9. Environment

Quality of life is not merely about our physical, emotional, social, or financial well being. We know that our built environment impacts the natural one, and visa versa. The long-term effects of our influence on the environment are not always clear, nor as immediate as a natural disaster. However, we now know that our actions and decisions have consequences. Anthropogenic or human-made environmental disasters like Bhopal, Love Canal, Exxon Valdez, and Chernobyl, to name a few, are familiar to most people in the modern world. “Green” and “sustainable” are becoming tired adjectives added to any product or hype. The truth is, whatever you call it; we have choices on how we impact the environment – for better or worse.

The Comox Valley Conservation Strategy (CVCS) is an ongoing initiative by the CVCS Steering Committee and Community Partnership to create a region-wide strategy for land conservation. They are working together with regional and municipal planners, engineers and politicians with an aim to provide reliable and accessible conservation information to the community. As a long-term approach to regional conservation, the CVCS hopes to protect the lands that are essential for ecosystem function, human health and well-being, economic sustainability, and civic pride. Further information on the strategy, and links to reports are available on the Comox Valley Land Trust web site at http://www.cvlandtrust.org/rcs-project.htm.

9.1 Water Use

Two factors affect our long term water planning: growth of population and potential changes in weather and water supply. Four areas of concern are included when evaluating water management:

1. A healthy respect for the water we use.
2. Active conservation of water: especially during dry seasons.
3. Protection of our watersheds and main water sources.
4. The need to extend the life of infrastructure.

The Comox Valley Regional District's role is to provide a reliable source of safe, high-quality drinking water to homes and businesses within some of its member municipalities and electoral areas. This includes acquiring and maintaining the water supply, treating it to ensure quality, and delivering it. The Comox Valley Water System serves the largest number of users in the region. Water for this system is taken out of

the Puntledge River by the regional district, downstream of Comox Lake, through a water license agreement with BC Hydro and the government of BC.[201]

The current water system in the Valley supplies water to approximately 40,406 people.[202] Most receive their water from the local water supply systems. The exceptions are parts of Denman Island, Hornby Island, Merville, Dove Creek, Point Holmes, and Plateau Road where water is provided independent of water operators.[203]

Table : Water Operators of the Comox Valley

Name of purveyor	Number of hook-ups	Water source	Area provided
Fanny Bay Waterworks	73	Cowie Creek: 2 source wells	Tsable River south to SPID (see below)
Ship's Point Improvement District	248	Groundwater: 3 source wells	Ship's Pt Road, Tozer Road, Baynes Drive, Vivian Way, Wente Way
Union Bay Improvement District	630	Langley Lake	Tsable River to Spindrift
Royston Improvement District	850	Cumberland Public Works bulk water sale	Spindrift to Fraser, Garltey Pt, Kentwood
Cumberland Public Works	1046	Allen and Henderson Lakes	Cumberland, transition point between RID on Royston Cumberland Road at Kentwood
Sandwick Improvement District	652	Groundwater: infiltration gallery adjacent Tsolum River	Mission Hill area
Mount Washington Alpine Ski Resort Ltd.	232	Groundwater	Mount Washington
Watutco Enterprises Ltd.	212 residential hook-ups and 200 + seasonal resort/RV/tent hook-ups	Oyster River, filtration gallery	Saratoga Beach area
Comox-Strathcona Regional District	38,000 residents	Comox Lake is the main system network Two other small systems exist in Black Creek and on Denman Island	Courtenay, Comox, parts of Black Creek, parts of Denman Island
Graham Lake Improvement District	65	Graham Lake	Subdivision on East Road

Source: Comox Valley's Drinking Water Reference Guide, June 2007, p 79, Table 7.

[201] Comox Valley Regional District. Water Conservation and Metering.

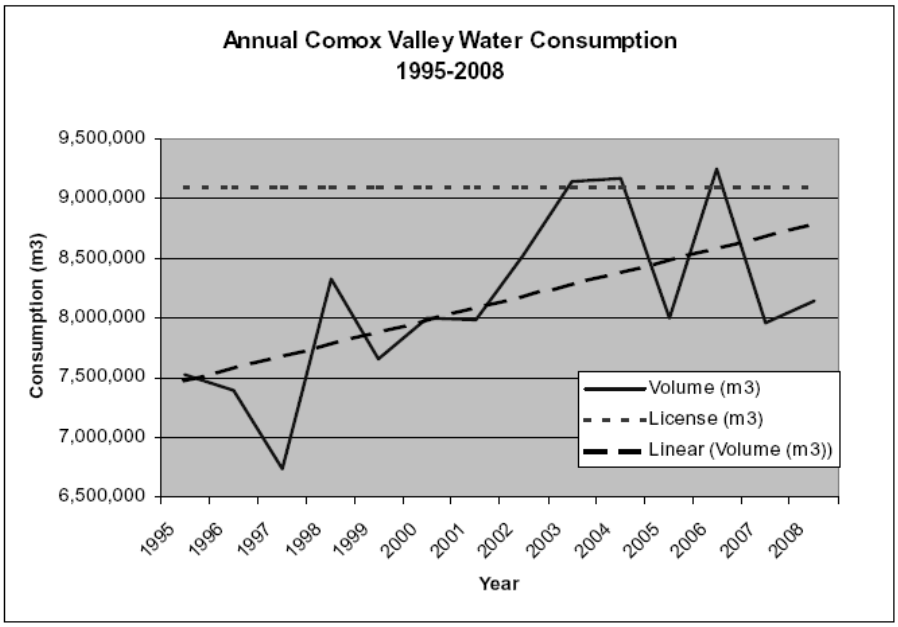
[202] Comox Valley Regional District Water Efficiency Plan, p. 2.

[203] Comox Valley Water Watch Coalition, Comox Valley's Drinking Water Reference Guide, June 2007, p 79, Table 7. Prepared by Sonya Jenssen.

With a growing population, water management is an issue that leads to heated debate. The Comox Valley Regional District has held a number of public forums on water use that highlighted the challenges and options facing the community. A draft report on water management, released June 2009, outlines the Comox Valley Regional District "water efficiency plan". [204]

Although the annual water consumption in the Comox Valley varies, depending on the annual rainfall, the overall trend (the linear scale in the graph below) is for increasing use. In fact, some years have exceeded the allowable annual withdrawal limit. There are predictable peak variations within each year, due largely to lawn and garden watering from the months of May to October.

Figure : Comox Valley Annual Water Consumption, 1995 to 2008.



Source: Comox Valley Regional District Water Efficiency Plan, Graph 1, p5.

BC is thought to have more rain than other parts of Canada, but in fact, monthly rainfall plummets between May and September, when demand for water is highest. Our summer rainfall averages 201 mm, compared to Calgary's average of 300 mm during the same months.[205] The Valley's per capita consumption continues to be the highest in BC and in Canada.

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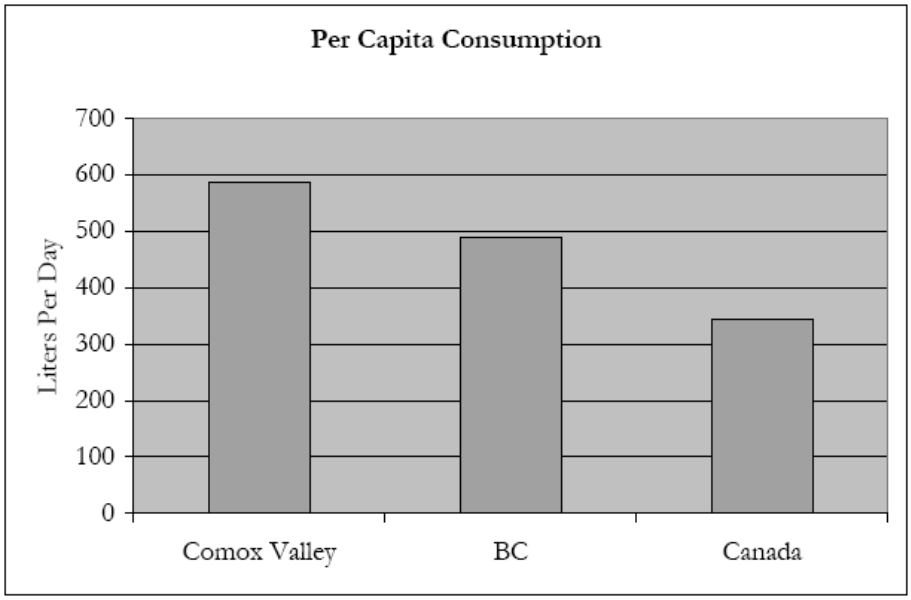
[204] Comox Valley Regional District Water Efficiency Plan.

[205] Comox Valley Regional District, Top 10 Most Popular Water Myths.

Figure : Daily Per Capita Water Use Comparison between the Comox Valley, BC & Canada



Source: Comox Valley Regional District Water Efficiency Plan, Graph 4, p8.

Current water use in the Comox Valley is about 675 litres per person per day. In comparison, average water use in the City of Nanaimo (which has a universal water meter system) is about 450 litres per person per day.[206]

A $2.6 million investment from the federal and provincial governments will go toward "twinning the East Courtenay Reservoir in order to double the region's available water supply. The project will also install new water level monitoring equipment".[207] However, more water will not mitigate water use unless people voluntarily choose to modify their attitudes and habits. This can be achieved through conservations practices, or through the installation of water meters.

Although controversial because of the expense, statistically, meters prove to change people's water use very quickly. A universal metering system generally reduces consumption by 20% and reduces peak demand during summer by 30%.[208] The Village of Cumberland has already decided to install meters at a cost of about $800 per household.[209]

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[206] Comox Valley Regional District. Water Usage by Province/Territory Including the Comox Valley.

[207] 2008 Comox Valley Regional District Annual Report, p. 16.

[208] Comox Valley Regional District. CV Water Metering, Koers & Associates Engineering Inc, Nov, 2007, p.22.

[209] "Valley residents thirsty for information on water",Comox Valley Echo, June 16, 2009.

Another benefit of meters is that they could effectively defer the need to expand existing pipes, pumps, reservoirs, etc. by 10 years. An engineering consultant has calculated that these deferred upgrades will save $4.27 million over the next 20 years.[210]

9.2 Water Quality

The main water source for the Comox Valley - Comox Lake - is an unprotected watershed. Further, the Vancouver Island Health Authority "has previously advised the Comox Valley water supply commission of their treatment standards policy for surface water supplies. Currently the regional district is not compliant with these water quality standards"[211]. Although the Comox Valley Regional District meets the provincial legislated standards, the VIHA 4-3-2-1 standards require the following to be met by the district: log inactivation of viruses; log removal or inactivation of Giardia cysts and Cryptosporidium oocysts; treatment process; and NTU maximum turbidity in finished water.[212]

In response, the CVRD began a watershed assessment for Comox Lake in 2006. A report generated by CH2M HILL revealed that "most human activities associated with risk occur in the summer, when lake processes are limited, and near the lake outlet where the water source is most vulnerable."[213]

The CVRD has also budgeted for an ultraviolet disinfecting (UV) system that will help them meet the 4-3-2-1 standards, but additional measures will be needed to meet the standards fully. These measures include increased watershed protection, the Comox Lake intake project, and/or a water filtration facility.[214] In general, the public is more supportive of steps that will improve water quality rather than those that reduce water quantity, such as water metering. Although universal metering is not always greeted by

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[210] "Valley residents thirsty for information on water",Comox Valley Echo, June 16, 2009.

[211] Comox Valley Regional District, Staff Report: Comox Lake Intake Project, February 27, 2009, p.2. File Number: 5260-01.

[212] Ibid, pp.2-3.

[213] Technical Memorandum 4, Comox Lake Watershed Assessment: Characterize Risk, June 2006, p.20.

[214] Comox Valley Regional District, Staff Report: Comox Lake Intake Project, February 27, 2009, p.3. File Number: 5260-01.

the public favourably, the water demand reductions from metering and other water efficiency measures will reduce the size and cost of the intake project.[215]

For more information on the Comox Valley Regional District Water Systems, visit http://www.rdcs.bc.ca/section_propserv/content.asp?id=4122&parent=81&sub_collection=92.

9.3 Air Quality

Air quality remains an unknown in the Comox Valley, as no data is collected to evaluate its condition. There are many models that the Comox Valley can look to regarding the usual changes a community experiences over time: population growth means more automobiles, more garbage, more greenhouse gas emissions, and more pollution. Higher levels of air pollutants are associated with higher levels of health problems, like respiratory and cardiac diseases, and with increasing damage to vegetation, agricultural land, and forest.

Citizens of numerous communities are taking action. They use public transit more often, walk or bicycle to where they need to go, or they car-share.

On Clean Air Day, June 4, 2008, the BC government announced their Air Action Plan. This plan sets out 28 actions to reduce pollution and allocates $28.5 million over a three year period to improve BC's air quality. All initiatives will be underway by 2009.[216]

One program initiated and approved in the Comox Valley to improve air quality is the "Idle-Free Zone" campaign launched in 2008. However, this is a voluntary program, and no data is collected on the results of the campaign in reducing engine emissions.

The Canadian government released a report *Canada's Greenhouse Gas Emissions: Understanding the Trends, 1990-2006* that analyzes the underlying trends that have shaped Canada's total Greenhouse Gas (GHG) emissions since 1990. There are detailed reviews of the primary economic, technological and other societal drivers that contribute to emissions, and comparisons from1990 to 2006 with the 1980 to1990 period.

> "In 2006, Canada's GHG emissions amounted to 721 megatonnes of carbon dioxide equivalent (Mt CO2 eq), which is 22% over 1990

[215] Comox Valley Regional District, Staff Report: Comox Lake Intake Project, February 27, 2009, p.4. File Number: 5260-01.

[216] BC Ministry of the Environment. Environmental Protection Division. BC Air Action Plan.

> emission levels and 29% above our Kyoto target. Although this represents a significant increase over the past 16 years, Canada has recently been experiencing a declining trend since 2003; 2006 emissions are 2.8% below 2003 levels...Canada's economic GHG intensity—the amount of GHGs emitted per unit of economic activity—was 11% lower in 2006 than in 2003." [217]

In the annual national inventory of GHG emissions, 2007 saw an increase of 4.0% from the 2006 levels.[218] This was due in part by the increased emissions from fossil fuel extraction and production, mining extraction, and electricity and heat generation. Additional factors affecting emissions were the colder winter of 2007 that increased heating use by almost 10% over 2006 on a national basis, and the growing popularity of sport utility vehicles that increased emissions in the transportation sub-sector.[219]

Table : Provincial and Territorial GHG Emissions, 1990 and 2006.

Table 4 Provincial and territorial GHG emissions, 1990 and 2006[a, b, c]

	1990 GHG emissions (Mt CO_2 eq)	2006 GHG emissions (Mt CO_2 eq)	Absolute change in emissions (Mt) 1990–2006	Relative change in emissions (%) 1990–2006	Relative contribution to absolute growth in emissions (%) 1990–2006	2006 GHG emissions per capita tonnes CO_2 (eq/person)	2006 GHG intensity of GDP (kg CO_2eq/$ GDP)
NL	9.39	9.39	0.0	0	0.0	18.4	666
PEI	1.96	2.05	0.1	5	0.1	14.9	640
NS	19.0	19.6	0.6	3	0.5	21.0	828
NB	15.9	17.9	2.0	13	2	23.9	907
QC	82.7	81.7	-1.0	-1	-0.8	10.7	362
ON	174	190	16	9	13	15.0	423
MB	18.8	21.2	2.4	13	2	18.0	618
SK	44.0	72.0	28	63	22	72.9	2 275
AB	172	234	63	37	49	69.5	1 609
BC	48.9	62.3	13	28	10	14.4	458
YT	0.54	0.39	-0.1	-27	-0.1	12.6	328
NT & NU	1.49	1.29	-0.2	-13	-0.2	17.7	261

Source: Canada's Greenhouse Gas Emissions: Understanding the Trends, 1990-2006, p.25.

Table 28 above is a summary of GHG emissions by province. The largest provincial contributor to the nation's increased GHG emissions was Alberta (50%), followed by

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[217] *Canada's Greenhouse Gas Emissions: Understanding the Trends, 1990-2006*, p.1. Her Majesty the Queen in Right of Canada, represented by the Minister of the Environment, 2008.

[218] *Information on Greenhouse Gas Sources and Sinks: Canada's 2007 Greenhouse Gas Inventory – A Summary of Trends*, p.1. Environment Canada.

[219] Ibid, p. 2 and 4.

Saskatchewan (22%), Ontario (13%) and BC (10%). The rest of the provinces and territories contribute 3% of the increase.[220]

9.4 Recycling

The Comox Valley Waste Management Centre (formerly Pidgeon Lake Landfill) was expected to reach capacity by 2029 (changed from 2032)[221], but with the boom in population and the additional waste generated, the landfill is likely to be full in 7 or 8 years.

Comox Valley citizens now generate 72,000 tonnes of waste annually.[222] In 2000, that figure was 35,508 tonnes.[223] Over the last five years, this represents more than a 50% increase in waste.[224]

Although there is a new landfill planned on property next to the current landfill, the fact is that waste management facilities are expensive to run, and add to the tax burden of residents.[225]

> "The process of collection itself is fossil fuel intensive; garbage trucks and other heavy machinery used at landfills emit large amounts of carbon dioxide and other environmentally harmful emissions. Gases, such as methane, emitted from landfills contribute to global warming, and in the Comox Valley account for 19% of the region's total Green House Gas emissions. Leachacte from poorly designed and ageing landfills can enter the water table and cause additional environmental harm. This can be especially

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[220] *Canada's Greenhouse Gas Emissions: Understanding the Trends, 1990-2006*, p.25. Her Majesty the Queen in Right of Canada, represented by the Minister of the Environment, 2008.

[221] Comox Valley Social Planning Society, *2004 Quality of Life Report*, p.69.

[222] Comox Valley Echo, "Cumberland eyed for huge new garbage dump," October 3, 2008.

[223] Comox Valley Social Planning Society, *2004 Quality of Life Report*, p.70.

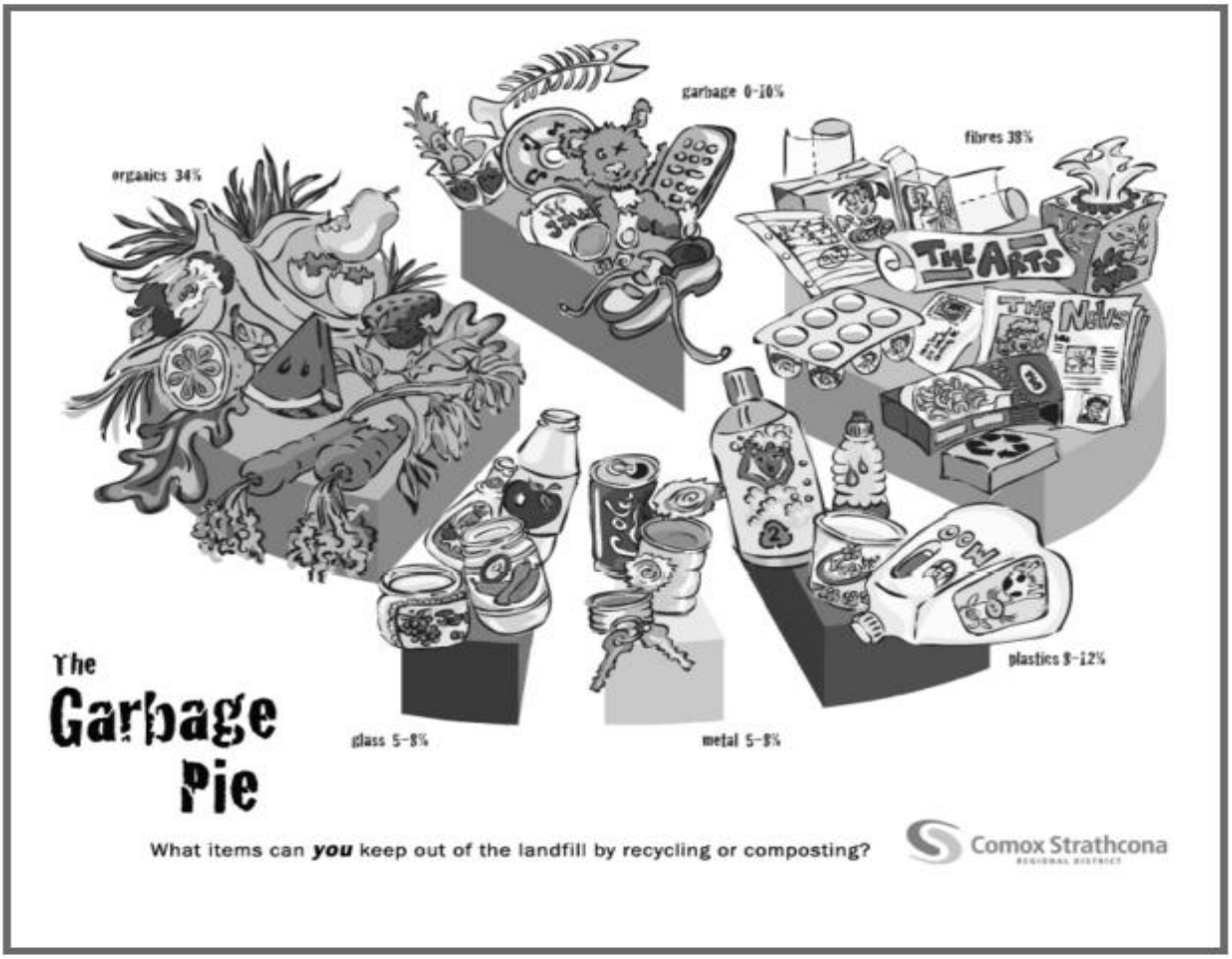
[224] 2008 Comox Valley Regional District Annual Report, p.12.

[225] *Understanding Our Choices: Comprehensive Background Paper – June 2009*, Regional Services, Chapter 7, p.153. Comox Valley Regional Growth Strategy.

dangerous where hazardous wastes find their way into the general refuse stream." [226]

The scenario would be far worse if the Comox Valley Regional District did not have its extensive re-cycling programs in place. "At present, 32% of solid waste generated in the district is diverted through these programs." [227] However, over 80% of the materials going into our landfills can be recycled.[228]

Figure : Garbage Pie. The makeup of house hold waste.



Comox Strathcona Regional District. Available at http://www.rdcs.bc.ca/garbage/pie.html.

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[226] *Understanding Our Choices: Comprehensive Background Paper – June 2009*, Regional Services.

[227] Solid Waste Services. CVRD web site. Visited May 2009.

[228] Comox Valley Regional District. Garbage Pie.

There is always room for improvement. One option in waste management is to turn waste into a renewable resource. A very successful example of this is the regional district's Skyrocket compost initiative. Another option is using technology to capture and burn landfill gases to generate electricity. Plans for such technology have been incorporated into the new landfill facility. The CVRD is considering other programs to add to the existing ones, and is eyeing the adoption of a "zero waste" strategy.[229]

Another successful initiative of the Comox Valley Regional District is the school and youth group programs that encourage and teach the value and importance of recycling: based on the three 'Rs' – reduce, reuse, and recycle. These programs follow the Ministry of Education Social And Science programs.

The Little Island that Does

"In 2008 the Hornby Island Recycling Depot carted 113,120 kg of construction waste off the island and 115,690 kg of household waste. Eight forty yard bins of recyclable materials where shipped to the recyclers. 28 tons of scrap metal was picked up by Walkers Scrap Metal providing a revenue of $883. That includes 120 fridges and freezers that had their Freon removed prior to crushing and disposal. We shipped 20 pallets of computers, monitors, TV's and peripherals to the electronics recycler. We shipped approximately 20,470 refundable containers off island generating $13,446. We increased the glass pile by approximately another 11 yards. We transported close to 10,000 bottles of milk off the island. We shipped roughly a hundred large bags of clothing to the Salvation Army in Courtenay. 220 propane tanks where collected and shipped to Viper Fuels to have them recycled. 2,000 litres of used oil where picked up by the oil recycler New-Alta."

March 2009 Notes from the Depot, Hornby Island Recycles. http://www.hirra.ca/Recycle/notes.htm

On Saturday, May 23, 2009, the CVRD and HAZCO Environmental Service held a hazardous waste amnesty in the Home Deport parking lot. Response was so overwhelming that people lined up for more than an hour to dispose of old paints, oil, gas, chemicals, pesticides, and unknown substances of unknown toxicity. The event collected 117 large barrels of hazardous materials, 70 large totes of paint, solvents and pesticides, dozens of propane cylinders, and nearly four pick-up trucks of car and household batteries. A similar event the previous year collected 37 barrels of materials.[230]

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[229] *Understanding Our Choices: Comprehensive Background Paper – June 2009*, Regional Services, Chapter 7, p.155. Comox Valley Regional Growth Strategy.

[230] Comox Valley Echo, "Record response Saturday to hazardous waste amnesty", Tuesday, May 26, 2009.

The CVRD provides 18 drop-off sites for recyclable materials. Blue Boxes are available for curb-side pickup of recyclable waste in selected locations. They have a compost education centre at 4795 Headquarters Road in Courtenay. Residents can pick up brochures on recycling and all kinds of other information at the CVRD office, 600 Comox Road in Courtenay.

Table : LOCAL WASTE GENERATION STATS - 2008

	COMOX	COURTENAY
BLUE BOX		
Tonnage (Metric Tonnes)	569	1030
Percentage of Waste Collected	9.2%	17.0%
YARD WASTE		
TONNAGE (Metric Tonnes)	1540	1894
Percentage of Waste Collected	24.8%	31.3%
GARBAGE		
Tonnage (Metric Tonnes) Municipal Collection Only	4101	3122
Percentage of Waste Collected	66.0%	51.6%

Source: WASTE DIVERSION 2008 UPDATE , Comox Valley Regional District Staff Report, p.2. File Number 5360-01.

The multi and single compartment bins in the Comox Valley collected 2,615 metric tonnes of recyclable materials. The popular backyard composting program sold 524 “earth machines” (compostors) in 2008, and another 354 units sold during a promotion in March 2009. The diversion of yard waste and organics is growing.[231]

Other organizations and businesses are taking up the recycling, reuse, reduce banner. In February 2009, the Comox Valley Chamber of Commerce held the “Grab Your Bag” campaign as a way to reduce and eventually eliminate single-use plastic bags, and encourage the use of re-usable cloth bags. 85,000 bags were distributed to 90 % of retailers in the Valley. The success of the campaign encouraged others to do their own thing. As of July 22, 2009, Thrifty Foods will no longer carry plastic bags, although they will continue to provide paper bags for customers who forget their cloth bags.[232]

9.5 E-Waste Recycling

As of August 1, 2007, a province-wide electronics recycling program for consumers and businesses was launched. People can drop off end-of-life electronics at designated

[231] WASTE DIVERSION – 2008 UPDATE , Comox Valley Regional District Staff Report, pp.2,3. File Number 5360-01.

[232] Comox Valley Record, “No more plastic at grocery”, April 23, 2009.

collection locations. The program is overseen by the Electronic Stewardship Association of BC (ESABC), and managed by Encorp Pacific. Designated depots were assigned to communities, usually recycling facilities that were already in place, like the bottle depots. Although Compucycle had been recycling e-waste in the Comox Valley, the local depot accepted the responsibility of collecting e-waste. Compucycle closed its doors in 2007.

An environmental handling fee (EHF) is now included in the price of new electronic products. The EHF is used for the administration, collection, transportation, and recycling of electronic waste. Currently, the program recycles desktop computers, laptops, monitors, printers, fax machines, and televisions.[233] There are plans to expand the program in 2009 by including telephones, computer scanners, audio/video recording and playback systems.[234]

Table : Current Methods of Recycling E-waste in the ESABC

Material/Component	Process	Result	Process Location
Leaded Glass	Hand Dismantle / Crushed / Smelted	Metal Recovery	Canada
Glass	Grind	Material Recovery	Canada
Plastic	Regrind / Smelted	Plastic / Energy Recovery	Canada
Plastic	Bailed / Ground	Plastic Commodity	US
Metal (non-ferrous)	Ground / Smelted	Metal Recovery	Canada / US
Metal (ferrous)	Ground / Smelted	Metal Recovery	Canada / US
Other Metals (Brass, Bronze & Fine particles)	Smelter	Metal Recovery	Canada
Cables and Wires	Regrind	Metal Recovery	Canada
High Grade Printed Wire Boards (Circuit Boards)	Smelted	Metal Recovery	Canada / Belgium
Low Grade Printed Wire Boards (Circuit Boards)	Smelted	Metal Recovery	Canada / Belgium
Mercury Bulb	Distilled	Mercury	US
Mercury Bulb	Distilled	Phosphorus Recovery (Powder Reuse)	US
Batteries (non rechargeable)	Smelted	Metal Recovery	Canada
Batteries (rechargeable)	Smelted	Metal Recovery (Lithium, Nickel, Cadmium)	Canada / US

Source: Where Do the Recovered Materials Go? Electronic Stewardship Association of BC.

[233] Electronics Recycling FAQ's for Consumers, Encorp Pacific web site. Visited May 2009.

[234] Program Expansion, Electronics Stewardship Association of British Columbia (ESABC) web site. Visited May 2009.

The Electronic Stewardship Association of BC (ESABC) has diverted 11,000 metric tonnes of electronics from landfills as of September 30, 2008, averaging 900 to 1,000 metric tonnes of diversion per month. Based on per capita weight the ESABC has become the second largest e-waste recycler in North America.[235] Statistics by region were not available.

9.6 Invasive Species

Next to habitat destruction, alien species are the leading cause of extinction of indigenous species. Despite our best intentions, our actions can have unforeseen consequences. This has been particularly illustrated by the introduction of non-native plant and animal species to BC. Many problem plants start in backyard gardens and spread to the wild. Others were unwittingly introduced by "beautification" programs. Some people illegally import non-native species for commercial gain. The proportions of introduced species in BC are: vascular plants – 21%; freshwater fish – 15%; mammals – 8%; reptiles – 27%; and amphibians – 10%.[236]

Early examples of invasive species introduced on Vancouver Island, probably brought on the first sailing ships and by non-native settlers, are various rats and house mice. Historically, people continued to bring non-native species to the Island, such as various fish, clams, oysters, frogs, slugs, pheasants, quails, doves, house sparrows, and most infamous of all, the European starling.[237]

Recently, the bullfrog and largemouth bass have become a concern on Vancouver Island. Both species are highly predatory and voracious. Their effect on local fish and frog populations is not clear: are they eating everything, or are they spreading diseases they are invulnerable to? Or are other factors responsible for the decline of indigenous species? Climate change? Ecosystem disturbances? Direct habitat loss, or a combination of any of the above?[238]

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[235] Electronic Stewardship Association of BC. Presentation to the Coast Waste Management Association Conference, by Joyce Thayer, October 30, 2008.

[236] Green, David. Lecture. "Invasive species: the worst case?" Simon Fraser University.

[237] Klinkenberg, Brian (Editor). 2009. E-Fauna BC: Electronic Atlas of the Fauna of British Columbia [www.efauna.bc.ca]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver.

[238] Ibid.

Once non-native species become well established, they are generally impossible to eradicate, and controlling further spread is expensive. Weeds are a prime example.

> "Weeds are responsible for reductions in crop yield and quality and they lead to environmental degradation through destruction of native plant and animal habitat. Weeds also harbour insects and diseases of crops, create unsafe conditions, reduce property values and the aesthetics of an enjoyable landscape and many can poison humans, livestock and wildlife." [239]

According to the BC Ministry of Agriculture,[240] Food and Fisheries the most noxious weeds for all regions in BC are:

- Annual Sowthistle (Sonchus oleraceus)
- Canada Thistle (Cirsium arvense)**
- Crupina (Crupina vulgaris)
- Dalmatian Toadflax (Linaria dalmatica)**
- Diffuse Knapweed (Centaurea diffusa)
- Dodder (Cuscuta spp.)
- Gorse (Ulex europaeus)**
- Hound's-tongue (Cynoglossum officinale)
- Jointed Goatgrass (Aegilops cylindrica)
- Leafy Spurge (Euphorbia esula)**
- Perennial Sowthistle (Sonchus arvensis)
- Purple Nutsedge (Cyperus rotundus)
- Rush Skeletonweed (Chondrilla juncea)
- Scentless Chamomile (Matricaria maritima)
- Spotted Knapweed (Centaurea maculosa)
- Tansy Ragwort (Senecio jacobaea)**
- Velvetleaf (Abutilon theophrasti)
- Wild Oats (Avena fatua)
- Yellow Nutsedge (Cyperus esculentus)
- Yellow Starthistle (Centaurea solstitialis)
- Yellow Toadflax (Linaria vulgaris)

**Indicates species of particular concern on Vancouver Island.

Additionally, the following plants are considered aggressive and undesirable[241]:

- Baby's-breath (Gypsophila paniculata)
- Burdock (Arctium lappa)
- Common tansy (Tanacetum vulgare)
- Musk thistle (Carduus nutans)
- Orange hawkweed (Hieracium aurantiacum)
- Oxeye daisy (Chrysanthemum leucanthemum)

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[239] Field Guide to Noxious and Other Selected Weeds of British Columbia, B.C. Ministry of Agriculture, Food and Fisheries,

[240] BC Ministry of Agriculture, Food and Fisheries web site. Visited May 2009.

[241] Ibid.

Cypress spurge (Euphorbia cyparissias)	Poison hemlock (Conium maculatum)
Diffuse knapweed (Centaurea diffusa)	Policeman's helmet (Impatiens glandulifera)
English ivy (Hedera helix)	Purple loosestrife (Lythrum salicaria)**
Field scabious (Knautia arvensis)	Scotch broom (Cytisus scoparia)**
Giant hogweed (Heracleum mantegazzianum)**	Spotted knapweed (Centaurea maculosa)**
Hound's-tongue (Cynoglossum officinale)	St. John's-wort (Hypericum perforatum)
Japanese knotweed (Polygonum sachalinense)**	Yellow toadflax (Linaria vulgaris)

**Indicates species of particular concern on Vancouver Island.

For a complete list of invasive, alien and noxious plants in BC, visit the E-Flora BC web site at http://www.geog.ubc.ca/biodiversity/eflora/Invasive_species_list.htm.

On Vancouver Island, the Coastal Invasive Plant Committee (CIPC) lists the following invasive plants as a priority because they are "perceived to present the greatest environmental, health and economic threats to the region".[242]

Canada Thistle (Cirsium arvense)	Leafy Spurge (Euphorbia esula)
Carpet Burweed (Soliva sessilis)**	Purple loosestrife (Lythrum salicaria)**
Dalmatian Toadflax (Linaria dalmatica)	Scotch broom (Cytisus scoparia)**
Giant hogweed (Heracleum mantegazzianum)	Spurge laurel.(Daphne laureola)
Giant knotweed (Polygonum sachalinense)[NB]**	Spotted knapweed (Centaurea maculosa)**
Gorse (Ulex europaeus)	Tansy Ragwort (Senecio jacobaea)
Japanese Knotweed (Polygonum cuspidatum)[NB]	Yellow flag iris.(Iris psuedacorus)**

**Not included in the two prior lists by BC Ministry of Agriculture, Food and Fisheries.

NB: The CIPC distinguishes between Giant Knotweed *(Polygonum sachalinense)* and Japanese Knotweed *(Polygonum cuspidatum)*; whereas, BC Ministry of Agriculture, Food and Fisheries gives the genus of Japanese Knotweed as *Polygonum sachalinense*. In any case, it is safe to say that any of the *Polygonum* knotweeds are undesirable.

9.7 Endangered Species

Since the 2004 Quality of Life Report, there have been changes in how endangered species are listed.

The Species at Risk Act (SARA) became fully operational on June 1, 2004, and is administered by three organizations: Environment Canada, Fisheries and Oceans

[242] Regional Priority Species of Concern, Coastal Invasive Plant Committee. Visited June 2009.

Canada, and Parks Canada. SARA was formed to help in the preservation and recovery of species at risk of extinction.

> "The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is the committee of experts that identifies and assesses wild species at risk in Canada. The Committee assesses the conservation status of a species using the best available scientific, Aboriginal and community knowledge. The assessment process is independent and transparent. COSEWIC provides assessments and supporting evidence annually to the Minister of the Environment. It assesses species as extinct, extirpated, endangered, threatened, special concern, data deficient, or not at risk. An extirpated species no longer exists in the wild in Canada, but exists elsewhere in the world. An endangered species faces imminent extirpation or extinction. A threatened species is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction. A species of special concern may become threatened or endangered because of a combination of biological characteristics and identified threats.[243]

Species at Risk Public Registry allows the public to view details of vulnerable species in Schedule 1 for any region of interest. SARA's web mapping application is limited to species belonging to Schedule 1 of the Species at Risk Act.[244]

Mountain Avian Rescue Society (MARS) is a local organization that helps ill, injured, or orphaned wildlife (primarily birds). MARS annually handles more than 3,000 phone calls and over 500 cases on Vancouver Island.[245] Since the fall of 2008, the following animals have been returned to the wild or to a facility that will release them.[246]

25 Bald Eagles	3 King Fishers
5 Deer	3 Cedar Waxwings
1 Golden Eagle	2 Great Blue Herons (listed as threatened)
4 Ruffed Grouse	13 Seals

[243] Species at Risk Act: Annual Report for 2006 and 2007. Government of Canada.

[244] Species at Risk Act. Available at http://www.sis.ec.gc.ca/ec_species/ec_species_e.phtml.

[245] MARS 2008 brochure.

[246] MARS Fall Newsletter, 2008.

6 Merlins	4 Northern Flickers
2 Saw Whet Owls	14 Crows
6 Pine Siskins	10 Racoons
8 Robins	3 Humming Birds
1 Screech Owl	

MARS is a non-profit, charitable organization that is volunteer run. Part of their fund raising initiatives is giving the gift of either sponsoring the rehabilitation of an injured animal, or sponsoring the release of a rehabilitated bird. The second option includes being there at the release of the bird.

For more information on MARS and their sponsorship gifts visit their web site at http://www.wingtips.org/.