCK constructed final cover and installed a final landfill cap in accordance with Ministry of Environment landfill closure requirements.

Waste collected at the Central Facility and all other transfer stations in the Central Sub-region are transferred to the Ootischenia Landfill for disposal. In addition to the transfer station, the site currently receives and grinds wood waste, operates as a septage disposal facility, composts yard and garden and wood waste, and collects scrap metal for recycling. It will be the location of one of the RDCK food waste composting facilities (see Section 4.2) and is adjacent to the HB Mines Tailings Facility (see Section 6.2.3).

As described in the 2010 Resource Recovery Plan, the RDCK retains an Operational Certificate for the Central site which leaves the possibility for the site to be used again as an active landfill if necessary. However, with the planned expansion of Ootischenia Landfill to achieve an estimated 94 years of landfill space, future use of the Central landfill site as a landfill is not anticipated.

6.2.2 Central Sub-region Transfer Stations

The following transfer station improvements are planned:

- Installation of a bin wall at the Central (Salmo) Transfer Station in 2021;
- New washroom/lunchroom/change room at the Central (Salmo) Transfer Station in 2021; and
- Heated storage for compacting trailers for Central hauling fleet in 2023.

6.2.3 HB Mines Tailings Facility

In 1998, the RDCK purchased the HB Mine Tailings Facility and surrounding land to establish additional buffer zone for the adjacent Central Landfill. The RDCK formally decommissioned the facility in 2005, and commenced a program of active monitoring and maintenance, and developed an Emergency Preparedness and Response Plan, a Plan of Environmental Protection, and an Operations, Maintenance, and Surveillance Manual. The facility infrastructure consists of the tailings dam, tailings deposition area, tailings pond, spillway, stilling basin, access roads, instrumentation, and a small granite rock quarry.

In July 2012, a portion of the earthen dam retaining the fine tailings, sloughed following a severe storm event. While the dam was repaired before a major tailings release occurred, a significant amount of follow-up work at this facility has been required. Ongoing operations and maintenance costs are high and continue to increase. Cost of supplementary investigations and one-time repairs are less predictable but have been significant over the last ten years. Additionally, following the near collapse in 2012 and subsequent geotechnical investigations, a number of environmental risks and liabilities associated with the facility in its current form became apparent.

The RDCK completed a closure options assessment that evaluated three scenarios for long-term facility management including ongoing pond management with and without repairs, passive closure as defined by the Canadian Dam Association, and full decommissioning with densification of the tailings via wick drains. The assessment determined that moving the facility into passive closure would appropriately address the environmental risks of the facility, provide long-term stability and containment of the tailings to ensure protection of the environment and of human health, and is the lowest-cost option for long-term management. Design works are now complete, and construction is planned for the summer of 2021.

In February 2021, the RDCK received an updated *Mines Act* permit to complete the closure construction works and is working closely with the Ministry of Energy, Mines, and Low Carbon Innovation to ensure compliance with this transition. After construction is completed in 2021, the RDCK will conduct geotechnical and routine (dam safety) monitoring and reviews, surveying, and revegetation, wildlife, vegetation tissue sampling, water quality, and tailings geochemistry monitoring at the facility.

6.2.4 Central Sub-region Legacy Landfills

The RDCK has an outstanding commitment to permanently close legacy landfills at Nelson (PR-1663), Balfour, Kaslo (PR-6710), Marblehead (PR-6711) and Salmo (PR-18067).

The RDCK will continue to work cooperatively with the City of Nelson and CP Rail to achieve closure and re-development of the Nelson Landfill site. A closure plan for this site is planned for 2021/2022 with closure works planned for 2023 pending results of the remaining site assessment work.

A closure assessment is planned for the Balfour, Marblehead and Kaslo sites in 2022 and closure works are planned for 2027 pending the outcome of the closure assessments.

6.2.5 Central Sub-region Cost Estimates

Table 6-4 shows the estimated costs (in 2021 $) for the major projects in the Central sub-region as described in Section 6.2, as well as the anticipated new staffing requirements to support these projects.

Table 6-4: Estimated Costs for Central Sub-region Landfills and Transfer Stations

	Description	Cost	Year
Estimated Capital Costs	Heated storage for compacting trailers	$500,000	2023
	Nelson Landfill Closure Works	$747,000	2023
	Legacy Landfill Closure Works (Balfour, Kaslo, Marblehead, and Salmo)	$4,000,000	2027
	Subtotal of estimated capital costs	**$5,247,000**	
Other Estimated Costs	Legacy Landfill Closure Plans (Nelson, Balfour, Kaslo, Marblehead and Salmo)	$415,000	2022
	Subtotal of other estimated costs	**$415,000**	
Estimated New Staffing Requirements	Project Management / Technical	0.25 FTE	2023/2027

6.3 East Sub-region Landfills and Transfer Stations

The East Sub-region has one landfill, the Creston Landfill, and three transfer stations: Boswell, Crawford Bay and Yahk.

6.3.1 Creston Landfill (OC 16913)

The Creston Landfill is a natural attenuation landfill located along Highway 21, about four kilometers south of the municipality of Creston. The landfill received approximately 6,877 tonnes of waste in 2020. Major upgrades to this site were completed in 2010-2014, notably the installation of a geo-membrane cap to meet closure requirements on historic portions of the waste mass.

Other initiatives that have occurred at this site since the completion of the last RRP include:

- Phase 1A Closure Works (2011)
- Phase 1B Closure Works (2012)
- Installation of electrical fencing (2010)
- Installation of landfill gas capture and flaring system (2014)
- Landfill Conformance Review (2017)
- Phase 1E Excavation Works and Phase 2 Slope and Drainage Works (2019)

Based on current landfilling rates, Creston Landfill has the capacity to continue receiving waste until approximately 2026 without expanding the footprint into new landfill cells. Under current Provincial landfill criteria, a footprint expansion of this site would require the installation of a liner and leachate collection system that is estimated to have a capital cost of $9 million. The capital cost to manage leachate, plus the estimated costs to operate a leachate management system are considered prohibitive for the scale of the landfill and the community it serves. In 2020, the Board approved the Staff recommendation to pursue a liner/leachate exception from the Province at the Creston landfill.

As per BC Landfill Criteria (2016), site-specific exceptions for base liner and leachate collection system may be made for lateral expansions of existing landfills meeting all three of the specific circumstances listed below:

- Landfill is accepting less than 5000 tonnes of waste per year, and total waste capacity is less than 100,000 tonnes.
- Landfill is located in a very remote area where there is no practical waste disposal alternatives less than 100 km away.
- Landfill receives less than 500 mm of precipitation annually (or has negative water balance).

In a 2017 Conformance Review based on the Criteria, Sperling Hansen and Associates (SHA) concluded that an exception from the above liner and leachate collection requirement is warranted. They argue that the annual tonnage of waste received at Creston does not significantly exceed the 5000 tonnes of waste per year, and that the area receives only 631 mm of precipitation each year which is also not significantly higher than 500 mm in the criteria. The Ootischenia Landfill is the closest disposal alternative but is approximately 120 km away and involves travelling a high mountain pass, which presents significant logistical challenges in the winter and risk of road closures.

According to the Province, all applications for exceptions from base liner requirements must show evidence of no existing groundwater contamination from the landfill site. In the 2017 Conformance Review, SHA notes “Landfill leachate is impacting the groundwater downstream of the landfill, as indicated by the elevated conductivity levels at most down gradient locations, however the situation is generally stable with water quality values comparable with 2009 data, and water quality is not necessarily deteriorating but rather showing slight improvement over historical levels at a number of monitoring locations.” The RDCK continues to collect and analyse data in accordance with our Environmental Management Plan and hires a consultant to interpret results. A full hydrogeological assessment to support the request for a liner/leachate exception is planned for 2021.

The DOCP for Creston was updated by SHA in 2010. They concluded that if progressive closure was completed aggressively and operational areas were kept to less than 1.0 Hectare that anticipated leachate generation would maintain an environmental risk at or below current levels at the Creston Landfill and at levels comparable to many natural control sites in BC.

Reducing the quantity of organic waste landfilled through the development of a food waste composting facility at the Creston Landfill site is also expected to improve the quality of the leachate.

An engineering Cost Analysis Model was prepared by SNC Lavalin[8] and RDCK Staff in 2019/2020, to examine the costs of the different scenarios for Creston, to help inform options moving forward. It found that it would be less expensive to close the landfill in 2026 and transfer the waste to the Ootischenia Landfill than to undertake improvements to the site to meet the Landfill Criteria. However, the preferable option, as approved by the RDCK Board, would be to obtain an exception as described above. This option would abate concerns over the safety and reliability of hauling waste over Kootenay Pass and maintains the social benefit of having a local landfill for residents in the East Sub-region.

In 2012, the RDCK obtained support from the (then) BC Ministry of Community, Sport and Cultural Development for acquiring Crown lands to the south and east of the landfill. Figure 6-2 shows the extensions in discussion. Further approvals are required by Front Counter BC and the Ministry of Forests, Lands and Natural Resource Operations, which includes consultation with First Nations. The expansion of land is for the purposes of additional buffer lands to meet existing landfill criteria with future landfilling activities expected to remain within the current landfill property boundary. The acquisition of the "wedge" will ensure access to the landfill property from public tipping areas on the fee simple lands held by the RDCK and assist with meeting the landfill criteria.

The landfill's lifespan is estimated to be until 2050; and future site development will be directed by an updated Design, Operations, and Closure Plan for the site. Usage of this space will be dependent on receiving approval for continuing use of the site without an engineered liner and leachate collection system.

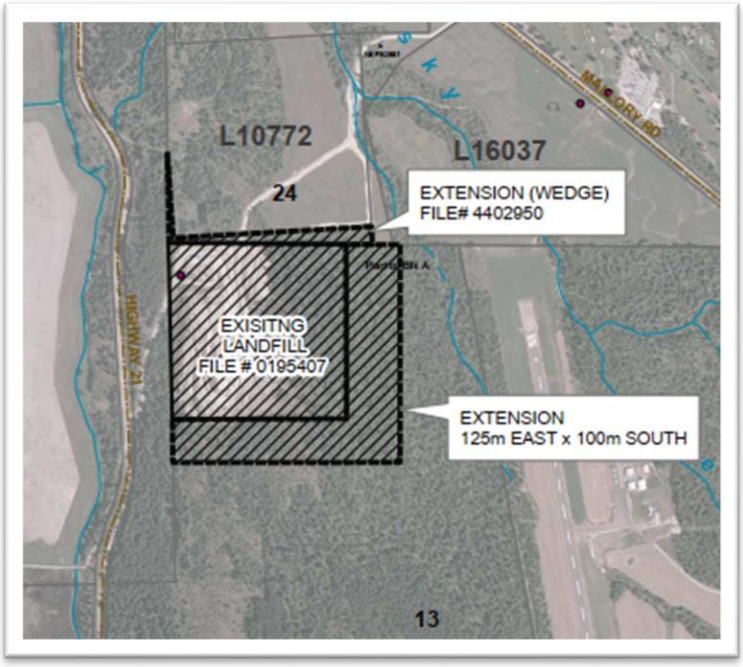

Figure 6-2: Creston Planned Landfill Extensions

[8] SNC Lavalin. (2020). *Resource Recovery Plan: Landfill Optimization and Waste Transfer Option Financial Model.*

Next steps for the Creston landfill include:

- Purchasing land from the Lower Kootenay Band to the west of the landfill to expand the buffer around the landfill site and allow for more cost-efficient closure of Phase 1C/D and slope stabilization works on the western portion of the landfill.
- Acquisition of additional lands from the Crown to south and east for future development and buffer, as well as the wedge parcel located between the RDCK fee simple lands and the landfill lands.
- Preparing an updated Design, Operations and Closure Plan for the site.
- Requesting a new Operational Certificate for the site to reflect updated bylaws and operational requirements.

The RDCK will continue to consult with First Nations regarding the landfill expansion and the request for a landfill criteria exception.

Upcoming initiatives at the Creston landfill include:

- Closure works for Phase 1E will begin in 2022 ($1.8M). These works will include an expansion of the existing gas capture and flaring with an anticipated reduction in GHG emissions.
- Phase 1C/D Closure, Stabilizing Berm by 2023 ($1.9M) (Requires land acquisition as described above).
- Phase 2 Closure in 2026/2027 ($1.8M).
- Asbestos Disposal Area Improvements.

6.3.2 East Sub-region Transfer Stations

There are no changes planned for the East Sub-region transfer stations.

6.3.3 East Sub-region Legacy Landfills

In the East Sub-region, there are two legacy landfills that need to undergo final closure: Boswell (PR-5991) and Crawford Bay (PR-4069). Active environmental monitoring occurs at both sites. A closure cost assessment for these sites is planned for 2022. Closure works are planned for 2027 pending the outcome of the closure assessments.

6.3.4 East Sub-region Cost Estimates

Table 6-5 shows the estimated costs (in 2021 $) for the major projects in the East sub-region as described in Section 6.2, as well as the anticipated new staffing requirements to support these projects.

Table 6-5: Estimated Costs for East Sub-region Landfills and Transfer Stations

	Description	Cost	Year
Estimated Capital Costs	Creston Landfill Closure works for Phase 1E	$1,281,000	2021/22
	Creston Landfill Phase 1C/D Closure, Stabilizing Berm	$1,917,900	2022/23
	Creston Landfill development	$396,250	2025
	Creston Landfill Phase 2 Closure	$1,880,000	2026
	Legacy Landfill Closure Works (Boswell and Crawford Bay)	$2,000,000	2027
	Subtotal of estimated capital costs	**$5,500,000**	
Other Estimated Costs	Legacy Landfill Closure Plans (Boswell and Crawford Bay)	$150,000	2022
	Subtotal of other estimated costs	**$150,000**	
Estimated New Staffing Requirements	Project Management / Technical	0.25 FTE	2022/2026

6.4 Septage Management

In the East sub-region, the RDCK is partnering with the Town of Creston to construct a septage receiving station at their wastewater treatment plant (WWTP). A Memorandum of Understanding between both governments outlines the Town will construct and operate the facility, and the RDCK will fund the capital works and administer the program's bylaw and financing. The cost for septage management is intended to be funded through tipping fees. A preliminary design is complete, and the Town is prepared to advance with a design build process once funding is in place. Grant funding will be pursued with an aim to reduce long-term borrowing costs.

In the West and Central Sub-regions, septage is received at the Ootischenia, Nakusp, and Central landfills. The septage is mixed with wood chips and placed into drying beds. The final product is cured and then used for daily and intermediate landfill cover. The septage treatment facilities at these three sites are in need of upgrades or replacement, and are not adequately meeting current and future demands in the region. To address this, RDCK engaged the engineering firm Kerr Wood Leidal Associates Ltd. to undertake an assessment of regional septage management options[9]. Through this process, three preferred options were identified. Table 6-6 lists each option and the associated advantages and disadvantages of each.

In 2020, the Board approved a staff recommendation to pursue Option 1, Castlegar Lagoons, because it is the technically simplest option, offers the highest level of treatment and has the lowest assessed capital and operating costs. This option would be a partnership with the City of Castlegar and is currently under consideration by the City.

[9]Kerr Wood Leidal Associates Ltd. (2019). Septage Management Plan, Final Report.

Table 6-6: Septage Management Options

Option	Advantages	Disadvantages
1. Treat septage at the City of Castlegar's Lagoons along with Castlegar's wastewater *(preferred option)* **Capital = $2.5 million** **Operating = $172,000/yr**	• Technically simple • Uses an existing facility • Low odour impacts • High level of treatment • Lowest operational GHG production • Lowest lifecycle costs	• Lagoon upgrades are required • Upgrades for septage will trigger other regulatory requirements • Impacts to adjacent public trails
2. Upgrade the existing septage drying beds at the Central Landfill **Capital = $3.4 million** **Operating = $454,000/yr**	• Process is known to operators • Technically simple	• Highest operational cost requirements • Increased GHG from anaerobic decomposition • Minor leachate production from curing process • Increased cumulative driving distances if centralized • Considerable land area requirements
3. Develop a septage composting facility at Central Landfill **Capital = $4.1 million** **Operating = $233,000/yr**	• Wider range of potential beneficial reuses, depending on feedstock quality • Possible cost savings associated with planned Central organics composting facility	• More costly and technically complex • Septage pathogens may be a concern for composting operators • Chemical stabilization (for pathogens) could impact the composting process • Highest capital cost option • Increased cumulative driving distances if centralized

Table 6-7 identifies the new costs associated with septage management. New septage facilities are intended to be operated as user pay systems. Costs presented below will be funded by tipping fees.

Table 6-7: New Costs for Septage Treatment

	Description	Cost	Year
Estimated Capital Costs	East Sub-region Septage Treatment Facility	$1,152,285	2022
	West and Central Septage Treatment Facility	$2.5-4.1 million	2023
	Subtotal of estimated capital costs	**$4,847,000**	
Other Estimated Costs	East Sub-region Septage Treatment Facility – operating	$40,000	
	West and Central Septage Treatment Facility - operating	$172,000-233,000	
	Subtotal of other estimated costs		
Estimated Staffing Requirements	Project Management (construction 2023)	0.1 FTE	2023
	Technical (on-going oversight) Operations staff West & Central– dependant on option pursued	0.05-0.25 FTE	

6.5 Environmental Monitoring

The Operational Certificates for RDCK landfills require that environmental monitoring programs be in place for each site. These programs include the sampling of groundwater and surface water in the vicinity of landfills, identification of trends in water quality, and submittal of annual reports to the Ministry which summarize the monitoring data. These reports are written by RDCK staff using data compiled by outside Qualified Professionals. No substantive changes to the environmental monitoring programs are anticipated.

6.6 Resource Recovery Facilities Bylaw

Bylaw No. 2771, 2021, as amended, is a Bylaw to regulate and set fees for the use of Resource Recovery Facilities in the Regional District of Central Kootenay.

7 Other Plan Components

7.1 Illegal Dumping

Illegal dumping of waste is a challenge for rural and urban areas in the RDCK and throughout British Columbia. Although tipping fees are often cited as the cause of illegal dumping, this anti-social behaviour is also observed in areas without tipping fees.

Illegal dumping is unsightly, can contaminate land and waterways, attract wildlife, and can cause the dispersion of invasive weeds. Many regional districts and municipalities in BC are dealing with this issue through prevention, enforcement and clean-up activities. The RDCK does not have a program to tackle illegal dumping, however, in accordance with Resource Recovery Regulatory Bylaw 2771, the RDCK has the authority to inspect loads deposited illegally at their facilities and send letters to those whose names are found in the garbage. If responsible parties do not remove the material, the bylaw gives the RDCK the ability to fine those in contravention.

Strategy: Continue to work with the community to reduce illegal dumping and to pursue the development of a regional, multi-sector approach to the mitigation of illegal dumping.

The actions to mitigate illegal dumping in the RDCK are:

1. **Lobby the Province** to provide adequate staff resources to support the investigation and enforcement of illegal dumping activities on Crown Land.

2. **Develop a regional, inter-agency illegal dumping mitigation strategy.** Collaborate with government, First Nations and private sector stakeholders on the development of a regional illegal dumping mitigation strategy. Some of the following actions all well-suited to a collaborative approach.

3. **On-going clean-up of problem sites.** This would involve assessing the nature and extent of illegal dumping in RDCK, mapping known problem sites, and sharing the information with community groups involved with clean-ups.

4. **Support Community-Based Initiatives.** Community groups will be encouraged to apply to their local area director for funding to support community-based initiatives that tackle illegal dumping such as stream and shoreline clean ups. Funding of these initiatives will be at the discretion of the local area director.

5. **Establish a reporting mechanism.** There are apps available that let citizens easily observe and report an illegal dump site, with a specific GPS location. Acquiring and promoting such a tool would assist RDCK and their partners with mapping, cleaning up and monitoring the effectiveness of the illegal dumping strategy.

The new costs associated with an illegal dumping strategy are shown in Table 7-1. There may be a cost associated with licensing an app for reporting illegal dumping, although there are free apps available. RDCK will need to research the app that best suits their needs and confer with other local government users of the apps to determine what the budget implications would be, if any.

Table 7-1: New Costs for Mitigating Illegal Dumping

	Description	Cost
New Annual Operating Costs	Promotion of the reporting app	$1,000
New Staffing	Technical Staff (on-going)	0.1-0.25 FTE

7.2 Human-Wildlife Conflict Mitigation

All RDCK resource recovery facilities are designed and operated to minimize wildlife attractants. All landfills are equipped with bear fencing around active filling areas and all transfer stations containerize waste in lidded, metal bins.

The RDCK provides financial support to the BC Conservation Foundation to facilitate the WildSafeBC (Bear Aware) program throughout the regional district. WildsafeBC's program objectives are to reduce human- wildlife conflict through education, innovation and cooperation.

7.3 Specified Risk Material Management

Specified Risk Material (SRM) is defined as the cattle tissue that can harbor the infective agent known as prions which causes Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease). The Canadian Food Inspection Agency (CFIA) has developed strict livestock handling and disposal protocols to ensure SRM is destroyed or contained permanently such that there is no potential for prions to enter the food chain.

SRM management is not typically addressed in the development of a solid waste management plan (RRP) since it is outside the definition of municipal solid waste management provided in BC's Environmental Management Act[10]. However, because SRM is a disposal issue in the Creston Valley, the RDCK Board directed consideration of this issue as part of the review and update of the RRP.

In the Creston Valley, the Creston landfill does not meet the CFIA standards for permanent containment of SRM and there is currently no CFIA compliant disposal option for SRM in the Creston area or anywhere in the RDCK. The most common disposal methods currently used are on-farm burial (compliant and non-compliant with regulations) and forest burial (non-compliant). Farmers can also ship SRM for compliant disposal out-of-region. The cost estimates for current practises of on-farm or forest disposal is $40-120 (per carcass) to $1,500/tonne for storage and trucking out-of-region for disposal.

[10] According to BC's Environmental Management Act, "Municipal Solid Waste (MSW)" means refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources.

In 2018, RDCK undertook a study on the management of SRM in the Creston Valley with the objective of the assessing disposal options for local agricultural producers.[11] The study assessed current disposal practices and analyzed four SRM disposal options. These options are presented in Table 7.2.

Table 7-2: SRM Disposal Options

SRM Disposal Options	Estimated Cost
Compost stabilization with trucking to Alberta for disposal	$838/tonne
Cold storage with trucking to Alberta for disposal	$738/tonne
Upgrade Creston Landfill for SRM disposal (lined cell)	$443/tonne
Incineration	$1,594/tonne

These costs were found to be unappealing to many in the local agricultural community as they were seeking a local, low-cost or no-cost disposal option. Further, it is questionable that RDCK or other authorities could enforce a requirement to use one of these disposal options should it be locally available.

The disposal options were presented to the RRPAC. Feedback from the RRPAC was that the options presented were too expensive (for RDCK and the farming community) and should not be pursued by the RDCK. Consequently, the following recommendations for SRM management are provided.

1. **Support industry efforts to develop an inter-regional strategy.** Agriculture operations in other regional districts in BC are experiencing the same issue (lack of a cost effective, relatively local disposal option for SRM disposal). Developing an inter-regional solution in dialogue with other major stakeholders including Ministry of Agriculture, other regional districts that have SRM disposal challenges, BC Cattlemen's Association and BC Dairy Association, and operators of large and small abattoirs may provide a solution that can be developed with some economy of scale. RDCK could be a supportive participant in the development of such an initiative.

2. **RDCK remain open to participating in the development of a solution for SRM disposal** should significant financial support (e.g., grant monies) become available that would remove the financial burden and risk for local taxpayers.

There are no new costs associated with the above recommendation.

[11] McDougall and Suggitt. (July, 2018). *The Management of Specified Risk Material in the Creston Valley*.

8 Implementation Schedule

Table 8-1 presented on this page and the next shows the implementation schedule for the capital projects and new programs presented in this plan. This schedule may be modified based on available staffing and financial resources or a necessary shift in RDCK priorities. The schedule will be revisited and may be updated as part of an interim plan assessment in 5 years.

Table 8-1: RRP Implementation Schedule

Regional Programs										
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Promote and facilitate reduction and reuse	■	■	■	■	■	■	■	■	■	■
Consultation on regional curbside collection in electoral areas	■	■								
Regional curbside collection program support		■	■	■	■	■	■	■	■	■
Regional curbside collection in electoral areas			■	■	■	■	■	■	■	■
Encourage ICI participation in organic waste diversion		■	■	■	■	■	■	■	■	■
Facilitate organic waste reduction and self-management		■	■	■	■	■	■	■	■	■
Cost-benefit of yard waste management at RR facilities	■	■								
Assess the potential to expand curbside recycling	■		■							
Establish ICI liaison group		■								
Establish CRD liaison group			■							
Research wood waste alternatives				■						
Require hazardous materials assessments from CDR projects				■						
Review disposal restrictions to include all EPR items		■		■		■		■		
Develop purchasing policies to support a circular economy			■							
Establish seed fund for local circular economy projects			■							
Develop an education and outreach strategy			■							
Conduct a CBSM project with community partners				■						
Inter-agency Illegal Dumping Strategy				■						
Systems Efficiency Study (benchmarking/tipping fee assessment)		■								
Waste composition analysis		■				■				
Scale Software Upgrade	■									
Cash Handling Process Changeover	■									

West Subregion										
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Curbside collection of food scraps in Castlegar (municipal service)		■	■	■	■	■	■	■	■	■
Compost transfer facility construction at Ootischenia	■									
Ootiscehnia DOCP	■	■					■			
Ootiscehnia Landfill Expansion					■	■				
Nakusp compost facility pre-design		■								
Nakusp compost facility construction					■					
Nakusp Landfill Closure Plan		■								
Nakusp transfer station construction			■							
Nakusp Landfill Closure				■						
Rosebery Transfer Station Ugrade			■							
Slocan Transfer Station Upgrades			■							
Legacy landfill closure assessments		■								
Legacy landfill final closures							■			
Septage management		■	■							

Central Subregion										
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Curbside collection of food scraps in Nelson (municipal service)										
Central Compost Facility construction										
Compost transfer facility construction at Grohman										
Operations of Central Compost Facility										
Nelson Legacy Landfill Closure Plan										
Nelson Legacy Landfill Closure										
HB Tailings - Remediation and Closure - Construction										
HB Tailings - Ongoing Management and Maintenance										
Legacy landfill closure assessments										
Legacy landfill final closures										
East Subregion										
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Creston Landfill Composting Facility construction										
Operations of Creston Compost Facility										
Curbside recycling & food scraps collection in Creston (municipal service)										
Creston Eco Depot										
Creston Landfill Phase 1E Closure										
Creston Landfill Purchase of Land for expansion										
Creston Landfill - Phase 1C/D Closure										
Creston Landfill DOCP										
Creston Landfill Development										
Creston Landfill Phase 2 Closure Plan										
Creston Landfill Phase 2 Closure										
Creston WWTP Septage Receiving Facility										
Legacy landfill closure assessments										
Legacy landfill final closure										

9 Finance and Administration

The strategies, actions and costs associated with this updated RRP have been discussed in previous sections and represent significant changes and improvements to the resource recovery system in the RDCK. This section of the plan presents the staffing implications associated with plan implementation, a summation of the estimated costs (in 2021 dollars) to the RDCK for the planned resource recovery system, options on how the implementation of the Plan will be financed and lastly recommendations to support financial sustainability and system resilience.

9.1 Staffing

As stated in Section 3.6, the staffing demands associated with managing, supervising, and operating a facility network of three active landfills, thirteen waste transfer stations, twenty-three recycling depots, and two organics processing facilities (planned for 2021), have increased significantly. The current staffing structure consist of 7 managerial, technical or supervisory positions associated with the resource recovery system, and 76 positions associated with operating the recycling depots, transfer stations, landfills and transfer systems. Although landfill operations are a contracted service, these contracts also require management and oversight as do the many smaller contracts for site operations and maintenance, hauling, and material management.

All the strategies and actions associated with this updated RRP will require staff resources to implement. Given that the RDCK current resource recovery staff complement is fully utilized, with exception of a reduction in staffing requirements associated with the HB Mines Tailing Facility following remediation and closure works, additional or reallocated staff resources would be required to plan, design, launch and supervise the new and expanded actions included in this RRP. Reallocation of current resource recovery staff to new tasks would impact timelines and service oversight of existing works.

The actions in this plan that will have the most significant need for new staff resources are:

- Expanded education and outreach associated with all current and planned activities.
- Development and management of organic waste processing facilities, the associated transfer system, collaboration with curbside collection partners, and end-product management.
- Managing and supporting curbside collection services in the electoral areas
- Encouraging and maintaining ICI participation in diversion.
- Supporting the development of organic waste diversion initiatives in smaller communities and at residences without access to a community-scale system.
- Asset, procurement, and contract management.
- Septage management, if new facilities are managed and/or operated by the RDCK.
- Project management of transfer station upgrades, landfill development, and landfill closures.
- Assessment and closures of historical landfill sites.

To implement and support these actions on an on-going basis, as well the other initiatives indicated in Table 9-1, the RDCK will need to hire roughly 4 more permanent FTE positions over the next five years as well as the 1.2 short-term temporary FTE, and 2.75 long-term temporary FTE to implement new or expanded RRP strategies. The timing and costs associated with these additional staffing requirements are included in the ten-year financial plans presented in Tables 9-2 to 9-4.

Table 9-1: New Staffing Requirements

Strategies	Project Management / Development	Technical	Operations	Seasonal	Total
Reduction and Reuse	0	0.1	0	0.2	**0.3**
Organics	1	1	2	1	**5**
Recycling	0	0.25	0	0	**0.25**
ICI	0	0	0	0	**0**
CDR	0	0.1	0	0	**0.1**
EPR	0	0	0	0	**0**
Circular Economy	0	0.05	0	0	**0.05**
Education and Outreach	0	0.1	0	0	**0.1**
Recovery	0	0	0	0	**0**
Residuals	0.5	1	0	0	**1.5**
Septage	0.1	0.25	0	0	**0.35**
Illegal Dumping	0	0.25	0	0	**0.25**
Total	**1.6**	**3.1**	**2**	**1.2**	**7.9**
on-going	0	1.75	2	0.2	**3.95**
Term - short (< 1 year)	0.1	0.1		1	**1.2**
Term - long (> year)	1.5	1.25			**2.75**

9.2 Ten Year Financial Plans

Ten-year financial plans, one for each sub-region, have been prepared to show both current expenditures and planned expenditures that have been identified as necessary to implement this plan as it is presented. Tables 9-3 to 9-5 provide a summary of the financial plans for Resource Recovery for each sub-region.

In British Columbia, municipalities and regional districts must annually adopt, by bylaw, a five-year financial plan which includes operating and capital expenditures. The summary tables provide a breakdown of revenues and expenditures based on the District's approved 2021-2025 Financial Plan extrapolated out to ten years. Values are in 2021 dollars with 2% inflation added annually to revenues and expenses where appropriate. Revenues are summarized under taxation, tipping fees, proceeds from borrowing, transfer from reserves, grants, recycling revenues, other (septage, user fees, etc.) and prior year surplus.

Existing expenditures are summarized according to whether they are operating (annual) or capital (one-time). Existing operating expenditures are grouped under zero waste/diversion, transfer and residual management, administration overhead and transfer to reserves. Existing capital expenditures are grouped under landfill closure capital works, residuals capital works, and organics capital works. Based on these current approved expenditures, the proposed financial plans are balanced for the next ten years. Table 9-2 illustrates the relative breakdown of current operating expenditures in the 2021 budget for each sub-region.

This breakdown of current expenditures demonstrates that transfer and residual management represents the majority of expenditures at 65%. Zero Waste represents 17% of current expenditures.

Table 9-2: Breakdown of Operating Expenditures by Region

	West		Central		East		TOTAL	
Existing Expenditure	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**
Zero Waste/Diversion	$ 568,629	15%	$ 907,048	18%	$ 545,435	18%	$ 2,021,112	17%
Transfer and Residual Management	$2,376,924	61%	$3,346,834	68%	$1,976,433	66%	$ 7,700,190	65%
HB Tailings Facility			$ 358,057	7%			$ 358,057	3%
Administration Overhead	$ 131,890	3%	$ 187,363	4%	$ 90,652	3%	$ 409,905	3%
Transfer to Reserves	$ 805,288	21%	$ 134,419	3%	$ 360,049	12%	$ 1,299,757	11%
TOTAL	**$3,882,730**	**100%**	**$4,933,722**	**100%**	**$2,972,569**	**100%**	**$11,789,022**	**100%**

Proposed operating expenditures, as presented in this Plan, are grouped under zero waste/diversion, other components and plan monitoring, residuals, staffing and proposed debenture. Capital expenditures are grouped under zero waste/diversion, residuals (legacy landfills), and septage management.

The tables then present the combined existing and planned expenditures with respect to existing revenue to identify potential funding gaps. The gaps are divided into capital and operating. Since capital can be funded through reserves, grants or borrowing, the final row in the tables provides the percentage increase from existing operational expenditures which may imply an increase in taxes or tipping fees.

Each Sub-Region has separate reserves that are intended for capital works (regular reserves), statutory requirements (landfill liability reserves), or to offset tax peaks in years with temporary increases in expenses (stabilization reserves). Annual contributions to reserves should be set to maintain compliance and consider balancing the funding of future capital works through borrowing or reserves.

It is important to note that these ten-year financial plans do not include any costs associated with implementing an Asset Management Plan for resource recovery services. The RDCK is currently developing an Asset Management Plan that will require all departments to undertake a detailed inventory of assets including an upgrade or replacement schedule. The results of this inventory will likely require an annual increase in reserve transfers to properly manage resource recovery assets.

Tables 9-3 to 9-5 indicate that for the ten-year period of the Plan, the increase in operating expenditures for the West Sub-Region is significant ranging from 0.6% in 2021 to 11.9% in 2025 and 14.3% in 2030. The West Sub-Region will need to consider increasing revenues to build reserves and lessen borrowing costs in the future. For the Central Sub-Region, the increase in operating expenditures is not as significant averaging at less than 1.2% from 2021 to 2027. However, this increases to 4.8%, 5.0% and 4.5% for 2028, 2029 and 2030 respectively and will require an increase in revenues at that time. For the East Sub-Region, the increase in operating expenditures over the plan period is also not as significant averaging less than 1.5% from 2021 to 2027. However, this increases to 5.3%, 5.1% and 5% for 2028, 2029 and 2030 respectively and will require an increase in revenues at that time.

Table 9-3: West Sub-Region Resource Recovery Ten Year Financial Plan (2021 $)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
REVENUE										
Taxation	-$ 675,631	-$ 689,143	-$ 702,926	-$ 716,985	-$ 731,324	-$ 745,951	-$ 760,870	-$ 776,087	-$ 791,609	-$ 807,441
Tipping Fees	-$ 2,270,766	-$ 2,278,554	-$ 2,211,243	-$ 2,255,468	-$ 2,300,577	-$ 2,346,589	-$ 2,393,520	-$ 2,441,391	-$ 2,490,219	-$ 2,540,023
Proceeds from Borrowing	$ -	$ -	-$ 2,649,347	-$ 1,000,000	-$ 1,500,000	-$ 6,082,267	$ -	$ -	$ -	$ -
Transfer from Reserves	-$ 671,963	-$ 729,125	-$ 101,672	$ -	$ -	-$ 3,000,000	$ -	-$ 190,000	$ -	$ -
Grants	$ -	-$ 190,063	$ -	$ -		$ -	$ -	$ -	$ -	$ -
Recycling Revenues	-$ 101,433	-$ 102,948	-$ 104,496	-$ 106,077	-$ 107,293	-$ 108,532	-$ 109,796	-$ 111,086	-$ 112,401	-$ 113,743
Other (septage, user fees, etc.)	-$ 352,319	-$ 327,007	-$ 299,472	-$ 213,528	-$ 217,666	-$ 221,880	-$ 226,177	-$ 230,578	-$ 235,056	-$ 239,623
Prior Year Surplus	-$ 482,583	-	-	-	-	-	-	-	-	-
TOTAL EXISTING REVENUES	**-$ 4,554,694**	**-$ 4,316,840**	**-$ 6,069,156**	**-$ 4,292,058**	**-$ 4,856,860**	**-$ 12,505,218**	**-$ 3,490,363**	**-$ 3,749,142**	**-$ 3,629,285**	**-$ 3,700,830**
EXPENDITURES										
Existing Operating Expenditures										
Zero Waste/Diversion	$ 568,629	$ 722,339	$ 816,438	$ 846,428	$ 877,705	$ 910,329	$ 944,362	$ 979,870	$ 1,016,923	$ 1,055,593
Transfer and Residual Management	$ 2,376,924	$ 2,241,798	$ 2,291,044	$ 2,142,837	$ 2,110,026	$ 2,175,676	$ 2,367,642	$ 2,388,309	$ 2,423,961	$ 2,460,377
Adminstration Overhead	$ 131,890	$ 134,528	$ 137,218	$ 139,963	$ 142,450	$ 145,299	$ 148,205	$ 151,169	$ 153,874	$ 156,951
Transfer to Reserves	$ 805,288	$ 297,068	$ 73,437	$ 162,829	$ 226,679	$ 191,647	$ 30,156	$ 39,795	$ 34,528	$ 27,909
Total Existing Operating Expenditures	**$ 3,882,730**	**$ 3,395,733**	**$ 3,318,137**	**$ 3,292,058**	**$ 3,356,860**	**$ 3,422,950**	**$ 3,490,364**	**$ 3,559,142**	**$ 3,629,285**	**$ 3,700,831**
Existing Capital Expenditures										
Zero Waste Capital	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Organics	$ 296,613	$ 312,974	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Residual Capital	$ 350,350	$ 508,134	$ 2,751,019	$ -	$ 1,500,000	$ 9,082,268	$ -	$ 190,000	$ -	$ -
LF Closure	$ -	$ 100,000	$ -	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -
Total Existing Capital Expenditures	$ 671,963	$ 921,108	$ 2,751,019	$ 1,000,000	$ 1,500,000	$ 9,082,268	$ -	$ 190,000	$ -	$ -
TOTAL ANNUAL EXISTING EXPENDITURES	**$ 4,554,693**	**$ 4,316,841**	**$ 6,069,156**	**$ 4,292,058**	**$ 4,856,860**	**$ 12,505,218**	**$ 3,490,364**	**$ 3,749,142**	**$ 3,629,285**	**$ 3,700,831**
EXISTING SURPLUS/DEFICIT	**-$ 0**	**$ 0**	**-$ 0**	**-$ 0**	**$ 0**	**-$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**
PROPOSED OPERATING EXPENDITURES										
Zero Waste/Diversion	$ -	$ 14,844	$ 45,178	$ 46,195	$ 107,234	$ 110,055	$ 111,181	$ 112,332	$ 113,510	$ 114,714
Other Components and Plan Monitoring	$ 24,805	$ 32,218	$ 412	$ 421	$ 29,970	$ 440	$ 450	$ 460	$ 471	$ 481
Staffing	$ -	$ 16,111	$ 144,910	$ 145,281	$ 135,366	$ 135,754	$ 136,150	$ 52,167	$ 52,581	$ 53,005
Proposed Debenture	$ -	$ -	$ 59,947	$ 59,947	$ 59,947	$59,947	$59,947	$283,947	$283,947	$283,947
Total Prosposed Operating Expenditures	**$ 24,805**	**$ 63,173**	**$ 250,448**	**$ 251,844**	**$ 332,517**	**$ 306,195**	**$ 307,728**	**$ 448,907**	**$ 450,509**	**$ 452,147**
Proposed Capital Expenditures										
Zero Waste - Phase 2 Curbside, Ecodepots & Nakusp Composting	$ -	$ 35,000	$ 218,571	$ -	$ 500,000	$0	$0	$0	$0	$0
Residuals (Septage, Legacy Landfills)	$ -	$ -	$ 2,500,000	$ -	$ -	$0	$4,000,000	$0	$0	$0
Total Prosposed Capital Expenditures	**$ -**	**$ 35,000**	**$ 2,718,571**	**$ -**	**$ 500,000**	**$ -**	**$ 4,000,000**	**$ -**	**$ -**	**$ -**
Total Proposed Operating and Capital Expendtures	**$ 24,805**	**$ 98,173**	**$ 2,969,018**	**$ 251,844**	**$ 832,517**	**$ 306,195**	**$ 4,307,728**	**$ 448,907**	**$ 450,509**	**$ 452,147**
COMBINED EXISTING AND PROPOSED EXPENDITURES	**$ 4,579,498**	**$ 4,415,014**	**$ 9,038,174**	**$ 4,543,902**	**$ 5,689,377**	**$ 12,811,414**	**$ 7,798,092**	**$ 4,198,049**	**$ 4,079,794**	**$ 4,152,977**
EXISTING REVENUES	**-$ 4,554,694**	**-$ 4,316,840**	**-$ 6,069,156**	**-$ 4,292,058**	**-$ 4,856,860**	**-$ 12,505,218**	**-$ 3,490,363**	**-$ 3,749,142**	**-$ 3,629,285**	**-$ 3,700,830**
Funding Gap (Deficit)	$ 24,805	$ 98,173	$ 2,969,018	$ 251,844	$ 832,517	$ 306,195	$ 4,307,728	$ 448,907	$ 450,509	$ 452,147
Capital Portion of Gap	$ -	$ 35,000	$ 2,718,571	$ -	$ 500,000	$ -	$ 4,000,000	$ -	$ -	$ -
Operating Portion of Gap	$ 24,805	$ 63,173	$ 250,448	$ 251,844	$ 332,517	$ 306,195	$ 307,728	$ 448,907	$ 450,509	$ 452,147
Percentage Increase Existing Operational Expenses	0.6%	1.9%	7.5%	7.7%	9.9%	8.9%	8.8%	12.6%	12.4%	12.2%

Table 9-4: Central Sub-Region Resource Recovery Ten Year Financial Plan (2021 $)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
REVENUE										
Taxation	-$ 2,990,378	-$ 3,468,934	-$ 3,542,102	-$ 3,648,365	-$ 3,757,817	-$ 3,832,973	-$ 3,909,633	-$ 3,987,825	-$ 4,067,582	-$ 4,148,934
Tipping Fees	-$ 1,536,730	-$ 1,399,725	-$ 1,483,426	-$ 1,466,008	-$ 1,495,326	-$ 1,525,233	-$ 1,555,738	-$ 1,586,852	-$ 1,618,589	-$ 1,650,961
Proceeds from Borrowing	-$ 1,359,675	-$ 2,415,000	-$ 1,210,167	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Equipment Financing	-$ 750,000	-$ 20,000	$ -	-$ 20,000	-$ 650,000	-$ 224,000	-$ 250,000	-$ 224,000	-$ 200,000	-$ 200,000
Transfer from Reserves	-$ 4,035,124	-$ 76,459	-$ 87,834	-$ 71,000	-$ 27,000	$ -	$ -	$ -	$ -	$ -
Grants	-$ 1,549,506	-$ 78,918	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Organics Revcnues		-$ 357,570	-$ 437,500	-$ 500,000	-$ 510,000	-$ 520,200	-$ 530,604	-$ 541,216	-$ 552,040	-$ 563,081
Recycling Revenues	-$ 103,204	-$ 103,528	-$ 103,858	-$ 104,195	-$ 104,538	-$ 106,629	-$ 108,761	-$ 110,937	-$ 113,155	-$ 115,418
Other (septage, user fees, etc.)	-$ 288,591	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000	-$ 10,000
Prior Year Surplus	$ 29,805	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EXISTING REVENUES	**-$ 12,583,403**	**-$ 7,930,134**	**-$ 6,874,887**	**-$ 5,819,568**	**-$ 6,554,681**	**-$ 6,219,035**	**-$ 6,364,736**	**-$ 6,460,831**	**-$ 6,561,367**	**-$ 6,688,394**
EXPENDITURES										
Existing Operating Expenditures										
Zero Waste/Diversion	$ 907,048	$ 1,402,640	$ 1,515,921	$ 1,545,498	$ 1,570,971	$ 1,600,636	$ 1,405,359	$ 1,431,581	$ 1,458,328	$ 1,485,609
Transfer and Residual Management	$ 3,346,834	$ 3,222,691	$ 3,210,129	$ 3,342,800	$ 3,329,310	$ 3,140,223	$ 3,195,533	$ 3,204,648	$ 3,329,444	$ 3,315,412
HB Tailings Facility	$ 358,057	$ 494,556	$ 402,751	$ 399,957	$ 396,754	$ 385,835	$ 256,099	$ 256,532	$ 256,972	$ 257,862
Adminstration Overhead	$ 187,363	$ 191,170	$ 195,057	$ 199,024	$ 203,074	$ 207,136	$ 211,278	$ 215,504	$ 219,814	$ 224,210
Transfer to Reserves	$ 134,419	$ 27,504	$ 253,027	$ 241,289	$ 377,573	$ 361,205	$ 746,466	$ 828,567	$ 896,809	$ 1,005,301
Total Existing Operating Expenditures	**$ 4,933,722**	**$ 5,338,562**	**$ 5,576,885**	**$ 5,728,567**	**$ 5,877,681**	**$ 5,695,035**	**$ 5,814,735**	**$ 5,936,831**	**$ 6,161,367**	**$ 6,288,395**
Existing Capital Expenditures										
Zero Waste Capital	$ 2,426,802	$ 2,119,573	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Residual Capital	$ 1,289,746	$ 435,000	$ 1,271,000	$ 64,000	$ 650,000	$ 524,000	$ 550,000	$ 524,000	$ 400,000	$ 400,000
HB Capital	$ 3,933,132	$ 37,000	$ 27,000	$ 27,000	$ 27,000	$ -	$ -	$ -	$ -	$ -
Total Existing Capital Expenditures	**$ 7,649,680**	**$ 2,591,573**	**$ 1,298,000**	**$ 91,000**	**$ 677,000**	**$ 524,000**	**$ 550,000**	**$ 524,000**	**$ 400,000**	**$ 400,000**
TOTAL ANNUAL EXISTING EXPENDITURES	**$ 12,583,402**	**$ 7,930,135**	**$ 6,874,885**	**$ 5,819,567**	**$ 6,554,681**	**$ 6,219,035**	**$ 6,364,735**	**$ 6,460,831**	**$ 6,561,367**	**$ 6,688,395**
EXISTING SURPLUS/DEFICIT	**$ 0**	**-$ 0**	**-$ 0**	**-$ 0**	**-$ 0**	**$ 0**	**-$ 0**	**$ 0**	**-$ 0**	**$ 0**
PROPOSED OPERATING EXPENDITURES										
Zero Waste/Diversion	$ -	$ 10,461	$ 10,733	$ 11,012	$ 11,232	$ 11,457	$ 11,686	$ 11,920	$ 12,158	$ 12,401
Other Components and Plan Monitoring	$ 30,117	$ 32,459	$ 423	$ 434	$ 30,559	$ 451	$ 460	$ 469	$ 20,557	$ 488
Staffing	$ -	$ 34,095	$ 57,385	$ 57,731	$ 47,711	$47,990	$69,372	$48,565	$48,861	$49,163
Proposed Debenture	$ -	$ -	$ -	$ -	$ -	$0	$0	$224,000	$224,000	$224,000
Total Prosposed Operating Expenditures	**$ 30,117**	**$ 77,014**	**$ 68,540**	**$ 69,177**	**$ 89,502**	**$ 59,898**	**$ 81,518**	**$ 284,954**	**$ 305,576**	**$ 286,053**
Proposed Capital Expenditures										
Zero Waste - Phase 2 Curbside	$ -	$ -	$ 110,503	$ -	$ -	$0	$0	$0	$0	$0
Residuals	$ -	$ -	$ -	$ -	$ -	$0	$0	$0	$0	$0
Legacy Landfills	$ -	$ -	$ -	$ -	$ -	$0	$4,000,000	$0	$0	$0
Total Prosposed Capital Expenditures	**$ -**	**$ -**	**$ 110,503**	**$ -**	**$ -**	**$ -**	**$ 4,000,000**	**$ -**	**$ -**	**$ -**
Total Proposed Operating and Capital Expendtures	**$ 30,117**	**$ 77,014**	**$ 179,043**	**$ 69,177**	**$ 89,502**	**$ 59,898**	**$ 4,081,518**	**$ 284,954**	**$ 305,576**	**$ 286,053**
COMBINED EXISTING AND PROPOSED EXPENDITURES	**$ 12,613,519**	**$ 8,007,149**	**$ 7,053,928**	**$ 5,888,744**	**$ 6,644,183**	**$ 6,278,933**	**$ 10,446,253**	**$ 6,745,785**	**$ 6,866,943**	**$ 6,974,447**
EXISTING REVENUES	**-$ 12,583,403**	**-$ 7,930,134**	**-$ 6,874,887**	**-$ 5,819,568**	**-$ 6,554,681**	**-$ 6,219,035**	**-$ 6,364,736**	**-$ 6,460,831**	**-$ 6,561,367**	**-$ 6,688,394**
Funding Gap (Deficit)	$ 30,116	$ 29,577	$ 128,487	$ 18,453	$ 48,939	$ 19,199	$ 4,019,582	$ 243,974	$ 264,451	$ 244,784
Capital Portion of Gap	$ -	$ -	$ 110,503	$ -	$ -	$ -	$ 4,000,000	$ -	$ -	$ -
Operating Portion of Gap	$ 30,117	$ 77,014	$ 68,540	$ 69,177	$ 89,502	$ 59,898	$ 81,518	$ 284,954	$ 305,576	$ 286,053
Percentage Increase Existing Operational Expenses	0.6%	1.4%	1.2%	1.2%	1.5%	1.1%	1.4%	4.8%	5.0%	4.5%

Table 9-5: East Sub-Region Resource Recovery Ten Year Financial Plan (2021 $)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
REVENUE										
Taxation	-$ 1,200,610	-$ 1,320,671	-$ 1,347,084	-$ 1,374,026	-$ 1,401,506	-$ 1,429,537	-$ 1,458,127	-$ 1,487,290	-$ 1,517,036	-$ 1,547,376
Tipping Fees	-$ 928,362	-$ 946,448	-$ 1,061,271	-$ 1,088,724	-$ 1,110,498	-$ 1,132,708	-$ 1,155,362	-$ 1,178,470	-$ 1,202,039	-$ 1,226,080
Proceeds from Borrowing	-$ 510,745		-$ 1,692,900	$ -	$ -	-$ 1,830,000	$ -	$ -	$ -	$ -
Transfer from Reserves	-$ 871,931	-$ 235,000	-$ 44,300	-$ 57,000	-$ 496,250	$ -	-$ 150,000	$ -	$ -	-$ 100,000
Grants	-$ 992,313	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Recycling Revenues	-$ 58,874	-$ 53,139	-$ 54,124	-$ 55,130	-$ 56,157	-$ 57,008	-$ 57,876	-$ 58,761	-$ 59,664	-$ 60,585
Other (septage, user fees, etc.)	$ 89,964	-$ 388,350	$ 90,002	$ 91,688	$ 93,407	-$ 95,160	-$ 96,949	-$ 98,773	-$ 100,634	-$ 102,532
Prior Year Surplus	$ 333,537	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EXISTING REVENUES	**-$ 4,986,335**	**-$ 5,127,893**	**-$ 4,289,682**	**-$ 2,666,568**	**-$ 3,157,819**	**-$ 4,544,413**	**-$ 2,918,314**	**-$ 2,823,294**	**-$ 2,879,372**	**-$ 3,036,573**
EXPENDITURES										
Existing Operating Expenditures										
Zero Waste/Diversion	$ 545,435	$ 579,447	$ 595,429	$ 594,499	$ 603,051	$ 453,543	$ 464,984	$ 477,267	$ 489,012	$ 501,631
Transfer and Residual Management	$ 1,976,433	$ 1,541,443	$ 1,703,620	$ 1,696,449	$ 1,731,916	$ 1,840,524	$ 1,789,756	$ 1,709,702	$ 1,647,370	$ 1,590,008
Adminstration Overhead	$ 90,652	$ 92,410	$ 94,168	$ 95,961	$ 97,790	$ 99,657	$ 101,561	$ 103,503	$ 105,484	$ 107,505
Transfer to Reserves	$ 360,049	$ 196,308	$ 124,137	$ 222,658	$ 228,811	$ 320,688	$ 362,012	$ 482,820	$ 637,505	$ 737,427
Total Existing Operating Expenditures	**$ 2,972,569**	**$ 2,409,608**	**$ 2,517,354**	**$ 2,609,567**	**$ 2,661,568**	**$ 2,714,412**	**$ 2,718,313**	**$ 2,773,292**	**$ 2,879,371**	**$ 2,936,571**
Existing Capital Expenditures										
Landfill Closure Capital Works	$ 100,000	$ 1,406,000	$ 1,692,900	$ -	$ 100,000	$ 1,780,000	$ -	$ -	$ -	$ -
Residuals Capital Works	$ 383,839	$ 1,302,285	$ 79,300	$ 57,000	$ 396,250	$ 50,000	$ 150,000	$ -	$ -	$ 100,000
Zero Waste Capital Works	$ 40,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -
Organics Capital Works	$ 1,489,927	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -	$ -
Total Existing Capital Expenditures	**$ 2,013,766**	**$ 2,718,285**	**$ 1,772,200**	**$ 57,000**	**$ 496,250**	**$ 1,830,000**	**$ 200,000**	**$ 50,000**	**$ -**	**$ 100,000**
TOTAL ANNUAL EXISTING EXPENDITURES	**$ 4,986,335**	**$ 5,127,893**	**$ 4,289,554**	**$ 2,666,567**	**$ 3,157,818**	**$ 4,544,412**	**$ 2,918,313**	**$ 2,823,292**	**$ 2,879,371**	**$ 3,036,571**
EXISTING SURPLUS/DEFICIT	**$ 0**	**-$ 0**	**$ 0**	**$ 0**	**$ 0**	**-$ 0**	**-$ 0**	**$ 0**	**-$ 0**	**$ 0**
PROPOSED OPERATING EXPENDITURES										
Zero Waste/Diversion	$ -	$ 4,198	$ 4,307	$ 4,419	$ 4,508	$ 4,598	$ 4,690	$ 4,784	$ 4,879	$ 4,977
Other Components and Plan Monitoring	$ 15,344	$ 16,348	$ 215	$ 221	$ 15,570	$ 230	$ 234	$ 239	$ 244	$ 249
Staffing	$ -	$ 47,718	$ 23,741	$ 21,716	$ 21,813	$43,009	$22,013	$22,115	$22,220	$22,328
Proposed Debenture	$ -	$ -	$ -	$ -	$ -	$0	$0	$120,000	$120,000	$120,000
Total Prosposed Operating Expenditures	**$ 15,344**	**$ 68,264**	**$ 28,263**	**$ 26,357**	**$ 41,890**	**$ 47,837**	**$ 26,937**	**$ 147,138**	**$ 147,343**	**$ 147,554**
Proposed Capital Expenditures										
Zero Waste -Phase 2 Curbside	$ -	$ -	$ 154,117	$ -	$ -	$0	$0	$0	$0	$0
Legacy Landfills	$ -		$ -	$ -	$ -	$0	$2,000,000	$0	$0	$0
Total Prosposed Capital Expenditures	**$ -**	**$ -**	**$ 154,117**	**$ -**	**$ -**	**$ -**	**$ 2,000,000**	**$ -**	**$ -**	**$ -**
Total Proposed Operating and Capital Expendtures	**$ 15,344**	**$ 68,264**	**$ 182,380**	**$ 26,357**	**$ 41,890**	**$ 47,837**	**$ 2,026,937**	**$ 147,138**	**$ 147,343**	**$ 147,554**
COMBINED EXISTING AND PROPOSED EXPENDITURES	**$ 5,001,680**	**$ 5,196,157**	**$ 4,471,934**	**$ 2,692,924**	**$ 3,199,708**	**$ 4,592,249**	**$ 4,945,250**	**$ 2,970,430**	**$ 3,026,714**	**$ 3,184,125**
EXISTING REVENUES	**-$ 4,986,335**	**-$ 5,127,893**	**-$ 4,289,682**	**-$ 2,666,568**	**-$ 3,157,819**	**-$ 4,544,413**	**-$ 2,918,314**	**-$ 2,823,294**	**-$ 2,879,372**	**-$ 3,036,573**
Funding Gap (Deficit)	$ 15,344	$ 68,264	$ 182,253	$ 26,356	$ 41,890	$ 47,835	$ 2,026,936	$ 147,136	$ 147,342	$ 147,552
Capital Portion of Gap	$ -	$ -	$ 154,117	$ -	$ -	$ -	$ 2,000,000	$ -	$ -	$ -
Operating Portion of Gap	$ 15,344	$ 68,264	$ 28,263	$ 26,357	$ 41,890	$ 47,837	$ 26,937	$ 147,138	$ 147,343	$ 147,554
Percentage Increase Existing Operational Expenses	0.5%	2.8%	1.1%	1.0%	1.6%	1.8%	1.0%	5.3%	5.1%	5.0%

9.3 Capital Projects Requiring Borrowing

Under the Environmental Management Act, if a Solid Waste Management Plan (Resource Recovery Plan in the RDCK) has been approved by the Minister, a bylaw adopted for the purpose of implementing the waste management plan, such as the annual Five-Year Financial Plan does not require a petition, the assent of the electors, or the approval of the electors. Table 9-6 provides the major capital works included in this RRP with projects shaded in blue for which long-term borrowing will not require the assent of the electors if the RRP is approved by the Province. A detailed list of capital projects included in this plan is provided in Schedule B.

Table 9-6: Major Capital Works Requiring Long-Term Borrowing (2021 $)

Major Capital Works Requiring Long-Term Borrowing 10 Year Plan											
EAST	**Total Est. Project Cost**	**2021 Budget**	**2022 Budget**	**2023 Budget**	**2024 Budget**	**2025 Budget**	**2026 Budget**	**2027 Budget**	**2028 Budget**	**2029 Budget**	**2030 Budget**
Creston Landfill Phase 1E Closure	$ 1,281,000	$ 100,000	$ 1,181,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
WWTP Septage Receiving Facility	$ 1,152,285	$ -	$ 1,152,285	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Creston Landfill Phase 1C/D Closure & Stabilizing Toe Berm	$ 1,917,900	$ -	$ 225,000	$ 1,692,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Creston Landfill Closure Phase 2	$ 1,880,000	$ -	$ -	$ -	$ -	$ 100,000	$ 1,780,000	$ -	$ -	$ -	$ -
Legacy Landfills	$ 2,150,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ 2,000,000	$ -	$ -	$ -
East Total	$ 8,381,185	$ 100,000	$ 2,708,285	$ 1,692,900	$ -	$ 100,000	$ 1,780,000	$ 2,000,000	$ -	$ -	$ -
CENTRAL											
HB Remediation and Closure	$ 3,949,839	$ 3,831,839	$ 37,000	$ 27,000	$ 27,000	$ 27,000	$ -	$ -	$ -	$ -	$ -
70 Lakeside Drive - Nelson Landfill Closure	$ 942,000	$ 80,000	$ 115,000	$ 747,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Recycling Depot - Nelson area	$ 2,000,000	$ -	$ 2,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Heated Hauling Fleet Building	$ 500,000	$ -	$ -	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Legacy Landfills	$ 4,300,000	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ 4,000,000	$ -	$ -	$ -
Central Total	$ 11,691,839	$ 3,911,839	$ 2,452,000	$ 1,274,000	$ 27,000	$ 27,000	$ -	$ 4,000,000	$ -	$ -	$ -
WEST											
Naksup Transfer Station Construction	$ 1,195,402	$ -	$ 91,954	$ 1,103,448	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Nakusp Landfill Closure	$ 1,100,000	$ -	$ 100,000	$ -	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -
Ootischenia Landfill Development (includes liner & leachate)	$ 9,272,268	$ -	$ -	$ -	$ -	$ -	$ 9,082,268	$ -	$ 190,000	$ -	$ -
Ootischenia New Tipping Area and Second Scale	$ 1,500,000	$ -	$ -	$ -	$ -	$ 1,500,000	$ -	$ -	$ -	$ -	$ -
Slocan TS Upgrades	$ 1,626,807	$ -	$ 80,908	$ 1,545,899	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Legacy Landfills	$ 4,300,000	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ 4,000,000	$ -	$ -	$ -
Septage Management	$ 2,500,000	$ -	$ -	$ 2,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
West Total	$ 21,494,477	$ -	$ 572,862	$ 5,149,347	$ 1,000,000	$ 1,500,000	$ 9,082,268	$ 4,000,000	$ 190,000	$ -	$ -
RDCK TOTAL	**$ 41,567,501**	**$ 4,011,839**	**$ 5,733,147**	**$ 8,116,247**	**$ 1,027,000**	**$ 1,627,000**	**$ 10,862,268**	**$ 10,000,000**	**$ 190,000**	**$ -**	**$ -**

Total from Reserves
Total From Long Term Borrowing
Total from Short Term Borrowing or Equipment Financing

9.4 Cost Recovery and Financial Sustainability – Funding the Gaps

The RDCK Resource Recovery program relies on both tipping fee revenue and tax requisition to maintain the network of facilities and services. The taxation to user fee ratio is different for each of the three Sub-regions and determined by the historic decisions made in each Sub-region and their unique operating conditions. The balance between tax requisition and tipping fee rates are reviewed by the RDCK Board as part of the annual budgeting process and set accordingly to balance many important factors. Table 9-7 demonstrates the balance between tax requisition tipping fees for the 2021-2025 Financial Plan.

Table 9-7: Tipping Fee vs Taxation for Sub-Regions

Sub-region	Average Revenue through Taxes	Average Revenue through Tipping Fees
West	26%	74%
Central	69%	31%
East	56%	44%

While there is no definitive right or wrong way to fund these services, the promotion of the "User Pay" principle and emphasis on tipping fees is generally considered to be the best practice. It is fair, transparent, places a cost burden relative to user demands, and provides greater financial incentives for waste diversion.

In the RDCK system each sub-region has strived to recover the costs of residual management through tipping fees. However, as indicated in the following Figures 9-1 to 9-3, only the West Sub-Region is meeting this policy expectation.

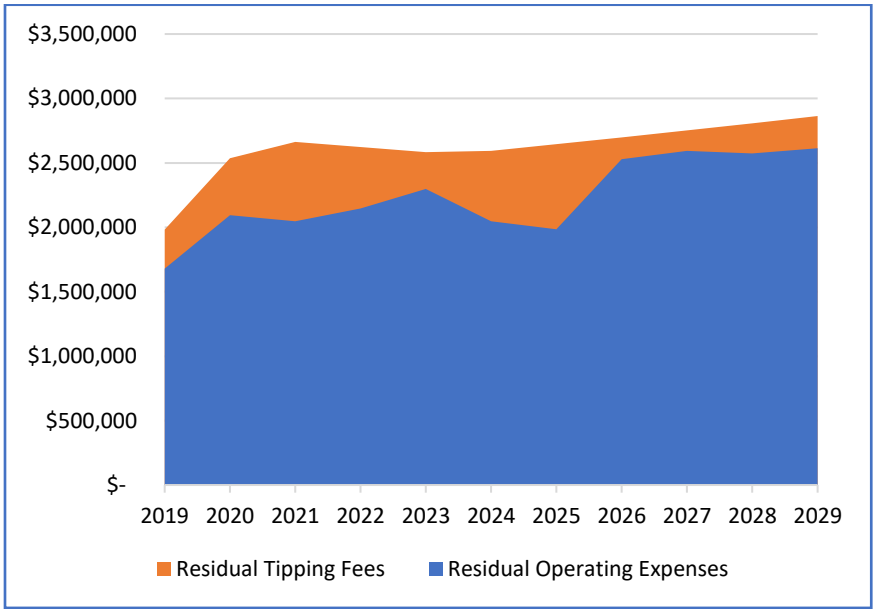

Figure 9-1: Tipping Fees vs. Residual Expenses – West Sub-Region

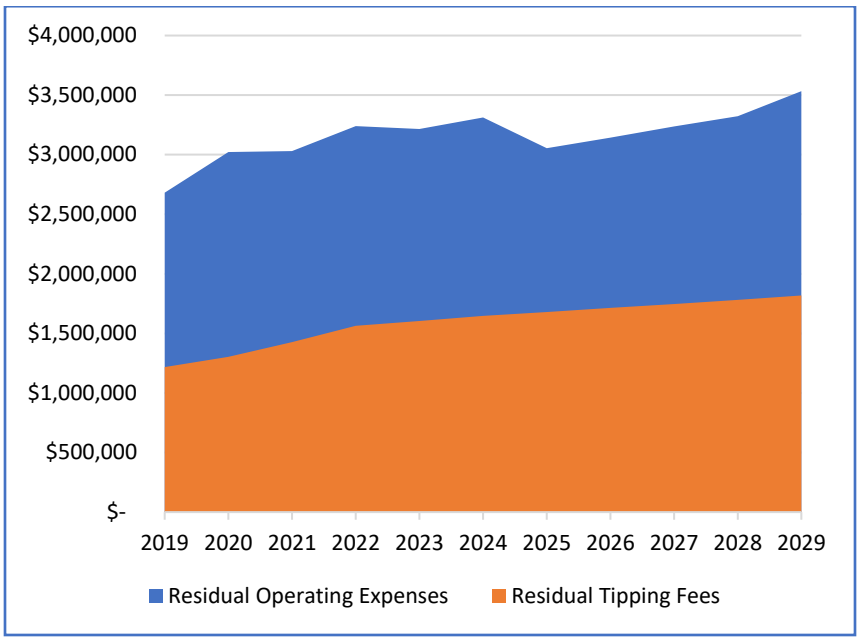

Figure 9-2: Tipping Fees vs. Residual Expenses – Central Sub-Region

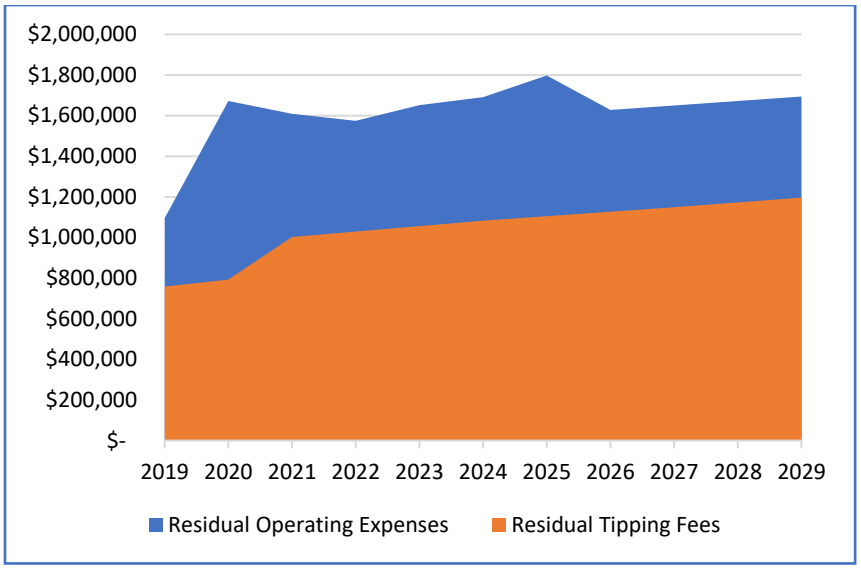

Figure 9-3: Tipping Fees vs. Residual Expenses – East Sub-Region

9.5 Planned Actions

The RDCK is one of the most rural regional districts in the province with over half of its residents living in unincorporated electoral areas outside of municipal boundaries. Due to geography and settlement patterns, resource recovery services are delivered through three established sub-regional service areas that together form a complex facility network consisting of three active landfills, thirteen waste transfer stations, twenty-three recycling depots and two organics processing facilities (to be constructed in 2021). Due to the addition of new zero waste services as well as the need to conform to new regulatory requirements for residual management, resource recovery system operating costs of increased significantly over the last five years.

Strategy: Ensure that the RDCK Resource Recovery system is financial sustainable and resilient.

Actions: The following actions associated with Finance and Administration will be undertaken:

1. **Consider an alternative administrative model for the Resource Recovery system.** The operation of three distinct sub-regional resource recovery services within the RDCK can pose economic and administrative challenges to optimal service delivery. Unlike most regional districts in BC that have regionalized solid waste management services, the RDCK, with its three separate sub-regional service areas and associated committees, operates almost like three separate regional districts. RDCK staff will assess the cost-benefit of regionalization vs. the current sub-region model. Minimally, the following services should be assessed for regional delivery: organics diversion, recycling, and septage management.

2. **Undertake a resource recovery system efficiency study and identify options to improve its cost effectiveness and equitability**. This would entail benchmarking system costs in comparable regional districts to determine whether service levels in the RDCK are adequate and identify potential areas for cost efficiencies. This would also include a review of transfer station and recycling depot requirements if curbside collection services are expanded to portions of electoral areas that are beyond municipal boundaries. The cost recovery models in each sub-region should also be assessed. Starting with the measurement of cost recovery through tipping fees the RDCK can ensure that the balance between taxation and tipping fees remains fair and equitable.

3. **Review the subsidization of waste diversion services at Resource Recovery Facilities.** RDCK will assess the levels of subsidization of recyclable materials (where the tipping fees charged do not cover the full cost of management) received at RDCK Resource Recovery facilities and consider the cost-benefit of subsidization for each applicable material stream.

4. **Implement Asset Management Plans at RDCK resource recovery facilities.** Following inventories of mobile and fixed assets, the RDCK can set appropriate contributions to reserves to achieve financial security and a balance between borrowing and reserve funding of future projects.

Table 9-8 provides an estimate of the additional costs to the RDCK (beyond what is currently budgeted) for undertaking the Finance and Administration actions listed above.

Table 9-8: New Costs to Finance and Administration Initiatives

	Description	Cost
New Annual Operating Costs	Undertake a Resource Recovery System Efficiency Study including a review of the Cost Recovery Model	$75,000
New Staffing	None	

10 Impact on Disposal

Many of the actions described in this report are intended to decrease the amount of waste landfilled. Table 9-1 shows the estimated reduction in disposal upon implementation of the Zero Waste components of the RRP, based on the amount of waste disposed in 2020. As shown, the per capita disposal rate is expected to reduce by 29%, from 490 kg per capita (2020 rate) to 351 kg per capita, which is in line with the Province's per capita disposal target of 350 kg per capita. It should be noted that this diversion estimate makes the following assumptions:

- That 8,700 homes in the electoral areas opt-in for curbside collection of food waste and recycling.
- That the Province adds ICI packaging and paper as a schedule to the Recycling Regulation, thus creating an EPR program for recyclables generated at businesses and institutions.[12]
- That the Province adds mattresses as a schedule to the Recycling Regulation.[7]
- That the measures that promote reduction, reuse and a local circular economy result in the removal or elimination of materials that are currently landfilled (as compared to materials that are currently recycled, which is also considered a positive result but would not be reflected in a reduction in the amount of waste landfilled).

Table 10-1: Estimated Reduction in the RDCK's Disposal Rate (region-wide)

	Estimated reduction in waste landfilled	Estimated tonnes per year	Notes on Estimates
Reduction and Reuse	1%	311	
Residential Recycling	2%	752	Based on curbside recycling being implemented in Creston and portions of the electoral areas.
Industrial, Commercial and Institutional (ICI) Recycling	0%	0	New diversion is expected because of EPR and is captured under EPR estimate below.
Construction, Demolition and Renovation (CDR) Waste Diversion	3%	933	Initiatives in plan expected to decrease CDR waste disposed by 20%.
Education and Outreach	0%	0	Support mechanism to all the current and future initiatives, therefore no diversion is directly attributed to this component of the RRP.
EPR & HHW Management	6%	1866	Based on the likelihood of the Province adding ICI paper and packaging and mattresses to the Recycling Regulation.
Organic Waste Diversion	11%	3417	Based on food waste diverted from the ICI sector, curbside collection of food waste from 18,700 homes, and depot collection from 8,275 homes.
Illegal Dumping	0%	0	No additional diversion.
Specified Risk Material Management	0%	0	No additional diversion.
Circular Economy	5%	1555	Outcome dependent on the specific activities undertaken.
Total estimated reduction in waste landfilled	**28%**	**8834**	
Total estimated reduction in per capita waste landfilled	**139 kg**		

[12] In September 2020, the BC Government released a Recycling Regulation Policy Intentions Paper to solicit feedback on expanding EPR by including more products under the Recycling Regulation. Of the items under consideration, packaging and paper products beyond residential sources and mattresses would have the greatest potential impact on the RDCK's waste disposal rate.

10.1 Targets

Implementation of the strategies described in this plan over the plan's 10-year timeframe is expected to contribute to the Province's climate action plan and disposal rate targets.

Targets for the RRP have been established as a means of measuring the RRP's progress and are listed in Table 10-2. Achieving these targets will not be the sole responsibility of the RDCK. These targets will require the following critical actions to be undertaken by organizations other than RDCK:

- Member municipalities with access to RDCK organic waste facilities implement services and/or policies to ensure that their residents and businesses are encouraged to participate in organic waste diversion. This may include but is not limited to the provision of curbside collection of organic waste, garbage container limits, and restrictions on organic waste in garbage set out for collection.
- The Province of BC including ICI packaging and printed papers as a schedule in the Recycling Regulation.

Table 10-2: Plan Targets

Target	Method of Measurement
1. Decrease the per capita MSW disposal rate from the 2020 rate of 490 kg per capita to 410 kg per capita by 2027 (five years into plan implementation).	Track total landfilled at RDCK facilities on an annual basis, as reported to the BC disposal calculator. If viable, RDCK will also track per capita disposal *without* the portion of waste landfilled that is construction/demolition/renovation waste due to the propensity of this type of waste to vary significantly from year to year.
2. Decrease the per capita MSW disposal rate from the 2020 rate of 490 kg per capita to 350 kg per capita by 2031.	Track total landfilled at RDCK facilities, as reported to the BC disposal calculator.
3. Reduce the residential waste generation rate by 10% by 2031.	Annually track the quantity of *all* waste streams collected in 3-4 representative municipalities with residential curbside collection. Ensure that weights of all waste streams collected at curbside can be reported, including future streams (e.g., organic waste). Track weight data on a per household basis. Data should be compiled from the same municipalities from year to year.

11 Plan Monitoring

The implementation of the Resource Recovery Plan will be monitored to determine its on-going effectiveness. Annual measurement and monitoring allow for course corrections to be made in a timely manner.
The following monitoring and measurement actions will be undertaken.

1. **Plan Monitoring:** Monitoring progress on the Plan's implementation will be undertaken by the Resource Recovery Plan Advisory Committee (RRPAC). This will maintain the linkage between the development of the plan and its implementation. The terms of reference for the RRPAC are included in this Plan as Schedule A.

2. **Annual Reporting**: On an annual basis, Regional District staff will compile a brief report that reflects the status of the Plan's implementation and progress toward the Plan's targets. This report will be provided to the RRPAC and the Joint Resource Recovery Committee.

3. **BC Disposal Calculator:** RDCK will continue to compile data annually on the municipal solid waste disposal activities in the regional district for reporting to the Ministry's on-line disposal calculator.

4. **Interim Assessment / Plan Update:** As per the BC Guidelines for Solid Waste Management Planning, five years into the implementation of the Plan, the RDCK intends to carry out a review of the plan's implementation and effectiveness. A Plan renewal will be undertaken after ten years.

5. **Waste Composition Study:** A study that looks at the composition of the waste being sent to landfill provides a wealth of information on the effectiveness of current programs and policies and assists in identifying opportunities to further minimize the amount of waste sent to disposal. Waste composition studies are planned for the following points in time:
    - In advance of implementing residential organic waste collection by Creston, Castlegar and Nelson,
    - In advance of the interim assessment (Item #4 above), and
    - In advance of the next RRP update.

The table below provides the estimated costs and staffing requirements associated with the above recommendations.

Table 11-1: New Costs to Plan Monitoring

	Description	Cost
New Annual Operating Costs	RRP Effectiveness Review	$25,000
	Waste Composition Study (2022)	$65,000
	Waste Composition Study (2027)	$65,000
New Staffing	Technical Staff (on-going)	0.1 FTE

12 Inter-Agency District Cooperation

The RDCK recognizes the value of collaborating with other regional districts with an aim to improve cost-efficiencies of providing solid waste services, and to learn from each other through sharing ideas and experiences. To this end, the RDCK is a member of the following organizations:

- Southern Interior Waste Management Association
- Recycling Council of BC
- BC Product Stewardship Council
- Solid Waste Association of North America

The RDCK has frequently partnered with the Regional District of Kootenay Boundary (RDKB) to undertake solid waste projects of mutual interest, including communications. During this plan's implementation period, RDKB will collaborate with RDCK on the organic waste diversion strategy through the delivery of some of RDKB's source-separated organics to the RDCK's future composting facility at the Central Landfill.

RDCK will liaise regularly with member municipalities, Columbia Basin Trust, and neighbouring/nearby regional districts to discuss opportunities for collaboration in service delivery and policy implementation.

13 Plan Flexibility and Plan Amendments

This plan represents the current understanding and approach to the solid waste management challenges being faced by the RDCK. The plan is a "living document" that may be amended to reflect new considerations, technologies, and issues as they arise.

Due to changing circumstances and priorities that may evolve over time, and with the input of the plan monitoring advisory committee and interested parties, all major actions identified in the plan will be reviewed for appropriateness before implementation. This will generally occur on an annual basis. The plan's implementation schedule will be flexible enough to reflect the availability of technologies that may arise over time, as well as the potential changes in regional issues and priorities. In addition, it will also take into account the financial priorities of the RDCK, its member municipalities and other partners, the availability of funding to undertake plan activities, and the availability of contractors and service providers.

The need for a plan amendment will be triggered by major changes to the solid waste management system which would include:

a) The opening (or changes to the location or status) of a site or facility:
   - That is included in this regional district's Resource Recovery Plan and requires an authorization under the EMA;
   - or any other facility that could have an adverse impact to human health or the environment
b) Waste import / export options which would significantly impact the regional district's or neighbouring solid waste systems, or not conform to provincial legislation, goals and / or targets.

c) A substantive change in disposal reduction targets or elimination of planned programs supporting the first three R's in the pollution prevention hierarchy (without substitution of alternative approaches that would achieve similar disposal reduction targets).
d) A change in the boundary of the plan, which would significantly change the amount of solid waste to be managed under the plan or significantly change the population of the plan area.
e) The addition, deletion or revision of policies or strategies related to the conditions outlined in the minster's approval letter.
f) Major financial changes that warrant seeking elector assent.

When a plan amendment becomes necessary, the RDCK will undergo a public consultation process and submit an amended plan to the Minister of Environment for approval, along with a detailed consultation report.

14 Dispute Resolution

Although consultation efforts may prevent or minimize conflicts, at times disputes may arise during development or implementation of the plan. To this end, a dispute resolution procedure has been included to address any complaints or concerns that occur during plan development or implementation.

This dispute resolution procedure, included as Schedule C, may apply to the following types of conflicts that could arise during plan implementation:

- Administrative decisions made by regional district staff
- Interpretation of a statement, bylaw, policy or provision in the plan
- Any other matter not related to a proposed change to the wording of the plan or an operating certificate.

Schedule A: Resource Recovery Plan Advisory Committee Terms of Reference

1.0 Application

These terms of reference apply to the Resource Recovery Plan Advisory Committee (RRPAC) established as suggested by the British Columbia Ministry of Environment and in accordance with Section B.1.2. of A Guide to Solid Waste Management Planning Version 1.0, September 2016.

2.0 Role of the RRPAC

The role of the RRPAC is to make recommendations to the Regional District of Central Kootenay (RDCK) Board of Directors on matters involving the development and implementation of the RDCK Resource Recovery Plan ("the Plan"). The RRPAC will act in an advisory capacity only and the RDCK Board retains the authority to make final decisions on Plan implementation.

3.0 Objectives of the RRPAC

The objectives of the RRPAC are as follows:

- Receive and relay feedback from the community regarding the development and implementation of the Plan;
- Review and comment on reports, studies, policies, legislation, and other forms of information relevant to Plan development and implementation;
- Review potential disputes relating to implementation of the Plan and refer those disputes to other RDCK committees or the RDCK Board of Directors, as appropriate;
- Participate in Plan review processes;
- Provide recommendations on waste management strategies, waste diversion opportunities, service provision, facility operation, and other matters of Plan implementation; and
- Ensure adequate public consultation in relevant Plan development and implementation matters.

4.0 Structure of the RRPAC

4.1 Representation

4.1.1 RDCK Representation

In order to capitalize on experience gained during development and implementation of the Resource Recovery Plan, RDCK members of the RRPAC will include:

- The Chair of each of the West, Central, and East Resource Recovery Committees of the RDCK;
- The Chair of the RDCK Board of Directors; and
- Resource Recovery staff.

4.1.2 Community Representation

The RDCK will invite representatives of local stakeholder groups to apply to be designated as community members of the RRPAC. Invitations will be sent directly to all community stakeholders identified during the Resource Recovery Plan development process; however, the RDCK Board of Directors will consider applications from any resident or group who demonstrates that they have a stake in the outcomes of the RDCK's resource recovery operations. To ensure fair representation, when appointing members, the RDCK Board of Directors will consider:

- The geography, demography, and political organization of the RDCK;
- A balance between technical and non-technical interests;
- A balance between industry / private sector and public members; and
- The RDCK's interests in ensuring input from key stakeholders, including:
  - Government (e.g. municipalities, First Nations)
  - Waste and waste diversion service providers (e.g. haulers, processors)
  - Environmental organizations
  - Community interest groups (e.g. business associations, school districts)
  - Waste producers
  - Interested individuals.

The RRPAC will include a maximum of seven and a minimum of one community member, not including representatives of the RDCK's Board and staff.

Participation in the RRPAC is voluntary. The RDCK will reimburse community members for travel expenses at the standard rate established through official RDCK policies. No other remuneration will be offered to community members.

Community RRPAC members will be required to sign a confidentiality agreement.

4.2 Membership Term

There will be no set membership terms for RDCK representatives. Each position listed in section 4.1.1 will maintain membership indefinitely. The specific individuals in those positions, however, may change over time.

Community members shall be appointed for a term of two years.

The RDCK Board of Directors may, at its discretion, revoke membership from any member at any time.

5.0 Meetings of the RRPAC

5.1. Scheduling

The Committee will endeavour to hold meetings at least twice per year, with additional meetings to be summoned as required. The RDCK Resource Recovery Manager, in consultation with the Chair, will schedule meetings.

The RDCK will advertise meeting dates on the RDCK website. The advertisements will explicitly invite attendance from stakeholders who are not members of the RRPAC.

5.2. Protocol and Procedures

- At the first meeting of each alternate year, the RRPAC shall elect a Chair and Vice-Chair. The Chair and Vice-Chair terms shall be two years.
- The Chair will generally conduct meetings in accordance with Roberts Rules of Order.
- Quorum will be deemed to have been achieved with the attendance of 50 percent of members or more.
- All RRPAC members are equal and will have equal opportunity to contribute to discussions at meetings.
- RRPAC members will respect the contributions of other members and make all efforts to understand alternative viewpoints.
- RRPAC members will endeavour to work collaboratively, and to engage in open, honest dialogue.
- RRPAC meetings will generally be open to the public. Non-members will be granted speaking privileges at the discretion of the Chair.
- The Chair may close meetings to the public as required to safeguard the confidentiality of sensitive information or issues.
- RDCK staff will attend meetings to act as a resource to the RRPAC.
- Any RRPAC member perceived to be in a conflict of interest for an issue before the RRPAC shall excuse themselves from proceedings unless specifically requested to speak through a majority vote of the remaining RRPAC members.
- The RDCK will provide administrative support for facilitation, meeting logistics, minute taking, and agenda preparation.

6.0 Communications

Minutes of RRPAC meetings will be provided as an information item to the RDCK Board of Directors. Specific actionable recommendations arising out of the minutes, and approved by the Board, will be routed through RDCK staff to the appropriate organization or individual.

RRPAC members may choose to express their personal views about non-confidential RRPAC issues to others outside the RRPAC but may not speak on behalf of or in any way create the impression that they are speaking for the RRPAC as a whole. RRPAC members should not discuss comments or opinions expressed by other committee members without their knowledge and consent.

Schedule B: Major Capital Works 10-Year Financial Plan by Sub-region (2021$)

Major Capital Works 10 Year Plan											
EAST	**Total Est. Project Cost**	**2021 Budget**	**2022 Budget**	**2023 Budget**	**2024 Budget**	**2025 Budget**	**2026 Budget**	**2027 Budget**	**2028 Budget**	**2029 Budget**	**2030 Budget**
East - Curbside Program development	$ 299,851	$ 145,734	$ -	$ 154,117	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Creston Compost Facility	$ 1,343,531	$ 1,343,531	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Creston Landfill Phase 1E Closure	$ 1,281,000	$ 100,000	$ 1,181,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
WWTP Septage Receiving Facility	$ 1,152,285	$ -	$ 1,152,285	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Creston Landfill Phase 1C/D Closure & Stabilizing Toe Berm	$ 1,917,900	$ -	$ 225,000	$ 1,692,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Creston Landfill Closure Phase 2	$ 1,880,000	$ -	$ -	$ -	$ -	$ 100,000	$ 1,780,000	$ -	$ -	$ -	$ -
Creston Landfill Development	$ 396,250	$ -	$ -	$ -		$ 396,250	$ -	$ -	$ -	$ -	$ -
Creston Eco Depot	$ 35,000	$ 35,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Estimated Fleet/Infrastructure Replacement	$ 440,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 100,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 100,000
Legacy Landfills	$ 2,150,000	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ 2,000,000	$ -	$ -	$ -
East Total	$ 10,895,817	$ 1,654,265	$ 2,738,285	$ 1,877,017	$ 30,000	$ 596,250	$ 1,810,000	$ 2,030,000	$ 30,000	$ 30,000	$ 100,000
CENTRAL											
Central - Curbside Program Development	$ 230,076	$ -	$ 119,573	$ 110,503	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Central Compost Facility	$ 2,289,802	$ 2,289,802	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Central Bin Wall Upgrade	$ 200,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Central New Building	$ 140,000	$ 140,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Grohman Narrows TS Organics Transfer Infrastructure	$ 133,000	$ 133,000									
HB Remediation and Closure	$ 3,949,839	$ 3,831,839	$ 37,000	$ 27,000	$ 27,000	$ 27,000	$ -	$ -	$ -	$ -	$ -
70 Lakeside Drive - Nelson Landfill Closure	$ 942,000	$ 80,000	$ 115,000	$ 747,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Recycling Depot - Nelson area	$ 2,000,000	$ -	$ 2,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Heated Hauling Fleet Building	$ 500,000	$ -	$ -	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Estimated Fleet/Infrastructure replacement	$ 3,200,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 400,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 400,000
Legacy Landfills	$ 4,300,000	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ 4,000,000	$ -	$ -	$ -
Central Total	$ 17,884,717	$ 6,974,641	$ 2,871,573	$ 1,684,503	$ 327,000	$ 427,000	$ 300,000	$ 4,300,000	$ 300,000	$ 300,000	$ 400,000
WEST											
West - Curbside Program Development	$ 471,544	$ -	$ 287,974	$ 183,571	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Naksup Transfer Station Construction	$ 1,195,402	$ -	$ 91,954	$ 1,103,448	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Nakusp Landfill Closure	$ 1,100,000	$ -	$ 100,000	$ -	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -
Proposed Nakusp Compost Facility	$ 540,000	$ 40,000	$ -	$ -	$ -	$ 500,000	$ -	$ -	$ -	$ -	$ -
Ootischenia Organics Transfer Infrastructure	$ 256,612	$ 256,612	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ootischenia Landfill Development (includes liner & leachate)	$ 9,272,268	$ -	$ -	$ -	$ -	$ -	$ 9,082,268	$ -	$ 190,000	$ -	$ -
Ootischenia New Tipping Area and Second Scale	$ 1,500,000	$ -	$ -	$ -	$ -	$ 1,500,000	$ -	$ -	$ -	$ -	$ -
Slocan TS Upgrades	$ 1,626,807	$ -	$ 80,908	$ 1,545,899	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Rosebery Transfer Station Ugrades	$ 84,144	$ -	$ 6,472	$ 77,672	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Proposed Castlegar and Creston Eco Depots	$ 70,000	$ -	$ 35,000	$ 35,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Estimated Fleet/Infrastructure Replacement	$ 1,150,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000
Legacy Landfills	$ 4,300,000	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ 4,000,000	$ -	$ -	$ -
Septage Management	$ 2,500,000	$ -	$ -	$ 2,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
West Total	$ 24,066,777	$ 326,612	$ 932,308	$ 5,475,590	$ 1,030,000	$ 2,030,000	$ 9,282,268	$ 4,200,000	$ 390,000	$ 200,000	$ 200,000
RDCK TOTAL	**$ 52,847,311**	**$ 8,955,518**	**$ 6,542,166**	**$ 9,037,109**	**$ 1,387,000**	**$ 3,053,250**	**$ 11,392,268**	**$ 10,530,000**	**$ 720,000**	**$ 530,000**	**$ 700,000**

Schedule C: Plan Dispute Resolution Procedures

Disputes will be settled using the following procedure:

Negotiation	Parties involved in the dispute shall make every effort to resolve the dispute on their own through non-facilitated communication. If necessary, the parties will provide each other with a written summary of their position and any relevant supporting documentation. Parties may agree to make use of a facilitator.
If this is unsuccessful, then:	
Plan Monitoring Advisory Committee	Parties involved in the dispute will have opportunity to speak to the Committee. Committee will review, consider and provide recommendations to the Board.
If this is unsuccessful, then:	
Board	Parties involved in the dispute will have opportunity to speak to the Board. Board will receive recommendations from the Committee and settle the dispute; or, recommend mediation.
If the Board is unable to settle the dispute, then:	
Mediation	A neutral, impartial third-party facilitator who is acceptable to all the parties to the dispute will be selected. Using appropriate mediation techniques, the facilitator will attempt to develop a solution which satisfies all parties. The facilitator has no decision-making authority. If the parties cannot agree on a mediator, the matter shall be referred to the BC Mediation Roster Society or equivalent roster organization for selection of a mediator. All efforts will be made to reach an agreement through mediation. Costs for mediation will be shared by the parties in dispute.
If this is unsuccessful, then:	
Independent Arbitrator	If the dispute cannot be resolved by a mediator, the matter will be referred to arbitration and the dispute will be arbitrated in accordance with the any applicable legislation. A neutral, impartial third-party arbitrator who is acceptable to all the parties to the dispute will be selected. The arbitrator hears each party's evidence and arguments and renders a final, binding decision. Costs for arbitration shall be apportioned at the discretion of the arbitrator.

Further to the above, the following principles will be followed if and when the dispute resolution process is invoked:

i. The parties will make all reasonable efforts to attempt to resolve the dispute in an amicable manner without outside intervention.
ii. Disputes will be attempted to be resolved as early and at the lowest administrative level as possible; every effort will be made to avoid disputes requiring a formal resolution process.
iii. The formal process is not intended to deal with inconsequential or frivolous disputes.
iv. The cost of mediation or adjudication will be shared by the parties to the dispute.
v. Information or data related to the dispute will be shared by the parties.
vi. Rules of confidentiality and freedom of information will apply.

Appendix A: RDCK Interest Statement on EPR (2015)

INTEREST STATEMENT

On Extended Producer Responsibility Programs – November, 2015

Endorsed by the Regional District of Central Kootenay (RDCK) Board of Directors through resolution number 770/11:

"The Interest Statement on Extended Producer Responsibility Programs, dated November 2011, be endorsed by the Board as a tool for staff and elected official to use when engaging with the Province, product stewards, the public, and other relevant parties in discussions on BC's product stewardship system."

The RDCK supports the belief that for effective waste diversion to occur the product stewardship system must adhere to the following principles:

1. All residents, in all areas of BC, must have reasonable access to collection facilities.
2. Extended producer responsibility policies must encourage waste reduction and promote environmental stewardship.
3. Producers/product stewardship agencies must not rely on local governments to fulfil their role in the product stewardship system.
4. All actors in the product stewardship system, including local governments, must be adequately compensated for their role.
5. All stakeholders, including local governments, must have a genuine say in how product stewardship programs are planned and managed.

The RDCK recommends the following actions and approaches to help overcome the challenges with the BC product stewardship system:

- The RDCK will (should) continue lobbying efforts with the Provincial Government to monitor and enforce performance targets set in Product Stewardship Plans, and ensure that stewards are achieving a reasonable level of service in all areas of BC. Further, the RDCK will (should) lobby the Provincial Government to monitor and enforce participation of producers in the MMBC program.
- Producers/product stewardship agencies must coordinate their collection activities in order to improve convenience for the consumer. Similar to a local government recycling depot, a 'one-stop' return location would improve consumers' abilities to fulfil their role in the product stewardship process.
- The RDCK and other local governments will (should) work together in order to improve regional services and convenience for the consumer.
- When establishing performance targets in Product Stewardship Plans, producers/ product stewardship agencies must commit to achieving a reasonable level of service in all areas of BC. This commitment must be monitored and enforced by the Province.
- The RDCK will (should) work with Producers/product stewardship agencies, specifically MMBC to ensure future participation in the packaging and printed paper program. Further, the RDCK should work with MMBC to utilize existing recycling infrastructure that will otherwise become redundant.
- The RDCK and local governments will consider working collaboratively with product stewardship agencies to investigate feasibility of Eco Depots and private sector partnerships.
- The RDCK will (should) consider various service delivery options presented by stewardship agencies (deliver programs as a contractor for stewardship agency or simply leave it to the steward to determine how services will be delivered.) The latter frees up financial resources that could be allocated towards other

waste diversion programs in the future such as organics.

- The RDCK will (should) continue to participate in key stakeholder groups such as the BC Product Stewardship Council and other product stewardship working groups.
- The RDCK will (should) be proactive in identifying local service gaps in Extended Producer Responsibility Programs and will (should) work with product stewards to address these gaps.

The RDCK will continue to lobby the Provincial Government to:

- Engage the Producers/product stewardship agencies to improve direct communication with consumers.
- Establish an Extended Producer Responsibility Advisory Committee to oversee communications regarding the BC product stewardship system, and to promote compliance with the Recycling Regulation. This committee should consist of representatives from the Province, the Regional Districts, and product stewardship agencies.

The RDCK is receiving minimum levels of service from Extended Producer Responsibility Programs and continuous improvement in service levels is a goal of the RDCK.

Appendix B: RDCK Letter to Ministry of Environment and Climate Change regarding the Recycling Regulation Policy Intentions Paper (2020)

Regional District of Central Kootenay

Box 590, 202 Lakeside Drive, Nelson, BC V1L 5R4
Telephone: (250) 352-6665
BC Toll Free: 1-800-268-7325

Web: www.rdck.ca
Email: info@rdck.bc.ca
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File No. 12-6230-20

November 13, 2020

Ministry of Environment and Climate Change Strategy
Recycling Regulation Amendments
PO Box 9341 Stn Prov Govt
Victoria, BC V8W 9M1

Dear Minister:

RE: RECYCLING REGULATION POLICY INTENTIONS PAPER

Thank you for this opportunity to provide feedback and ideas regarding the proposed changes to the *Recycling Regulation* described in the policy intentions paper. The *Regulation* is an important document guiding the services available to British Columbians to safely dispose of end-of-life materials and reduce the amount of waste directed to landfills.

The published policy intentions paper is largely focused on expanding the range of materials regulated through Extended Producer Responsibility (EPR) through the addition of new or amended schedules and product categories described in the *Recycling Regulation.* This proposal is fully supported by the RDCK as it will increase the role of producers in managing the collection and recycling of materials that have too long been the responsibility of local governments through costly collection depots or annual round up events. At this time however, the RDCK is still chronically underserved by existing EPR programs and most communities within the district lack permanent collection facilities for most materials already described in the *Recycling Regulation.* Only the City of Nelson currently has a facility where residents can recycle the full range of EPR materials in BC. This facility is sustainable only through funding from the RDCK for the facility operator to cover the shortfalls in the current EPR funding for collectors. All RDCK residents outside of the City and surrounding area face either a long drive or a long wait for annual Household Hazardous Waste (HHW) events to dispose of materials such as paint, solvents, electronics and used oil. Before new material categories are added to the *Regulation* the RDCK would like to see that current EPR programs are held to the guidelines for EPR depot access prescribed by the BCPSC and more permanent drop off locations are established with the promise of adequate collection service in the RDCK and other rural districts in BC.

Expanding Recycling and Recovery

New Schedule for Mattresses

Mattresses are large, bulky items that are difficult to handle for waste facility operators and take up considerable volumes in landfills. Recycling options exist but are expensive and difficult to access for residents that live far away from the few processing facilities in BC. Making them a stewarded material will help reduce waste in landfills provided the collection program is adequately funded and accessible to all residents. A mattress EPR program will need eco-fees that reimburse collectors and fully cover collection, transportation and recycling costs. For simplicity and to ensure full market capture any mattress program must include foam mattresses that are purchased through online retailers and delivered directly to homes.

Update Existing Schedules and Product Categories – Residual Product Category

The additions to the Residual Product Category proposed in the intentions paper represent the bulk of non-EPR materials that are collected at the RDCK's annual HHW round up events. These events are well attended and popular with residents but also costly to hold and promote. Adding the materials in the intentions paper to existing schedules in the *Regulation* and having their collection and recycling funded by EPR stewards would at least help lower costs for the RDCK to safely collect these materials. Additional eco fees from expanded material categories would ultimately hopefully help to fund more permanent collection facilities for these materials. Product categories suggested for inclusion should be prioritized based on their potential harm to the environment and estimated volumes that are available for collection in the province.

Other materials such as propane gas canisters are already collected at RDCK waste facilities free of charge for residents. Consistent contractors to collect these materials are difficult to source and stockpiled canisters present a fire hazard for facilities. Disposal costs fluctuate based on market prices for metal recycling and proper funding from eco fees would help improve service levels and provide incentive for haulers. Canisters for mixed fuels used for torches and welding as well as home improvement and auto repair such as spray-on insulation and air conditioning gases must also be included in expansion for this category. These canisters are often incorrectly disposed of alongside propane cylinders or brought to HHW events at a significant cost to the RDCK. Only when completely empty and properly discharged can they be safely accepted in existing scrap metal collection.

Update Existing Schedules and Product Categories – Electronic and Electrical Product Category

Aside from gaps in collection depots being accessible for some residents the electronics collection and recycling program is well-known to residents in BC and successful at recovering high percentages of available materials. As the variety of electronic goods keeps increasing so should the EPR coverage for recycling those goods. Large, seldom disposed of items such as electronic vehicle batteries should be returned to the point of sale and those existing reverse supply chains for recycling existing automotive batteries expanded and strengthened. New consumer goods such as drones and electronic cigarettes should be subject to the same eco fees as other electronic goods and collected at existing depots. As with the residual product category, hopefully expanding the collection of eco fees the addition of more products can lead to greater service and the establishment of permanent depots in communities where they do not currently operate. To reduce complexity for depot operators and users new products should be added to existing recycling schedules and not regulated by new EPR programs.

Update Existing Schedule and Product Categories – Packaging and Paper Product Category

As of summer 2020 the RDCK joined the Recycle BC (RBC) network of recycling depots and now operates 24 sites that collect Packaging and Paper Products (PPP) from residents that are then processed by RBC's network of partners. Twelve of these depots are RBC core depots and serviced directly by RBC's post-collection partners while the remaining 12 are categorized as satellite depots funded primarily by the RDCK to provide recycling access to communities not targeted by RBC. This change has brought greater supervision to depots and increased the variety of materials that residents can recycle, but it has left small businesses in many communities with no viable option to recycle their PPP. Commercial recycling haulers are often not cost effective for small businesses in the RDCK and service levels are well behind those in larger population centers; in some areas there is no commercial recycling provided by private haulers at all. The RDCK, RBC and its partners have invested a great deal of time and money into upgrading our recycling depots and hauling infrastructure in our region in order to take this step forward with our recycling program. Building a parallel system to serve businesses in our communities is foolish when an effective model already exists. Explaining to businesses why they cannot use RDCK depots to deposit recycling is a

communication challenge, particularly for food service providers who often find that they are bringing identical materials, purchased from the same retailers as residents. Additionally, there are a number of small haulers, social enterprises and non-profit groups that collect both residential and commercial recycling in volumes too small to be of interest to larger haulers and previously brought this material to RDCK depots. These small operators are now shut out of the recycling program in the RDCK and are frustrated when told their material is unacceptable even when collected from residential sources and seemingly covered by RBC. The existing EPR for residential PPP should absolutely expand to include PPP from the Industrial, Commercial and Institutional (ICI) sector. Primary focus should be given to materials such as metal and plastic containers that commonly come from food service businesses and have material value but are expensive to recycle and collect co-mingled. Small food service businesses, retailers and small haulers that do not have direct access to processing facilities should be given access to existing recycling depots as they are almost exclusively trying to recycle PPP that is already designated under the *Regulation* but is refused based only on its source. Fibres should be included as well to take advantage of market and hauling efficiencies in smaller and remote communities, but are less of a priority as some independent markets for them still exist.

Implementation

Given the feedback from the ICI sector over the launch of RBC recycling depots in the RDCK and the district's long standing lobbying efforts the RDCK would like to suggest that the inclusion of ICI PPP in existing product schedules be given the highest priority of the actions suggested in the implementation paper. Greater access to recycling ICI PPP in the RDCK would have the biggest positive impact on increasing recycling rates and diversion of waste from landfills in the RDCK and likely in other similar districts. The network of local haulers and businesses to bring this material to depots is already in place and could utilize the newly upgraded depot network without significant challenges.

While not as visible to the public, disposing of mattresses presents a significant challenge for landfill operators and uses a large volume of landfill capacity. There are currently no recycling options in our region and would be very costly to implement. Only EPR support will make them sustainable. Similarly, safe disposal of residual materials including propane tanks, other compressed gas canisters and potentially hazardous household substances pose an environmental and safety risk for waste facility operators. Safe disposal options are lacking and could be improved with greater funding from a wider range of materials falling under EPR coverage. These inclusion of these two categories should be given the next highest priority for implementation.

Thank you again for this opportunity to provide feedback. It is welcome to see that environmental concerns are being addressed. The expansion of product stewardship in BC is important but it must again be stated that the inclusion of more categories should not be prioritized over providing adequate service to recycle the existing categories of EPR materials in the RDCK and other districts that still do not have permanent collection facilities accessible for all residents.

Sincerely,

Aimee Watson
RDCK Board Chair

AW/tb

END OF DOCUMENT