Solid Waste Management Plan Update
Technical Memo 1:
Current Solid Waste Management System Overview

PRESENTED TO
Cowichan Valley Regional District

MARCH 28, 2018
ISSUED FOR USE
FILE: 704-SWM.PLAN03006-01

REVISION 1

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Acronyms/Abbreviations	Definition
ACM	Asbestos-Containing Materials
AVICC	Association of Vancouver Island Coastal Communities
Bings Creek	Bings Creek Recycling Centre & Garbage Drop-Off Depot
C&D	Construction and demolition
CRD	Capital Regional District
CVRD	Cowichan Valley Regional District
DO	Drop-off
Duncan	City of Duncan
EMA	Environmental Management Act
EPR	Extended Producer Responsibility
Guide	"A Guide to Solid Waste Management Planning" published by the BC Ministry of Environment and Climate Change in 2016
ICI	Industrial, Commercial, and Institutional
Ladysmith	Town of Ladysmith
Lake Coiwchan	Town of Lake Cowichan
Meade Creek	Meade Creek Recycling Centre & Garbage Drop-Off Depot
MF	Multi-family
Ministry	British Columbia Ministry of Environment and Climate Change
MRF	Material Recycling Facility
MSW	Municipal solid waste
MTSA	Municipal Type Service Agreement
North Cowichan	District of North Cowichan
PAC	Plan Advisory Committee
Peerless Road	Peerless Road Recycling Centre & Garbage Drop-Off Depot
$PM_{2.5}$	Atmospheric particulate matter that has a diameter of less than 2.5 micrometers.
R	The 5 "R"s of the Pollution Prevention Hierarchy: reduce, reuse recycle, recover, residuals management.
RAPP	Report All Poachers and Polluters
RD	Regional District
RDN	Regional District of Nanaimo
Recycling Centres	Refers to Bings Creek, Meade Creek, and Peerless Road
SF	Single family
SWMP	Solid waste management plan

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TETRA TECH

TECHNICAL MEMO

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To:	Tauseef Waraich, CVRD	**Date:**	March 28, 2018
c:	Harmony Huffman, CVRD	**Memo No.:**	1
From:	Wilbert Yang Melissa Nielsen	**File:**	704-SWM.PLAN03006-01
Subject:	Current Solid Waste Management System Overview Revision 1		

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1.0 INTRODUCTION

The Cowichan Valley Regional District (CVRD) retained Tetra Tech Canada Inc. (Tetra Tech) to assist the CVRD in updating their solid waste management plan (SWMP). Updating the SWMP requires: (1) reviewing the existing solid waste management system, policies and programs, (2) identifying and evaluating options for reduction, diversion, residual management, and financing, and (3) developing and setting waste management principles, targets and strategies for the next ten years.

Using the baseline information provided by CVRD, this technical memorandum examines the existing solid waste management system, policies and programs, and discusses some of the potential options that the CVRD may be considering for the updated SWMP.

1.1 Solid Waste Management Plans

Regional Districts in British Columbia (BC) are required to prepare SWMPs. In 1989, the *Waste Management Act* [now the E*nvironmental Management Act* (EMA)] was amended to require all regional districts to prepare and submit solid waste management plans to the BC Ministry of Environment and Climate Change Strategy (Ministry) for approval. The purpose of the SWMP is to provide a guiding document that will indicate the Region's solid waste management activities over the next 5 to 10 years. The plan should outline a framework for managing solid waste in the region while keeping in mind local circumstances, community goals, disposal capacity, environmental protection, community support, operational capacity and financial sustainability.

1.2 Guiding Principles

The Ministry released a planning guide entitled, "A Guide to Solid Waste Management Planning" (Guide) in 2016. These guidelines will be used to update the CVRD's SWMP.

According to the Ministry's guidelines, the SWMP should be founded on locally-relevant guiding principles, which should be clearly stated in the plan. These principles will be developed in consultation with an advisory committee and also factor in provincial guiding principles, which are summarized in Figure 1-1 and described below. If the provincial guiding principles are modified or not included, a clear rationale for these decisions should be provided to the Ministry.

Figure 1-1: Provincial Guiding Principles

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- **Promote zero waste approaches and support a circular economy.**

  Encourage a shift in thinking from waste as a residual requiring disposal, to waste as a resource that can be utilized in closed-loop systems. Zero waste approaches aim to minimize waste generation and enable the sustainable use and reuse of products and materials. At the local level, look to remove barriers or encourage opportunities that will contribute to the establishment of a circular economy.

- **Promote the first 3 Rs (reduce, reuse and recycle).**

  Elevate the importance of waste prevention by prioritizing programming and provision of services for the first 3 Rs in the 5 R waste management hierarchy, presented in Figure 1-2. Encourage investments in technology and infrastructure, and ensure they occur as high up on the hierarchy as possible.

Figure 1-2: The Pollution Prevention Hierarchy

Source: (BC Ministry of Environment and Climate Change Strategy, n.d.[1])

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- **Maximize beneficial use of waste materials and manage residuals appropriately.**

  Technology, best practices and infrastructure investments should continue to develop to recover any remaining materials and energy from the waste stream, and to manage residuals for disposal.

- **Support polluter and user-pay approaches and manage incentives to maximize behaviour outcomes.**

  Producer and user responsibility for the management of products can be supported through the provision of market-based incentives, disposal restrictions on industry stewarded products, zoning to support collection facilities, and support for reuse and remanufacturing businesses. Education and behaviour change strategies aimed at consumers and businesses will help foster further waste reduction, reuse and recycling. For example, user fees can be managed as incentives to increase waste reduction and diversion.

- **Prevent organics and recyclables from going to the garbage wherever practical.**

  Maintaining a system to prevent organics and recyclables from going into the garbage will provide clean feedstock of greater economic value as well as a potential end product use to the recycling industry, while reinforcing behaviour to reduce, reuse and recycle. Innovation in separation solutions, establishment and enforcement of disposal restrictions or other creative means will influence this approach.

- **Collaborate with other regional districts wherever practical.**

  Collaboration on many aspects of solid waste management (e.g., to access facilities and markets, share campaigns and programs) will support the most efficient and effective overall municipal solid waste system.

- **Develop collaborative partnerships with interested parties to achieve regional targets set in plans.**

  Strengthen partnerships with interested parties to achieve regional targets. All waste and recycling service providers, industry product stewards and waste generators are key interested parties in achieving these targets. Cooperative efforts will optimize successful outcomes. Encourage a marketplace that will complement stewardship programs and drive private sector innovation and investment towards achievement of targets.

- **Level the playing field within regions for private and public solid waste management facilities.**

  Solid waste management facilities within a given region should be subject to similar requirements. A consistent set of criteria should be used to evaluate the waste management solutions proposed by private sector and by a regional district or municipality

[1] http://www2.gov.bc.ca/gov/content/environment/waste-management/zero-waste

Supporting guiding principles outlined by the CVRD in the 2006 SWMP include:

- Support local industry.
- Engagement with local municipalities.
- Engagement with local First Nations.
- Support extended producer responsibility (EPR) initiatives.
- Use economic instruments for achieving waste diversion.
- Promote sound environmental management practices.

1.3 Provincial Goals and Targets

The Ministry has three targets that are encouraged when regional districts are developing strategies and actions for their SWMPs.

- **75% of BC's Population covered by Organic Waste Disposal Restrictions.** The Ministry set a target to have 75% of the population in BC covered by an organic waste disposal restriction by 2020.
- **75% Recovery of Materials Covered by Extended Producer Responsibility Programs.** Through the Recycling Regulation, the Ministry oversees an EPR program that sets 75% recovery targets for products covered through the program (e.g., beverage containers, packaging and printed paper, electronics, and other items).
- **Provincial Disposal Rate of 350 kg per capita, per year.** The Ministry has set a target to reduce the annual per person disposal rate from 550 kg per capita to 350 kg per capita over the next 10 years, by 2028, through a phased approach. Phasing implementation will optimize existing and implement new waste reduction and diversion programs with the capacity to reduce disposal per capita.

1.4 The Plan Update Process

The process that will be used to review and update the CVRD SWMP is presented in Figure 1-3, along with proposed public consultation steps.

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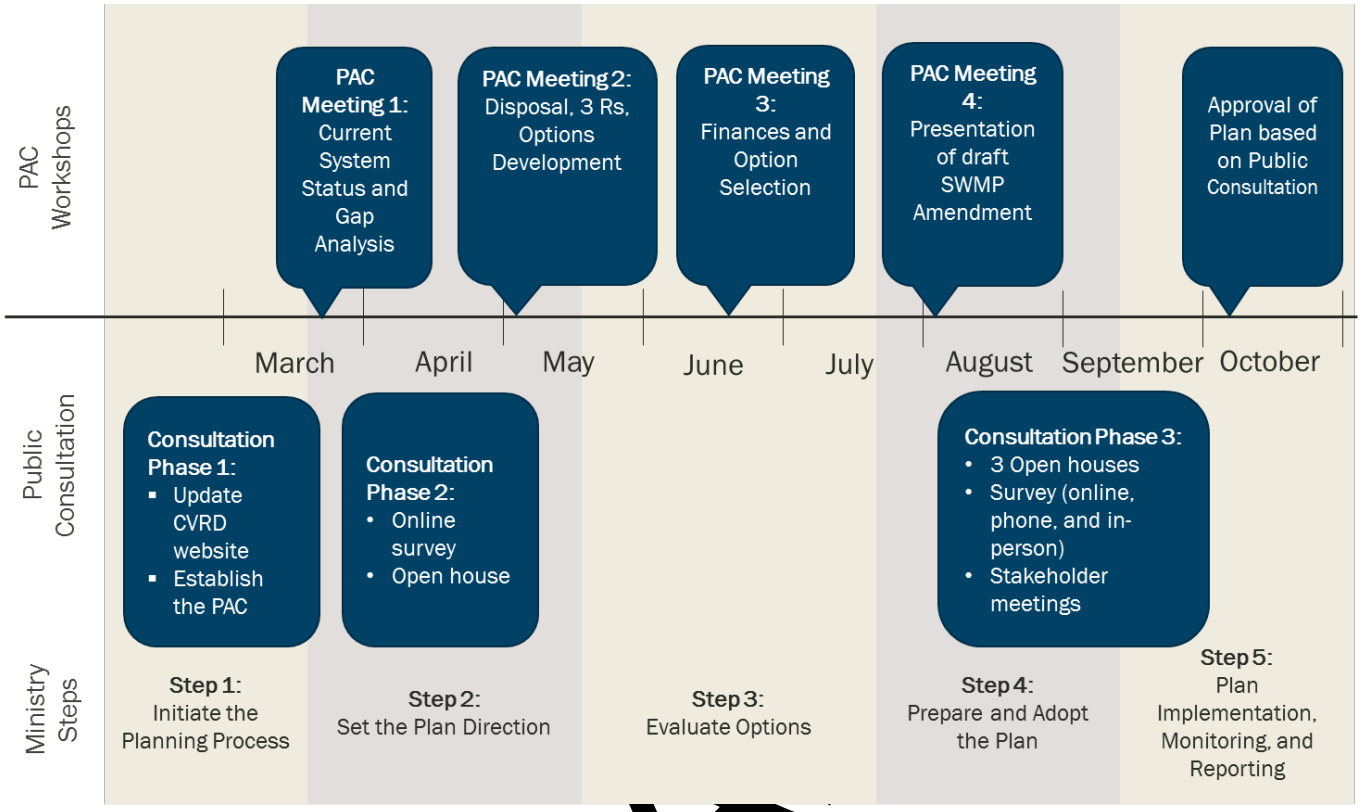

Figure 1-3: Steps of SWMP Update

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As outlined in Figure 1-3, the steps outlined in the Ministry's Guide will be applied to the SWMP update process in the CVRD as follows:

1. During the first step, the CVRD updated their website with information about the SWMP Update and established a plan advisory committee (PAC). This step occurred in early February and March 2018.
2. During the second step, the PAC will convene and be presented with Current Solid Waste Management Overview (this document). An online survey will be posted and an open house will be held to educate the broader public about the SWMP Update process and the CVRD's solid waste management system.
3. During the third step, two PAC meetings will be held to discuss options for focus in the CVRD SWMP Update.
4. During the fourth step, the draft SWMP Amendment will be prepared and presented at a fourth PAC Meeting. Input will be gathered from the broader public via three open houses and a survey.
5. A fifth PAC meeting may be held to discuss amendments to the draft SWMP Update after public consultation. Finally, the 2018 SWMP Update for submission to the Ministry for approval.

This process is expected to consist of four or five PAC Meetings. A report will be prepared for each PAC Meeting to assist the PAC with their deliberations.

Table 1-1: PAC Meetings in SWMP Amendment Process

	PAC Meeting Topic	Corresponding Prepared Document
1	Current System Status and Gap Analysis	Technical Memorandum (this document)
2	Disposal, 3Rs, Options Development	Technical Memorandum
3	Finances and Option Selection	Technical Memorandum
4	Presentation of draft SWMP amendment and Consultation Plan	Draft SWMP Amendment
5	Approval of Plan based on Public Consultation (to be confirmed)	SWMP Amendment

Stakeholder and community consultation will take place throughout the SWMP update process to engage the public, key stakeholders, and First Nations to provide input on the selected options in the draft SWMP. The consultation plan will take place in three phases, as presented in Table 1-2.

Table 1-2: Consultation Plan

Phase	Timeline	Tasks
1	Before first PAC meeting	▪ Post information about CVRD SWMP Update on website ▪ Establish the PAC
2	Between first and second PAC meeting	▪ Online survey to gauge public support and priorities ▪ Open house to advise planning process and gauge public perception
3	After development of draft SWMP	▪ Open houses to review initiatives being considered ▪ Public feedback through survey (online, phone, and in-person) ▪ Stakeholder meetings

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2.0 BACKGROUND

This section discusses the historical and current state of solid waste management in the CVRD.

2.1 Plan History

The first SWMP was submitted to the Ministry in November 1995. Since then, the SWMP has undergone three major amendments which took place in 1997, 2002, and 2006. A five-year review of the 2006 SWMP was completed in 2011, and it found that no major changes in direction were required. The majority of initiatives identified within the current SWMP are complete or have been incorporated into the CVRD's day-to-day operations as ongoing items.

Table 2-1 presents the highlights of these initiatives. Appendix B presents all options identified in the plan and implementation progress at the time of writing.

Table 2-1: Highlights of 2006 SWMP Initiatives

Planned Initiative Group	Highlights
Regulation of Solid Waste Management System	▪ Adopted and implemented CVRD Bylaw No. 2020 and Bylaw No. 3716 – Prohibits open burning of land clearing debris and restricts backyard burning of yard waste ▪ Continued implementation of CVRD Bylaw No. 2570 – Issuance and enforcement for licensing of solid waste facilities
Waste Reduction	▪ Published the Environmental Guide and Recycling Directory online ▪ Published an environmental education manual for students
Reuse	▪ Promotion of opportunities for reuse and repair ▪ Implemented 'Free Stores' at Bings Creek and Peerless Road
Recycle	▪ Focused efforts to optimize participation in curbside recycling programs ▪ Phased out the Multi-Product Neighbourhood Recycling Bin Program ▪ Emphasized the existing material ban provisions of CVRD Bylaw No. 2108 to encourage local businesses to make use of recycling opportunities (ongoing) ▪ Developed a dedicated Food Waste Tipping and Transfer Area at Bings Creek ▪ Evaluated feasibility for the provision of on-site processing at Bings Creek ▪ Redeveloped the west side of the residential tipping area at Bings Creek ▪ Promoted unlicensed private waste management facilities to residents ▪ Provided enforcement measures against unlicensed facilities ▪ Promotion of non–burning management practices for land-clearing materials ▪ Introduced year-round free tipping of yard and garden waste at CVRD Recycling Centres ▪ Improved tipping and transfer of residential and commercial food waste at Bings Creek
Recovery	▪ Evaluated feasibility for technologies to manage CRD, CVRD & RDN residual waste and evaluation of the technology's potential markets for producing fuel, power, steam or other products
Residual Waste Management	▪ Evaluated feasibility for a residual waste tipping area for residential and small commercial self-haul customers adjacent to the main tipping floor at Bings Creek ▪ Purchased a roll off truck and containers for local materials transfer ▪ Launched an illegal dumping prevention campaign in partnership with the Association of Vancouver Island Coastal Communities (AVICC) ▪ Updated Free Tipping policy to support illegal dumping clean-up

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2.2 Plan Area

The CVRD is one of 27 regional districts in British Columbia. It covers a land area of 3,473.12 km^2 on the east coast of Vancouver Island and includes several Gulf Islands, including Thetis, Kuper, and Valdes. The CVRD is comprised of nine electoral areas and four municipalities: the City of Duncan (Duncan), the Town of Ladysmith (Ladysmith), the Town of Lake Cowichan (Lake Cowichan), and the District of North Cowichan (North Cowichan). The regional district offices are in Duncan. Figure 2-1 is a map of CVRD; Appendix D contains several maps of CVRD with details about the solid waste management system.

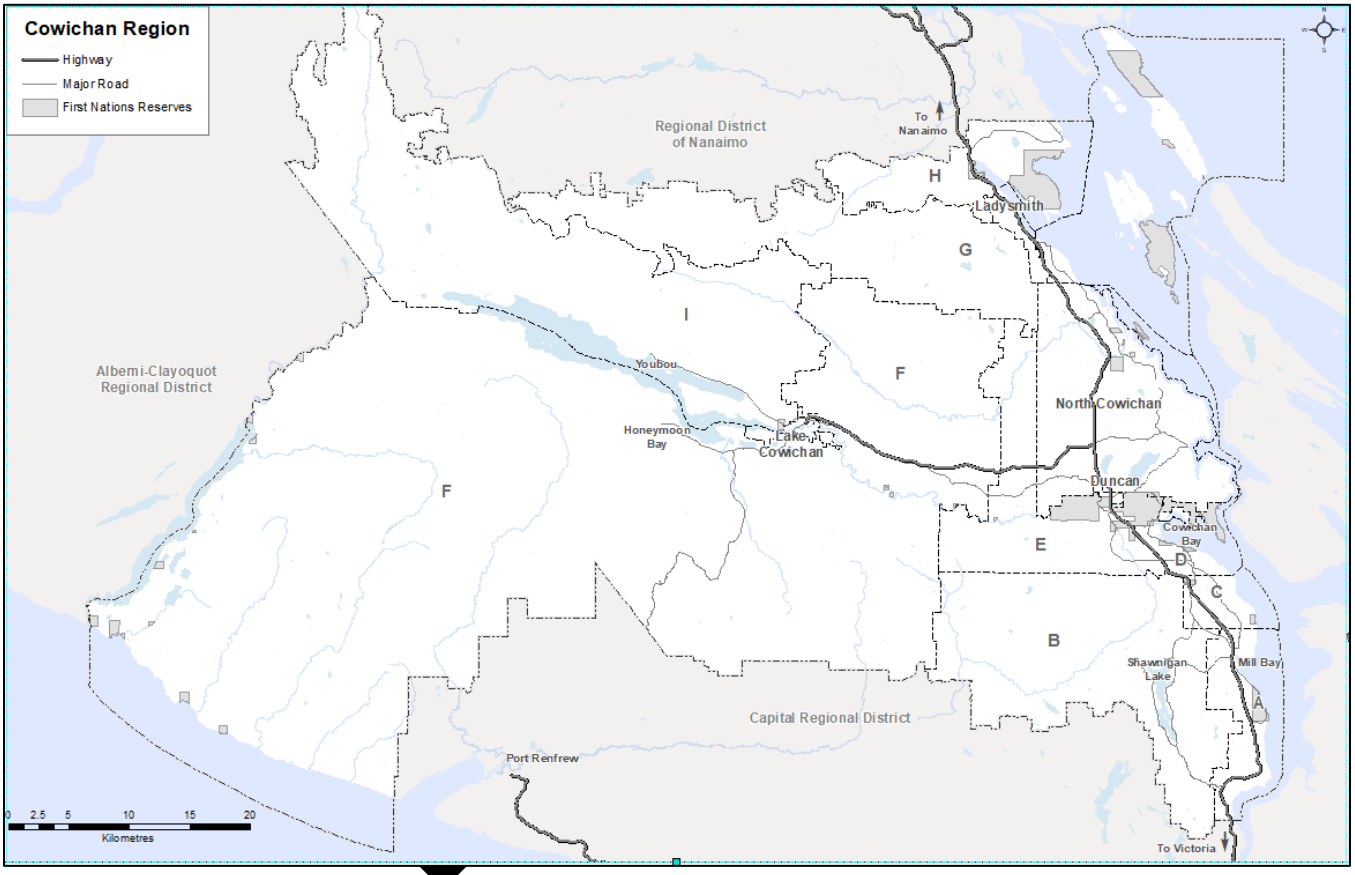

Figure 2-1: Map of Cowichan Valley Regional District

2.3 Demographic Information

The CVRD has a population of 83,739 residents that reside in four unique municipalities, nine Electoral Areas, and 10 First Nations. Of these residents, approximately 55% reside within municipalities, 40% reside in Electoral Areas, and 5% of residents live on First Nations Reserves. The CVRD's largest population centres are North Cowichan (29,676) and Ladysmith (8,537). Demographic information for the CVRD is presented in Table 2-2.

Table 2-2: Regional Demographic Information

Area	Population (2016)	Population Rate of Growth, 2011 - 2016	Population Density per square kilometre	Land Area in square kilometres
CVRD	**83,739**	**4.2%**	**24.1**	**3,474.52**
Electoral Area A	4,733	7.7%	96.0	49.31
Electoral Area B	8,558	5.3%	27.9	306.47
Electoral Area C	5,019	4.6%	222.2	22.59
Electoral Area D	3,243	9.2%	207.4	15.64
Electoral Area E	4,121	6.9%	30.6	34.85
Electoral Area F	1,629	-1.2%	0.9	1,792.34
Electoral Area G	2,325	4.7%	7.9	294.65
Electoral Area H	2,446	4.9%	29.4	83.09
Electoral Area I	1,206	8.6%	2.4	505.80
City of Duncan	4,944	0.2%	2,387.1	2.07
District of North Cowichan	29,676	3.0%	151.7	195.56
Town of Lake Cowichan	3,226	8.5%	389.3	8.29
Town of Ladysmith	8,537	7.8%	711.9	11.99
First Nations Reserves[2]	4,076	-	-	-

[1] Statistics Canada. 2017. Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released October 25, 2017.

[2]Detailed data is not provided as the communities are excluded from the Plan Area.

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The average population density in the CVRD is 24.1 persons per square kilometre, however, this varies greatly between communities. Duncan has the highest population density at 2,387.1 persons per square kilometre. Most CVRD residents live on the eastern side of the region along the TransCanada Highway. The regional population density is illustrated in Map [illegible] in Appendix [illegible].

Between 2011 and 2016, the regional population growth rate was 4.2%, which is lower than the provincial population growth rate of 5.6%. Electoral Area [illegible] (Cowichan Bay) and Lake Cowichan saw the greatest population growth from 2011 to 2016, at 9.2% and 8.5%, respectively.

Approximately 10% of residences in the CVRD are multi-family (MF) residences, most of which are in North Cowichan and Duncan. The average household size in the region is 2.3 persons per household.

2.3.1 Economic Information

Income distribution in the CVRD is similar to the province as a whole with proportionally less low-income individuals than average and more higher income individuals than average, as presented in Figure 2-2.

Figure 2-2: Individual Income for CVRD and BC

The median after-tax income of households in the CVRD in 2015 was $57,783. Median household incomes are highest in Electoral Areas A, B and C, averaging $68,1[illegible] in 2015, as presented in Figure 2-3. Median after-tax household incomes in 2015 were lowest in Electoral Area I and in Duncan.

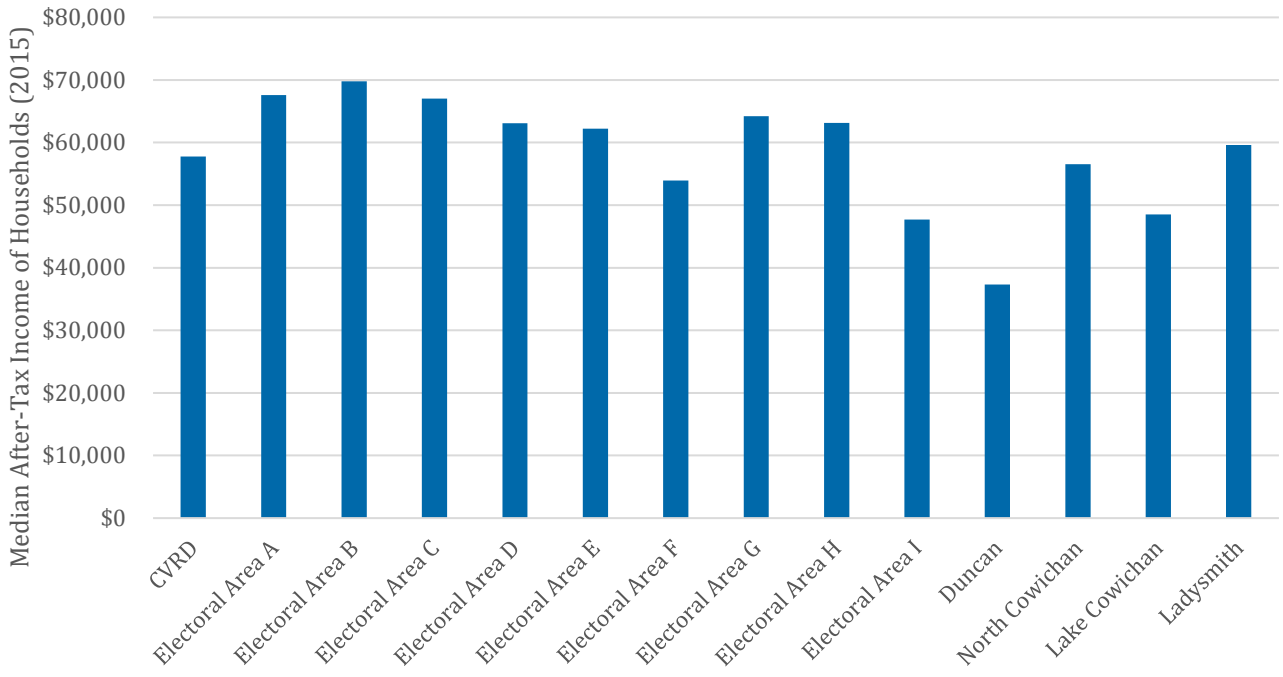

Figure 2-3: Household Income

2.3.2 First Nations

The CVRD encompasses traditional territories of 10 First Nations in 16 Indian Reserves in the Coast Salish and Nuu-Chah-nulth tribal regions. Although not part of the plan area, First Nations communities rely on regional solid waste services and infrastructure including waste transfer stations and Recycling Centres. The CVRD maintains Municipal Type Service Agreements (MTSAs) with some local First Nations for use of this infrastructure, while other First Nations communities use the services on an informal basis. Two closed landfill sites are located on Cowichan Tribes Reserve lands.

2.4 System Data

This section provides general data associated with the performance of the existing system, including the quantity and types of waste disposed. 2016 data is used as it is the most recently available data.

2.4.1 Disposal and Recycling Data

In 2016, an estimated 30,100 tonnes of waste were disposed from within the region, which amounts to a disposal rate of 359 kg per capita. The total amount of materials recycled (including organic materials) was approximately 44,000 tonnes, which amounts to a recycling rate of 525 kg per capita. Figure 2-4 presents the historical disposal and recycling rates for the region. These quantities represent amounts which are disposed at public and licensed private facilities in CVRD, and include material received from First Nation communities[2]. Preliminary reports suggest that 2017 regional waste tonnages will be similar to 2016; recycling data for 2017 is not yet available.

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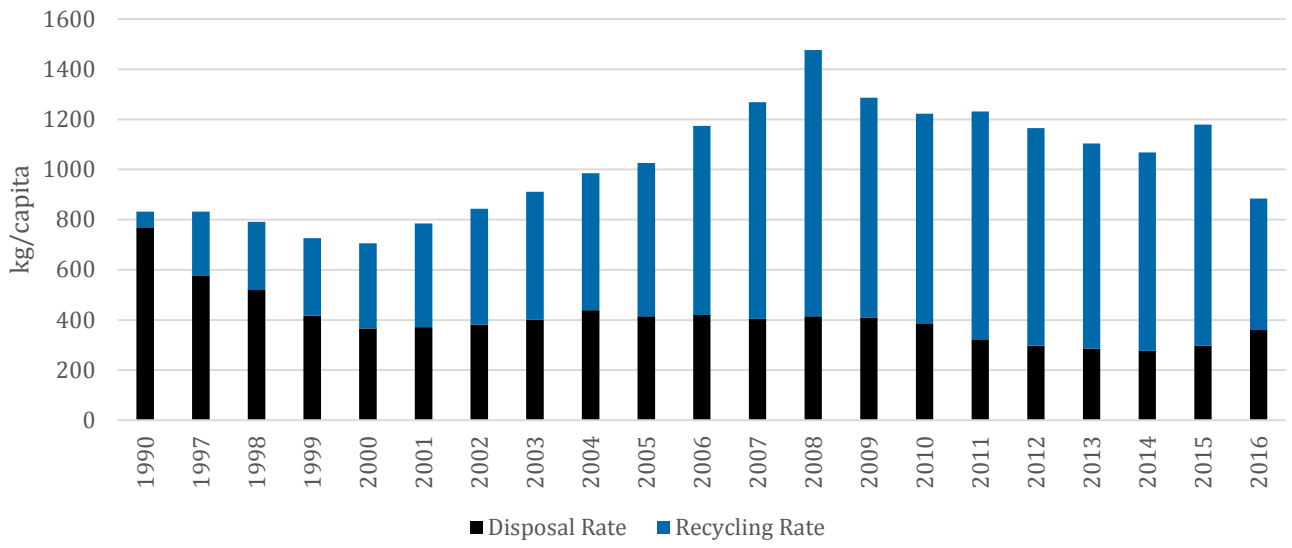

Figure 2-4: Per-Capita Disposal and Recycling Rate[1]

Notes:
1. Fluctuations in recycling quantities reflect changes in reporting methodology related to external factors

[2] Material delivered to the CVRD Bings Creek from First Nation's communities in 2017 included 987 tonnes of waste and 87 tonnes of recyclables (PPP, organics, and other items).

The waste quantities presented in Figure 2-4 represents waste generated by several sectors:

- Single-family (SF) and Multi-family (MF) residential;
- Industrial, commercial, and institutional (ICI);
- Drop-off; and
- Construction and demolition (C&D).

Most materials disposed in the CVRD are taken at public facilities (22,000 tonnes). At the CVRD facilities, the ICI sector disposes the most materials (7,300 tonnes), followed by the C&D sector (5,300 tonnes) and the SF sector (4,100 tonnes). Table 2-3 summarizes the amount of waste disposed by each sector at CVRD facilities in 2016.

The remaining approximately 7,000 tonnes that are disposed at private facilities and receive a combination of MF, ICI, and C&D waste.

Table 2-3: Tonnes by Sector (2016) from Public Facilities

Sector	Percent of Total Disposed Materials[1]	Quantity of Disposed Materials (tonnes)
Single-Family	24%	4,100
Multi-Family	6%	1,700
Industrial, Commercial, and Institutional	41%	7,300
Drop-off	13%	3,600
Construction and Demolition	15%	5,300
Total Disposal Rate	**100%**	**22,000**

[1]2017 CVRD Waste Composition Study, Tetra Tech 2017

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The CVRD has one of the lowest disposal rates in the province and is well below the average provincial disposal rate of 498 kg per capita. Figure 2-5 presents the 2015 disposal rates for all Regional Districts (RDs) in BC, as well as the average provincial disposal rate. [3]RDs highlighted in green represent neighbouring RDs with similarities to CVRD. In 2016, the CVRD disposal rate increased to 35[illegible]kg per capita.

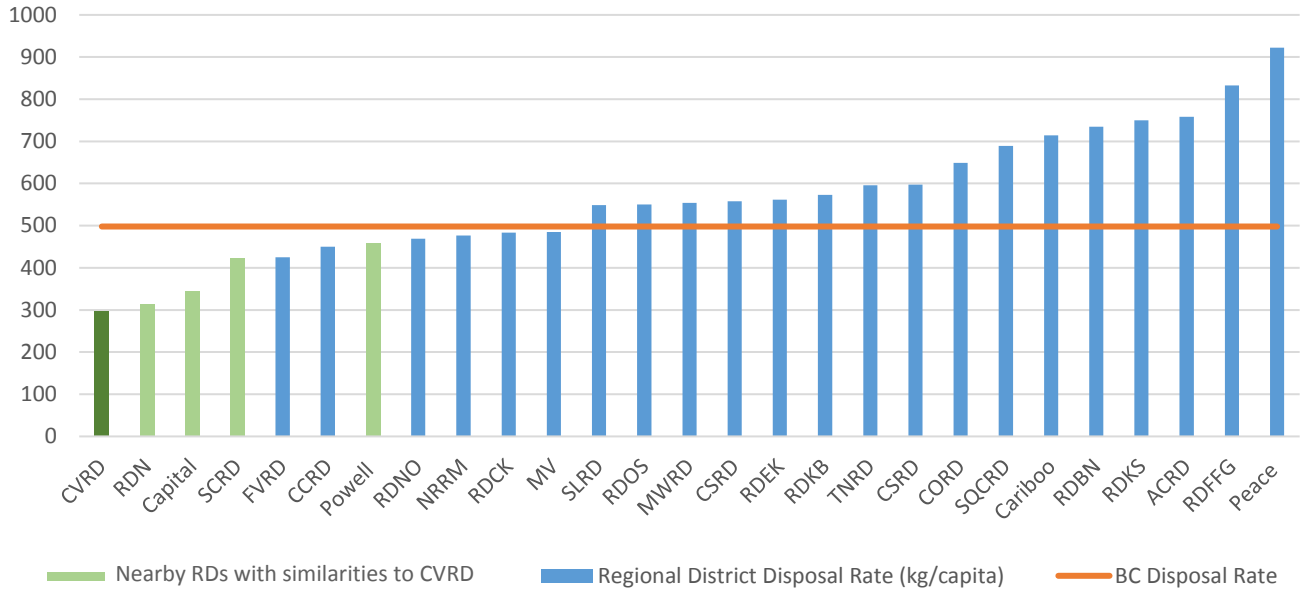

Figure 2-5: 2015[1] Disposal Rate by Regional District

Notes: [1.] 2015 data is the most recent disposal data available for all RDs from the Ministry.

[3] The most recent disposal rates available from the Ministry were measured in 2015.

2.4.1.1 Waste Leakage

It is difficult to quantify the amount of waste that bypasses the CVRD system; that is, MF, ICI, or C&D waste that is shipped directly to out-of-region transfer stations or landfills. Loss of waste to private transfer stations that ship to out-of-region landfills is influenced by operational efficiencies and economic factors including the CVRD waste tipping fee and the US exchange rate. Figure 2-6 presents the total waste disposed through the CVRD's waste management system from 2012 to 2017. Reductions between 2013 and 2015, and again in 2017, correspond with a decline in visits by some major commercial haulers.

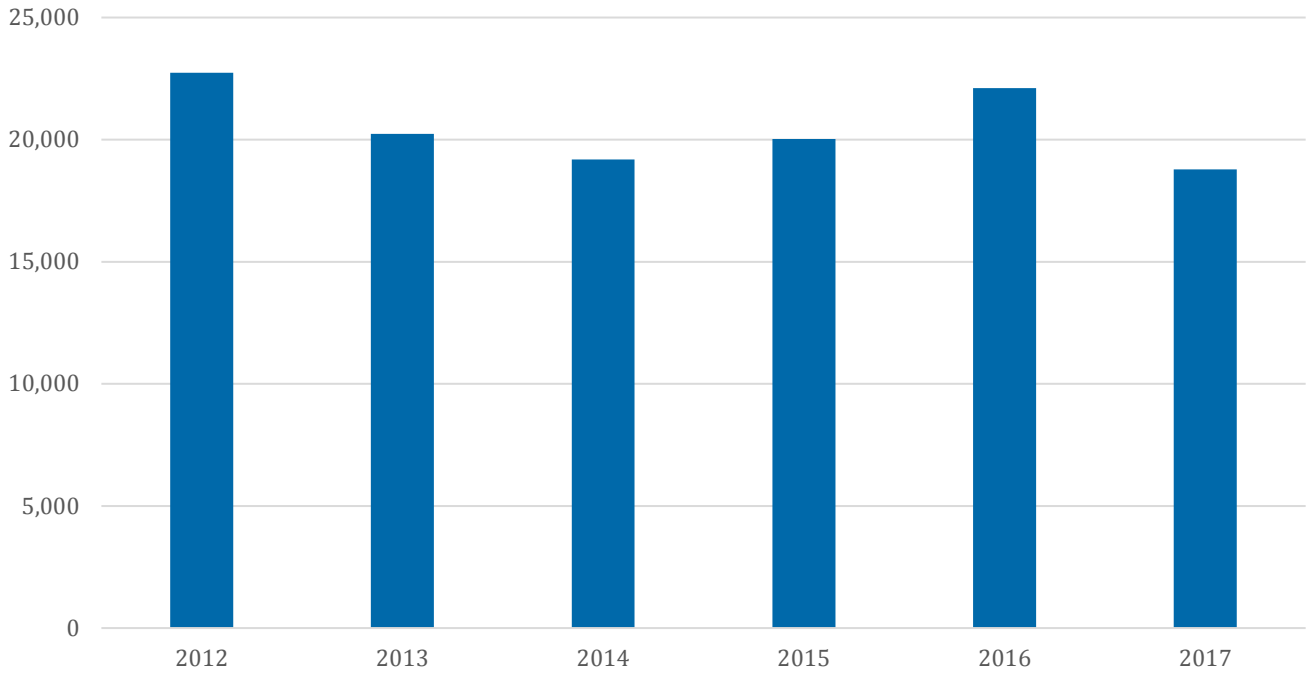

Figure 2-6: Public Waste Management System Tonnages, 2012 - 2017

2.4.1.2 Carbon Neutral Operations

The CVRD is a signatory with Climate Action Charter and has been committed to carbon neutral operations since 2012. The carbon offset credits, which CVRD has obtained voluntarily, are presented in Table 2-4. Most of these offset credits have been generated from yard and garden waste diversion programs.

Table 2-4: Carbon Offset Credits

Year	Voluntary Carbon Offsets (tonnes CO_2 equivalent)
2012	610
2013	449
2014	1,792
2015	1,606
2016	1,391

2.4.2 Waste Composition

In 2017, the CVRD conducted a waste composition study to determine what types of recoverable materials were still in the waste stream. The composition was calculated for each sector, and the overall average for the CVRD was calculated.

Figure 2-7 presents the overall waste composition for the CVRD. The largest component of the waste disposed was compostable organics (24.4%), followed by plastics (17.2%), and paper (11.1%).

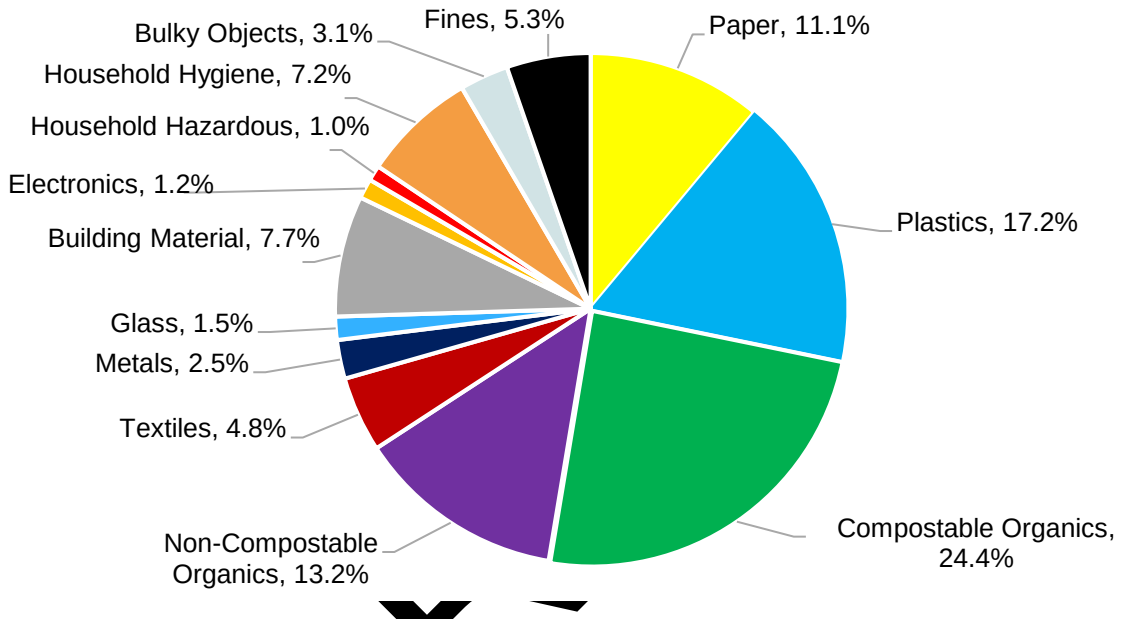

Figure 2-7: Overall Waste Composition – All Sectors

Figure 2-8 presents the waste composition by sector. This figure presents the primary waste composition categories. Most of the paper, plastic, metal, and organic materials are easily recyclable. This illustrates that there are still many recoverable materials in the waste stream.

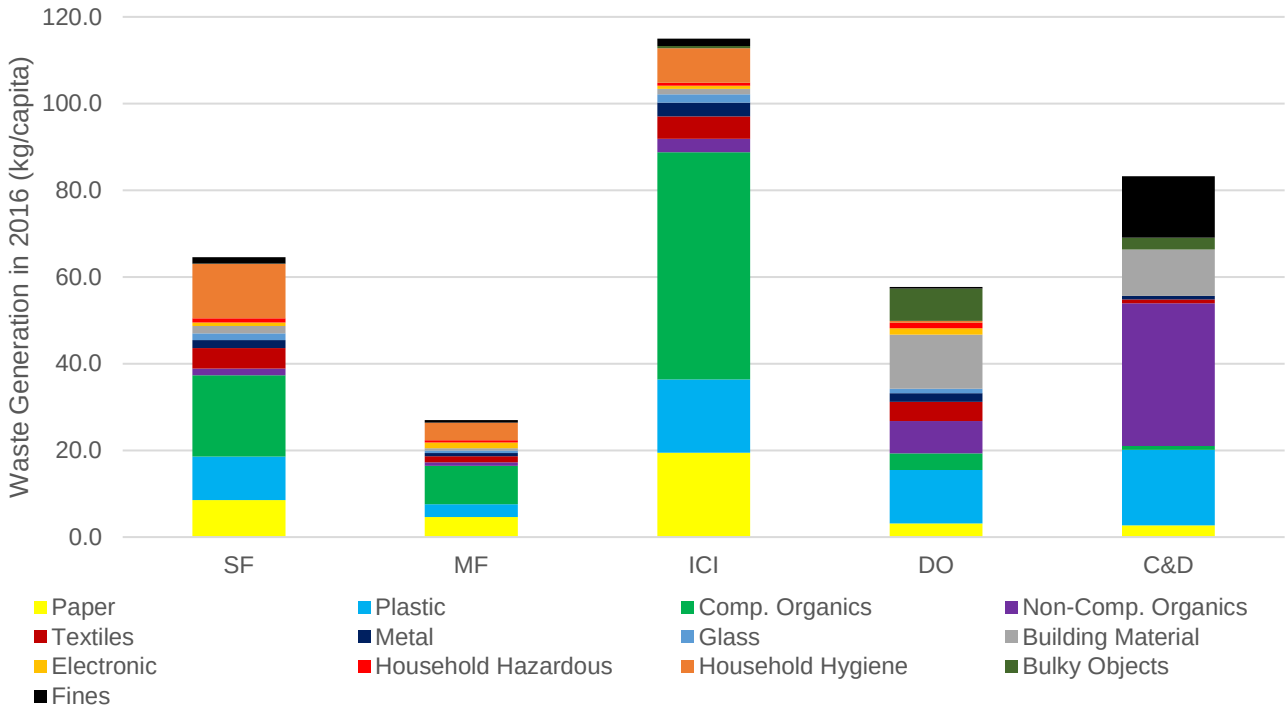

Figure 2-8: Waste Composition and Disposal by Sector

Details of the waste composition study are presented in Appendix E. Results for each sector will be noted as relevant throughout this report.

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2.5 Facility and Services Summary

This section describes the facilities and services in the region and discusses the flow of waste throughout and around the CVRD. A map of all facilities in the CVRD is presented in Appendix D.

Figure 2-5 represents the major waste management facilities in the CVRD and indicates their type, location, and their ownership model. These facilities, as well as smaller recycling facilities in the CVRD, will be discussed in more detail in this section. All waste management facilities in the CVRD are shown in Map 4 in Appendix D.

Table 2-5: Overview of Major CVRD Facilities

Facility Name	Facility Type	Location(s)	Ownership Model
Bings Creek Recycling Centre & Garbage Drop-Off Depot	Transfer Station and Drop-off Depot	Duncan	Public
Meade Creek Recycling Centre & Garbage Drop-Off Depot	Drop-off Depot	Lake Cowichan	Public
Peerless Road Recycling Centre & Garbage Drop-Off Depot	Drop-off Depot	Ladysmith	Public
Coast Environmental	Transfer Station, Drop-off Depot, Organics Processor	Duncan and Chemainus	Private
Fisher Road Recycling	Transfer Station and Drop-off Depot, Organics Processor	Cobble Hill	Private

2.5.1 Summary of Waste Flow

It is important to understand waste flows to understand the impacts of any proposed changes to the solid waste management system. Figure 2-9 summarizes typical waste flow. A detailed diagram presenting waste flow within the CVRD is presented in Appendix F.

Figure 2-9: Typical Solid Waste Management Flow Diagram

Waste flow in the CVRD can be summarized as follows:

- Most SF residential waste is hauled to Bings Creek (except curbside waste collected through subscription services in Electoral Areas A, B, and C, which is hauled to Fisher Road Recycling, and Area H garbage which is hauled to the Peerless Road Recycling Centre);
- MF garbage is hauled to the Bings Creek Transfer Station or a private transfer station;
- ICI garbage may be hauled to a private transfer station, Bings Creek Transfer Station, or directly to an out-of-region landfill; and
- C&D material may be hauled to a private transfer station within the CVRD or it may be hauled directly to a landfill outside of the CVRD.

2.5.2 Collection Operations

Three types of waste collection exist in the CVRD:

- Public collection, or publicly contracted collection;
- Private collection; and
- Self-haul by residents or small businesses to drop-off depots.

2.5.2.1 Residential Curbside Waste Collection

Residential waste includes waste from single family and multi-family residences. In this report, single-family residences refers to all single family homes and multi-family buildings with four or less units. Multi-family residences refer to all multi-family buildings with five or more units.

Table 2-6 summarizes the curbside collection service levels for garbage, recycling, and organics in the CVRD. Cells highlighted in red indicate that there is no collection available; cells highlighted in orange indicate that service is available from a private hauler but not mandatory for residents to participate. Map 3 in Appendix D illustrates the geographical boundaries of curbside collection services delivered by municipalities and the CVRD.

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Table 2-6: Curbside Collection Levels

Jurisdiction	Single Family						Other Collection
	Garbage		Organics		Recycling		
	Collection Frequency	Collector	Collection Frequency	Collector	Collection Frequency	Collector	Description
City of Duncan	Every-other-week	City of Duncan	Weekly	City of Duncan	Every-other-week	City of Duncan	Weekly glass and yard waste collection for single family residences.
District of North Cowichan	Every-other-week	District of North Cowichan	Weekly	District of North Cowichan	Every-other-week	Contractor	None
Town of Lake Cowichan	Every-other-week	Town of Lake Cowichan	Weekly	Town of Lake Cowichan	Every-other-week	Contractor	Garbage, recycling, and organics collection offered to all multi-family buildings and commercial businesses.
Town of Ladysmith	Every-other-week	Town of Ladysmith	Weekly	Contractor	Every-other-week	Contractor	None
Electoral Areas A, B, C, some parts of Area D	Subscription (varies)	Private Collector	Subscription (varies)	Private Collector	Every-other-week	CVRD	None
Electoral Areas D, E, F[1], G, H and I[1]	Every-other-week	CVRD	None	N/A	Every-other-week	CVRD	None

[1]Areas F and I receive weekly service June 15 to October 15

Single Family Garbage

All municipalities provide every-other-week curbside garbage collection to their residents.

There are varied service levels of curbside garbage collection in the Electoral Areas. Approximately 5,300 households receive curbside garbage collection from the CVRD. The CVRD provides every-other-week garbage collection in Areas D, E, and G. Areas F and I receive weekly garbage collection during the summer months from the CVRD (to reduce wildlife conflicts), and bi-weekly service for the remainder of the year. Participation rates (i.e. the number of homes that set out containers for collection) are approximately 74%, and per-home collection quantities average approximately 12 kg per collection. Areas A, B, C, and H have no mandatory garbage collection service, but residents in these areas can access a private hauler and subscribe to a garbage collection service.

First Nation councils in Cowichan, Penelakut, Ditidaht, Stz'uminus and Halalt First Nation communities, provide curbside garbage collection to members.

Single Family Recycling

Participation in curbside recycling is mandatory in the CVRD and curbside recycling collection is provided throughout the region to all SF residences.

Municipalities provide curbside recycling collection services to their residents.

The CVRD provides curbside recycling services to all Electoral Areas (approximately 12,600 homes). Participation rates in the CVRD's curbside recycling program range from an average of 58% in the winter to 66% in the summer.

All member municipalities within the region are registered as collectors with RecycleBC, the provincial EPR steward for paper and printed packaging[4]. Cowichan Tribes is the only First Nation within the region registered as a collector offering residential PPP collection at curbside. The Stz'uminus First Nation website states that curbside recycling collection is offered to members.

Single Family Organics

Within municipalities, participation in curbside organics programs is mandatory and weekly collection services are offered.

Participation in curbside organics collection programs is not mandatory in Electoral Areas and curbside organics service is not consistently available. Currently, there is no organics collection service available in Electoral Areas E, F G, H or I. Residents in Electoral Areas A, B, C, and some parts of Area D, can access organics collection on a subscription basis from a private hauler.

Backyard composting, in addition to participation in curbside organics collection programs, is encouraged to support organics diversion.

2.5.2.2 Multi-Family Collection

In general, in the CVRD (except in Lake Cowichan), MF buildings with more than four units are not serviced under public sector collection programs and must instead rely on the private sector for service. Service varies widely

[4] EPR is a provincial policy tool that is intended to create an incentive for producers to include environmental considerations in design of products. In 2014, a new EPR program for packaging and printed paper (PPP) was introduced in BC, resulting in financial changes to curbside recycling collection programs, as RecycleBC (formerly Multi-Material BC) assumed responsibility for management of PPP collection and processing.

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between buildings. Some are underserved with no mixed recycling collection, no access to the provincially mandated EPR program for PPP, and no organics collection.

2.5.2.3 Industrial, Commercial, and Institutional Collection

Except in Lake Cowichan, the ICI sector within the CVRD is serviced by the private sector for garbage and recycling. Services vary widely, from three-stream collection (garbage, recycling, and organics) to garbage only. Small-volume commercial generators may choose to self-haul garbage and recyclable materials to depots. Public and private depots can accommodate small quantities of commercial material for most recycling programs. Public depots also offer separate collection for small quantities of plastic and film plastic packaging from commercial generators.

Lake Cowichan's municipal curbside collection program for garbage, recycling and organics is offered to all businesses within the Town's boundaries. Service is not mandatory and businesses have the option to obtain private service instead.

2.5.2.4 Depot Collection

Materials not collected by curbside programs are typically delivered to recycling drop-off depots. Several types of residents may use these depots:

- Residents who do not receive curbside garbage collection (may include residents in Electoral Areas A, B, C and H);
- Residents who occasionally produce more garbage than they can dispose of at curbside; and
- Residents who wish to recycle materials that are not accepted in their curbside recycling program.

Public Depots

The CVRD operates a network of public recycling and garbage drop-off depots (Recycling Centres) that service communities in the central, north and western parts of the region:

- Bings Creek Recycling Centre & Garbage Drop-Off Depot (Bings Creek) in Duncan;
- Peerless Road Recycling Centre & Garbage Drop-Off Depot (Peerless Road) in Ladysmith; and
- Meade Creek Recycling Centre & Garbage Drop-Off Depot (Meade Creek) in Lake Cowichan.

The Recycling Centres at these facilities provide extensive recycling opportunities for residential customers, with more than 650 individual products accepted, many at no charge. All CVRD Recycling Centres also accept self-hauled garbage for disposal. Fisher Road Recycling and Coast Environmental (both Chemainus and Duncan locations) also accept self-hauled residential garbage. The locations at which all recyclable materials in the CVRD are accepted are presented in Appendix C.

Private Depots

The CVRD licenses private garbage and recycling facilities under Bylaw No. 2570. The CVRD is one of three RDs in the Province that license private facilities.

There are currently seven private facilities licenced by the CVRD to accept municipal solid waste (MSW) and recyclable materials (including organics), within the region.

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The southern Electoral Areas (A, B, and C) are served exclusively by private facilities. The CVRD tried to site a depot in Area B in 2011 but was unsuccessful. In lieu of public service, the CVRD partners with private sector depots to offer free drop-off for packaging and printed paper and yard waste for south end residents.

2.5.3 Transfer Stations

There is one large public transfer station in the region: the CVRD-owned and -operated Bings Creek Recycling Centre & Garbage Drop-Off Depot. It is a centralized public transfer station for materials collected throughout the region hauled by municipalities, the CVRD, and materials collected from CVRD Recycling Centres (as described in 2.5.1). Public and private haulers deliver waste in self-tipping vehicles to Bings Creek, where it is loaded into rail containers for shipment to an out-of-region landfill, via truck, barge and rail.

Two private licensed transfer facilities exist in the CVRD. Fisher Road Recycling receives privately-hauled garbage, recyclables, and organics, including materials collected in subscription-based curbside collection programs from Electoral Areas A, B and C. Coast Environmental (with locations in Duncan and Chemainus) is a transfer facility for commercial and residential garbage and C&D materials. Both Fisher Road and the Chemainus location of Coast Environmental have on-site composting facilities. These licenced facilities are required to annually report the quantity of garbage and other materials disposed and diverted.

Recycling

Large quantities of residential recycling are collected for transfer at Bings Creek, but there are no in-region transfer or processing options for large volumes of ICI recyclables (e.g. mixed paper, cardboard, tin, plastics etc.). These materials are not accepted at Bings Creek because existing infrastructure is dedicated to the PPP EPR program, which is for residential materials only. Instead, single-stream ICI materials are hauled directly to materials recovery facilities (MRF) in either Nanaimo or Victoria.

Organics

Organic food waste from residential and ICI sources is accepted at the Bings Creek Transfer Station, where it is consolidated with residential food waste from municipalities and shipped to a private facility for processing. ICI food waste can also be hauled directly to any private licenced composting facility.

Residential and commercial yard waste is accepted at Central Landscape in Cobble Hill, a private composting facility contracted by the CVRD to receive and compost yard waste. ICI yard waste can also be delivered directly to Fisher Road Recycling or Coast Environmental.

2.5.4 Processing

All processors of organics and recyclable materials in the CVRD are summarized in Table 2-7. For recyclable materials, processors are facilities that sort and sell (or use) recycled materials. Organics processors are facilities that recover nutrients from waste organic materials through composting or another process (for example, anaerobic digestion).

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Table 2-7: Processors of Recyclable and Organic Materials in the CVRD

Facility	Location	Recyclable Materials Processed	Organic Materials Processed
Fisher Road Recycling	Cobble Hill	Mattresses, couches and armchairs, clean wood waste, drywall, asphalt roofing shingles, metal, rubble, packaging and printed paper (PPP)	Food and yard waste
Coast Environmental	Chemainus and Duncan	Clean wood waste, cardboard, drywall, asphalt roofing shingles, rubble, metal	Food and yard waste
Stone Pacific Contracting	Duncan	Rubble	None
Central Landscape Supplies	Cobble Hill	None	Yard waste
Cowichan Biodiesel Coop	Duncan	None	Waste vegetable oil
Hillside Stone & Garden	Duncan	None	Yard waste
Schnitzer Steel	North Oyster	Metals	None

As noted above, there are no processors for comingled recyclables in the CVRD; these materials are transported to a MRF in either Nanaimo or Victoria.

2.5.5 Landfills

There are no landfills in the CVRD. Waste destined for disposal is exported to an out-of-region landfill, currently the Roosevelt Regional Landfill in Washington State, USA. In 2016, the CVRD shipped approximately 22.000 tonnes of waste to this landfill. Some of the private sector transfer stations also ship waste to the Roosevelt Regional Landfill.

The CVRD maintains a contingency disposal agreement with the Regional District of Nanaimo (RDN), in the event export to the Roosevelt Landfill is temporarily disrupted. Invasive plants collected at CVRD Recycling Centres are also transferred to the RDN landfill for disposal.

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3.0 CURRENT SOLID WASTE SYSTEM

Figure 3-1 outlines the key components of CVRD's solid waste management system, including waste prevention, waste generation, collection, recycling and disposal. This section of the report describes the associated services, programs, infrastructure and policies that are associated with these system components.

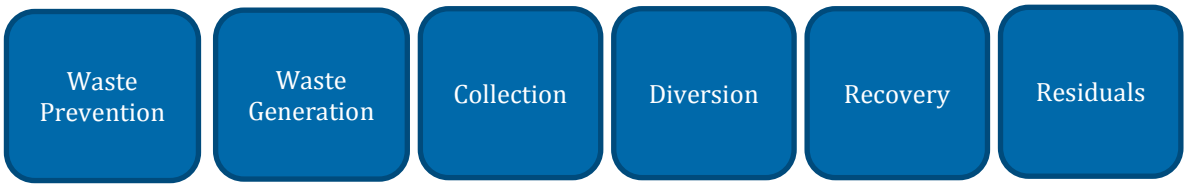

Figure 3-1: Components of the Waste Management System

3.1 Waste Prevention

Waste prevention includes initiatives to improve waste management that fall into the top 2 Rs of the pollution prevention hierarchy: reduction and reuse. These initiatives are an essential component of the CVRD waste management system. Additionally, this section includes initiatives which are intended to educate the public about the entire waste prevention hierarchy.

3.1.1 Waste Reduction

Cowichan Recyclopedia

In 2013, the CVRD Environmental Guide and Recycling Directory was moved to an online platform and rebranded as the Cowichan Recyclopedia, an interactive online recycling database that provides waste reduction, reuse and recycling tips for hundreds of household items. An interactive mapping feature was added to the Recyclopedia in 2016. The site received 1,085-page views from January 1, 2017 to November 29, 2017. The site is a good platform to promote waste reduction and reuse but would benefit from increased promotion.

Publication of *Earth Issues, Our Lifestyles and the Environment*

In 2005, the CVRD developed *Earth Issues, Our Lifestyles and the Environment*, an environmental education manual targeting grades K to 5. The manual is available on the CVRD website. The school education program has grown significantly and now offers in-classroom presentations region-wide for grades K to 12. The CVRD has partnered with a local non-profit environmental organization to develop and provide classroom education sessions that align with school curriculum guidelines. The program also includes a public outreach component, which includes booths at public markets, festivals and events to provide information on waste reduction, reuse and recycling programs to residents.

Encouraging Reduction in Plastic Bag Use

In 2009, an outreach program was implemented to encourage all grocery stores in the region to reduce the use of single-use plastic bags. Most grocery stores now charge a fee for single-use plastic bags and provide alternatives to single-use plastic bags at checkout.

Garbage Can Limits

Waste reduction is promoted through the use of garbage can limits in all curbside collection programs throughout the CVRD.

Food Waste Reduction

A key waste reduction opportunity within the ICI sector is the recovery of expired, but usable, food waste at grocery stores. It is estimated that 10% of ICI sector waste (over 600 tonnes per year) is donatable food. The Cowichan Green Community, a local non-profit environmental organization, has founded a Food Security Coalition to explore opportunities to reduce food waste within the region.

3.1.2 Reuse

Free Stores

Free stores were introduced in 2006 at CVRD Recycling Centres. Free stores allow residents to divert reusable materials from the waste stream by paying to drop off materials (tipping fees are set at the same rate as garbage tip fees), but picking up items is free. Requiring payment for drop-off covers the cost of managing materials and

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ensures that Free Stores do not compete with local thrift stores. The program has been expanded and Free Stores will be in place at all CVRD Recycling Centres by spring 2018.

Online Sales Platforms

Online sales platforms such as Used Cowichan and Kijiji offer additional local reuse opportunities for household goods, furniture and building materials. There are also several stores operating in the region that exclusively sell repurposed or refurbished furniture, which suggests a strong local resale economy. At this time, other platforms to encourage reuse, such as Repair Cafes, tool libraries, or reclamation of building supplies, have not been established in the region, but there may be opportunities for growth in this area in the future.

ICI Sector Reuse Opportunities

Reuse opportunities within the ICI sector are currently limited. Some opportunities to improve reuse within the ICI sector may include mandatory source-separation for C&D debris. C&D reuse and diversion programs will require coordination with Provincial and local building codes and local Planning departments.

3.2 Diversion

The CVRD has several public and private facilities that collect and process recyclable and organic waste for diversion.

3.2.1 Recycling

There are a range of recycling services available to CVRD residents, although the availability of services varies across the region.

EPR regulation requires producers of the designated products to develop a program for their end-of-life collection and recovery of materials and to consult stakeholders (including local governments) when developing their plans.

3.2.1.1 Residential Recycling

The 2017 waste composition study found that there is a considerable amount of recyclable materials in residential garbage: in SF residential garbage, the largest component was compostable organics (29.0%), followed by household hygiene (19.4%), plastics (11.6%), and paper (13.2%). In MF garbage, the largest component was compostable organics (32.9%), followed by paper (17.1%), household hygiene (14.9%), and plastics (11.0%).

As discussed in Section 2.5.2.1, all SF residences in the CVRD receive curbside recycling collection. Additionally, in Lake Cowichan, MF buildings receive recycling collection service. Outside of Lake Cowichan, consistent collection of recyclables from MF buildings is lacking. The 2017 waste composition study found that a large proportion of the materials in MF garbage is recyclable: paper comprises 17.1% of the waste stream and plastics comprise 11.0% of the waste stream.

The CVRD Recycling Centres (Bings Creek, Peerless Road, and Meade Creek) are managed by the CVRD and have been designed to maximize convenience by providing ‘one-stop-drop’ services. The Recycling Centres at these facilities provide extensive recycling opportunities for residential customers, with more than 650 individual products accepted (including organic materials). The CVRD does not do any in-house processing, instead partnering with the private sector as well as with EPR programs to recycle these materials. Tipping fees, accepted materials, and regulations at these facilities are defined by CVRD Bylaw No. 2108. Most CVRD residents can access one of these depots within 15 minutes driving time, however, there is no public depot in the south end of

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the region. Residents of Electoral Areas A, B and C must use private facilities (which may not offer the same range of drop-off services) or drive for up to 30 minutes to access a public facility.

CVRD residents have benefitted from the recent expansion of EPR programs, including the 2014 launch of the PPP EPR program. The introduction of this program has resulted in several local retailers offering drop-off recycling programs. There are several return-to-retail locations for residential EPR products such as plastic film (e.g. grocery bags), styrofoam and refundable beverage containers. Most large grocery stores within the region offer return programs for these items. The local London Drugs also offers an extensive take-back program for almost all packaging purchased from the store.

3.2.1.2 ICI Recycling

The 2017 regional waste composition study shows that there is room for significant improvement in diversion programs for the ICI sector. It is estimated that ICI waste makes up the largest portion of the regional waste stream at 41%[5]. Of this, 16.9% is paper, and 14.7% is plastics.

Outside of Lake Cowichan, there are no municipal collection programs servicing the ICI sector. Collection and hauling services provided by the private sector tend to vary widely from three-stream collection (organics, waste, recycling) to garbage-only. As discussed in Section 2.5.2, there are no in-region transfer or processing options for large volume ICI generators of single-stream mixed recycling (e.g. mixed paper, cardboard, tin, plastics etc.).

At this time, the only regulatory mechanism to implement source separated collection programs in the ICI sector is landfill bans. A review of CVRD Bylaw No. 2018 is needed to ensure disposal bans continue to reflect diversion goals.

3.2.1.3 C&D Recycling

C&D waste from construction, demolition and renovation projects (C&D waste) consists primarily of wood and, to a lesser extent, roofing materials, drywall, plastic, cardboard, metal, concrete and other building materials. There are three facilities in the CVRD that recycle C&D waste: Coast Environmental with locations in Chemainus and Duncan, Fisher Road Recycling in Cobble Hill, and Stone Pacific Contracting in Duncan.

During the 2017 waste composition study the contents of post-processing C&D materials were analyzed. This material is what remains after recyclable materials have been removed by the processing facility. The largest component of the garbage was non-compostable organics (e.g. treated wood) (39.5%), plastics (20.9%), and building materials (12.8%). Non-compostable organics largely consisted of contaminated wood (37.3%) with some rubber (2.2%). Plastics mostly comprised durable plastic products (20.0%). All of the types of materials above currently tend to be difficult or not economically viable to recycle. These materials may be suitable to be used as a process engineered fuel.

3.2.1.4 Hazardous Waste Recycling

The CVRD partners with Provincial EPR programs for collection and recycling of several household hazardous materials including flammable liquids, solvents, oil, gasoline, polychlorinated biphenyl (PCB) ballasts, and mercury-containing thermostats. All household hazardous materials accepted under EPR programs can be dropped off for free at all CVRD Recycling Centres. Large volumes of material covered under EPR programs can often be managed by contacting stewardship agencies directly. Large volumes of non-EPR material can be shipped directly to out-of-region processors. Asbestos-containing materials are not accepted at CVRD Recycling Centres but can be taken

[5]Association of Vancouver Island Coastal Communities (AVICC) Solid Waste Technical Group – Solid Waste Research Data Update, 2017

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to Coast Environmental (Duncan location), or directly to the RDN's Cedar Road landfill, under a service agreement with the CVRD.

Overall, the 2017 waste composition found that the waste in the region was 1.0% hazardous waste. This material came mostly from the single-family, multi-family, and drop-off waste.

3.2.1.5 In-Region Processing

There are a variety of processors of recyclable materials in the region. The region is able to offer recycling programs for many non-EPR materials due to a strong local recycling industry. This industry has developed due to a combination of factors, including historically high garbage disposal costs (due to shipping rates), proximity to major population centres, good transportation infrastructure, availability of land, and political support for waste diversion. Publicly funded recycling programs and landfill bans have generated a steady supply of feedstock, which, in turn, supports investment in processing facilities.

The in-region processing of recyclable materials is presented in Table 3-1.

Table 3-1: In-Region Processing of Recyclable Materials

Material	In-Region Processing Location	Notes
Mixed Recycling	None (shipped out of CVRD)	In 2006, curbside recyclables were delivered to the Vancouver Island Recycling Centre located on Koksilah Road near Duncan BC. The site was purchased by BFI Inc (now Waste Connections of Canada), and has subsequently closed.
Mattresses, Couches, and Armchairs	Fisher Road Recycling[1]	Collected items are manually disassembled into component parts for recycling. Materials recovered include metals, wood and foam.
Hazardous Waste	None (shipped out of CVRD)	-
Construction and Demolition Materials		
Clean wood waste	Coast Environmental and Fisher Road Recycling	There are no regulatory requirements for source-separating C&D waste; private facilities voluntarily sort the mixed loads to retrieve high quality material for recycling.
Drywall	Coast Environmental and Fisher Road Recycling	
Asphalt Roofing Shingles	Coast Environmental and Fisher Road Recycling	
Rubble	Stone Pacific	

[1]Fisher Road Recycling is contracted by the CVRD to recycle all mattresses, couches, and upholstery armchairs collected at Bings Creek. More than 12,000 mattresses have been collected since the program's implementation in 2012.

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3.2.2 Organics

Organic waste generally refers to yard and garden waste (i.e., leaves, branches, weeds, and grass), food waste, and some non-recyclable paper products such as paper toweling and tissue. There are opportunities to reduce the amount of organic waste, as illustrated in Figure 3-2. This figure is a hierarchy of food waste management solutions that replicates the pollution prevention hierarchy of reduce then reuse then recycle, before considering disposal.

Figure 3-2: Food Waste Management Hierarchy

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3.2.2.1 Residential Organics Recycling

Within municipalities, participation in curbside organics programs is mandatory and weekly collection services are offered. In Electoral Areas A, B, C, and some parts of Area D, organics collection is available but program participation is not mandatory.

Outside of Lake Cowichan, there is no curbside collection of organics for MF buildings. The 2017 waste composition study found that 32.9% of the materials in MF garbage are compostable organics.

Municipal residential collection programs are intended to collect food waste and limited quantities of yard waste. Much of the CVRD is rural and many properties produce more yard waste than can be collected by municipal crews. Thus, open burning of yard waste has been problematic in the CVRD, which leads to reduced air quality[6]. The air contaminant of greatest concern is $PM_{2.5}$, and estimates suggest that up to 53% of total $PM_{2.5}$ produced in the region is from open burning[7].

Residential open burning is banned in all member municipalities except North Cowichan, where open burning is banned within urban containment boundaries but permitted, with restrictions, in other areas. Residential open burning is permitted, with restrictions, in Electoral Areas A, B, C, D, E and G under CVRD Bylaw No. 3716 – *Smoke Control Regulation Bylaw, 2013*, which was developed to regulate the residential open burning of yard waste, and prevent backyard burning of garbage. The bylaw bans burning of garbage and wet, compostable materials (such as grass), and limits the burning of clean, dry material to a one-month period during the spring and fall. There are no restrictions on residential open burning in Electoral Areas F, H and I. Working farms and forest lands are exempt from local burning regulations.

In 2006, the CVRD introduced a pilot program for free drop-off of yard and garden waste at Bings Creek. The program was expanded to all CVRD Recycling Centres in 2007 and today is one of the region's most popular

[6] The region has one of the highest hospital admission rate for children with respiratory diseases in the Province, averaging 70% higher than the provincial average from 1998 to 2012.

[7] "The Air Quality Problem." *The Air Quality Problem | Cowichan Valley Regional District*. Cowichan Valley Regional District. 4 December 2017. https://www.cvrd.bc.ca/2186/The-Air-Quality-Problem.

recycling programs with 7,333 tonnes of yard waste collected and composted in 2016. The program is an important component of the region's air quality improvement strategy.

3.2.2.2 ICI Organics Recycling

The 2017 waste composition study found that 45.6% of ICI sector waste is compostable organics.

Organics collection is inconsistent for the ICI sector in the CVRD. A phone survey completed by CVRD staff in 2015 showed that several large grocers and retailers within the region do not have programs in place for mixed recyclables or organics diversion. Amongst institutional generators such as local governments, Island Health facilities including the Cowichan District Hospital, and school districts, diversion programs for recyclable materials are common, however organics diversion is inconsistent. For example, local school districts do not have district-wide organics diversion programs in place, although several classrooms have implemented organics collection and back-yard composting on an individual-basis. The CVRD maintains recycling and food waste diversion programs at all CVRD-owned facilities.

ICI organics can be hauled to Bings Creek, Fisher Road Recycling, or Coast Environmental (Chemainus).

3.2.2.3 In-Region Processing

There are three private composting facilities within the region all licenced under CVRD Bylaw No. 2570: Coast Environmental (Chemainus), Fisher Road Recycling, and Cel[illegible] Landscape. Since the summer of 2016, the Provincial government has required all composting facilities that produce more than 5,000 tonnes of finished compost per year to obtain a permit under the *Organic Matter Recycling Regulation*. Fisher Road Recycling and Coast Environmental are subject to the new permitting requirements.

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Table 3-2: Organics Processing Facilities

Facility	Materials Accepted	Process	Annual Capacity (Tonnes)	Sectors Accepted	Notes
Coast Environmental	Yard waste, food waste, and "sludge" (comprised of brewery, wine, dairy, and septic pre-treated and stabilized waste)	In-vessel facility using Gore cover technology and aerated indoor floors	13,200	Residential and ICI	The CVRD currently has a contract with Coast Environmental to process all organic material received at the Bings Creek transfer station.
Fisher Road Recycling	Yard waste and food waste	In-vessel facility with aerated floors	18,000	Residential and ICI	Fisher Road currently receives the majority of incoming feedstock from out-of-region sources, however an application to increase capacity to 36,000 tonnes is currently under review by the CVRD If approved, this would significantly increase available capacity.

Facility	Materials Accepted	Process	Annual Capacity (Tonnes)	Sectors Accepted	Notes
Central Landscape	Yard waste	Passive outdoor windrows	6,000	Residential and ICI	The CVRD currently has a contract with Central Landscape to process yard waste received under the CVRD's free yard waste drop-off program for south-end residential and small-volume commercial generators. A Request for Proposals has recently been issued that, when awarded, may result in a change to the processor and may also result in the consolidation of residential food and yard waste processing. Food and yard waste collected under private subscription services would be excluded. Proposals are currently under review and a contract is expected to be awarded in 2018.
Total			**37,200**		

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The Town of Ladysmith has recently completed construction of an enclosed aerated composting facility designed to process the Town's municipal biosolids. The facility has been designed with additional capacity, so there is potential, in future, for it to provide an additional processing option for organic materials.

Regional Organics Processing Capacity

Regional composting capacity has grown significantly since the last SWMP Amendment in 2006. However, composting programs have also grown, meaning that the capacity to accommodate new organics collection programs is limited. At the time of writing, regional capacity for processing of food waste has been reached. Further initiatives to increase the amount of food waste collected (for example, expansion of mandatory source separation programs for organics for ICI and MF sectors) could cause the total amount of organics collected to exceed the regional processing capacity. Although SF waste represents less than 20% of the total waste in the CVRD, 85% of organics currently dropped off at Bings Creek is from curbside programs. Thus, the amount of organics capture from other sectors (i.e. MF, ICI) is low.

Facilities that process more organics than they were designed to receive are susceptible to odour incidents. Odour complaints have been an issue in recent years. Nearby RDs such as Metro Vancouver, Capital Regional District (CRD), and RDN are struggling with odour issues from composting facilities within their region. Odour complaints are a serious issue that shut down organics processing facilities.

More than 7,000 tonnes of yard waste is collected annually through the free yard waste drop-off program. This is less than one quarter of the regional yard waste processing capacity. Changes to programs with regards to yard waste collection would not be likely to exceed the regional yard waste processing capacity.

3.3 Recovery – Waste to Energy

Two processes occur in the CVRD to recover energy from waste. A methane capture system at the Roosevelt Landfill in Washington provides some energy recovery from landfilled waste. Locally, energy is derived from source-separated clean wood waste, wood waste separated from mixed C&D debris, and some landclearing debris (i.e. stumps), which is processed into hog fuel by Coast Environmental, and used to fire boilers at pulp mills on Vancouver Island.

A joint-study in 2008 between the CVRD and the RDN reviewed the feasibility of establishing a waste to energy (WTE) facility to process residual waste streams from both regional districts. The study found that, while viable technology existed, recovery of energy from residual waste would not be economically feasible for the CVRD's waste stream alone. A study was completed again in 2011 by AECOM which builds on the findings of the 2008 study and includes residual waste from the CRD[8]. The results of the 2011 also indicated that a WTE facility would not be economically feasible.

3.4 Residuals Management

The CVRD does not have a disposal facility and instead exports waste out-of-region, currently to the Roosevelt Regional Landfill in Washington State, USA. In 2016, the CVRD shipped 22,108 tonnes of waste to the Roosevelt Landfill. It is estimated that a further 7,441 tonnes was shipped to out-of-region landfills by private transfer stations, bringing the 2016 regional waste total to 29,105 tonnes.

Until the late 1990s, the region relied on three MSW incinerators and one municipal landfill site for waste disposal. An extensive search for a new landfill site was carried out beginning in the mid-1990s, during which time construction was also started on the new Bings Creek Transfer Station. During Bings Creek construction, the CVRD shipped 7,627 tonnes of MSW to the Cache Creek Landfill in the Thompson-Nicola Regional District. Initially done as a temporary measure, waste export became a long-term solution when the former CVRD landfill closed in 1998, and the CVRD was unable to obtain final approval for the proposed new landfill site. Export of solid waste has remained the region's primary disposal solution in subsequent SWMPs; the exploration and analysis of alternative disposal solutions is an ongoing process. The CVRD maintains a contingency disposal agreement with the RDN, in the event that export to the designated disposal facility is temporarily disrupted.

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3.4.1 Historic Disposal Sites

Prior to the development of the Bings Creek Transfer Station in the late 1990s, the region relied on three MSW incinerators and one municipal landfill site for waste disposal, as noted above. These sites are presented in Table 3-3.

Table 3-3: Historic Disposal Sites Activities

Facility	Location	Years of Operation	Operator	Current Activity
Koksilah Road Sanitary Landfill	Near Duncan, on Cowichan Tribes Reserve Land	1959-1973 (Unpermitted) 1973 – 1998 (Permitted)	City of Duncan	▪ Tri-annual ground- and surface-water monitoring at the site ▪ Regular cover inspections and site maintenance (as per the permit abandonment requirements outlined by the Ministry)
Koksilah Road Incinerator	Near Duncan, on Cowichan Tribes Reserve Land	1981-1995	CVRD	▪ Cowichan Tribes and the CVRD are currently engaged in mediation to explore alternate disposal options for remaining incinerator ash
Peerless Road Incinerator	South of Ladysmith	1979-1998	CVRD	▪ Buildings have been converted to use as a municipal waste and recycling drop-off depot
Meade Creek Incinerator	West of Lake Cowichan	1976-1998	CVRD	▪ Buildings have been converted to use as a municipal waste and recycling drop-off depot

[8] AECOM. Tri-Regional District Solid Waste Study. 2011.

Between nine and eleven old, unpermitted landfill sites were located throughout the region at one time. With one exception (Koksilah Road Sanitary Landfill), these sites were not owned or operated by the CVRD at any time. Since 1995, the SWMP has included a commitment to close these sites; however, the ownership results indicate that the CVRD is not responsible for remediation of the sites listed in 2006 SWMP Amendment, with the exception of the Koksilah Landfill.[9]

Several burn sites, formerly operated within the CVRD, were intended to dispose of landclearing debris. The last site, the Elizabeth Compton burn pit (located in North Cowichan) was closed in 2017.

3.4.2 Illegal Dumping

Illegal waste dumping continues to occur across the region. The CVRD provides financial incentives to encourage clean-up of public lands where illegal dumping has occurred.

Tipping Fee Exemption

A "Free Tipping" policy, wherein non-profit groups that clean up public lands can dispose of collected debris for free, has been in place since the early 2000s. Between 2013 and 2016, the program received approximately 100 tonnes of material per year. The policy was recently revised to clarify tipping fee limits and incorporated into CVRD Bylaw No. 2108. Under the revised Bylaw, up to $15,000 in tipping fee exemptions are available each year for registered charities or non-profit organizations undertaking clean-up of public lands. A further $15,000 in tipping fee exemptions are available to businesses in the non-profit sector that may be subject to illegal dumping on their premises, such as thrift stores. Additional funding of $1,500 is available (subject to application) for clean-up supplies.

Education Campaigns

The Hillcrest Road area is a known hotspot for illegal dumping, and in 2016, the CVRD launched a focused education campaign to reduce illegal dumping. The campaign included a partnership with the Conservation Officer Service to promote use of the Report All Polluters and Polluters (RAPP) line number to report illegal dumping, site-specific signage and messaging, and broader regional messaging encouraging all residents to report illegal dumping using the shortened RAPP number #7277. The campaign also featured shared initiative between members of the Association of Vancouver Island Coastal Communities (AVICC) to produce a short video to educate residents about illegal dumping.

The initiative was the first of its kind and allowed RDs to share the costs for production of a video that can be used in all regions. The 'Don't Trash Hillcrest' campaign is estimated to have reached 25,000 residents via the CVRD Facebook page. In 2018, a similar campaign is planned to combat illegal dumping in the Shawnigan Lake area.

3.4.3 Hazardous Waste Disposal

The CVRD partners with Provincial EPR programs for collection and end-of-life disposal for several hazardous materials including flammable liquids, solvents, oil, gasoline, PCB ballasts, and mercury-containing thermostats. The CVRD does not accept hazardous materials not managed under an EPR program. The CVRD advises residents with non-EPR hazardous materials to contact licenced private companies for pick-up and disposal. The quantity of hazardous materials disposed in this manner is not known. The CVRD does not accept asbestos-containing materials (ACM) but Coast Environmental's Duncan facility will, under special conditions collect ACM for

[9] Cowichan Valley Regional District. Preliminary Investigation of Historical Landfill Sites in the CVRD. October 2016.

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transport to authorized disposal facilities (see section 2.5.3 Processing for more information). The CVRD maintains an agreement with RDN which allows residents to drop off ACM to the RDN's regional landfill.

3.5 Finance and Administration

Solid waste management is administered under two separate budgets: one for waste services including planning, transfer station, and recycling centre operation and one for curbside collections.

3.5.1 Solid Waste Services Finances

Waste services including planning, transfer station and recycling centre operation, and roll-off hauling services, are administered under a regional solid waste management budget. The budget is primarily funded by tipping fees and by requisition (property taxes), which are collected from all CVRD residents including those within municipalities. The value of the operating budget is approximately $7.8M (2017).

Table 3-4 summarizes the CVRD's projected budget as identified in the five-year financial plan through to 2022. CVRD's main solid waste expenses are operational costs which comprise over 50% of average annual expenses. Balanced budgets are projected from 2018 through to 2022.

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Table 3-4: Solid Waste Services Budget

	2017	2018	2019	2020	2021	2022
Requisition/Parcel Tax	$4,251,210	$4,520,9	$4,520,9	$4,520,900	$4,520,900	$4,520,900
User Fee	$2,841,398	$2,541,00	$2 ,000	$2,541,000	$2,541,000	$2,541,000
Transfer from Capital Reserve	$200,000	,000	-	-	-	-
Transfer from Operating Reserve	-	$1 ,000	-	-	-	-
Transfer from Gas Tax Reserve		-	-	-	-	-
Other	$3,616,383	$1, 0,880	$938,296	$1,028,996	$1,130,898	$1,243,332
Debt Proceeds	$2,445,319	$2,470,320	-	-	-	-
Revenue Total	**$1 54,310**	**$11,268,100**	**$8,000,196**	**$8,090,896**	**$8,192,798**	**$8,305,232**
Operational Costs	$7,100,014	$7,299,677	$7,435,471	$7,584,180	$7,735,863	$7,848,297
Long Term Debt	$621,079	$468,639	$264,941	$257,514	$232,451	$232,451
Short Term Debt	$120,442	$163,484	$163,484	$112,902	$88,184	$88,184
Capital	$5,372,184	$3,300,000	-	-	-	-
Transfer to Capital Reserve	$100,000	-	$100,000	$100,000	$100,000	$100,000
Transfer to Remediation Reserve	$40,591	$36,300	$36,300	$36,300	$36,300	$36,300
Expenses Total	**$13,354,310**	**$11,268,100**	**$8,000,196**	**$8,090,896**	**$8,192,798**	**$8,305,232**
Surplus/Deficit	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**

Historically, waste tipping fee revenues have helped to fund the recycling programs offered by the CVRD. However, disposal costs have increased in recent years, in part due to increased export and shipping costs, and the decline in value of the Canadian dollar. This means there is less revenue available to support recycling programs. The

waste tipping fee increased gradually between 1987 and 2012 to offset rising disposal and operating costs, but has not increased since 2012 due to concerns that additional increases would exacerbate the loss of waste to lower cost landfills outside of the region. The high tipping fee is one of the primary reasons that waste tonnages have declined during recent years, although reduced economic activity and the success of diversion programs have likely also played a role. Requisition rates have increased to offset this lost revenue.

3.5.2 Curbside Collection Finances

The CVRD curbside collection program is managed under a separate budget, which is funded through user fees and payments from Recycle BC for provision of packaging and printed paper (PPP) collection. The value of the curbside collection budget is approximately $2.0M (2017). The curbside collection budget has been relatively stable since the transition to in-house collection in 2013. User fees have not increased since 2012, however, an increase should be considered for 2019 to ensure the program remains adequately funded.

Table 3-5 summarizes the CVRD's projected curbside collection budget as identified in the five-year financial plan through to 2022. The bulk of expenses are operational costs, which comprise 87% of annual expenses. Balanced budgets are project from 2018 to 2022.

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Table 3-5: Curbside Collection Budget

	2017	2018	2019	2020	2021	2022
Requisition/Parcel Tax	-	-	-	-	-	-
User Fee	$787,946	$797,50	$1,135,78	$1,121,296	$1,107,458	$1,094,284
Transfer from Capital Reserve	-	-	-	-	-	-
Other	$488,000	$49 ,400	$493,400	$493,400	$493,400	$493,400
Debt Proceeds	-		-	-	-	-
Surplus/(Deficit)	$720,177	571,253	$264,913	$311,989	$359,065	$406,141
Revenue Total	**,996,12**	**62,153**	**$1,894,100**	**$1,926,685**	**$1,959,923**	**$1,993,825**
Operational Costs	731,303	$1,597,333	$1,629,280	$1,661,865	$1,695,103	$1,729,005
Long Term Debt	$14 20	$144,820	$144,820	$144,820	$144,820	$144,820
Short Term Debt	-	-	-	-	-	-
Capital	-	-	-	-	-	-
Transfer to Capital Reserve	$120,000	$120,000	$120,000	$120,000	$120,000	$120,000
Expenses Total	**$1,996,123**	**$1,862,153**	**$1,894,100**	**$1,926,685**	**$1,959,923**	**$1,993,825**

4.0 SYSTEM GAPS AND OPPORTUNITIES

While the solid waste management system in CVRD is well established, there are still gaps and potential opportunities to further optimize waste reduction, diversion and recycling. The items below are currently listed to align in order of the 5 Rs of the pollution prevention hierarchy within Section 3.0. They highlight key gaps and opportunities for further analysis and potential options development. Once the Solid Waste Management Plan Advisory Committee (PAC) provides input, the next steps will be to prioritize and further expand upon opportunities as informed by the March 29 meeting outcomes and industry trends.

Reuse and Reduction Programs

There is potential to further enhance and increase access for programs for reuse and reduction, including building local food rescue capacity, implementing reuse platforms such as repair cafes, tool libraries, reclamation of building supplies, and banning use of disposable plastic shopping bags.

Education and Behaviour Change

Ongoing education and fostering behaviour change is important for the continued success of existing solid waste management programs, and is especially critical when implementing new initiatives or expanding existing programs. Continuing to integrate a community-based social marketing approach can help to ensure that engagement programs are designed to overcome barriers and build on motivators to participation as community and business members adopt new behaviours and support successful programs.

Organics Processing Capacity

Regional composting capacity has grown significantly since the 2006 SWMP update; however, some facilities are nearing capacity as composting programs continue to evolve. As capture increases for existing collection and organics collection expands, there is concern that the region may lack adequate processing capacity. Given the higher percentage of putrescibles in feedstock mixes, facilities are more susceptible to odour incidents, which poses a threat to organics management processing infrastructure, which has resulted in organics processing facility shut downs in nearby jurisdictions.

Organics and Recycling Programs for ICI & MF

ICI and MF sectors currently have inconsistent collection services levels for recycling and organics. More uniform requirements in concert with augmented services could significantly increase capture for recyclables and organic material shown in significant percentages in recent waste composition studies as shown in Section 2.4.2.

Improve Southern CVRD Services

Approximately 20% of the population lives in the south end of the CVRD (Electoral Areas A, B, and C) where there are currently no public depots. Residents contribute to the region-wide services through taxation but do not have proximate access to these services. There are no public curbside collection programs for garbage or organics in the south end.

Expanded Curbside Collection

While recycling collection exists across the region, garbage and organics curbside collection is not in place throughout the CVRD. Public garbage collection occurs only in Electoral Areas D, E, F, G, and I (and through a private sector ‘opt in’ subscription basis in Electoral Area H). Private curbside garbage (and organics) collection is available to Electoral areas A, B, and C residents on a subscription basis Comparison across jurisdictions shows that expanded curbside collection to include all three material streams (recyclables, organics and garbage) can significantly reduce garbage tonnage by 35-40%.

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Construction and Demolition

There are opportunities to further recover recyclable materials from C&D waste. Markets continue to fluctuate which affects how wood waste can be utilized; other opportunities may exist to develop markets within the region or leveraging inter-jurisdictional opportunities for material reuse, re-manufacturing and/or energy recovery.

Expansion of EPR Programs

The CVRD supports the expansion of EPR programs for new products such as textiles (which comprise up to 11.9% of the waste stream in Electoral Areas) and bulky furniture (e.g., mattresses, couches, and chairs). The CVRD currently pays to operate a recycling program for these materials. Advocating senior governments to expand products covered under the BC Recycling Regulation could help to address materials management for these items.

Local Solid Waste Management Capacity

The CVRD lacks local solid waste disposal capacity. Garbage is exported to the Roosevelt Regional Landfill in Washington State. There are also solid waste infrastructure gaps to address related to ICI sector single-stream recyclables requiring processing, and how hazardous waste is collected and processed, particularly for larger commercial volumes, in the region.

Illegal Dumping

Illegal dumping continues to be a challenge in the region. The cost and ubiquity of illegal dumping should be analyzed to determine whether changes need to be made to the current system, and if there are regulatory and behaviour change programs than can be augmented to mitigate illegal dumping issues.

Emergency Management Plan

The CVRD currently does not currently have an emergency/disaster management plan for how to manage solid waste in the event of a natural disaster. Several Canadian municipalities, such as BC Regional Districts including Cariboo and Fraser Fort George as well as several Alberta regions have recently been affected by fires and floods. These types of disasters generate a significant amount of extra solid waste within a short period and require a management plan to deal with the large amounts or different types of waste that will require disposal or staging.

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5.0 LIMITATIONS OF REPORT

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6.0 CLOSURE

We trust this technical memo meets your present requirements. If you have any questions or comments, please contact the undersigned.

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APPENDIX A

LIMITATIONS ON THE USE OF THIS DOCUMENT

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GEOENVIRONMENTAL

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The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

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In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

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APPENDIX B

STATUS OF 2006 SWMP INITIATIVES

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Solid Waste Management Plan Amendment No. 3 (2006) contains 54 planned initiatives relating to regulations, waste reduction, reuse, recycling, recovery, and residual waste management. Initiatives from each category are outlined in the table below along with comments on implementation. The status of each initiative is classified as one of the following:

- Complete: Item has been implemented or addressed and no further action is required;
- In-Progress: Item has been started and more effort is required to complete;
- Ongoing: Item has been implemented and is part of regular business;
- Incomplete / On-Hold: Item should be revisited and either cancelled or carried into the upcoming SWMP Amendment;
- Cancelled: Item is no longer relevant or applicable.

Planned Initiative	Status
2.3 Regulation of Solid Waste Management System	
Final Adoption and implementation of CVRD Bylaw No. 2020 in 2007, with education and enforcement measures to support as required	Complete
Continued implementation of CVRD Bylaw No. 2570. Subsequent to issuing the majority of licenses for existing waste management facilities by early 2007, the CVRD will direct waste materials to licensed facilities only and proceed with enforcement measures against unlicensed facilities, in accordance with the Enforcement Policies and Procedures document. A list of facilities holding valid waste stream licenses will be maintained on the CVRD website, as will facilities in non-compliance	Complete
Sustained, progressive enforcement of the material ban provisions of CVRD Bylaw No. 2108, with targeting of materials and generating sectors to be determined through observation of the incoming residual waste stream	On-hold, pending Bylaw review
Evaluate the impacts of expanding the commercial food waste ban provisions of CVRD Bylaw No. 2108 to include post-consumer commercial food waste (e.g. restaurant plate scrapings etc.), and de-packaging where feasible, with possible implementation to follow	On-hold, pending Bylaw review
Ongoing evaluation of the effectiveness of the existing regulatory structure in achieving CVRD waste management objectives. Development of new or expanded bylaws may be initiated in response to identified needs.	Ongoing
2.4 Waste Reduction	
Publish the Environmental Guide and Recycling Directory primarily in an on-line format. The Guide will also be printed and distributed locally on a periodic basis;	Complete
Publication of Earth Issues, Our Lifestyles and the Environment, a CVRD- produced environmental education manual targeting Kindergarten to Grade 5 students	Complete
Continued efforts to minimize the amount of waste generated by internal CVRD operations, which may include development of an Environmental Management System	Cancelled
2.5 Reuse	
Promotion of material and product reuse and repair opportunities available within the Cowichan region through the Environmental Guide and Recycling Directory and CVRD Recycling Hotline	Complete
Support for the Cowichan Recycling Exchange service offered in partnership with Cowichan News Leader/ Pictorial newspaper and promotion of the RCBC Materials Exchange, and other such waste exchanges	Complete
Implementing a trial period for 'Free Store' facilities at the Bings Creek Solid Waste Management Complex and the Peerless Road Recycling Drop-off Depot where unwanted, but useable items can be placed for removal and reuse by others	Complete

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Planned Initiative	Status
2.6 Recycle	
Promotion of Recycling Opportunities	
Outreach and education efforts focused around planned CVRD programs diverting food waste from the residential and commercial residual waste streams	Ongoing
Promotion of any new opportunities for material recycling at CVRD-operated or privately operated solid waste facilities	Ongoing
Evaluate the need for a region-wide initiative to support private haulers and local municipalities in promoting and delivering recycling services to multi-family dwellings	On-hold pending further review
Promotion of free yard and garden tipping at CVRD facilities and other alternatives to burning yard waste	Ongoing
Focused efforts to optimize participation in curbside recycling programs	Complete
Curbside Recycling Collection Programs	
Pending support from member municipalities, the CVRD will evaluate the feasibility of collectively tendering all contracted-out curbside-collection contracts within the region so that the CVRD and local municipalities may benefit from a 'buying in bulk' approach	Cancelled
The CVRD will evaluate the feasibility of integrating residential food waste collection with existing curbside waste and recycling collection programs within the region. Evaluation will be conducted in partnership with local municipalities, industry stakeholders, and rural and urban residents	In-Progress
If the feasibility of a food waste collection services can be established, the CVRD will pursue region-wide implementation of residential food waste collection	On-hold
Multi-Product Neighbourhood Recycling Bins	
The CVRD will evaluate phasing-out the Multi Bin Program in the 2011 to 2012 period. If the region-wide program is discontinued, multi bins, or similar equipment, will remain in place at CVRD Recycling Drop-off Depots	Complete
Commercial & Multi-Family Recycling	
Continue to emphasize the existing material ban provisions of CVRD Bylaw No. 2108 to encourage local businesses to make use of recycling opportunities	Ongoing
Evaluate the impact on the hauling sector and local business community of expanding the commercial food waste ban to include post-consumer food waste	On-hold
In consultation with local municipalities and local haulers, the CVRD will evaluate the need for new initiatives targeting increased waste diversion from the commercial and multi-family sectors.	On-hold
CVRD Recycling Facilities	
Develop "Free Side" and "Paid Side" Traffic Streams. In order to maximize convenience for residents accessing CVRD recycling facilities, the CVRD will assess the feasibility of modifying traffic flow at CVRD recycling sites to allow residents to drop off free recyclable materials without requiring these materials to cross the scale	Complete
Food Waste Tipping and Transfer Area. In support of upcoming CVRD initiatives targeting diversion of food waste, a dedicated tipping area will be developed at Bings Creek for transfer of large quantities of organic waste. A container for drop off of residential organics will also be provided at Bings Creek	Complete
On-site material processing. Consistent with the CVRD's intention to minimize the cost of hauling recyclable materials collected at CVRD facilities, the CVRD will evaluate the feasibility of providing on-site processing at Bings Creek for some materials. Materials being considered for some on-site processing are wood waste, yard and garden waste, and food waste, amongst others.	Complete
Develop a South-end Depot. To ensure that Cobble Hill, Mill Bay, Shawnigan Lake and Cowichan Bay residents have convenient local access to recycling facilities, the CVRD will develop a full-service waste recycling drop-off depot in the southern part of the region.	On-hold

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Planned Initiative	Status
Improved recycling infrastructure. The CVRD plans to re-develop the west side of the residential tipping area at Bings Creek to facilitate recycling. Planned improvements include: installing a stationary compactor for management of cardboard; providing a permanent building for the Free Store; improved enclosures for management of hazardous materials.	Complete
Multi-Material Recycling	
The CVRD will encourage sound environmental management at Vancouver Island Recycling Centre, consistent with the standards in place for licensed facilities	Cancelled
The CVRD will continue to support private sector materials recovery facilities through the ongoing expansion of recycling programs	Ongoing
Construction & Demolition Waste	
The CVRD will continue to promote opportunities for residents to use licensed private C&D waste processing facilities	Ongoing
The CVRD will support licensed C&D recycling facilities through pursuing enforcement measures against unlicensed facilities	Ongoing
In co-operation with its member municipalities and the building trades, the CVRD will develop a requirement that construction and demolition projects provide the opportunity for salvage of materials	On-hold pending feasibility review
The CVRD will seek agreements with its member municipalities to ensure that specific sorting and waste segregation requirements are applied following material salvage. This agreement would be a condition of all new building construction and demolition permits issued within the CVRD boundaries. The CVRD will develop program guidelines to assist local builders in establishing effective site sorting techniques and waste reduction programs.	On-hold pending feasibility review
Landclearing Debris	
In support of ongoing efforts to improve local air quality, the CVRD will promote non–burning management practises, such as mulching and composting for locally generated landclearing debris. The CVRD will also enforce the provisions of CVRD Bylaw No. 2073, which regulate open burning of landclearing debris	Ongoing
Composting	
Continue to hold a sale of backyard composters every second year with the cost to residents for each unit significantly subsidized by the CVRD	Cancelled
Year-round free tipping of yard and garden waste at CVRD Recycling Drop-off depots	Ongoing
Support licensed composting facilities through development of curbside food waste collection services. Prior to developing this service the CVRD will evaluate the capacity of local composting facilities to accept materials collected through this service	In-Progress
Enforce CVRD Bylaw No. 2108 prohibitions on disposal of commercial organic waste	On-hold pending Bylaw review
Improve tipping and transfer of residential and commercial food waste at Bings Creek	Complete
Hazardous Materials	
Cooperating and assisting with the promotion of provincial initiatives	Ongoing
Incorporating household hazardous waste into the overall education and partnership programming	Ongoing
Promoting waste exchanges and swap days for materials, such as paint, that are developed by local community groups or provincial manufacturing associations	N/A
2.7 Recovery	
To evaluate the feasibility of the three types of technology – Gasification, Refuse Derived Fuel, and Waste–to-Energy processes, considered most likely to be a viable option for managing CVRD / RDN residual waste	Complete
Evaluate each technology's potential markets for producing fuel, power, steam or other products from the residual waste streams	Complete
To identify considerations and a time frame for initiating a Request for Proposals process for selecting a specific waste management technology.	Cancelled
2.8 Residual Waste Management	

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Planned Initiative	Status
Residual Waste Collection	
Encourage member municipalities to implement further can limits and/or reduced collection frequency	Cancelled
Apply enforcement of material bans (i.e. yard waste) to municipal collection crews	Ongoing
Support and assist local municipalities in integrating food waste collection into their existing waste collection protocols	Cancelled
Residual Waste Transfer	
Provide capacity for drop-off of self-hauled residual waste at the planned South-end Recycling Drop-off Depot.	Cancelled
The CVRD will evaluate the feasibility of, and possibly develop, a residual waste tipping area for residential and small commercial self-haul customers adjacent to the main tipping floor	Complete
The CVRD will evaluate the benefits of cost savings and operational flexibility that may result from purchasing a roll off truck and containers for local materials transfer. If cost savings can be established, the CVRD may proceed with vehicle purchase or lease	Complete
Non-CVRD Residual Disposal	
The CVRD will continue to monitor the flow of residual waste from the region. If ongoing evaluation indicates that the CVRD's overall objectives for management of regional solid waste are compromised by changes in private sector disposal practices, the CVRD will consult with local industry regarding regulatory and non-regulatory approaches to discouraging use of non-CVRD disposal facilities.	On-hold
Illegal Residual Waste Disposal	
The CVRD will continue to offer all existing programs to reduce the prevalence of illegal dumping within the CVRD. Following the completed closure of CVRD ash landfills, the CVRD will initiate investigations of the illegal dump sites and develop an overall strategy for their closure	Complete

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APPENDIX C

RECYCLABLE MATERIALS ACCEPTED AT CVRD FACILITIES

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Materials	Bings Creek Recycling Centre & Transfer Station	Peerless Road Recycling Centre	Meade Creek Recycling Centre	Central Landscape Supplies	Coast Environmental Duncan	Coast Environmental Chemainus	Cowichan Energy Alternatives	Fisher Road Recycling	Hillside Stone and Garden	Schnitzer Steel Canada	Stone Pacific Contracting	Island Return-It Bottle Depot (Duncan)	Island Return-It Bottle Depot (Cobble Hill)	Junction Bottle Depot (Ladysmith)
Garbage	■	■	■		■	■		■						
Air Conditioners	■	■	■											
Antifreeze and Containers	■	■	■					■						
Small Appliances	■	■	■					■				■	■	■
Large Appliances	■	■	■											
Batteries	■	■	■									■	■	■
Books	■	■	■									■		
Cellphones and Chargers	■	■	■									■	■	■
Couches and Armchairs	■	■	■					■						
Clothing	■	■	■									■		
Construction and Demolition Waste					■	■								
Drywall					■	■		■						
Electronics	■	■	■									■	■	■
Fridges and Freezers	■	■	■		■	■								
Gas and Fuel	■	■	■											
Glass	■	■	■					■						
Insulation (Garbage)	■	■	■					■						
Lights and Lighting Fixtures	■	■	■									■	■	
Lumber and Wood	■	■	■						■					
Mattresses	■	■	■					■						
Metal	■	■	■		■	■		■		■				
Used Needles / Syringes	■	■	■											
Oil	■	■	■					■						
Oil Filters and Containers	■	■	■					■						
Vegetable Oil	■	■	■				■							
Organics (Food Waste)	■	■	■		■	■		■						
Outdoor Power Tools	■	■	■											
Paint	■	■	■									■		■
Packaging and Printed Paper1	■	■	■					■				■		■
Pesticides (Domestic)	■	■	■											
Plastic Bags, Film Plastic and Overwrap1	■	■	■									■	■	

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Materials	Bings Creek Recycling Centre & Transfer Station	Peerless Road Recycling Centre	Meade Creek Recycling Centre	Central Landscape Supplies	Coast Environmental Duncan	Coast Environmental Chemainus	Cowichan Energy Alternatives	Fisher Road Recycling	Hillside Stone and Garden	Schnitzer Steel Canada	Stone Pacific Contracting	Island Return-It Bottle Depot (Duncan)	Island Return-It Bottle Depot (Cobble Hill)	Junction Bottle Depot (Ladysmith)
Hard (Rigid) or Oversized Plastic														
Power Tools														
Propane Tanks														
Refundable Beverage Containers														
Roofing														
Rubble - Class 1														
Rubble - Class 2														
Smoke and Carbon Monoxide Alarms														
Solvents and Flammable Liquids														
Thermostats														
Tires														
Vehicle Batteries														
Yard Waste														

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APPENDIX D

CVRD MAPS

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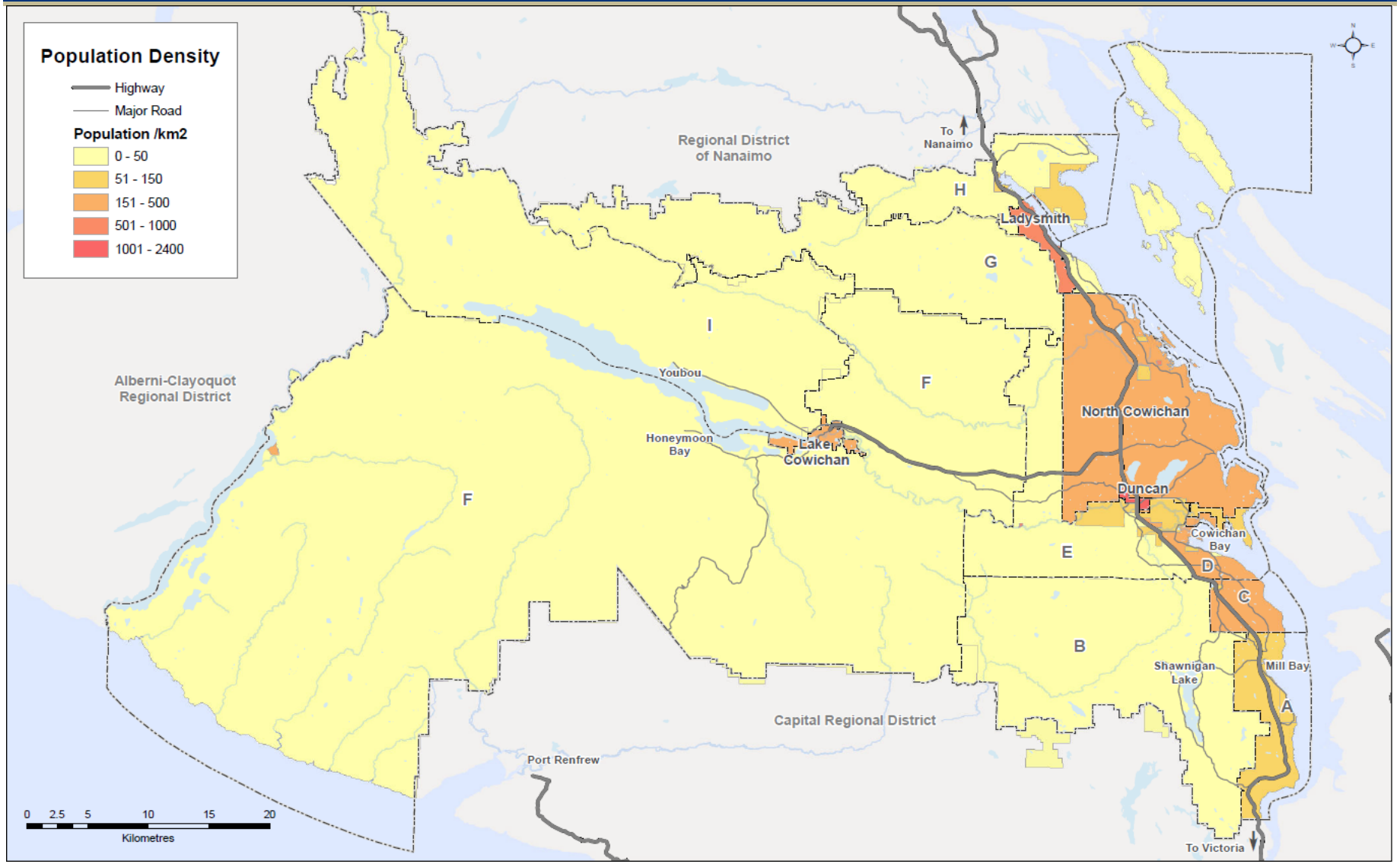
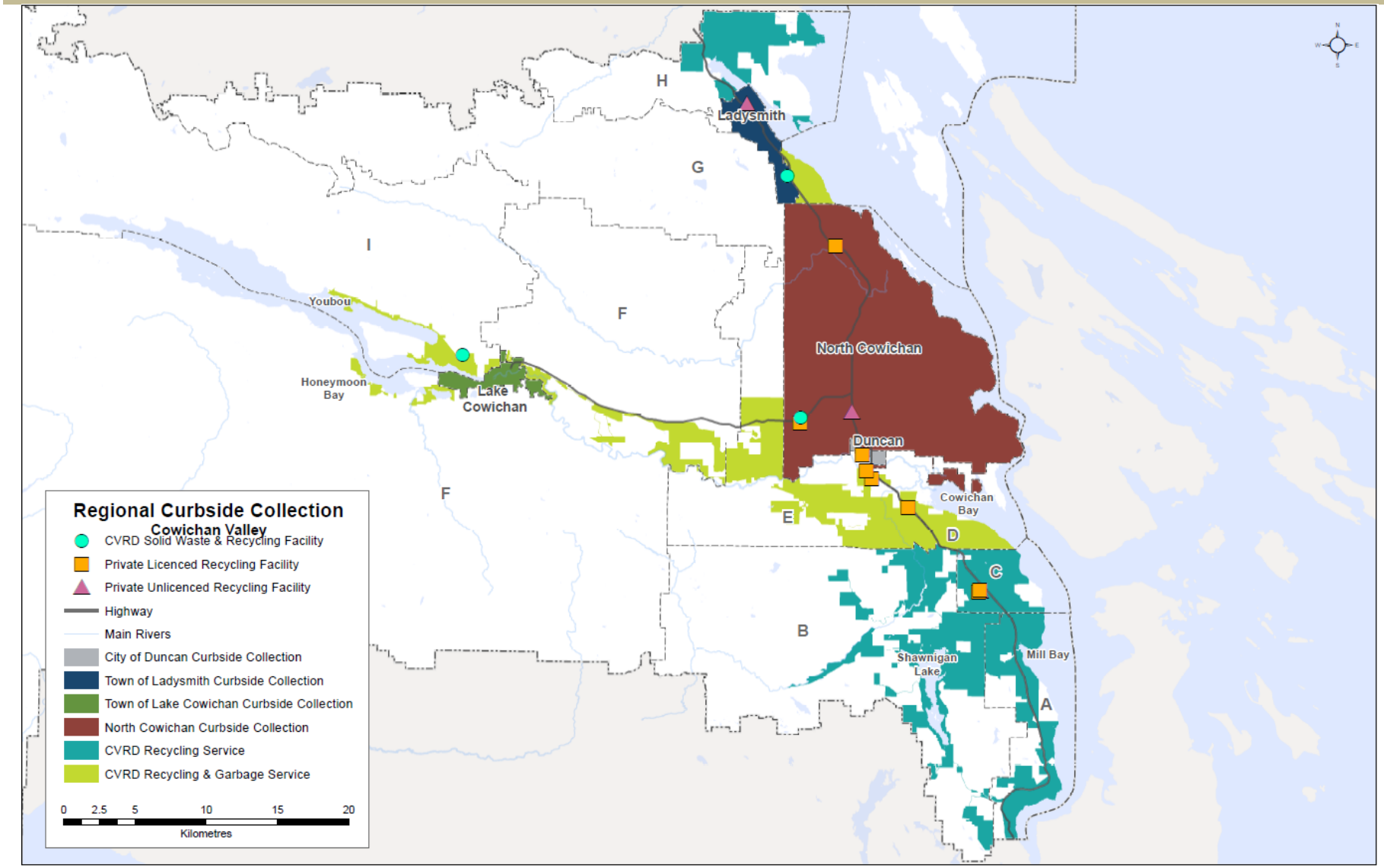
MAP 1: COWICHAN VALLEY REGIONAL DISTRICT

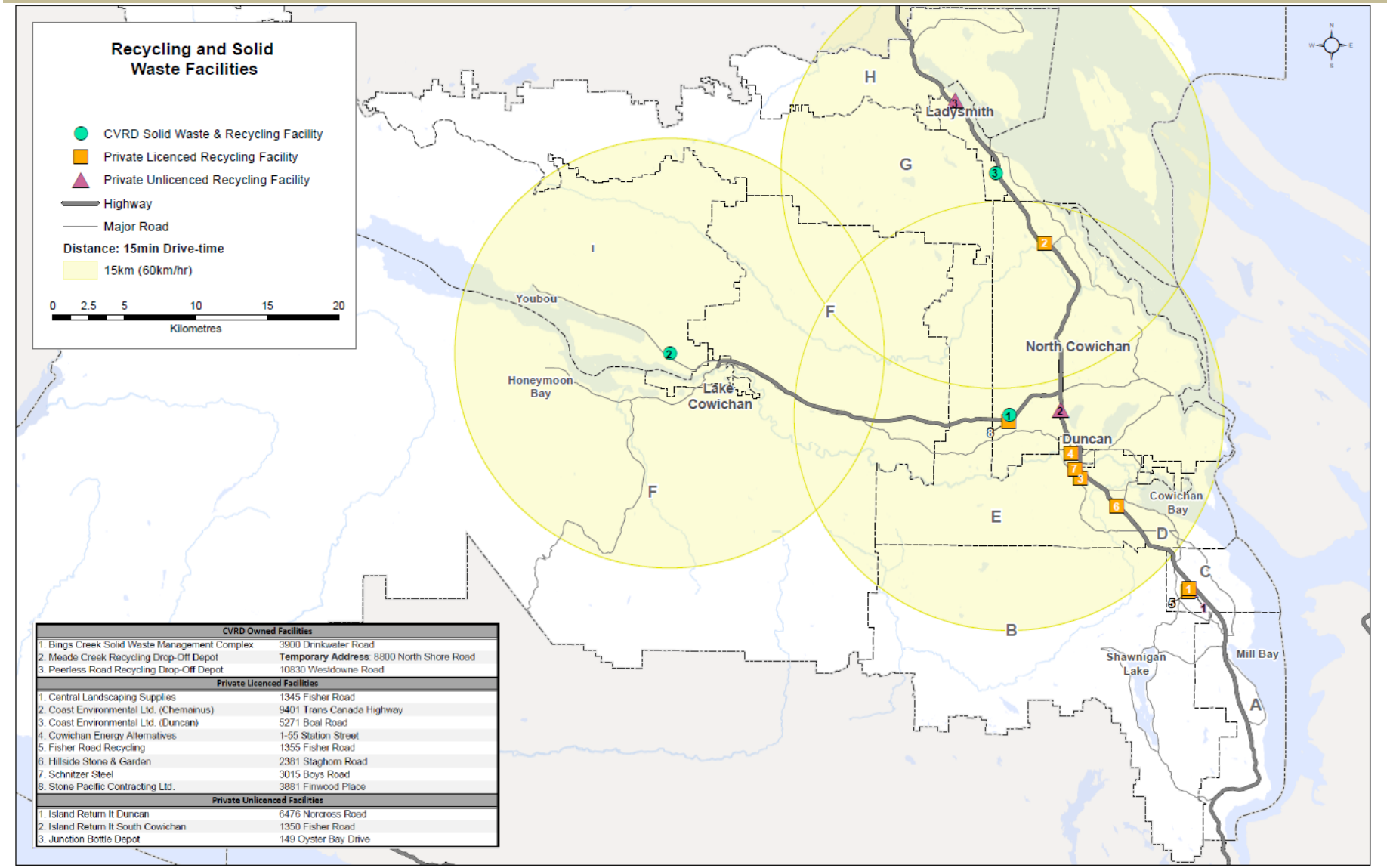
MAP 2: POPULATION DENSITY



MAP 3: CURBSIDE COLLECTION SERVICES



Map 4: CVRD Recycling Centres



CVRD Owned Facilities	
1. Bings Creek Solid Waste Management Complex	3900 Drinkwater Road
2. Meade Creek Recycling Drop-Off Depot	**Temporary Address**: 8800 North Shore Road
3. Peerless Road Recycling Drop-Off Depot	10830 Westdowne Road
Private Licenced Facilities	
1. Central Landscaping Supplies	1345 Fisher Road
2. Coast Environmental Ltd. (Chemainus)	9401 Trans Canada Highway
3. Coast Environmental Ltd. (Duncan)	5271 Boal Road
4. Cowichan Energy Alternatives	1-55 Station Street
5. Fisher Road Recycling	1355 Fisher Road
6. Hillside Stone & Garden	2381 Staghorn Road
7. Schnitzer Steel	3015 Boys Road
8. Stone Pacific Contracting Ltd.	3881 Finwood Place
Private Unlicenced Facilities	
1. Island Return It Duncan	6476 Norcross Road
2. Island Return It South Cowichan	1350 Fisher Road
3. Junction Bottle Depot	149 Oyster Bay Drive

APPENDIX E

WASTE COMPOSITION RESULTS

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Waste Composition Results – All Categories by Sector and Overall Average

Category	ICI	MF	SF	DO	C&D	Averag	kg/capit
Paper							
Beverage Container - deposit	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.2
Packaging – liquids	0.3%	0.5%	0.3%	0.1%	0.0%	0.2%	0.7
Printed Paper	4.8%	7.7%	2.8%	1.7%	0.0%	3.0%	10.4
Packaging – OCC	1.0%	0.4%	0.3%	1.0%	0.9%	0.8%	2.8
Packaging – liquid containers (beverage cups)	1.2%	0.7%	0.6%	0.6%	0.0%	0.6%	2.2
Packaging – composite cans	0.2%	0.1%	0.1%	0.0%	0.0%	0.1%	0.3
Books	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.2
Compostable Paper	6.7%	6.8%	7.8%	1.2%	0.0%	4.4%	15.3
Packaging – Waxed OCC	1.0%	0.0%	0.3%	0.0%	0.0%	0.4%	1.3
Other Paper	1.6%	0.6%	0.8%	0.8%	2.4%	1.4%	5.0
Subtotal	**16.9%**	**17.1%**	**13.[illegible]%**	**[illegible].4%**	**3.2%**	**11.1%**	**38.4**
Plastics							
Beverage Container - deposit	0.3%	0.2%	0.1%	0.3%	0.0%	0.2%	0.6
Plastic Packaging - Non-beverage #1-7	3.1%	2.[illegible]%	2.[illegible]%	1.2%	0.0%	1.9%	6.7
Plastic Packaging - #6 Styrofoam, foam	1.2%	0.5%	[illegible].1%	1.6%	0.0%	0.9%	3.2
Plastic Packaging - Film, #2, #4 (grocery bags, packing)	0.9%	1.0%	[illegible].0%	0.4%	0.0%	0.8%	2.8
Plastic Packaging - Other films	7.0%	3.[illegible]%	7.3%	0.8%	0.9%	4.3%	15.0
Other Plastics - Uncoded (straws, forks)	0.6%	[illegible].4%	0.4%	0.4%	0.0%	0.4%	1.3
Other Plastics - Durable plastic products	[illegible].5%	[illegible].3%	2.2%	16.7%	20.0%	8.7%	30.1
Subtotal	**[illegible].7%**	**[illegible].0%**	**15.6%**	**21.4%**	**20.9%**	**17.2%**	**59.7**
Compostable Organics							
Yard and Garden	0.7%	6.7%	2.0%	0.4%	1.1%	1.5%	5.1
Food waste – non-backyard compostable (unavoidable) - bones/cartila[illegible]	[illegible].9%	8.1%	9.8%	0.7%	0.0%	5.5%	19.2
Food waste – backyard compos[illegible]ble (unavoidable)	0.6%	0.1%	0.8%	0.2%	0.0%	0.4%	1.3
Food waste – avoidable	24.5%	14.0%	12.1%	1.4%	0.0%	11.7%	40.6
Food waste – donatable	10.0%	3.2%	3.7%	0.7%	0.0%	4.3%	15.1
Clean wood	0.9%	0.4%	0.6%	2.8%	0.0%	0.9%	3.1
Other Compostable Organics	0.0%	0.4%	0.1%	0.5%	0.0%	0.1%	0.5
Subtotal	**45.6%**	**32.9%**	**29.0%**	**6.6%**	**1.1%**	**24.4%**	**84.9**
Non-Compostable Organics							
Rubber	0.8%	0.1%	0.9%	0.9%	2.2%	1.1%	3.9
Contaminated Wood	1.7%	2.7%	1.2%	11.9%	37.3%	11.9%	41.4
Other Non-Compostable Organics	0.2%	0.1%	0.3%	0.2%	0.0%	0.2%	0.5
Subtotal	**2.7%**	**3.0%**	**2.4%**	**13.0%**	**39.5%**	**13.2%**	**45.8**
Textiles							
Clothing	1.5%	3.2%	4.0%	1.4%	0.1%	1.7%	6.0
Footwear	0.4%	0.6%	0.7%	1.1%	0.0%	0.5%	1.7

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Category	ICI	MF	SF	DO	C&D	Averag	kg/capit
All other textiles	2.6%	1.4%	2.6%	5.1%	1.0%	2.5%	8.9
Subtotal	**4.5%**	**5.2%**	**7.3%**	**7.7%**	**1.1%**	**4.8%**	**16.6**
Metals							
Beverage Container	0.6%	0.3%	0.1%	0.1%	0.1%	0.3%	1.0
Metal Packaging	1.4%	1.8%	1.5%	0.3%	0.0%	0.9%	3.3
Other Metals	0.7%	0.6%	1.4%	3.0%	0.9%	1.2%	4.3
Subtotal	**2.8%**	**2.6%**	**2.9%**	**3.4%**	**1.0%**	**2.5%**	**8.5**
Glass							
Beverage Container	0.3%	0.4%	0.3%	0.3%	0.0%	0.3%	0.9
Glass packaging (food containers)	0.7%	0.8%	1.0%	0.2%	0.0%	0.5%	1.8
Other glass	0.6%	0.9%	1.0%	1.4%	0.0%	0.7%	2.4
Subtotal	**1.7%**	**2.2%**	**2.4%**	**2.9%**	**0.0%**	**1.5%**	**5.1**
Building Material							
Gypsum/drywall, plaster	0.0%	0.0%	0.6%	5.6%	0.0%	1.0%	3.6
Rigid Asphalt Products	0.0%	0.0%	0.3%	0.3%	0.0%	0.1%	0.3
Carpet Waste	1.0%	0.6%	0.7%	7.7%	0.0%	1.8%	6.1
Other Building Material	0.1%	1.2%	1.1%	8.2%	12.8%	4.8%	16.6
Subtotal	**1.1%**	**1.8%**	**2.7%**	**21.6%**	**12.8%**	**7.7%**	**26.6**
Electronics							
Computers and Entertainment	0.2%	0.2%	0.1%	0.7%	0.0%	0.4%	1.2
Lighting Equipment	0.1%	0.1%	0.2%	0.3%	0.0%	0.2%	0.6
Smoke/CO Alarms	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Thermostats (Non-Mercury Containing)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Electronic Toys	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Outdoor Power Equipment	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0
Small Appliances and Power Tools	0.3%	0.1%	0.3%	1.2%	0.0%	0.4%	1.3
Major Household Appliances	0.0%	2.4%	0.0%	0.0%	0.0%	0.2%	0.7
Other Electronics	0.1%	0.0%	0.4%	0.3%	0.0%	0.1%	0.5
Subtotal	**0.6%**	**5.0%**	**1.2%**	**2.5%**	**0.0%**	**1.2%**	**4.3**
Household Hazardous							
Batteries	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.2
Lighting Equipment	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.2
Oil and Antifreeze	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1
Solvent and Flammable Liquids	0.0%	0.0%	0.2%	0.4%	0.0%	0.1%	0.4
Paint	0.1%	0.2%	0.3%	0.6%	0.0%	0.2%	0.7
Pesticides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Fertilizers	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1
Medications	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.2
Cosmetics	0.3%	1.3%	0.4%	0.2%	0.0%	0.3%	1.0
Mercury Containing Items	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0
Other Hazardous Waste	0.0%	0.0%	0.2%	0.5%	0.0%	0.1%	0.4
Subtotal	**0.6%**	**2.0%**	**1.5%**	**2.1%**	**0.0%**	**1.0%**	**3.4**

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Category	ICI	MF	SF	DO	C&D	Averag	kg/capit
Household Hygiene							
Biological – Diapers	4.7%	7.7%	7.9%	0.3%	0.0%	3.7%	12.7
Biological – Pet Waste	1.5%	5.8%	9.8%	0.4%	0.0%	2.8%	9.8
Other Biological	0.8%	1.5%	1.8%	0.0%	0.0%	0.7%	2.5
Subtotal	**7.0%**	**14.9%**	**19.4%**	**0.8%**	**0.0%**	**7.2%**	**25.1**
Bulky Objects							
Bulky Objects	0.4%	0.0%	0.1%	12.9%	3.3%	3.1%	10.7
Subtotal	**0.4%**	**0.0%**	**0.1%**	**12.9%**	**3.3%**	**3.1%**	**10.7**
Other							
Fines	1.5%	2.3%	2.3%	0.7%	1.1%	1.5%	5.2
Subtotal	**1.5%**	**2.3%**	**2.3%**	**0.7%**	**1.1%**	**1.5%**	**5.2**
Grand Total	**100.0%**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0%**	**347.6**

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APPENDIX F

WASTE FLOW IN CVRD

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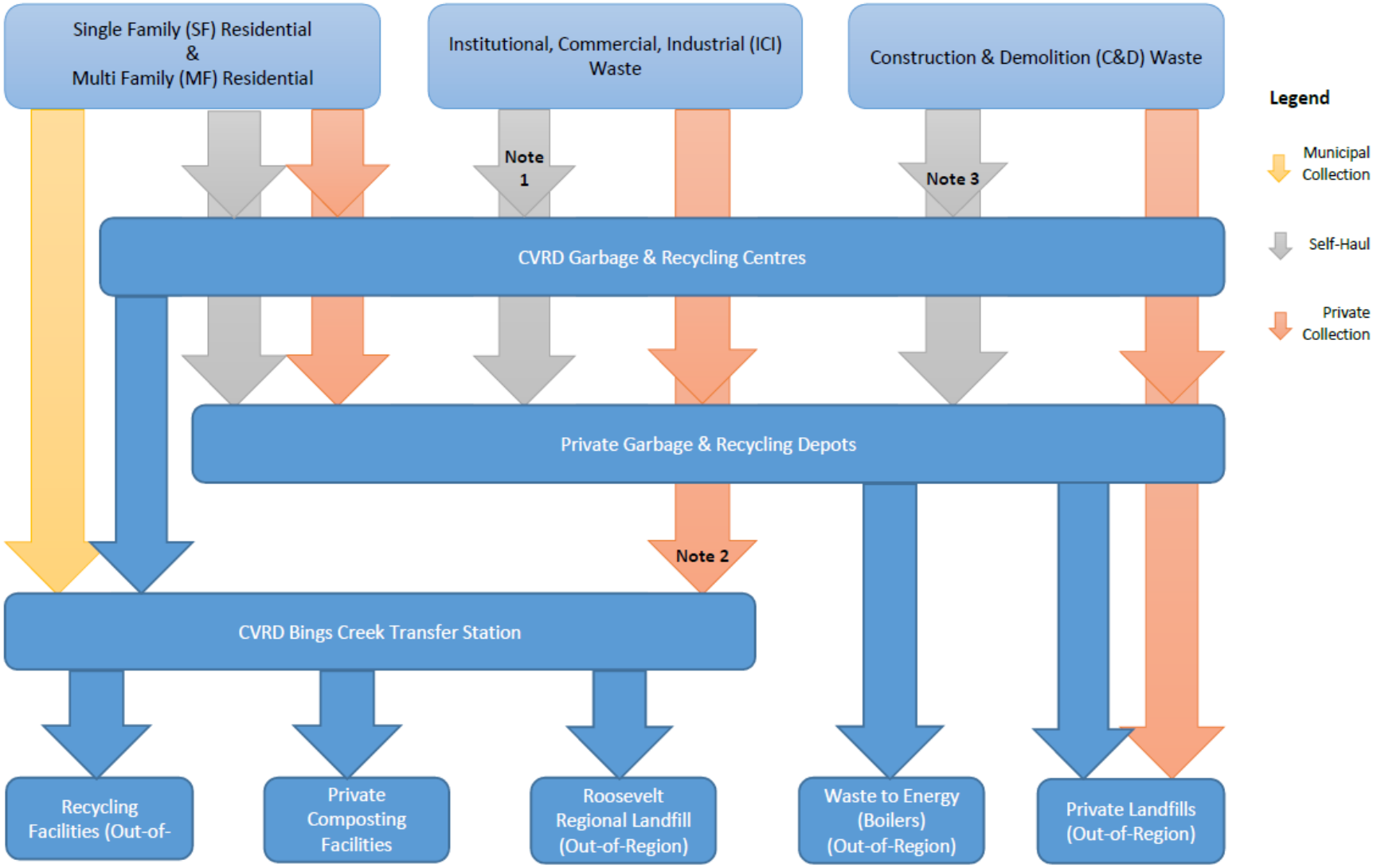

Note 1: Limited types of self-haul recyclables are accepted from ICI
Note 2: Only ICI garbage and organics accepted in self-tipping vehicles are allowed at Bings Creek
Note 3: Small quantities only, asbestos not accepted