

Environmental Resource Management Annual Report

Capital Regional District | 2014



CRD

Making a difference...together

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Overview of CRD Solid Waste & Resource Management

Background

The Capital Regional District (CRD) is the regional government for 13 municipalities and three electoral areas on southern Vancouver Island and the nearby Gulf Islands, serving more than 375,000 citizens. There are 22 First Nations whose traditional territories span portions of the region, with 11 of those Nations holding reserve lands throughout the capital region.

The CRD became responsible for solid waste disposal for the region in 1973 when the Province of British Columbia directed all regional districts to take control of solid waste disposal within their borders.

- In 1975 the CRD acquired Hartland landfill, which had been operating as a private facility since the early 1950s. Located in the District of Saanich, the facility continued to be operated by a private contractor until 1985, when the CRD assumed direct operation of the site.
- In 2008, the Highwest Waste Management Facility (now owned and operated by Tervita Corporation) was added to the CRD Solid Waste Management Plan. The Tervita Highwest Facility is located in the District of Highlands and primarily manages construction and demolition material.

Compactor at Hartland's active face.





Aggregate production for internal use at Hartland landfill

Garbage & Kitchen Scraps Collection

	SERVICE PROVIDER
RESIDENTIAL MATERIALS	
Esquimalt	Municipal Programs
Oak Bay	
Saanich	
Sidney	
Victoria	
View Royal	
Central Saanich	Private Sector Services
Colwood	
Highlands	
Langford	
Metchosin	
North Saanich	
Sooke	
Salt Spring Island EA	
Southern Gulf Islands EA	
Juan de Fuca EA	
BUSINESS MATERIALS	
All Areas	Private Sector Services

The Hartland facility is a multi-purpose site providing: recycling, household hazardous waste (HHW) collection, yard and garden waste collection and processing, controlled waste disposal and landfill services to commercial and residential customers.

In the region, residential garbage and kitchen scraps collection services are provided by municipal crews or contractors in six municipalities. Residents in the remaining seven municipalities and three electoral areas, as well as all commercial businesses, are serviced by private haulers. The CRD provides curbside and depot collection of residential recyclables (packaging and printed paper) under an agreement with Multi-Material BC (MMBC).

The Solid Waste Management Plan is a legally mandated document by the Province of British Columbia. The original CRD Solid Waste Management Plan (SWMP) was approved by the Minister of Environment in 1989. There have been two subsequent revisions to the original plan plus eight amendments. In 2012, the CRD began development of a new Integrated Solid Waste and Resource Management Plan and appointed a Public and Technical Advisory Committee.

The development of the new plan involves three stages:

- Stage 1:** Analysis of Existing Systems and Identification of Issues
- Stage 2:** Development and Evaluation of Options and Strategies
- Stage 3:** Plan Consultation and Adoption

The graph below outlines work to date completed on the development of the plan.



Environmental Resource Management Division

With a mandate of focusing on the environmental future, Environmental Resource Management is responsible for planning, developing and applying systems that will best ensure an integrated and beneficial use and reuse of our resources, some of which may now be seen as waste. The CRD is focused on looking at waste as a commodity for beneficial reuse. This includes a focus towards zero waste in our landfill, landfill gas capture, utilization of other energy from waste initiatives, organics diversion initiatives, and other emerging opportunities.



Curbside recycling collection

The Environmental Resource Management division is part of the CRD Parks & Environmental Services department and consists of:

Diversion Services

- planning and policy
- recycling and composting programs

Recovery Services

- landfill gas capture
- electricity generation

Landfilling Services

- disposal services
- environmental compliance

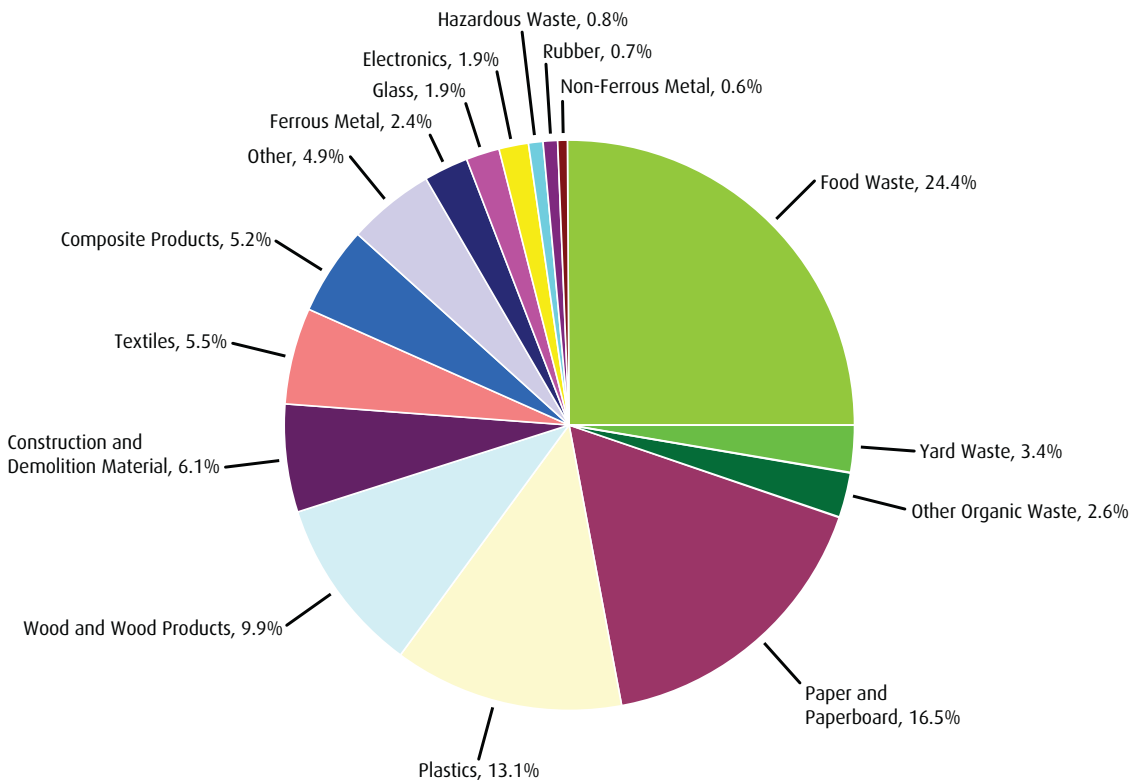
ERM reports to the Environmental Services Committee (ESC), which also acts as the steering committee for the development of the new Integrated Solid Waste and Resource Management Plan.

Waste Stream Analysis

Since 1990, the CRD has commissioned five studies to assess the composition of waste being landfilled at Hartland. These studies provide valuable benchmark data and analysis for evaluating the success of solid waste management programs. The studies also provide information on waste types to target, for example, household hazardous waste in 2001 and, most recently, organic materials such as yard and garden waste and kitchen scraps.

The fifth waste stream analysis took place in 2009/2010, with one phase conducted in the fall of 2009 and the second phase conducted in the spring of 2010. The study is conducted in two phases to allow for seasonal variance. A detailed statistical evaluation was completed as part of the final report that was published in 2010. Objectives of the study included determining the overall waste composition by material type, characterizing the waste by source sector (residential, industrial/commercial/institutional and demolition/land clearing), and reviewing trends from different areas of the Capital Region.

2009-2010 Solid Waste Stream Composition Study

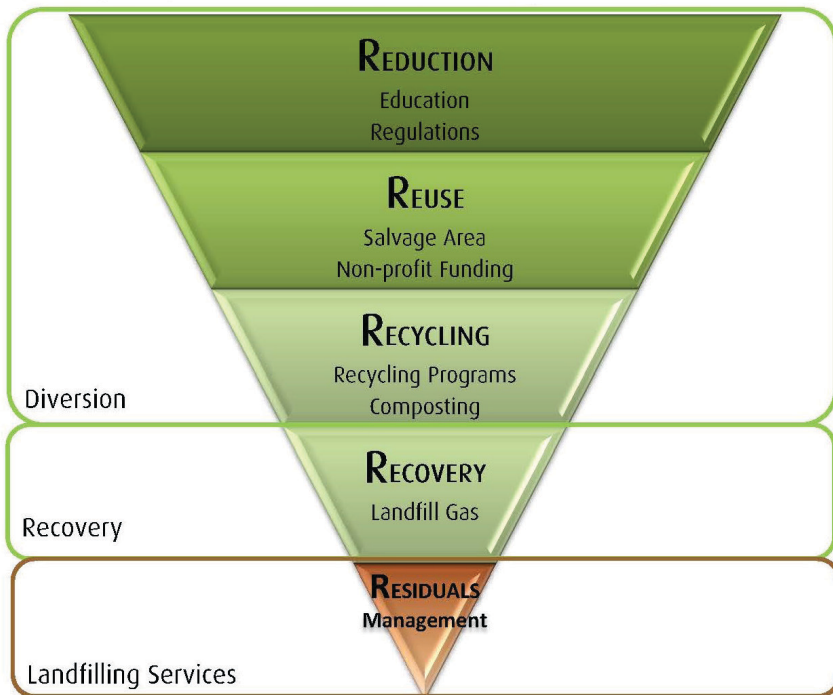


Solid Waste Diversion Strategy

Environmental resource management in the Capital Regional District is based on the 5R hierarchy of Reduction, Reuse, Recycling, Resource Recovery and Residual Management. The plan is to extend the life of Hartland landfill by minimizing waste disposal and maximizing diversion opportunities. The key strategies to divert waste from Hartland landfill are outlined in the 5R graphic.

In 2014, the Ministry of Environment created the BC Waste Disposal Calculator and adopted a new service plan target of 350 kg/capita solid waste disposal by 2020. Based on the Ministry's revised calculation method, the CRD's per capita disposal rate was 369 kg/capita in 2014.

CRD Solid Waste and Resource Management Strategies



Reduction & Reuse

Education & Outreach Programs

The Environmental Resource Management division, with support from Environmental Partnerships and Corporate Communications, has a number of education programs that support all solid waste diversion services in addition to promoting behaviour changes based on the 3Rs in general.

Activities include:

- Education and outreach for all solid waste programs
- Communication planning and research
- Advertising, promotional and educational materials
- Media relations (print, radio and television)
- Presentations, tours and outreach displays
- Hartland bi-annual open house

CRD Hotline

The CRD Hotline (250.360.3030) is an essential part of education and outreach programs. Callers can access an automated voice messaging service 24 hours a day or speak with a Hotline clerk during office hours of 8:30 am to 4:30 pm (closed 12 noon to 1 pm). The CRD Hotline can be reached by e-mail at Hotline@crd.bc.ca. Information can also be obtained on the CRD website at www.crd.bc.ca.

Myrecyclopedia.ca

Myrecyclopedia.ca contains a comprehensive online listing of household products and items—from aluminum to zinc—and includes the environmental story behind each item, recycling facility listings and tips on how to reduce and reuse in daily living. Myrecyclopedia was developed to encourage sustainable practices and to reinforce the 3Rs of Reduce, Reuse and Recycle.



The Hartland Learning Centre



Hartland Learning Centre
The LITTLE HOUSE on the LANDFILL

Environmental education is of paramount importance to the CRD, and the Hartland Learning Centre allows for place-based learning, which gives our youth and communities a chance for experiential, interactive involvement in education. Place-based learning links a learner to the space around them, creating awareness of natural and social history and the relation of our community with the rest of the world.

Green 365

The Green 365 outreach and engagement pilot assessed the effectiveness of campaigns that combined messages associated with central environmental themes. This project brought together complimentary environmental messages under a single umbrella and was the department's first fully integrated initiative. Green 365 consisted of two major campaigns, "In the Kitchen" and "Spring Cleaning", which were delivered consecutively from January to June 2014.



Hartland Happening: Open House



The 2014 Hartland open house was held on Sunday, June 22, 2014, for the purpose of promoting both public awareness and understanding of landfill operations and activities, as well as to help maintain and foster good relations with the local community surrounding the facility.

Many residents are not aware that Hartland landfill is owned and operated by the CRD and that it is the only sanitary landfill serving residents in the capital region. By showcasing the multi-purpose facility and its operations, such as the residential recycling facility, the household hazardous waste drop-off area and landfill services to both commercial and residential customers, we can promote the landfill and educate residents. Special attention was given to recent developments such as the Hartland Learning Centre.

The open house included a free shuttle to the event from Camosun College, guided tours, interactive exhibits, a giant sandbox and a truck and machine display area. The Central Saanich Lion's Club, a volunteer organization, was on site to barbeque hot dogs, hamburgers and veggie burgers that were free to participants. Donations were also collected for the United Way.



Children examining the landfill model at the Open House on June 22, 2014

The open house also offered a variety of environmental activities that were intended to be both informative for adults while also being interesting and entertaining for children. These activities included:

- Interpretive bus tours of the site with staff members, which highlighted recycling, environmental monitoring and waste management programs;
- An “Ask the Experts” station in the Hartland Learning Centre, where residents can ask technical questions and get detailed site information;
- Environmental educational displays regarding Hartland landfill, CRD recycling programs and solid waste management in general; and
- Other related educational displays including an integrated CRD display, the Compost Education Centre, Shaw Ocean Discovery Centre and BC Hydro.

Holiday Campaign

Every holiday season, we launch the “Remember the 3Rs this Holiday Season” campaign to remind residents to make the 3Rs part of their holiday actions. Since 2011, in partnership with Metro Vancouver, the seasonal “Creating Memories, Not Garbage” campaign has been delivered to capital region residents. The purpose of the campaign is to engage and inspire residents to celebrate the holidays without creating unnecessary waste that will end up at Hartland landfill.

Compost Education Centre



The Compost Education Centre (CEC) was established in 1992 to educate CRD residents about composting, ecological gardening practices and soil conservation. Under contract to the CRD, the CEC annually offers presentations, workshops, educational compost demonstrations, volunteer training, monthly e-newsletter and maintains the CEC Hotline and website.

In 2014, the CEC delivered 120 school presentations to 2,645 children from Pre-school to Grade 12, and facilitated 64 community workshops on topics from Composting Basics to Soil Science 101 and Mushroom Garden Pathways. Over 90,000 CRD residents visited the CEC's demonstration site or participated in one of its 32 educational community events, documentary nights and compost demonstrations. The CEC hosted six core community events in 2014, including a spring and fall Organic Plant Sale, Pollination Education Day and Mushroom Education Day. The CEC expanded its programming in 2014 to include a spring and fall rainwater harvesting educational series called Rainy Days in partnership with the CRD's Integrated Watershed Management department. The CEC reached a total of 250,392 residents in 2014 through all avenues of their educational mandate, an increase of 210% from 2013!

Community Clean-Up Funding

The CRD Community Clean-up program financially supports non-profit groups that make visible environmental improvements to their community through organized clean-ups. In 2014, the CRD provided funding to three non-profit groups. This funding provided support in the areas of:

- Collection, processing and marketing of recyclables recovered during clean-up.
- Container rental for transportation and disposal of non-recyclable material.
- Supplies, such as rubber gloves and collection bags.

Diversion Funding for Non Profit Recycling Organizations

Since 1992, the CRD has provided funding to non-profit organizations involved in recycling clothing and used household goods. The funding assists with their garbage disposal costs at Hartland, in recognition that some donated used goods are unusable and destined for the landfill. Eight organizations participated in the program in 2014.

Hartland Reusable Materials Program

The CRD partners with five organizations for the management of donated items received in the public drop-off area at Hartland. Goods such as textiles, books, household items and bicycles are redistributed through a variety of networks operated by these non-profit associations.

Recycling

Recycling Programs

Curbside/Depot/Apartment Recycling

On May 19, 2014, a new province-wide Extended Producer Responsibility (EPR) program for residential packaging and printed paper (PPP) commenced which shifted the responsibility for the management of these materials from local governments to producers. The new EPR program is administered by Multi Material BC (MMBC) on behalf of PPP producers. Local governments had the option to contract for the collection of PPP with MMBC.

The CRD chose to enter into an agreement with MMBC for collection of PPP to continue its residential blue box curbside and depot collection programs. The CRD apartment recycling funding program was discontinued as of May 19, 2014, when MMBC assumed responsibility for PPP from multi-family dwellings.

In 2014:

- 123,457 households were serviced by the blue box curbside program.
- 11,498 households on Salt Spring Island and the other Southern Gulf Islands were serviced by the depot program.
- 1,042 apartment buildings participated in the funding program until May 19, 2014.
- 11,092 blue boxes and 24,781 blue bags were distributed to residents.
- 16,994 tonnes of recyclables were collected in the curbside program.
- 505 tonnes of recyclables were deposited at Electoral Area recycling depots through the MMBC agreement from May 19 to December 31.

2014 Achievements

- Conducted 49 Hartland school tours to over 1,350 participants
- Delivered 67 school program presentations and workshops
- Delivered 16 community presentations and 28 community tours
- Provided waste reduction messaging at 32 community displays
- Provided event recycling bins at 22 community events
- Received 55,000 Hotline enquiries

Hartland Diversion Programs (Tonnes)

Antifreeze	4
Appliances	128
Asphalt Shingles	101
Batteries	6
Books	50
Containers (metal, plastic)	33
Cooking Oil	3
Electronics and Electrical Items	309
Fibres (paper/cardboard)	330
Foam Packaging	10
Fire Extinguishers	1
Food Waste	2,109
Glass (bottles, jars)	11
HHW Orphans	66
Lead Acid Batteries	28
Light Bulbs, Tubes, Ballasts	7
Mattresses	218
Metals	590
Metal Appliances	128
Motor Oil, Filters, Containers	32
Paint, Solvents, Pesticides	167
Plastic (Bags & Overwrap)	12
Plastic (Large Rigid)	147
Propane Tanks	16
Reusable Materials	12
Tires	54
Wood	1,653
Yard & Garden Material	657

Total 2014 Hartland Recycling 6,882

Hartland Public Drop-Off Area

The public drop-off area at Hartland receives garbage, recyclables and household hazardous waste. Over 80 items from 28 product categories are accepted for recycling. This area is intended for residential quantities only for vehicles with a maximum GVW of 5,500 kg.

2014 Recycling Fees:

- \$107/tonne for wood waste, mattresses and asphalt shingles
- \$57/tonne for yard and garden material
- \$6 gate fee for recycling area (residents)
- \$26 gate fee for recycling area (small commercial loads)
- No charge for Extended Producer Responsibility products
- No charge for Household Hazardous Waste

Additional charges include a \$10 fee for general refuse deposited in the transfer area and \$20 per item for appliances containing refrigerants.



Bikes donated as part of Hartland’s Reusable Materials Program

Extended Producer Responsibility Programs

British Columbia's industry-led product stewardship programs require producers of designated products to take Extended Producer Responsibility (EPR) for the life-cycle management of their products, including collection and recycling. The BC Recycling Regulation, under authority of the Environmental Management Act, sets out the requirements for product stewardship in BC.

The CRD supports industry-led product stewardship with participation in the following provincial programs:

Beverage Containers (Refundable)

Refundable glass, plastic, aluminum, metal and polycoated beverage containers are accepted at the Hartland recycling facility and Electoral Area recycling depots. Beverage bags and pouches are not included in CRD programs. Refundable beverage containers are also accepted at participating retail stores and private depots.

Electronics, Electrical Products, Batteries and Lighting Products

In 2014, the CRD partnered with seven stewardship agencies for the collection of various electrical items at the Hartland recycling facility:

- Encorp Pacific (computers, monitors, printers, TVs, audio visual)
- ElectroRecycle (small appliances, power tools, sewing machines, exercise equipment)
- Call2Recycle (batteries and mobile phones)
- LightRecycle (residential fluorescent lamps and CFL bulbs and lighting fixtures)
- Switch the 'Stat (thermostats)
- AlarmRecycle (smoke detectors)
- Outdoor Power Equipment (processed through metal recycler)

Lead-Acid Batteries

Lead-acid batteries have been accepted at the Hartland recycling facility since 1992, shortly after the BC Lead Acid Battery Collection program was introduced. This first generation program transitioned in 2012 to being managed under the BC Recycling Regulation. Batteries are broken down at smelters into lead, plastic and acid.

Paints, Solvents and Flammable Liquids, Gasoline and Pesticides

Since 1994, the CRD has worked with the Product Care Association (PCA) to provide the region with waste paint collection at the Hartland recycling facility. Since then, the program has expanded to include solvents, flammable liquids, gasoline and pesticides (paint plus) and a paint exchange.

Number of PCA paint depots in the region:

- 1 paint plus with paint exchange (Hartland Recycling)
- 3 paint plus
- 2 paint only with paint exchange
- 5 paint only

Pharmaceuticals

The pharmaceutical EPR Medications Return Program is promoted regionally through the CRD Hotline, CRD website and Myrecyclopedia.ca, as well as in CRD Source Control messaging. The CRD works in partnership with the Medications Return Program and Island Health to raise awareness about safe and proper disposal of medications. Through 2014, the CRD continues to have one of the highest medication return rates per capita amongst regional districts in the province.

Packaging and Printed Paper

In May 2011, the BC Recycling Regulation was amended to add packaging and printed paper (PPP) from residential generators. The amendment shifted the financial responsibility for managing these materials from local governments to PPP producers as of May 2014. PPP includes all materials currently collected in the blue box recycling program. Additional materials such as Styrofoam and plastic bags are accepted at depots.

The CRD has entered into agreements with MMBC to collect PPP and has contracted the work to a curbside service provider and depot recycling societies. The CRD provides PPP collection services to residents at the Hartland recycling area and Port Renfrew transfer station.

From May 19 to December 31, 2014, MMBC reports that 12, 756 tonnes (36.6 kgs per capita) of PPP was collected in the region, with:

- 11,670 tonnes collected through the CRD curbside recycling program
- 744 tonnes collected through CRD depot recycling programs
- 342 tonnes collected through other non-CRD programs operating in the region



Front end section of Hartland public drop off area

Tires

Tires have been accepted at the Hartland recycling facility since the depot opened in 1992, in conjunction with the province's Financial Incentives to Recycle Scrap Tires ("FIRST") program. In 2007, this provincial initiative was replaced with an EPR program under the BC Recycling Regulation managed by Tire Stewardship BC (TSBC). TSBC, in partnership with the Bicycle Trade Association of Canada and the local biking community, also offer a voluntary program for the recycling of tires and tubes through bike retailers. Collection of bicycle tires and tubes at Hartland began in 2011.

Used Lubricating Oil, Filters and Containers

The BC Used Oil Management Association (BCUOMA) manages the product stewardship program that provides for the collection and recycling of used oil, oil filters, antifreeze and containers. The program strives to ensure every drop of used oil and antifreeze, every filter and container, is brought to a collection facility to be properly recycled.

Organics Management

Regional Kitchen Scraps Strategy

In April 2012, the CRD Board voted to implement a region-wide kitchen scraps strategy based on the success of pilot programs in the District of Oak Bay and Town of View Royal. Kitchen scraps include meat, bones, grains, dairy products, eggs, vegetables, fruits and some soiled paper products.



The initial phase of the strategy included an incentive, in 2013 and 2014, for waste haulers who delivered separate kitchen scraps loads to CRD-approved transfer stations and composting facilities. Also during this time period, 1,000 food waste digesters were distributed to residents in rural areas and on the Gulf Islands, at a slightly subsidized price. In 2014, over 15,000 tonnes of kitchen scraps were diverted from Hartland landfill through the incentive. A planned surcharge component of the strategy was cancelled. In the final phase of the strategy the CRD will implement a ban on kitchen scraps from Hartland landfill starting January 1, 2015.

The kitchen scraps collection program will save landfill airspace and help to increase diversion and reduce the disposal rate. Regional greenhouse gas (GHG) emissions that contribute to climate change will also be reduced. In addition, kitchen scraps processing will create a valuable resource, such as compost and/or biogas. It is estimated that 30,000 tonnes of processed kitchen scraps would generate approximately 17,000 tonnes of finished compost.

In 2014, the CRD Board directed staff to investigate the establishment of a kitchen scraps processing facility within or in proximity of the region. An Expression of Interest for processing capacity was issued in November 2014.

Compost Facilities Bylaw

The CRD Board adopted the regional composting bylaw in December 2005. The bylaw came into effect immediately for new facilities and 12 months thereafter for existing facilities. The bylaw regulates the operation of composting facilities to protect public health and the environment. As of June 2014, there were no licensed facilities under the bylaw.

Yard & Garden Material Landfill Restriction

In 2006, a yard and garden material landfill ban came into effect. A number of private facilities in the area accept the region's yard and garden material. In 2014, 657 tonnes of source-separated yard and garden material was received at Hartland where it was ground and used on-site. The landfill ban excludes invasive, infectious and noxious plants, which are managed at Hartland as garbage or controlled waste through a reduced rate of \$57/tonne in an effort to reduce their expense.

Household Hazardous Waste

In 2005, the number of items collected at the Hartland recycling facility was expanded to include non-stewardship household hazardous wastes. This expansion provided the region's residents with a "one-stop" drop for virtually all of their Household Hazardous Waste (HHW) and is the only program of its kind in British Columbia. The material is accepted in residential quantities only, at no charge, for recycling (where feasible) or disposal at a special waste management facility.

Salt Spring Island and the Southern Gulf Islands are serviced by means of mobile HHW collection events held on the islands. Initial events were conducted on these five islands during 2006/2007, with subsequent events scheduled for every two years. In 2014, HHW collection events were held on Pender Island and Salt Spring Island.

Household Hazardous Waste collection at Hartland.





Installation of landfill gas collection piping at Hartland

Recovery

Hartland Gas Utilization Facility

With a 56.4% capture rate in 2014, 943 ft³/min of landfill gas produced enough energy to power 1,100 homes. The CRD strives to optimize landfill gas production with a 75% capture rate by 2016.

In 2013, the CRD purchased Maxim Power Corporation's portion of the power plant, which gives the CRD full control over the landfill gas. In addition to landfill gas recovery, staff are continually investigating other resource recovery opportunities.

Residuals Management

Hartland landfill is a state-of-the-art, award-winning facility receiving the Silver Landfill Management Excellence Award from the Solid Waste Association of North America in 2005, as well as other awards for leadership and innovation in gas utilization and best practices for household hazardous waste collection. The CRD received four awards in 2010 for its safety initiatives, including the prestigious National Award for Best Safety Week Program in Canada, in which Hartland landfill played a major role. In 2011, Hartland was recognized with the Leader in Sustainability, Top 100 Participants in Canada award from Call2Recycle.

Landfill Disposal Rates

Landfill tipping fees provide a financial incentive to reduce the quantity of solid waste being brought to the landfill for disposal. The landfill tipping fee structure for 2014 included:

- \$107/tonne for general refuse
- \$152/tonne for controlled waste
- \$247/tonne for bulky waste

Residential User Pay Garbage Collection

The six municipalities in the region that offer residential garbage and kitchen scraps collection utilize a user pay system. This system limits the amount of refuse each household may place out for collection to the equivalent of one can/bag per week. Additional cans or bags are only collected if residents purchase and attach garbage tags. Households with private garbage collection services also use a user pay system.

Landfill Material Restrictions

Landfill restrictions have been part of the CRD waste diversion strategy since 1991 and are only implemented when viable and sustainable recycling alternatives exist. Recyclable materials banned from disposal include:

- 1991 - drywall
- 1993 - corrugated cardboard, white goods, tires, directories
- 1995 - scrap metal, aggregate, concrete, asphalt, rubble, clean soil
- 1998 - paper fibres
- 2006 - yard and garden waste
- 2011 - Extended Producer Responsibility materials

A kitchen scraps ban will come into effect on January 1, 2015.



Several Hartland landfill staff.

Landfill Capital Works

Since 1995, over \$30 million has been invested in capital works, environmental controls and general site improvements.

In 1997, Phase 1 of the landfill site was closed and the filling of Phase 2 (Heal basin) was initiated. It is expected that Phase 2 will continue to receive landfill materials until about 2049, at which time it will have reached its current design capacity.

Following are achievements for 2014:

- Installation of new horizontal gas wells and leachate collectors in the west half of the 171m landfilling lift and the east half of the 175m landfilling lift and commissioning of fourteen horizontal wells to increase gas collection efficiency.
- Environmental Engineering oversees the landfill operations contract.
- Environmental Engineering continued to work with Seattera on the development of the Hartland North pad for the proposed Resource Recovery Centre.
- Completion of Cell 2 Cliff Quarry.
- Planning for Phase 2, landfilling Cell 3.
- Upgrades to Food Waste Transfer Station.
- Assessment and design of commercial scale deck.
- Landfill capacity study initiated.

Site Reclamation

Since the Phase 1 closure, significant efforts have gone towards site rehabilitation. A long-standing vision for Hartland landfill is to restore the land to a condition that will blend in naturally with the surrounding forest. Planting began in 2004 and includes Douglas Fir, Big Leaf Maple and Red Alder, as well as Ocean Spray, Indian Plum and Mock Orange (all of which are native to the area). Phase 1, Cell 1 Final Closure design was completed in 2010, which included a final cover complete with a new wetland sedimentation pond in addition to gas, leachate and road upgrades.

In 2008, Hartland landfill received a \$50,000 Trees for Tomorrow grant to plant thousands of native trees, seedlings and bushes over top of Phase 1. This area of the landfill has been capped and sealed with a plastic liner and layer of soil, allowing vegetation to grow as a top cover. Because landfill areas can settle and shift over time, a green space or a park is an ideal end use for a closed landfill. Over 22,000 trees and bushes have been planted over Phase 1 of Hartland landfill.

Leachate Management

Leachate is liquid that is produced from decomposing refuse and includes any precipitation that comes in contact with the refuse. To minimize the leachate generation area, impermeable covers are installed on the landfill and perimeter ditches are lined to divert more clean surface water away from the landfill. The most recent final closure of the North face of Phase 2 Cell 1 was completed in 2011 and plans are underway for additional progressive closure of the East and South Faces of Phase 2 Cell 2. These closures reduce the total leachate generation area of the landfill.



Leachate lagoon at Hartland landfill.

Environmental Monitoring

The operation of a landfill can result in potential environmental effects and health and safety issues, specifically to surface water and groundwater, and the production of landfill leachate and landfill gas. Hartland landfill uses a number of control measures to prevent or reduce effects on groundwater, surface water and air. An environmental monitoring, assessment and management program is in place to measure the effectiveness of these control measures, and to identify potential impacts of landfill operations and solutions.

In 2014, landfill gas monitoring confirmed that the landfill gas collection system worked effectively to control emissions from Phase 1. Additionally, new gas wells installed in Phase 2 as part of a long-term gas management plan, resulted in increased gas utilization and collection efficiency. Water quality monitoring indicated that landfill leachate is effectively contained and controlled on site. Leachate quality monitoring confirmed that leachate discharged from the site was generally in compliance with CRD's Sewer Use Bylaw, which regulates discharges to the sanitary sewer. Surface water issues associated with runoff from aggregate stockpiled on the Hartland North site continue to improve as a result of the cover installed on the stockpile and continual reduction of stockpile size.

2014 Summary

Environmental resource management in the Capital Region consists of a complex and mature materials management system that is constantly evolving. The Environmental Resource Management division uses its mandate to educate, facilitate and regulate to help minimize waste and maximize resources. A number of successful programs have been implemented over the years that have resulted in a per capita disposal rate of 369 kg as compared to the provincial average of over 500 kg/person.

Total Refuse by Type

Type of Waste Declared	2013 Annual Total (tonnes)	2014 Annual Total (tonnes)	% Change from 2013
General Refuse	123,210	119,306	-3%
<u>Controlled Waste</u>			
Miscellaneous	735	849	16%
Liquid Waste	676	611	-10%
Asbestos	1,711	1,572	-8%
Screenings	5,086	5,707	12%
Sub-Total	8,208	8,739	6%
Total	131,418	128,045	-3%

- Miscellaneous includes food processing, surface coating and health hazard wastes, fibre optic cable, spoiled food, animal feces, dead animals, contaminated drywall, soot and contaminated soil
- Liquid waste includes pumpings from catch basins, car wash sumps and other sumps containing non-hazardous waste
- Asbestos also includes material from outside of the region

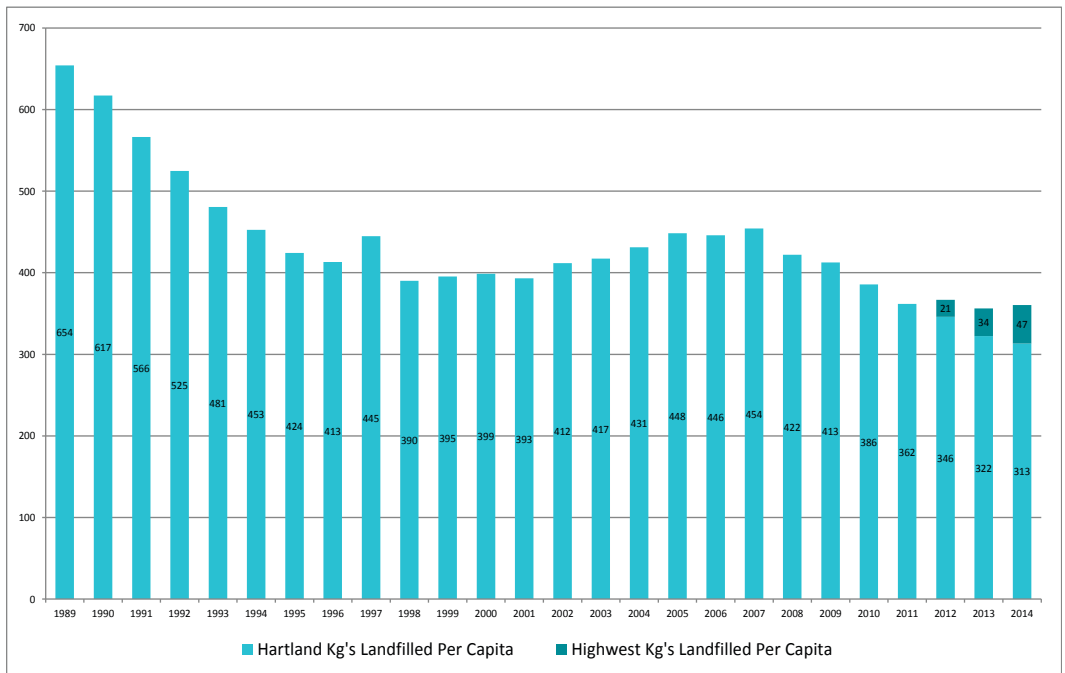
CRD Per Capita Disposal Rate

The Province of British Columbia has begun using per capita waste disposal rate as the standard solid waste metric and is targeting 350 kg/capita by 2020. Based on the Ministry of Environment's new calculation method, the CRD's 2014 disposal rate was 369 kg/capita and is expected to be well below 350 kg/capita by the end of 2015, when the kitchen scraps ban has been fully implemented.

Year	Population ¹	Hartland Landfill			Tervita Highest Landfill ²	Disposal Rate (kg/person)
		Received	Beneficial Use	Landfilled		
2012	368,935	129,279	n/a	129,279	7,880	372
2013	371,265	123,210	n/a	123,210	13,025	367
2014	372,463	120,942	-1,636	119,306	18,000	369

¹ BC Stats

² 80% of facility's total disposal in recognition of out-of-region waste being landfilled at site



Financial Management

A sustainable financial business model is essential for the provision of solid waste services. In the CRD, the majority of funding has traditionally been drawn from landfill tipping fees, with a new significant funding source from EPR programs being added in 2014. This form of financing has practical limits as diversion increases and landfill volumes decline. The deficit is currently covered from a sustainability reserve fund that was established in 1998. Long term financial sustainability of the CRD solid waste function will form a critical part of the new Integrated Solid Waste and Resource Management Plan.

Revenues	
Tipping Fees	\$15,384,915
EPR Programs	\$3,198,168
Power Plant	\$646,247
Recycling Program Revenues	\$134,956
Permits, Fines & Misc	\$61,900
TOTAL	\$19,426,186
Costs	
Recycling Collection Programs	\$5,720,434
Landfill Operations	\$5,498,543
Capital Spending	\$3,070,000
Kitchen Scraps Contracts	\$993,110
Closure & Post-Closure Fund	\$910,000
Debt Charges	\$645,965
Hartland Recycling	\$611,871
Household Hazardous Waste	\$603,458
SW Initiatives & Enforcement	\$536,681
Planning	\$400,942
Equipment & Vehicle Fund	\$328,708
Power Plant Costs	\$268,168
Community Support Programs	\$222,999
TOTAL	\$19,810,879
Surplus (Deficit)	\$(384,693)

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