

Salt Spring Island Central Composting Feasibility Study

PRELIMINARY RESEARCH REPORT

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by the

Salt Spring Island Agricultural Alliance

with funding from the

**Islands Agri-food Initiative, the Islands Trust, the CRD, the
Farmers Institute, Island Natural Growers and the Earth Festival
Society.**

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<i>Contents</i>	<i>page</i>
1. Introduction	1
2. Regulatory requirements	
CRD composting bylaw 2736	1
Definitions from bylaw 2736	
Zoning	3
3. Greenhouse gas (GHG) implications	4
4. Regional composting facilities	5
Bevan Road, Courtenay	
UBC compost facility	
City of Vancouver yard waste facility	
5. Equipment and facility options	6
6. Salt Spring composting initiatives	7
Rainbow Road Recycling Centre	
Burgoyne biosolids composting pilot project	
Draft report from Environment Sustaining Products Limited	
In-vessel system at horse farm	
Earth Worm Composting Pickup & Education	
Salt Spring Vineyards	
7. Market and feedstock surveys	9
Methodology	
Findings:	
Commercial growers	
Restaurants	13
Horse owners	17
Utility arborists	19
Supermarkets and large institutions	21
Summary	22
8. Haulers, potential sites and operators	22
9. Next steps	22
Endnotes	23
Appendices	
A—CRD Composting Bylaw 2736	
B—Measurements and conversion factors	
C—List of documents and resources	
D—Survey questions	
E—Photos	

1. Introduction

To facilitate the development by another organization or entrepreneurial entity, the Salt Spring Island Agricultural Alliance is undertaking a study to evaluate the need for and feasibility of a Central Composting Facility to meet requirements for commercial growers.

The Central Composting Feasibility Study includes a market assessment, an overview of regulatory requirements, equipment options—including in-vessel and enclosed windrow—possible locations, sources, availability, suitability and transport of raw materials, markets for finished product, capital and operating cost ranges and revenue estimates. Potential owners and operators will be identified to ensure the utility of the study.

This preliminary research report presents the information gathered in October and November of 2009. The work will be completed by the end of March, 2010.

2. Regulatory Requirements

A number of regulations apply to composting facilities. These include the BC Environmental Management Act, the Organic Matter Recycling Regulation, and the Agricultural Waste Control Regulation, B.C. Reg. 131/92. Location of the facility must conform to local zoning regulations. A composting operation within the Capital Regional District is governed by the requirements of the CRD Composting bylaw¹ (CRD Bylaw No. 2736).

CRD composting bylaw 2736

To meet the requirements of bylaw 2736, composting must generally take place in-vessel (proprietary covers are accepted) on an impervious surface, with proper attention to leachate, odour control and so forth. However, if no cooked food waste, meat scraps, etc. are accepted for composting, the facility may be classified as a 'Class 1 Composting Facility' undertaking 'agricultural waste composting' or 'topsoil production' and be exempted from acquiring a license. Such a facility may process General Organic Matter, e.g. yard and garden waste, including chipped or ground tree trimmings, animal manure, uncooked food waste, brewery and winery waste, sawdust, hay, straw, etc. (see Table 1) in open windrows on an impermeable surface, subject to zoning and other local and provincial regulations. CRD Bylaw No. 2736 is reproduced in full in Appendix A.

CRD Bylaw No. 2736—SECTION 2 – APPLICATION AND EXEMPTION

2.1 This bylaw applies to the operation of composting facilities within the Capital Region unless otherwise exempted by this bylaw or another enactment.

2.2 Despite subsection 2.1, this bylaw does not apply to:

- a) agricultural waste composting;*
 - b) backyard composting;*
 - c) topsoil producers who handle and use straw/sawdust/animal manure mixes or other stabilized organic matter, or soil conditioners; or*
 - d) the composting of organic matter which originates at the site of the composting operation.*
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Table 1 from CRD BYLAW NO. 2736, SCHEDULE E, TABLE 1 FEEDSTOCK PROCESSING, GENERAL ORGANIC MATTER

May be composted on an impermeable surface or in-vessel and will not require a licence unless the operation contravenes subsection 6.3 of this bylaw.

Feedstock	Constituents of Feedstock
animal bedding	animal bedding derived from straw, paper, hog fuel, wood chips, bark, shavings or sawdust
brewery waste/winery	waste used or diverted grain, malt, hop flowers, berries, fruit, leaves and twigs and yeast resulting from brewing or wine-making process
Class A food waste (1)	uncooked vegetable matter and clean paperfibre containers used to package and transfer the uncooked vegetable matter
manure	animal excreta from pets, animals in zoological facilities, fish held in commercial aquaculture or aquarium facilities, livestock, farmed game or poultry, this does not include the management of animal excreta (manure) on farms as defined as agricultural waste in BC Reg. 131/92, but does include animal excreta (manure) not included within the scope of BC Reg. 131/92
plant matter derived from processing plants	fruit, vegetable and vegetative material derived from fruit and vegetable processing plants, these are materials which have been removed from an agricultural operation and no longer fit within the definition of agricultural waste (agricultural vegetation waste) as defined in BC Reg. 131/92
untreated and unprocessed wood residuals	clean (non-contaminated and untreated) wood from lumber manufacture, e.g., shavings, sawdust, chips, hog fuel and ground mill ends, and land clearing waste which has been ground with the majority of the greenery removed and no soil present, but does not include construction and demolition debris
yard waste	clean and untreated wood waste or non-food vegetative matter resulting from gardening operations, landscaping and land clearing; yard waste does not include wood waste derived from construction or demolition. Neither human or animal food waste that is diverted from residential, commercial or institutional sources, nor manure, is yard waste
whey (1)	the serum or watery part of milk that remains after the manufacture of cheese and quantities to be imported are less than 450 litres per year

(1)

Definition modified from Schedule 12 of the Organic Matter Recycling Regulation (OMRR)

Definitions from CRD Composting bylaw 2736

"agricultural waste" means agricultural waste that is subject to the Code made under the Agricultural Waste Control Regulation, B.C. Reg. 131/92, which includes all plant- and animal-derived organic materials generated directly as a result of an agricultural activity of a farm operation, as defined in the *Farm Practices Protection Act*, but does not include:

- a) human or animal food waste that is diverted from residential, commercial or institutional sources;
- b) waste materials derived from non-agricultural operations; or
- c) wood waste derived from land clearing, construction or demolition.

"Class 1 composting facility" means a facility composting general organic matter on an impermeable surface or in-vessel.

"Class 2 composting facility" means a facility composting biosolids with general organic matter on an impermeable surface or in-vessel.

"Class 3 composting facility" means a facility composting restricted organic matter with either or both general organic matter or biosolids with general organic matter in-vessel.

"compost" means a product which is:

- a) a stabilized earthy matter having the properties and structure of humus;
- b) beneficial to plant growth when used as a soil amendment;
- c) produced by composting; and
- d) only derived from organic matter.

"compostable materials or feedstock material" means those materials set out in Tables 1, 2 and 3 of Schedules E, F and G of this bylaw that are suitable for composting.

"composting" means the controlled biological decomposition through the biological oxidation of organic matter to a matured stage for a Class 1 or Class 2 composting facility or the curing stage for a Class 3 composting facility, but does not mean the application of unprocessed organic matter to the ground.

"composting facility" means a facility that:

- a) processes organic matter to produce compost; or
- b) receives and grinds, blends or processes organic matter prior to shipping to another site for composting.

"curing" means the further maturing of organic matter that has undergone the rapid initial stage of composting into a humus-like material.

"in-vessel," in relation to composting, means any composting method where composting materials are contained in a closed reactor or vessel:

- a) in which conditions such as moisture, temperature and oxygen levels can be closely monitored and controlled; and
- b) which has been designed and sealed by a professional engineer to ensure that there is no discharge of leachate to the environment or nuisance created.

"matured," with respect to composting, means:

- a) the compost has passed through the mesophyllic and thermophilic composting stages; and Bylaw No. 2736 Page 4
- b) biological decomposition of the compost has occurred to a sufficient degree that the product meets the requirements of this bylaw and has beneficial value to plant growth.

"mesophyllic stage" means the biological decomposition of organic matter characterized by active bacteria which are favoured by a moderate temperature range of 20°C to 45°C; and is associated with a moderate rate of decomposition and stabilization.

"phase 1" means the receiving and blending, grinding, mixing and initial rapid phase of composting of all restricted organic matter through the mesophyllic and thermophilic stages of composting.

"phase 2" means curing for a minimum of twenty-one (21) days after having completed the mesophyllic and thermophilic stages.

"restricted organic matter" means those materials prescribed in Table 3 of Schedule G of this bylaw that must be composted in-vessel only for phase 1.

"stabilized" means organic matter that has completed the phase 2 process.

"substance" includes any solid, liquid and/or gas.

"thermophilic stage" means the biological decomposition of organic matter characterized by active bacteria which are favoured by a high temperature range of 45°C to 75°C; and is associated with a high rate of decomposition and stabilization.

"vector" means a rodent, bird, fly or mosquito or other animal or insect carrier that ingests or conveys garbage, odour, micro-organisms and/or pathogens from one location to another.

Zoning

Land use activities are regulated by Salt Spring island Land Use Bylaw 355 (currently undergoing revisions). A central composting facility could be established in the Community Facilities 2 (CF2) zone associated with an existing waste transfer station [written confirmation requested of planning staff]. Waste transfer stations on Salt Spring are regulated by CRD Bylaw 2810 which precludes animal manures and has other storage limitations, but a composting operation could operate under CRD Bylaw 2736 on the same site, adjacent to a waste transfer station.

Permitted uses in zone CF2 are as follows:

- Collection of recyclable materials
- Sorting and *temporary* storage of recyclable materials
- Collection of *municipal solid waste*

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- Sorting and *temporary* storage of *municipal solid waste*
 - Liquid waste treatment
 - *Public service uses*

The maximum combined lot coverage for buildings and structures in zone CF2 is 25%. Side yard interior and exterior setbacks are 7.5 m (subject to provisions of section 4.3)

If another site was selected, it could, subject to approval by the Salt Spring Island Local Trust Committee, operate for a two year period, renewable once for a maximum of four years, under a Temporary Use Permit (TUP). Rezoning could be applied for after a trial period. A rezoning application could also be initiated prior to establishment of the facility, however the outcome of the application would be less certain than if operations were first proven under a TUP.

For example, the Burgoyne liquid waste facility and pilot compost demonstration is sited on A1 land under Zone Variation A1(c) as follows:

- (4) The following additional *use* is permitted:
 - (a) Liquid waste *disposal*
- (5) The following size and siting regulations apply:
 - (a) Not more than 10 square metres is to be covered by *buildings and structures* associated with the management and treatment of septage and sewage sludge.
 - (b) No building or structure associated with the treatment and management of septage and sewage sludge may exceed 4 m and one storey in height.
 - (c) No building or structure associated with the management and treatment of septage and sewage sludge, or part thereof, except a fence is permitted within 30 m of a lot line.
 - (d) Where the interior side lot line or the rear lot line abuts any lot not zoned for septage and sewage sludge treatment, then no part of a facility for the management or treatment of septage and sewage sludge may be located within 30 m of any lot line.
 - (e) No part of a facility for the management and treatment of septage and sewage sludge may be located within 60 m of a natural boundary of any waterbody.
 - (f) A landscape screen not less than 2 m in width is to be provided along the developed portion of each lot line that abuts a public highway.
- (6) The following regulations apply regarding *subdivision*:
 - (a) The minimum area of an individual lot that may be created through subdivision is 4 ha.

3. Greenhouse Gas (GHG) Implications

There are several positive GHG implications for a central composting facility using aerobic composting techniques. Aerobic composting produces carbon dioxide (CO₂) but not methane. CO₂ is considered GHG neutral in this context because it involves the short-term cycling of plant and animal material, part of the carbon cycle. Diversion of organic waste from landfills significantly reduces the generation of landfill methane. Methane is a potent GHG, about 21-25 times more potent than CO₂ over a 100 year time span and about 72 times more potent over the short term.²

The Hartland landfill has already imposed a yard waste ban and will be banning all organics, including residential and commercial food waste, in 2012. Current GHG emissions estimates for Salt Spring's solid waste are 5,770 tonnes CO₂e/year, or 12% of total Salt Spring emissions from transportation, buildings and solid waste³. Salt Spring contributed 4,205 tonnes of solid waste to Hartland in 2007, of which an estimated 30% was organic waste (to be confirmed by a CRD survey in January). Each tonne of compostable organic waste sent to landfill is estimated to create about 4 tonnes CO₂e⁴.

Hartland captures methane from its landfill, however methane capture is never 100% effective. Only 30% of methane generated is typically captured. If an on-island central composting facility were to divert all food and other organic waste from Hartland, the GHG reductions would be significant. The alternative option for Salt Spring is to divert compostable waste to an off-island composting facility,

of which there are several. This option would also be far preferable to current landfilling, but would create more GHG emissions than local treatment because of the added transportation.

Transportation of local feedstock materials to a central facility and transportation of finished compost to local growers requires fossil fuel, but considerably less than that needed to transport waste off-island and to import finished compost. Distances involved with a local facility are shorter and avoid the use of BC Ferries, a major source of GHG emissions⁵. It is difficult to quantify GHG emission reductions attributable to transportation savings at this point, since amounts of material and destination have not yet been determined. However, a truck hauling 27 yards of organic waste from Ganges to the ICC facility at Duke Point (round trip of approx 100 km) would emit about 229 kg CO₂e⁶, plus perhaps 45 kg CO₂e from BC Ferries⁷.

Application of compost in an organic food production system results in increased carbon storage in soils.

“Composting is one of the best ways of increasing soil carbon levels, producing very high sequestration rates of 1–2tC/ha/yr in trials in favourable conditions.”⁸

This increased soil carbon storage has very significant implications for climate change mitigation. In some cases, soil carbon storage under organic production with added compost has been found to be as great as forest carbon storage:

“At an application rate of around 30t/ha/yr (freshweight), and as long as inorganic N fertilizer is not used, green waste compost offers as much carbon sequestration/savings per hectare as the conversion of farmland to woodland or biomass energy crops, but with the great advantage that the land can be kept in food production so this is not displaced elsewhere.”⁹

The entire topic of soil carbon sequestration and storage is very well-documented in a recent report from the U.K. Soil Association¹⁰. This report suggests that about 11% of all anthropogenic global GHG emissions for at least the next 20 years could be offset by a global shift to organic farming and agro-forestry, assuming 1tC/ha/yr.

Including soil carbon sequestration, on-island central composting may reduce or offset as much as 4–5 tonnes of CO₂e for every tonne of organic waste diverted. If the benefits of reduced transportation only are included (assuming that organic waste will be diverted to composting operations on Vancouver Island and that growers do not increase their use of compost) only about 23 kg of CO₂e will be saved for every tonne of organic waste diverted¹¹.

4. Regional Composting Facilities

Central composting facilities in Courtenay, Delta, and at UBC have been visited. Information about facilities at Duke Point, Cobble Hill, Chemainus and Ladysmith has been collected with the intention of future site visits. Facility operators are reluctant to permit tours because of the time required and, in the case of privately-operated facilities, because the risk that proprietary information will be used by a competitor. Composting is big business.

Bevan Road, Courtenay biosolids composting

(Field trip notes, Sept 28 2009) \$3.5 million facility processes 90 – 100 metric tonnes per week of biosolids and wood chips (population of 60,000). The method is an in-vessel aerated static pile. Biosolids are dumped into Lucknow feed mixer, mixed with hog fuel for 6 minutes then moved by loader into one of five concrete bunkers.

Each bunker takes one week of product to fill, then sealed and left to compost for four weeks, primary process. An in-ground biofilter is used to control odour. From bays, product is moved by loader and piled under cover in windrows for secondary process. Both primary and secondary stages are mechanically aerated (compressor and 6 inch pipe). After six weeks in secondary process, finished product is screened and stored in outdoor windrows prior to selling. Other operator comments:

- Outdoor windrows too muddy in winter.

- Windrows turned monthly.
- Wood waste from “clean” wood waste from landfill next door. 4:1 ratio by weight, 50:50 by volume.
- Star screen not as tough as would like.
- Finished compost sold in bulk @ \$10 / yd. Minimum charge \$50.
- No E-coli. Tests for fecal coliform often positive because composting microorganisms trigger positive test result.

UBC compost facility

(Field trip notes, Sept 30 2009) Operating since 2004, serves 50,000 student population, primarily food waste, mixed with wood chips and chipped yard waste. The method is an in-vessel Wright unit. Environmental not economic investment. Green bin collection system across campus, fruit fly problem. No pre-shredding of food waste material prior to loading into Wright unit.

- 5-6 T/day mixed with wood chips on a 1:1 mix produces 300T/yr finished compost used by campus landscapers, they need more and supplement by buying additional compost.
- 14 days in-vessel (could be longer)
- 4 weeks curing minimum
- Turn windrow 1x month
- Stored until June and then screened. 1/2 “ screen for finished compost

Operator (and others with similar units) reported problems with the Wright unit: moving floor, continuous feed, if breakdown no backup, cannot handle plastic bag contamination. Cyclical nature of student population, not a steady supply throughout year was also a problem.

City of Vancouver yard waste facility

(Field trip notes, Sept 30 2009) Yard waste only collected from City of Vancouver, transported to the landfill site in Delta, shredded, windrows turned monthly. 45,000 T / yr yields 25,000 m³ / yr Class A compost. Turned with front end loaders, screened at end of process. No aeration, no watering. No impermeable surface, very simple operation. Farmers purchase at \$1 / m³, regular price \$10 / m³

5. Equipment and facility options

Because of the small population and limited feedstock supply, any composting facility on Salt Spring will be much smaller than typical municipal or commercial facilities in Canada. It was difficult to find commercial equipment and models at a scale appropriate for Salt Spring.

From information obtained from site visits and from the Composting Council of Canada (CCC) 2009 Vancouver Conference, a very basic composting facility conforming to CRD bylaw 2736 and handling only “General Organic Matter” needs:

1. Access driveway plus truck unloading, loading, and parking areas for feedstock delivery and wholesaling of finished compost,
2. sufficient area to store feedstock,
3. chipper or stump grinder if woody feedstock is not already chipped,
4. equipment to load, move and turn material (e.g. tractor with front end loader)
5. impermeable pad with leachate collection system for composting,
6. watering system for the summer months to maintain moisture levels in the windrows and reduce dust,
7. temperature sensors to monitor the piles,
8. screen (e.g. rotary trammel screen) to screen the finished compost,
9. area to store the finished compost,
10. shed to house tractor and other equipment,
11. trailer or small building to function as office, lunch room, etc.
12. (optional) covered area or tarp system to protect compost from heavy rain.

In addition to the above, the following items are needed for an in-vessel facility handling cooked food waste:

-
13. Sealed storage bins for cooked food waste and other smellies,
 14. equipment to mix the raw compost (e.g. livestock feed mill),
 15. (optional, depending on location) enclosed building for odour control during mixing,
 16. In-vessel system for primary composting, e.g. self-contained commercial composting unit such as the Wright, or site-built enclosed bunkers, or proprietary fabric covers such as Gore Cover for windrows (the latter system sometimes housed in a lightweight structure such as a Coverall building),
 17. system to aerate the piles, typically 'Big O' perforated pipe, blowers and a compressor to control temperature,
 18. odour control system, typically an in-ground site built biofilter, but commercial products also available,
 19. computer to run automated aeration control system,
 20. power supply,
 21. (depending on location) fencing and gate to prevent unauthorized access,
 22. (if a weight-based tipping fee is charged) truck weigh scale.

Covered windrows using proprietary covers were reported to work well for municipal composting facilities in BC¹². They provide a great deal of flexibility, and facilitate easy expansion. However, these facilities were all located away from residential areas. A new facility in Chemainus uses this system but is housed in a Coverall building. Both the UBC and Courtenay operations were noticeably odorous; both mixed their raw materials under cover but not in an enclosed building.

Proprietary Gore Cover systems use cables to mechanically cover and uncover the windrows, minimizing labour requirements. But these, according to the suppliers, are either not available or are uneconomic for very small operations.

Concrete caissons, used to contain material, were popular, and could be moved as needed.

Resorts and other small facilities sometimes use modular manufactured units with built-in odour control systems.

One consultant¹³ suggested that the least expensive in-vessel option for small quantities may be an aerated static pile housed in a series of sealed bunkers operated under negative pressure with a biofilter (see description of Courtenay operation above) using wood frame construction.

6. Salt Spring composting initiatives

There are several initiatives currently underway on Salt Spring, and some past history to draw from. Brief descriptions follow, in alphabetical order.

Burgoyne biosolids composting pilot project

The CRD liquid waste facility in Burgoyne Bay processes the island's septage and sewage sludge. The by-product is dewatered biosolids, which are shipped off-island at taxpayer expense to Hartland landfill.

A pilot composting demonstration has been planned for several years, with the objectives of reducing operating and environmental costs. 700 tonnes of biosolids per year would be diverted from Hartland landfill. Finished compost would be used for site remediation. The pilot project has been stalled for over a year for various reasons but CRD expects to proceed in 2010 [to be verified]. The May 2008 budget for Phases 1 and 2 of the pilot is \$95,000 for the construction of a concrete pad, 186 m² mixing building and biofilter¹⁴. An additional \$300,000 is the cost allowance for a full scale compost facility¹⁵.

Earth Worm Composting Pickup & Education

Earth Worm Composting Pickup & Education is a new small business operated by Chris Muscat. Chris charges households \$15 a month for the service. An 11 litre plastic bucket and instructions are supplied. Full buckets are collected curbside twice a month. Chris will also help people set up a

backyard composter. The business is very small with under 20 customers. There are no plans to grow the business significantly because of regulatory issues. Chris mixes the kitchen compostables with hay and leaves and applies the finished compost to his own garden.

Eco Living Organic Solutions

Eco Living Organic Solutions is a Salt Spring business operated by Eric Beamish. Eric provides Bokashi system kitchen composters to households, and markets Effective Microorganisms (EM). EM is a mixture of fermentation microorganisms used for composting. EM is used to control odour in large scale composting operations and is sprayed in solution on windrows. Eco Living Organic Solutions objectives include a central composting operation on the Lower Mainland using EM.

Environment Sustaining Products Limited

Environment Sustaining Products Limited, a New Zealand manufacturer of an in-vessel composter, provided the SSI Solid Waste Advisory Committee with a draft discussion paper¹⁶, including preliminary costing information, dated Dec 2008. The company proposed their MIVC 10 unit and ancillary equipment, capable of processing 1.2 tonnes per day of combined organic wastes, for about \$100,000, excluding shipping, taxes, buildings and site preparation etc. They estimated available feedstock at 6,000 kg/week for commercial food waste, and 2,000 kg/week for residential kitchen compostables, for a total of 8,000 kg/week. This they estimated would require 5,300 kg/week of chipped yard waste at a 60:40 ratio, for a total of about 11.5 tonnes per week, or 2.3 tonnes per day, about double the capacity of their proposed composter.

In-vessel system for horse farm

A Salt Spring landowner constructed a first class composting facility, including large concrete pad, raised area for loading manure and bedding into a mixing hopper, and a shed for second stage composting. A commercial rotating drum in-vessel composter was installed. There were various problems with the equipment, which was never satisfactorily commissioned. The equipment was removed in 2009. There are currently no horses on the property and the composting facility is unused.

Planet Zero Food Waste Collection Service

Planet Zero Food Waste Collection Service is a start-up business with an anticipated launch early in 2010. The plan is to haul food waste to the ICC composting facility at Duke Point. Customers will be provided with 140 litre capacity containers which will be collected on a regular schedule and exchanged for empty containers. The service will be priced to be competitive with regular garbage disposal costs and will target both residential and commercial customers.

Rainbow Road Recycling Centre

For several years prior to the mid 1990s, the Community Services Society recycling centre on Rainbow Road accepted small quantities of household kitchen waste, which they composted with chipped yard waste in open bins at the back of the property. This was essentially a backyard type of operation, turned by hand, and was terminated when rats became a problem.¹⁷

Salt Spring Vineyards

CRD solid waste Wendy Dunn reported: "We are currently conducting another pilot on the use of food digesters for rural areas of our region. Pilot participants on Salt Spring are Salt Spring Vineyards." [seeking to contact Joanne McIntyre of Salt Spring Vineyards for details]

7. Market and Feedstock Surveys

A market survey of Salt Spring Island commercial growers was undertaken to estimate farm sector demand for finished compost. Feedstock surveys of restaurants, large waste generators, horse owners, and utility arborists (chipper contractors) were undertaken to estimate the types and quantities of raw materials available to a central composting facility.

Methodology

Three researchers developed the survey questions, conducted telephone interviews, and tabulated the results. Separate questionnaires were developed for each of the four groups—commercial growers, restaurants (including large waste generators), horse owners and utility arborists— and are attached as Appendix 1. The list of SSI growers to be contacted was taken from the Island Natural Growers 2009 Local Organic Food Guide and the Farmers' Institute 2009 Farm Directory list, while restaurants, horse owner/operators and chipper contractors were taken from the Lions Directory. The contact list was divided equally between the three researchers and each researcher phoned the first participant from each list to test of the questionnaires. No issues with the survey questions were reported, and the rest of the interviews were undertaken. The interviews were undertaken between October 19 and November 30, 2009.

The Salt Spring Island growers list consisted of 65 growers, of which 45 were selected for phone interviews. Of those 45 growers, 39 participated in the survey. The restaurants category included restaurants, hotels, large bed and breakfasts, two food processing facilities, a store, and two seniors' residences. Thirty-two participants were selected for the survey and 25 participated. Some of the restaurant surveys were done face to face as well as by phone. Thirteen horse owner/operators were identified for the survey, of which ten participated. Finally, thirteen chipper contractors were contacted and nine participated in the survey.

After the surveys were completed, the results were tabulated and summarized by the researchers. Finally, the two island supermarkets, the hospital, the secondary school and the eldercare facility were interviewed and their potential feedstock contributions tabulated.

Findings

Findings from the five sectors are presented below with results from each question in order. Respondents used different measurements when asked questions about quantities. The researchers had some difficulty in finding conversion factors to present responses in common units. Assumptions are generally given in the text. Further weight and volume conversion information is provided in Appendix B.

COMMERCIAL GROWERS

Of the 39 commercial growers who participated in the survey, only five currently purchase compost, and almost all make their own. 29 respondents said they imported either nitrogen or carbon feedstock materials. (Table 7.1)

Table 7.1– Composting Practices

Composting practices (39 respondents)	No	%	Yes	%
1. Do you currently purchase finished compost?	34	87%	5	13%
2. Do you make your own compost?	2	5%	37	95%
How much compost is produced?	415 yd/year; avg = 11 yd / farm			
3. Do you bring in raw materials to make compost?				
3a) I use materials from my farm only	16	41%	23	59%
3b) I import carbon materials (sawdust, shavings, straw etc.)	26	67%	13	33%
3c) I import nitrogen materials (animal manure, restaurant)	23	59%	16	41%
3d) Approximate imported quantity in yards/year?	Total = 762 yards			

Nine of the 39 growers reported that they could supply a central composting facility with feedstock materials. A total of 116 yards per year of carbon materials and 18 yards / year of animal manure was available. (Table 7.2)

Table 7.2—Feedstock

Availability of Feedstock (39 respondents)	No	%	Yes	%
4. Do you currently have any materials you would contribute to an on-island facility?	30	77%	9	23%
4a) Do you currently have any Carbon materials (tree trimmings, sawdust, etc) you would contribute to an on-island facility? Quantity? Total =116 yds/yr	32	82%	7	18%
4b) Do you currently have any Nitrogen materials (animal manure, green manure/vegetable waste, etc) you would contribute to an on-island facility? if yes, quantity? 18 yds/yr Composition? Cow & chicken manure, apples, weeds, whey	33	15%	6	85%
4c) What time of year is it available?				
	All year	2		
	Fall	6		
	Occasionally	2		
	N/A	28		
4d) Do you currently sell these materials, or do you give them away, or do you use them yourself?				
	give away	2		
	left to nature	2		
	use themselves	35		
4e) Do you anticipate future changes to the availability?				
	No	38		
	Yes	1		
	If so, how will it change?	Will not have manure		

Slightly over half the respondents said they would be somewhat unlikely or very unlikely to purchase compost from a central facility, with lack of need being the determining factor, followed by price and quality. However, when asked if they would consider replacing some of their compost with purchased compost from a central facility, 28 (72%) said yes or maybe. Five respondents reported that they currently paid commercial rates for compost.

Nine respondents said that they had a site, or potentially had a site, on their property where a composting facility could be located.

When asked to contribute additional comments, almost three quarters (28) of the respondents offered supportive comments, with 11 offering unsupportive or neutral comments.

Table 7.3– Possible purchases from SSI facility

Possible purchases from SSI facility (39 respondents)			
5. How likely would you be to purchase compost from a central facility?			
	Very likely	10	26%
	Somewhat likely	8	21%
	Somewhat unlikely	7	18%
	Very unlikely	14	36%
6. What factors would affect your decision to purchase compost from a Salt Spring facility?			
	price	12	31%
	quality	10	26%
	lack of need	18	46%
	local	1	2.5%
	availability	1	2.5%
	convenience	1	2.5%
7. Would you consider replacing part of the compost you currently use with purchased compost from a local facility?			
	no	11	28%
	yes	20	51%
	maybe	8	21%
8. How much do you currently pay for compost?			
	part of farm operating costs	9	23%
	n/a	25	64%
	commercial rates	5	13%

Table 7.4–Possible location for composting business

Possible location for composting business (39 respondents)			
9. Do you have a spot on your property for a composting business?			
	no	33	85%
	yes	3	8%
	potentially	6	15%

Table 7.5–Level of commercial grower support for central composting

Level of commercial grower support for central composting (39 respondents)			
10. Any other thoughts on a central composting facility you would like to share? Note: three categories were assigned to analyze the comments. (Comments follow.)			
	supportive	28	72%
	unsupportive	9	23%
	neutral or unconvinced	2	5%

10. Any other thoughts on a central composting facility you would like to share?

- Great idea. We have manure contributors sign an affidavit saying source is free from herb/pesticide because we are a certified organic farm.
- Sources of our compost would be a concern/ really wants to know the source and if pesticides or herbicides were used.
- Even if the piles reach 55 degrees, our main concern is the source of the feedstock going into the compost.
- Good idea if there is enough demand for it.
- I wonder if it's home gardeners who require compost rather than farmers.
- Farmers seem to have enough compost, but I get many request from people with small gardens for compost.

-
- Other thought: I would be concerned about antibiotics in the compost (particularly if waste from hospitals was used). Using mushrooms would solve this. A good book to read on this subject is Mycelium running.
 - Fantastic idea; may be looking for a place in the future to get rid of excess manure and possibly excess compost and would donate it to the facility, but right now they use all that they make.
 - I'd like to see the compost being run through an animal first. I'd like to see people with poultry etc. get the food scraps first and then use the manure.
 - Good concept but not sure how many farmers would get involved because many make their own compost and profit margins are too slim to buy from an outside source.
 - It may be a better idea for backyard gardeners and residences that have no disposal of organic waste available to them.
 - No
 - Would be nice
 - Sounds good.
 - I would support it but I don't really need it for my uses.
 - I wonder if it's ecologically sound to have a central composting facility rather than encourage people to compost right on their land.
 - Check out Pengergetics website. We spread the solution on our manure and straw to make compost. Could be something the facility would be interested in.
 - It's a great idea
 - I think it would be great if you could use compost cake (it is the left-over sewage after the water has been removed) for trees or flower beds. They do it at the Hartland Dump right now.
 - It's important to have a central facility for people who don't have the ability to make their own compost.
 - It's a great idea.
 - I think it's a great idea. To make it work, though, there needs to be a free pick-up service. So it needs to be subsidized.
 - yes.
 - Cusheon Lake Farm would be a good site for a central facility. Sheri Neilson would be a good source to talk to.
 - We should consider small neighborhood facilities.
 - it would be wonderful if we could compost the wooden construction waste
 - no
 - no
 - Foxglove would be an ideal place to have a central composting facility.
 - I think it would be great to have a central facility on Rainbow Rd. (Farmer's Institute).
 - no
 - no
 - Fantastic idea
 - I don't see a need for it from our perspective. We like to continue maintaining a closed loop.
 - I'd love to see it proceed; I think it's a great idea.
 - It's an interesting idea - I'd like to think about it more.
 - no
 - no
 - chippings might be available, in which case it would make a low grade product. We could look into poultry and breweries as sources of nitrogen.
 - good idea
-

- Use piece of Capelli's old farm which is now part of community farm maybe held by farmer's institute. Publicly held 68 acres.
- The Burgoyne Bay solid waste site seems a useful location.
- It is a great idea, but we deal with everything right here on the farm.

RESTAURANTS

Thirty-two (32) Salt Spring Island facilities were contacted to participate in the Central Composting Feasibility Study's survey for commercial food operations. Of these, 25 respondents, including 18 restaurants (including two hotels), 2 B&Bs, 2 seniors' homes, 1 store, and 2 food processing plants agreed to participate.

Table 7.6—Which of the following best describes your current waste management practices?

Current Waste Management Practices	# Respondents (25)
co-mingled, with no separation of organics and recycables	1
Some separation of recycables, with organics and other waste comingled	8 (+ 1 in winter)
Organic waste is kept separate from other waste	13 (+ 1 in summer)
Other	1

From Table 7.6, fourteen respondents currently separate organic waste from other waste/recycling, but one of them only does so in summer. Eight respondents separate recycling from other waste (nine in the winter time); and one does not separate at all. One facility does not produce waste, other than some fish carcasses, which are donated to a local farmer.

Table 7.7—If your waste is currently mixed, would your facility be willing to separate the organic materials?

Willingness to Separate	# Respondents (12)
Very willing	9
Somewhat willing	1
Somewhat unwilling	1
Very unwilling	0

As Table 7.7 shows, of the twelve respondents who do not separate organic waste from other waste year-round, nine say they are very willing to separate their waste, while one said to be somewhat willing and one said to be somewhat unwilling to separate waste.

Ninety-two percent of the respondents (23) include vegetables and fruit in their organic waste. Five respondents indicated that they include other food processing in their organic waste, including egg shells (3) and okara (1). One respondent did not specify the type of food processing. Only one respondent includes plastic.

Table 7.8—Which of the following compostables are included your organic waste?

Type of Compostables	# Respondents (24)
Vegetables and fruit (raw or cooked)	23
Flour and baked goods	18
Fish and/or meat and/or dairy scraps (raw or cooked)	11
Coffee grounds, tea leaves	15
Other food processing	5
Paper products (serviettes, plates, newspaper, cardboard)	10
Non-compostables such as plastic film, plastic forks, cans, etc.	1

Table 7.9—How much compostable organic waste does your facility produce on a weekly basis?"

#	Minimum Waste/Week	Average Waste/Week	Maximum Waste/Week
1	10 lbs* /2 gallons		15 lbs*/3 gallons
2		120 liters/32 gallons	
3	40 liters/10 gallons		75 liters/20 gallons
4	5 gallons		10 gallons
5		64 liters/17 gallons	
6	10 gallons		40 gallons
7		100 lbs* /20 gallons	
8		5-6 liters/1.5 gallons	
9		140 lbs*/28 gallons	
10	5 big garbage bins**/160 gallons		6 big garbage bins**/192 gallons
11		No idea.	
12	150 gallons		400 gallons
13	3 big bags*** /90 gallons		Much more (150 gallons?)
14	5 gallons		20 gallons
15	12 gallons		25 gallons
16	50 gallons		100 gallons
17	50 gallons		100 gallons
18	350 gallons		500 gallons
19	10 gallons		40 gallons
20	10 liters/3 gallons		15 liters/4 gallons
21			27 gallons (in summer)
22		140 liters/37 gallons	
23		20 liters/5 gallons	
24		4-6 large garbage buckets****/250 gallons	
25		Small amount	
Total	907 gallons/4.5 cubic yards	390.5 gallons/2.2 cubic yards	1,631 gallons/8.1 cubic yards

* Calculations based on 5 lbs per 1 gallon bucket

** Calculations based on 32 gallon garbage can

*** Calculations based on 30 gallon garbage bag

**** Calculations based on five 50 gallon garbage buckets

Lines in *italic* indicate facilities that prefer to continue their current waste disposal method (to compost on/off site or donate compost to local farmers).

The respondents produce a wide range of organic waste - between 5 and 500 gallons per week. The total weekly amount of organic waste during peak season among the respondents is reported to be 10.3 cubic yards, of which up to 7 cubic yards could be available for a central composting facility. The total weekly amount of organic waste during off-season is approximately 6.7 cubic yards, of which 3.8 cubic yards could potentially be contributed to a central composting facility. The total available amount is 236 yards per year (based on peak production of 12 weeks and off-season production of 40 weeks).

As can be seen in Table 7.10, 64% of respondents (16) either compost their organic waste or give it away (including one respondent who only composts in the summer time). Nine respondents use a contracted garbage service to remove their (organic) waste (ten in the winter time), and one uses an in-house garbage removal service.

Table 7.10—Which of the following describes how you currently dispose of compostable organic waste?

Method of Organic Waste Disposal	# Respondents (25)
Contracted garbage service	9 (+ 1 in winter)
Informal free pick up by local farmers	8
Composted on-site	7 (+ 1 in summer)
In-house garbage removal service	1
Other	0

Table 7.11—How frequently is your organic waste removed?

Frequency of Organic Waste Removal	# Respondents (25)
Once every two weeks	1
Weekly	8
Twice a week	7
Daily	4
Other	5

Four respondents have their organic waste removed daily; two remove theirs 3-4 times per week; two remove their organic waste 2-3 times per week; seven do so twice a week; eight once a week, and one once every two weeks. One respondent did not know the answer to this question.

Table 7.12—The Hartland Landfill will be closed to organic waste in 2012. If there is a central composting facility on- island at that time, which of the following options would you be most likely to choose?

Disposal Options	# Respondents (25)
Use a garbage service that supplied the composting facility	10
Truck waste to the facility ourselves	0
Look for the least expensive disposal option	3
Continue our current disposal method	6
Other	6

If Salt Spring Island has established a central composting facility by 2012, ten of the respondents would likely use a garbage system to dispose of their organic waste; six would prefer to continue to compost on-site or donate their organic waste to local farmers, and three would look for the least expensive disposal option. One respondent is undecided, and another respondent is planning to acquire pigs for the plate scrapings that are currently not yet recovered by her facility. Three respondents said that “the small amount produced now and in the future will get used opportunistically”; all three currently compost on-site or donate their organic waste to a farmer. One facility does not have any organic waste to contribute.

To the question, “Are there any obstacles that would prevent you from choosing to send your organic waste to a Salt Spring composting facility?”, cost was cited most frequently (7 times) as the biggest obstacle to participate in a central compost facility scheme, followed by the need for compost for their own or other people’s farms (5). Four respondents reported that frequency of pick-up would be a prohibiting factor as they have no means to store organic compost; three other respondents also said to require pick-up (but on a less frequent basis). Two respondents stated that they would be more inclined to participate if a bin were provided. One respondent said that time was an issue; if it created considerably more work, his facility would likely not participate.

Table 7.13—What best describes your volume of organic waste?

Volume of Organic Waste	# Respondents (25)
Constant throughout the year	5
Peaks in summer, with less during fall, winter and spring	20
Other	0

When asked, “Are there other materials generated at your facility (such as yard trimmings, or waste paper) that are not already being recovered for reuse/recycling that could potentially serve as compost feedstock?”, five respondents answered affirmatively. Four respondents indicated that they have waste paper, and one said to have some garden waste available.

Eighty percent of respondents (20) said their volume of organic waste peaks in the summer. One respondent did not reply to this question.

When asked, “Do you anticipate that your organic waste quantity will change in the future?”, sixteen respondents said they do not anticipate any changes in the volume of organic waste they produce, while five respondents either anticipate or hope their volume will increase. Four respondents did not respond to this question.

Only one respondent replied to the question “Would you be comfortable telling us how much you currently pay for organic waste removal?”; the response was \$700 per month.

When they were asked the question “Any other thoughts on a central composting facility you would like to share?”, nine respondents expressed their interest in participating if a compost facility was established for SSI, although several of these qualified this by adding a request for a (frequent) pick-up service at a fair price. Another respondent said his facility would participate if farmers were no longer interested in its organic waste.

Other thoughts included a request to be allowed to purchase finished compost at a fair price and a warning about attracting rodents if meat were going to be composted.

Eight respondents supplied their email addresses when asked if they liked to be added to our email list for future updates.

HORSE OWNERS

Thirteen horse operators were contacted to participate in this survey. Of these, ten agreed to participate.

Table 7.14 shows the volume of manure produced by the horse operations. Manure production ranges from about 6 to 19 yards per month for a total of 978 yards per year, of which 521 yards per year could be available to a composting facility.

When asked, “Does production change with the seasons?”, only one respondent said that manure production was higher in the winter time; the remaining nine respondents stated that production was fairly constant throughout the year.

Table 7.14—How much manure does your facility currently produce?

#	Manure Production per Month	Available Volume per Year
1	No idea (stays on land)	None
2	½ to 1 yard per day/ 15 to 30 yards per month†	180-360 yards per year†
3	6 yards per month (only available for 6 months)	36 yards per year
4	300 lbs* per day/ 5.56 yards per month	None
5	14 wheelbarrow** loads per day/13 yards per month	Any leftovers (not much)
6	250-350 lbs* per day/ 5.56 yards per month	None
7	12 horses*** / 11 yards per month	None
8	21 horses*** / 19.4 yards per month	233 yards per year
9	No idea	None
10	6 yards per month	72 yards per year
Total	75.52 yards per month	521 yards per year

* Calculations based on 60 lbs per cubic foot (.45 lb per cubic yard)

** Calculations based on 14 horses per day

*** Calculations based on 50 lbs of manure per horse per day (including urine)

† For these calculations, the lower figure was used, as it seems more in line with the other horse operations.

Table 7.15—How do you currently handle manure?

Manure Disposal Options	# Respondents (10)
stockpile and sell	1
spread on own land	4
both	5
other	4

Five respondents reported using a combination of stockpiling, selling, and spreading for use on own land; four primarily spread the manure on their own land; and one stockpiles and sells it. Four respondents also give manure away to friends and/or neighbours.

From Table 7.16, of the 6 respondents who currently sell (a portion of) their manure, prices range between \$5 to \$35 per yard. Two use a sliding scale for their customers.

When asked, “Would a manure removal service be useful to you?”, four respondents said they would use a manure removal service, provided that it were free and would not create extra work. Six respondents said they would not use a manure removal service.

Table 7.16—If you currently sell manure, would you be willing to tell us how much you charge?

Price of manure	# Respondents (6)
Don't know	1
\$5 per bucket (1 yard) or \$40 per truck load (6 yards)	1
\$10-\$15 per yard or \$50 per truck load	1
\$20 per yard	1
\$35 per yard	1
Sliding scale	2

To the question, “If you were to use a manure removal service, what frequency of pickup would you prefer?”, two respondents said they prefer a monthly pick-up, one would like her manure to be picked up twice a year (in November and May), and one has no preference.

When the respondents were asked, “If a central composting facility were set up for SSI, would you support the project by supplying manure?”, five said they could not donate manure because they need it for their own land, or because they prefer to sell it or give it away to friends and neighbours. Five respondents stated willingness to supply manure to the facility (if it didn’t cost them money); one of them has manure available only in the winter, and one said that if there is any manure left over, this could be contributed to the facility. One respondent offered all manure produced (about 233 yards per year), while the remaining two respondents did not specify the amount they were willing to supply. (See table 3.1).

Table 7.17—Are there other materials generated at your facility (such as yard trimmings or waste paper) that are not already being recovered for reuse/recycling that could potentially serve as compost feedstock?

Other Potential Feedstock Materials	# Respondents (5)
Wood pile	1
Poor hay on occasion	1
Cardboard	1
Tree trimmings	1
Unspecified	1

When asked, “Do you anticipate that manure quantity from your facility will change in the future?”, one respondent reported that her production may decrease in the future; the remaining nine did not anticipate a change in production.

When the respondents were asked, “Any other thoughts on a central composting facility you would like to share?”, two respondents said they thought a central composting facility was a great idea, and one respondent warned to be aware of neighbours and suggested to look for sources of newspaper as well.

Five respondents said they would like to be kept informed about the progress of the study through email.

UTILITY ARBORISTS

Thirteen chipper contractors were identified for inclusion in the feedstock supplier survey, of which nine participated.

Table 7.18—How do you currently dispose of potential compost feedstock such as chipped tree trimmings and other yard waste?

Disposal Method	Number (total # of respondents: 9)
Give away	2
Sell	1 @ \$50 per truck load
Clients are responsible for disposal	2
Sometimes sell/sometimes give away	1
Compost on site	2
Burn stumps and other wood debris	2
Tipping fee paid	0

Q: “Would you be willing to tell us your rates for chipping and hauling?”

2 @ \$100 per hour

1 @ \$150 per hour

Table 7.19—If a central composting facility were set up for SSI, how likely would you be to support the facility by supplying a regular quantity of clean chipped wood/yard waste?

Response	Number (9 respondents)
Very Likely	2
Somewhat Likely	1
Only if it was free	1
Only if they were paid for hauling	1
Would recommend it to clients	1
Would not participate	3

Table 7.20—What quantity of chips could you supply per week? What composition (percentage or weight)? Does production of this waste change with the seasons?

Yards Per Week	Composition	Peak Seasonality (6 respondents)
2.5	Wood debris	Spring/Fall
2 - 5	Unspecified (most likely dirty wood chips)	Spring/Fall
2.2 – 33*	Mostly wood chips	Spring/Fall
Unpredictably variable	99% wood chips, 1% grass	Unpredictable
Unpredictably variable	100% wood chips	Unpredictable/Affected politically
Don't know	Don't know	Wood Debris – Consistent Grass - Summer

* The wide range is a result of seasonality: 1-2 truck loads per week in offseason, 10-15 in spring and fall. Conversion of truck loads to yards: Assuming volume of truck bed is 60 cubic feet; Truck load = 2.2 yards

Q: Would you be interested in assisting with a central composting facility? For example by supplying equipment and operator (chipper, stump grinder, truck etc.)

Seven participants said no. Two participants said that they would possibly assist with the facility. One said if there is advertisement and notoriety we would be willing to assist and have also thought about this as a business idea for ourselves. The other responded that they have a chipper for sale right now and would consider renting equipment to the facility.

Table 7.21—If no, what are the obstacles preventing you from choosing to supply the facility?

Reason	Number (3 respondents)
Cost; cheaper to burn or compost on site	1
Client owns the chips	2

Table 7.22—Do you anticipate that the quantity of organic waste that you handle will change in the future? If so, will it increase or decrease? By how much?

Response	Number (8 respondents)	Forecast
Yes	2	Increase
No	4	N/A
Hopeful for increase	2	Increase

Q: Any other thoughts on a central facility you would like to share?

- Often people pay us to get rid of the firewood, but if we had a place where we could dump wood, this would be good. You would want to consider phytotoxic plants, such as maple trees, unless they have reached 360 degrees. We have built these types of composting systems before.
- I think it's a great idea. It's probably going to take a fair bit of trying it out and getting the word out. It would be very good if burning could be outlawed.
- I think it's a good idea to have a good compost facility rather than have it mixed in with regular garbage.

Of the thirteen chipper contractors identified for inclusion in the feedstock supplier survey, nine participated. Six of these responded that they would participate in some way with donating feedstock to the proposed SSI composting facility. When asked how much feedstock they could supply to the facility, only three were able to give estimates. These estimates were 2.5 yards wood debris per week (no yard clippings); 2-5 yards per week unspecified composition; 1-2 truck loads offseason/10-15 truck loads spring/fall of mostly chips. Two participants said that it was unpredictable and one did not know how much he could provide. This equates to a minimum of 6.7 yards of potential feedstock per week. However, in the spring and fall seasons, this number could be as high as 40.5 yards per week. Nearly all of the feedstock offered was wood chips.

Obstacles preventing use of the facility included expense because it is cheaper to burn or compost on site than to transport, and that the clients are responsible for the waste.

Three participants gave rates for hauling and chipping, and these ranged from \$100 - \$150 per hour. None of the participants pay tipping fees for disposal of grass or wood debris. Chipper contractor participation in the SSI composting facility seems to be contingent upon free disposal of waste, but this issue should be clarified with a follow-up survey in order to truly gauge the willingness to participate. Another question that should be included on any follow up is: Would you donate wood debris/grass to the proposed facility if it provided pickup of the material? Would this pickup have to be free in order for you to participate?

Two participants said that they would possibly assist with the facility. One responded that they are selling one of their chippers right now, and would possibly be willing to rent equipment to the facility. The other said that they would assist if there were "advertisement and notoriety" involved. They went on to say that they have thought of starting a facility as part of their business.

SUPERMARKETS AND LARGE INSTITUTIONS

The two island supermarkets, the hospital, the secondary school (GISS) and the eldercare facility participated in the survey. The hospital representative expressed the concern that VIHA regulations may require all hospital waste to be classified as potentially contaminated, and therefore it would not be possible to contribute compostables until a clarification was obtained. In principle, the hospital would be willing to provide compostables. Current kitchen waste was reported to be about 25 to 38 yards per year (2 to 3 @ 50 gal drums per week). This amount has not been included in the totals since it may not be available.

The eldercare facility reported producing 18 to 24 lbs / week of kitchen waste, with more in summer. GISS reported 120 litres / week, or a total of about 6 yards for the ten months of the year that the school operates. Both institutions were willing to supply a composting facility, depending on cost. Both currently donate at least some of their kitchen compostables to local farmers. The combined total from these institutions is less than 0.5 yard per week.

One supermarket reported one dump truck load of organic waste per week (typically 27 cubic yards). The other supermarket reported between 5 and 6 @ 50 gal drums of waste vegetables and fruit per day (8 to 10 yd per week), supplied to a farmer, with an additional 5-6 @ 50 gal drums per

day (8 to 10 yd per week), of other organic waste sent to landfill. Both supermarkets expressed willingness to supply a composting facility, depending on cost.

Summary

The findings of the surveys indicate that a central composting facility could annually receive from the survey respondents up to about 130 yards of organic material from commercial growers, up to about 250 yards of organic waste from local restaurants, B&Bs, seniors' homes, and food processing plants. In addition, there could be at least 350 yards per year of waste available from chipping companies; this waste consists mainly of wood chips and wood debris, but could contain a small amount of grass clippings.

Horse operators could contribute up to 520 yards per year of manure. Supermarkets could potentially provide about 1,870 yards per year of organic waste. In total about 1,935 yards per year, or an average of 61 yards per week could be supplied by the respondents. If cooked food waste was eliminated, the average weekly supply of "General Organic Materials" would be up to about 38 yards. If the supermarkets were not supplying feedstock, the total weekly supply would be about 25 yards, or 20 yards of General Organic Materials.

It should be stressed that these figures are very rough estimates. The volume of organic waste from restaurants and other commercial kitchens appears to vary greatly from off-season to peak season, and our study did not specifically ask respondents to differentiate between off-season and peak season waste; it is possible that some of the reported figures reflect summer or off-season waste production only rather than a yearly average. The volume of organic waste cited by restaurants of similar size also varies greatly; it is possible that some respondents who are currently not separating their organic waste from non-compostable waste reported volumes of total waste production rather than organic waste alone.

Table 7.23—Feedstock potentially available from survey respondents

Sector	yd, yearly	yd, weekly (avg.)	yd, yearly, no cooked food
commercial growers	130	3	130
restaurants etc.	250	5	0
horse owners	520	10	520
utility arborists*	350	7	350
supermarkets**	1,870	36	935
Totals	3,120	61	1,935
Weekly avg. with no cooked food			38

* minimum amount, quantities rise to maximum 40 yd /wk during spring and fall

** about 50% of this feedstock is estimated to be General Organic Materials

Some horse operators had difficulty estimating the volume of manure their horses produced on a daily or weekly basis, and the cited figures should be interpreted with caution. The horse operators collectively used different measurement units (in pounds, yards, wheelbarrows, and number of horses owned), which made it difficult to convert to cubic yards.

Not only are some quantities in question, it is also not certain whether all the material identified would be available. Many of the surveyed operations donated organic food waste to farmers, thus avoiding haulage and tipping fees. Chipped yard waste was mostly used on-site. If utilizing a composting facility resulted in increased costs to suppliers, feedstock quantities could be considerably less than suggested by the survey responses.

The potential demand for finished compost from the commercial growers surveyed is estimated to be about 154 yd/yr, based on average annual compost use of 11 yd/yr per grower, and assuming that the 28 growers willing to replace some of their current supply purchased half their annual needs from the facility. Since the annual production from the feedstock apparently available would

be between 1,040 and 1,560 yd (assuming 50%—66% shrinkage, depending on the percentage of woody feedstock), there is much room for market growth.

8. Haulers, potential sites and operators

Salt Spring waste transfer station operators, solid waste haulers, and others with a potential commercial interest were interviewed. Of those contacted to date, all were supportive of a Salt Spring central composting facility. Only one expressed possible interest in locating the facility on his property, with some concern regarding regulatory requirements. The recycling centre manager declined because of lack of space, although collection bins for residential food waste were a possibility. The Blackburn Road waste transfer station manager declined because of the perceived risk of nuisance odours. This site had previously been identified as a good possibility.

Several grower and chipper survey respondents expressed interest in providing a site and/or operating a facility and these will be contacted again for more information. At this point it is not clear whether any of the suggested sites would be suitable and meet Islands Trust approval.

The Burgoyne Bay liquid waste facility has much to recommend it as a potential site; it is accessible but remote from homes and other development, there is already a waste processing facility onsite generating more nuisance odours than would result from a composting operation, the site is owned, operated and regulated by the CRD, and a biosolids composting pilot is planned. One or two acres of the site could be leased to a private operator or other entity to run a composting operation, possibly in tandem with in-vessel biosolids composting. On the negative side, the site has restricted access from a private road, and only liquid waste is allowed to be processed onsite. These issues would need to be resolved before a solid waste composting facility could be established at Burgoyne.

9. Next steps

The following tasks, in addition to those identified in the text, remain to be undertaken:

- Discuss with CRD in more detail opportunities for collaboration, on both solid and liquid waste diversion programs.
 - Obtain more information about the status of the Burgoyne Liquid Waste pilot demonstration. A permanent composting operation at Burgoyne composting 700 tonnes of biosolids per year would require 175 tonnes of chipped wood waste, half the feedstock potentially available from surveyed contractors. Competition for carbon feedstock could result.
 - Research the process for implementing an outdoor burn ban on Salt Spring. A ban would considerably increase the availability of wood waste.
 - Follow-up on potential sites and operators.
 - Meet with Island Trust planner and Trustees to verify zoning requirements and location options.
 - Research capital and operating costs for licensed and unlicensed facilities (in-vessel and open) for three different volume scenarios.
 - Research funding and financing options.
 - Develop a draft business plan.
 - Assess overall viability.
 - Develop management options.
 - Make recommendations for next steps.
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Endnotes

- ¹ CRD Bylaw No. 2736 A Bylaw To Regulate The Operation Of Composting Facilities In The Capital Regional District <http://www.crd.bc.ca>
 - ² Science 30 October 2009: Vol. 326. no. 5953, pp. 716 - 718 "Improved Attribution of Climate Forcing to Emissions" Drew T. Shindell,* Greg Faluvegi, Dorothy M. Koch, Gavin A. Schmidt, Nadine Unger, Susanne E. Bauer
 - ³ Salt Spring Island Community Energy & Greenhouse Gas Emissions Inventory: 2007, HYL A, draft Oct 1, 2009
 - ⁴ ibid
 - ⁵ Salt Spring Island Community Energy Strategy Baseline Report, Earth Festival Society, May 2004
 - ⁶ based on fuel consumption of 61 litres / 100 km (actual reported Canadian fleet average, from Fraser Basin Council), and a lifecycle emission factor of 3.756 kg /litre (from NRCan avg. for Canada).
 - ⁷ Assuming Route 4 round trip fuel consumption of 120 litres with one tenth attributed to truck.
 - ⁸ Soil Carbon and Organic Farming, U.K. Soil Association, Nov 2009
 - ⁹ ibid
 - ¹⁰ ibid
 - ¹¹ Based on 274 kg CO₂e per trip and 12 tonnes organic waste per trip
 - ¹² Information in this section from notes taken at the 2009 Composting Council of Canada conference
 - ¹³ John Paul Ph.D. P.Ag, Transform Compost Systems Abbotsford www.transformcompost.com
 - ¹⁴ CRD SSILW 23 May 2008 report
 - ¹⁵ CRD SSILW 26 June 2008 report
 - ¹⁶ Salt Spring Island Community Composting Facility Scenario—Environment Sustaining Products Limited, Dec 2008
 - ¹⁷ Information provided by Community Services Rainbow Road Recycling Centre manager.
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LIST OF APPENDICES

A—CRD Composting Bylaw 2736

B—Measurements and conversion factors

C—List of documents and resources

D—Survey questions

E—Photos

**CAPITAL REGIONAL DISTRICT
BYLAW NO. 2736**

**A BYLAW TO REGULATE THE OPERATION OF COMPOSTING FACILITIES
IN THE CAPITAL REGIONAL DISTRICT**

WHEREAS:

- A. The Board of the Capital Regional District established a service to manage municipal solid waste and recyclable material, by Bylaw No. 2654, "Solid Waste Disposal Local Service Establishment Bylaw No. 1, 1991, Amendment Bylaw No. 1, 1999";
- B. Under Section 25 (3) of the *Environmental Management Act*, the Capital Regional District may make bylaws regulating the operation of a site, works or facility, including those identified specifically or by class in a Waste Management Plan, that is used for the management of municipal solid waste or recyclable material;
- C. The Capital Regional District has undertaken consultations with affected stakeholders, has indicated its intention to adopt this bylaw in its Waste Management Plan and has obtained the written consent of the Minister of Water, Land and Air Protection to the adoption of this bylaw;

NOW THEREFORE the Board of the Capital Regional District in open meeting assembled enacts as follows:

SECTION 1 – DEFINITIONS

- 1.1 The definitions in the *Environmental Management Act* and the Organic Matter Recycling Regulation, not already defined in the bylaw and so far as the terms defined can be applied, extend to this bylaw.
- 1.2 The following terms, words and phrases when used in this bylaw shall have the meanings set forth in this section, whether appearing in capital or lower case form.

"agricultural waste" means agricultural waste that is subject to the Code made under the Agricultural Waste Control Regulation, B.C. Reg. 131/92, which includes all plant- and animal-derived organic materials generated directly as a result of an agricultural activity of a farm operation, as defined in the *Farm Practices Protection Act*, but does not include:

- a) human or animal food waste that is diverted from residential, commercial or institutional sources;
- b) waste materials derived from non-agricultural operations; or
- c) wood waste derived from land clearing, construction or demolition.

"application" means a request for one of the following:

- a) a recycler licence (Class 1, 2 or 3 or a provisional recycler licence)
- b) to amend, add or delete a term or condition of a recycler licence
- c) to change the activity that is the subject of a recycler licence
- d) to renew a recycler licence

"backyard composting" means the composting of food waste or yard waste, or both, at a site where

- a) the food waste or yard waste is generated by the residents of a residential dwelling unit; and
- b) the annual production of compost does not exceed 20 cubic metres.

"biosolids with general organic matter" means those materials prescribed in Table 2 of Schedule F of this bylaw that may be composted on an impermeable surface (windrows or static pile) or in-vessel.

"Board" means the Board of the Capital Regional District.

"bylaw enforcement officer" means the chief bylaw enforcement officer or a bylaw enforcement officer or an assistant bylaw enforcement officer of the CRD.

"Class 1 composting facility" means a facility composting general organic matter on an impermeable surface or in-vessel.

"Class 2 composting facility" means a facility composting biosolids with general organic matter on an impermeable surface or in-vessel.

"Class 3 composting facility" means a facility composting restricted organic matter with either or both general organic matter or biosolids with general organic matter in-vessel.

"Class 1 recycler licence" means a licence to operate a Class 1 composting facility.

"Class 2 recycler licence" means a licence to operate a Class 2 composting facility.

"Class 3 recycler licence" means a licence to operate a Class 3 composting facility.

"compost" means a product which is:

- a) a stabilized earthy matter having the properties and structure of humus;
- b) beneficial to plant growth when used as a soil amendment;
- c) produced by composting; and
- d) only derived from organic matter.

"compostable materials or feedstock material" means those materials set out in Tables 1, 2 and 3 of Schedules E, F and G of this bylaw that are suitable for composting.

"composting" means the controlled biological decomposition through the biological oxidation of organic matter to a matured stage for a Class 1 or Class 2 composting facility or the curing stage for a Class 3 composting facility, but does not mean the application of unprocessed organic matter to the ground.

"composting facility" means a facility that:

- a) processes organic matter to produce compost; or
- b) receives and grinds, blends or processes organic matter prior to shipping to another site for composting.

"CRD" means the Capital Regional District.

"curing" means the further maturing of organic matter that has undergone the rapid initial stage of composting into a humus-like material.

"discharge" means to directly or indirectly introduce a substance into the environment by spilling, disposing of, abandoning, depositing, leaking, seeping, pouring, draining, emptying or by any other means.

"discharger" means the owner or operator of a composting facility or a licensee.

"drywall" means gypsum board or wallboard.

"enactment" means any applicable act, regulation, bylaw, order or authorization by a Federal, Provincial, regional or municipal government or its authorized representatives.

"Environmental Management Act" means the *Environmental Management Act* of the Province of British Columbia or any legislation that replaces the *Environmental Management Act*.

"general manager" means the general manager, or his or her deputy, of the CRD Environmental Services department.

"general organic matter" means those materials prescribed in Table 1 of Schedule E of this bylaw that may be composted on an impermeable surface (windrows or static pile) or in-vessel.

"impermeable surface" means a surface which:

- a) has a permeability rating of no greater than 1×10^{-7} cm per second; and
- b) has been designed and sealed by a professional engineer to ensure that there is no onsite discharge of leachate to the environment.

"in-vessel," in relation to composting, means any composting method where composting materials are contained in a closed reactor or vessel:

- a) in which conditions such as moisture, temperature and oxygen levels can be closely monitored and controlled; and
- b) which has been designed and sealed by a professional engineer to ensure that there is no discharge of leachate to the environment or nuisance created.

"leachate" means:

- a) effluent originating from organic matter being received, processed, composted, cured or stored at a composting facility;
- b) precipitation, stormwater, equipment wash water or other water which comes into contact with the organic matter being received, processed, composted, cured or stored;
- c) precipitation, stormwater, equipment wash water or other water which mixes with leachate at a composting facility; or
- d) effluent originating from organic matter upon storage.

"licensee" means a person who holds a recycler licence.

"matured," with respect to composting, means:

- a) the compost has passed through the mesophilic and thermophilic composting stages; and

- b) biological decomposition of the compost has occurred to a sufficient degree that the product meets the requirements of this bylaw and has beneficial value to plant growth.

"mesophyllic stage" means the biological decomposition of organic matter characterized by active bacteria which are favoured by a moderate temperature range of 20°C to 45°C; and is associated with a moderate rate of decomposition and stabilization.

"odour" means smells which are ill-smelling, disgusting, offensive, nauseous or obnoxious.

"order" means an order issued by the solid waste manager.

"organic matter" means materials that are suitable for composting under this bylaw unless excluded by municipal, Provincial or Federal enactments or orders that prohibit or restrict composting or composting methods.

"pathogen" means an organism capable of causing disease in humans, plants or animals.

"phase 1" means the receiving and blending, grinding, mixing and initial rapid phase of composting of all restricted organic matter through the mesophyllic and thermophilic stages of composting.

"phase 2" means curing for a minimum of twenty-one (21) days after having completed the mesophyllic and thermophilic stages.

"pollution" means the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment.

"premises" means any land or building or facility or site or works or any part thereof.

"proven technology" means any in-vessel composting technology in use at an appropriate scale for at least two (2) years which is capable of meeting the requirements of this bylaw.

"provisional recycler licence" means a licence issued for one (1) year for the operation of an in-vessel composting facility not using proven technology.

"qualified professional" means a person who:

- a) is registered in British Columbia with his or her appropriate professional association, acts under that professional association's code of ethics and subject to disciplinary action by that professional association; and
- b) through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within his or her area of expertise.

"recycler licence" means a licence to operate a Class 1, Class 2 or Class 3 composting facility and includes a waste stream management licence as defined in the *Environmental Management Act*.

"residential dwelling unit" means a property which is used primarily for the purpose of a residence by persons on a permanent, temporary or seasonal basis.

"restricted organic matter" means those materials prescribed in Table 3 of Schedule G of this bylaw that must be composted in-vessel only for phase 1.

"site" means any premises that are used in the operation of a composting facility.

"Solid Waste Management Plan" means the solid waste management plan of the CRD as revised.

"solid waste manager" means the manager of solid waste, or his or her deputy, appointed by the general manager.

"solid waste officer" means an officer appointed by the general manager.

"stabilized" means organic matter that has completed the phase 2 process.

"substance" includes any solid, liquid and/or gas.

"thermophilic stage" means the biological decomposition of organic matter characterized by active bacteria which are favoured by a high temperature range of 45°C to 75°C; and is associated with a high rate of decomposition and stabilization.

"vector" means a rodent, bird, fly or mosquito or other animal or insect carrier that ingests or conveys garbage, odour, micro-organisms and/or pathogens from one location to another.

"waste" means any substance that is discharged or discarded, directly or indirectly, to the environment.

"wastewater" is any water emanating from the composting process, including process water, wash water, compost leachate and effluent.

"watercourse" means

- a) a river, stream, creek, waterway, lagoon, lake, spring, swamp, marsh or other natural body of water; or
- b) a canal, ditch, reservoir or other man-made surface feature, whether it contains or conveys water continuously or intermittently.

SECTION 2 – APPLICATION AND EXEMPTION

2.1 This bylaw applies to the operation of composting facilities within the Capital Region unless otherwise exempted by this bylaw or another enactment.

2.2 Despite subsection 2.1, this bylaw does not apply to:

- a) agricultural waste composting;
- b) backyard composting;
- c) topsoil producers who handle and use straw/sawdust/animal manure mixes or other stabilized organic matter, or soil conditioners; or
- d) the composting of organic matter which originates at the site of the composting operation.

SECTION 3 – LICENCE APPLICATION

3.1 A person who operates a composting facility as of the date this bylaw comes into effect shall obtain a recycler licence or provisional recycler licence within one (1) year of the date the bylaw comes into effect.

3.2 A person shall not commence operation of a composting facility without first obtaining a recycler licence or provisional recycler licence in accordance with this bylaw.

- 3.3 Despite subsections 3.1 and 3.2, a recycler licence is not required for a Class 1 composting facility unless subsection 6.3 of this bylaw applies.

3.4 Required Information

An applicant for a recycler licence shall provide to the solid waste manager, on initial licence application, the following information as outlined in Schedule A of this bylaw:

- a) the types and quantities of organic matter to be composted each year;
- b) an odour management plan;
- c) a leachate management plan;
- d) a vector, litter and dust management plan;
- e) the maximum tonnage of feedstock and compost to be stored at any one time; and
- f) municipal/electoral area approval.

3.5 Provisional Recycler Licence

Applicants wishing to use other than proven technology for in-vessel composting shall apply for a one year provisional licence using the form attached to this bylaw as Schedule A. On initial application, the following information must be provided to the solid waste manager:

- a) the types and quantities of organic matter to be composted each year;
- b) an odour management plan;
- c) a leachate management plan;
- d) a vector, litter and dust management plan;
- e) the maximum tonnage of feedstock and compost to be stored at any one time; and
- f) municipal/electoral area approval.

3.6 Licence Fee

The applicant for a recycler licence shall pay to the CRD the applicable application fee set out in Section 8.

3.7 Leachate Management Plan

A leachate management plan provided under subsection 3.4 or 3.5 shall:

- a) stipulate how leachate generated from any and all stages of the composting process will be minimized, managed, treated or disposed; and
- b) be prepared and sealed by a qualified professional who has experience with leachate control.

3.8 Odour Management

3.8.1 An odour management plan provided under subsection 3.4 or 3.5 shall:

- a) show how the generation of odours detectable beyond the boundary of the parcel on which the composting facility is located will be prevented; and
- b) be prepared and sealed by a qualified professional who has experience with odour management systems.

3.8.2 For the purposes of subsection 3.8.1, all contiguous parcels owned by the same person shall be considered to be a single parcel.

3.9 Vector, Litter and Dust Management

A vector, litter and dust management plan provided under subsection 3.4 or 3.5 shall show how the composting operation will be managed:

- a) to control vectors;
- b) to keep the site free of litter and garbage; and
- c) to prevent the emission of dust (spores or other particulates) from the site.

3.10 Additional Requirements

The solid waste manager may require additional information with respect to management plans that he or she considers necessary for the protection of human health and the environment, and may specify particular concerns or questions that the management plans must address.

3.11 Performance Security

3.11.1 An applicant for a recycler licence shall submit to the solid waste manager, at the time of application, security in the form of an irrevocable letter of credit, or a combination of an irrevocable letter of credit and surety bond, in an amount calculated in accordance with the amounts set out in Schedule B of this bylaw, which may be used by the CRD in accordance with Schedule B of this bylaw to provide security that:

- a) in the event that the licensee fails to comply with the terms and conditions of the recycler licence or this bylaw, the default may be corrected; and
- b) in the event of closure, the site will be cleared of any abandoned compostable materials.

3.11.2 Where the security is provided by way of a combination of a letter of credit and a surety bond, the amount of the letter of credit shall not be less than 50% of the total security required under this bylaw.

3.11.3 If, at any time, a licensee's surety bond is withdrawn or cancelled, the licensee shall immediately provide alternative financial security in accordance with Schedule B of this bylaw.

3.11.4 If, at any time, notice is provided by the surety provider that a licensee's letter of credit will be withdrawn, the CRD may draw down on the letter of credit if the licensee fails to replace it at least seven (7) days before the proposed cancellation date.

3.11.5 The solid waste manager may suspend or cancel a recycler licence if a licensee fails to comply with the requirements of this subsection.

3.12 Licence Amendments

3.12.1 A licensee who proposes to implement an operational change to the operation of a composting facility, as described in Section 1.3 of Schedule C of this bylaw, shall apply for an amendment to the recycler licence in the form attached to this bylaw as Schedule A, and shall provide such information, drawings and specifications as may be required under Schedule A of this bylaw.

3.12.2 A licensee must obtain the amendment to the recycler licence prior to implementing the changes referred to in subsection 3.12.1.

3.13 Licence Types

A person proposing to:

- a) compost general organic matter prescribed in Table 1 of Schedule E of this bylaw shall obtain a Class 1 recycler licence if subsection 6.3 of this bylaw applies;
- b) compost biosolids with general organic matter prescribed in Table 2 of Schedule F of this bylaw shall obtain a Class 2 recycler licence;
- c) compost restricted organic matter prescribed in Table 3 of Schedule G of this bylaw shall obtain a Class 3 recycler licence.

SECTION 4 – ISSUANCE OF A RECYCLER LICENCE

4.1 Issuance

Recycler licences will be issued by the solid waste manager.

4.2 Term of Licence and Renewal

- 4.2.1 Subject to subsection 4.2.3, the term of a recycler licence is five (5) years from the date of issuance.
- 4.2.2 A licensee may apply to the solid waste manager for renewal of a recycler licence upon payment of the fees set out in Schedule C of this bylaw.
- 4.2.3 The term of a provisional recycler licence is one (1) year.
- 4.2.4 A provisional recycler licensee may apply for a one-time, one-year renewal. The licensee shall apply for a renewal of a provisional recycler licence prior to expiry of the licence, in accordance with the procedures set out in Schedule C of this bylaw.

4.3 Refusal to Issue

The solid waste manager will not issue a recycler licence for a composting facility which does not comply with this bylaw, local applicable land use, zoning and other bylaws or Federal and Provincial enactments applicable to the operation of the composting facility.

4.4 Cancellation or Suspension

The solid waste manager may suspend or cancel a recycler licence for any violation of, or non-compliance with, the terms and conditions of the recycler licence, or this bylaw or where the composting facility does not comply with Federal or Provincial enactments applicable to the operation of the composting facility.

4.5 Licence Transfer

- 4.5.1 A recycler licence may not be transferred or assigned without the solid waste manager's written consent.

4.5.2 The solid waste manager may withhold consent under subsection 4.5.1 where there is an ongoing violation of this bylaw or any enactment applicable to the operation of the composting facility.

4.6 No Representation

The issuance of a licence under this bylaw is not a warranty or representation by the CRD that the composting facility is in compliance with this bylaw or any other enactment nor that the discharger will not cause harm to the environment.

SECTION 5 – STORAGE AND COMPOSTING REGULATIONS

- 5.1 A discharger shall not store compostable materials for use in relation to a composting facility except in accordance with Schedule B of this bylaw.
- 5.2 Every discharger shall operate a composting facility in accordance with the composting regulations as set out in Schedule D of this bylaw and with the leachate management, odour management and vector, litter and dust management plans submitted in accordance with Section 3 of this bylaw. If the leachate management, odour management and vector, litter and dust management plans contain any provision that conflicts with Schedule D of this bylaw, that provision of the plan does not apply.

SECTION 6 – GENERAL REGULATIONS

- 6.1 No discharger shall operate a Class 1, Class 2 or Class 3 composting facility in a manner that creates or results in litter, dust (spores or other particulates), odours or vectors so as to pose a risk to public health or the environment or constitute a public nuisance.
- 6.2 No discharger shall operate a Class 1, Class 2 or Class 3 composting facility that creates or results in the discharge of leachate.
- 6.3 Owners or operators of Class 1 composting facilities will not be required to obtain a recycler licence or a provisional recycler licence unless the discharger of the composting facility is convicted of an offence under the bylaw.
- 6.4 If a discharger required to obtain a licence under the provisions of 6.3 is not convicted of an offence under this bylaw for five (5) years after obtaining the licence, then that discharger will not be required to renew the recycler licence.
- 6.5 A licensee shall operate a composting facility in accordance with the terms and conditions of a recycler licence or a provisional recycler licence.

SECTION 7 – ENFORCEMENT

- 7.1 The general manager, the solid waste manager, a solid waste officer or a bylaw enforcement officer may enforce the provisions of this bylaw.
- 7.2 The solid waste manager, a solid waste officer or a bylaw enforcement officer may, at any reasonable time and upon presentation of proof of his or her identity, enter upon premises to ascertain whether the terms of a recycler licence or provisional recycler licence have been or are being complied with or the regulations of this bylaw are being observed.

- 7.3 Nothing in this bylaw shall be interpreted as restricting the powers of a bylaw enforcement officer, a solid waste officer or the solid waste manager under the *Environmental Management Act* and its regulations.

SECTION 8 – FEES AND CHARGES

- 8.1 The Board hereby imposes the fees set out in Schedule C of this bylaw.
- 8.2 Every person who applies for or who holds a recycler licence or provisional recycler licence issued under this bylaw shall pay the applicable fee or fees set out in Schedule C of this bylaw.
- 8.3 Every person who applies for a licence renewal shall pay a licence renewal fee as set out in Schedule C of this bylaw.
- 8.4 Every person who applies for a licence amendment shall pay a licence amendment fee as set out in Schedule C of this bylaw.

SECTION 9 – OFFENCES AND PENALTIES

- 9.1 No person shall do any act or suffer or permit any act or thing to be done in contravention of this bylaw.
- 9.2 A person who contravenes this bylaw is guilty of an offence and is liable to a fine up to a maximum of \$200,000.
- 9.3 The penalties imposed under subsection 9.2 hereof shall be in addition to and not in substitution for any other penalty or remedy imposed by this bylaw or any other statute, law or regulation.
- 9.4 Nothing in this bylaw shall limit the CRD from pursuing any other remedy that would otherwise be available to the CRD at law.
- 9.5 A separate offence shall be deemed to be committed upon each day during and on which the contravention occurs or continues.

SECTION 10 – APPEAL

- 10.1 A person affected by a decision of the solid waste manager under this bylaw may appeal the decision to the general manager by advising the general manager in writing of the order or requirement being appealed from and setting out the reason for the appeal and attaching any relevant documents.
- 10.2 The written notice of appeal under this section must be delivered to the general manager within thirty (30) days of the decision from which the appeal is made.
- 10.3 The matter will be reviewed by the general manager pursuant to subsection 10.4.
- 10.4 Upon considering the matter under appeal, the general manager may:
- a) confirm, reverse or vary the decision under appeal; and
 - b) make any decision that the general manager considers appropriate.

- 10.5 An appeal under this section does not operate as a stay or suspend the operation of the decision being reviewed unless the general manager orders otherwise.

SECTION 11 – GENERAL

- 11.1 No person shall hinder or prevent the general manager, a solid waste manager, a solid waste officer or a bylaw enforcement officer from entering any premises or from carrying out his or her duties with respect to the administration of this bylaw.
- 11.2 Where the Board has authority to direct that a matter or thing be done by a person, the Board may also direct that, if the person fails to take the required action, the matter or thing shall be done at the expense of the person in default in accordance with Section 269 of the *Local Government Act*. If action in default is taken, the Board may recover the expense from the person, together with costs and interest at the rate prescribed under Section 11 (3) of the *Taxation (Rural Area) Act*, in the same manner as municipal taxes.
- 11.3 The schedules annexed to this bylaw are an integral part of this bylaw.
- 11.4 If any provision of this bylaw is found to be invalid by a court of competent jurisdiction, it may be severed from the bylaw without affecting the validity of the remainder of the bylaw.
- 11.5 The headings in this bylaw are inserted for convenience of reference only.
- 11.6 This bylaw may be cited for all purposes as "Capital Regional District Composting Facilities Regulation Bylaw No. 1, 2004."

READ A FIRST TIME THIS	10 th	day of	November	2004
READ A SECOND TIME THIS	10 th	day of	November	2004
READ A THIRD TIME THIS	8 th	day of	June	2005
APPROVED BY THE MINISTER OF ENVIRONMENT	2 nd	day of	November	2005
ADOPTED THIS	7 th	day of	December	2005

CHAIR

SECRETARY

LICENCE NO. _____

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE A

RECYCLER LICENCE APPLICATION

Please ✓ relevant boxes:		<input type="checkbox"/> Class 1	<input type="checkbox"/> Class 2	<input type="checkbox"/> Class 3	Page 1 of 2
<input type="checkbox"/> New Application		<input type="checkbox"/> Amendment/Renewal of Recycler Licence			
<input type="checkbox"/> Provisional Licence Application		<input type="checkbox"/> Renewal of Provisional Licence			
APPLICANT DATA					
Name of Applicant:	_____				
Address of Applicant:	_____				
City, Province:	_____				
Postal Code:	_____	Applicant Phone:	_____		
Contact Person:	_____	Contact Phone:	_____		
FACILITY DATA					
Name of Facility:	_____				
Legal Description of Facility Location:	_____				
Address of Facility:	_____				
Facility Mailing Address:	<input type="checkbox"/> same as above OR _____				
Facility Phone:	_____	Facility Fax:	_____		
Registered Owner of Premises (Property):	_____				
Registered Owner Authorization	<input type="checkbox"/> YES (attach documentation)		<input type="checkbox"/> NO		
Have municipal/electoral area approval?					
Zoning	<input type="checkbox"/> YES (attach documentation)	<input type="checkbox"/> NO			
Siting	<input type="checkbox"/> YES (attach documentation)	<input type="checkbox"/> NO			
Building	<input type="checkbox"/> YES (attach documentation)	<input type="checkbox"/> NO			
Other _____	<input type="checkbox"/> YES (attach documentation)	<input type="checkbox"/> NO			
	(specify)				
Business Licence (copy) Attached	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NOT APPLICABLE		
Business Year (financial)	_____	to	_____		
	(day)		(month)	(day)	(month)

OPERATING DATA		Page 2 of 2
Proposed Feedstock Material	Maximum Quantity Expected to be Received	Maximum Quantity of Feedstock and Compost to be Stored at Any One Time
General Organic Matter		
<input type="checkbox"/> Animal bedding	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Brewery waste/winery waste	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Class A food waste	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Manure	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Plant matter derived from processing plants	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Untreated and unprocessed wood residuals	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Yard waste	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Whey	_____ litres/year	_____ litres
<input type="checkbox"/> Compost	_____	_____ tonnes
Biosolids		
<input type="checkbox"/> Biosolids	_____ tonnes/year	_____ tonnes
Restricted Organic Matter		
<input type="checkbox"/> Class B food waste	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Domestic septic tank sludge	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Fish wastes	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Hatchery waste	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Milk processing waste	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Poultry carcasses	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Sewage sludge	_____ tonnes/year	_____ tonnes
<input type="checkbox"/> Whey	_____ litres/year	_____ litres
<input type="checkbox"/> Compost	_____	_____ tonnes
Odour Management Plan Attached	<input type="checkbox"/> YES	
Leachate Management Plan Attached	<input type="checkbox"/> YES	
Vector, Litter and Dust Management Plan Attached	<input type="checkbox"/> YES	
<u>Performance Security</u>		
Surety Bond Attached	<input type="checkbox"/> YES	Amount \$ _____
Letter of Credit Attached	<input type="checkbox"/> YES	Amount \$ _____
APPLICANT'S SIGNATURE:		
I, _____, declare that the information given on this application form is correct to the best of my knowledge.		
_____ Date	_____ Signature of Applicant or Agent	
_____ Title	_____ Phone Number	

The collection of this information is authorized under the Capital Regional District Composting Facilities Regulation Bylaw and Section 25 of the *Environmental Management Act* and will be used for the purpose of administration, including enforcement, of the Composting Facilities Regulation Bylaw. This information is collected under/subject to the *Freedom of Information and Protection of Privacy Act*. For further information, you may contact the freedom of information and protection of privacy coordinator for CRD Environmental Services at 360-3089.

Application should be sent to the Manager, Solid Waste, Capital Regional District, PO Box 1000, Victoria, BC V8W 2S6.

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE B

REGULATIONS REGARDING THE STORAGE OF FEEDSTOCK MATERIALS CALCULATION AND USE OF SECURITY

1. **STORAGE**

A discharger shall not store the materials listed in Column 1 below in excess of the maximum limits set out in or established under columns 2, 3 and 5, unless the storage is carried out in a self-contained unit maintained to prevent the escape of organic matter, odours, leachate and vector attraction.

2. **SECURITY**

2.1 The formula for the determination of the amount of security to be provided under subsection 3.11 of this bylaw is set out in Column 4 below. Where the applicant for a recycler licence indicates a pre-processed tonnage maximum which is less than the amount shown in Column 2 below, the amount of security to be provided under subsection 3.11 of this bylaw shall be calculated under Column 4 below using the pre-processed tonnage amount specified in the application.

2.2 The CRD may draw down on or use the security provided by the licensee under this bylaw where the discharger:

- a) fails to comply with any term or condition of this bylaw or of the recycler licence;
- b) has not commenced processing;
- c) has stored the feedstock material contrary to Section 1 of this schedule; or
- d) abandons the composting facility, as shown by discontinuance of activity related to the management of feedstock materials on the site for six (6) months, leaving materials on the site to be cleaned up, removed or disposed.

2.3 Without limiting subsection 2.2 of this schedule, the CRD may draw down or use the security provided by the licensee to clean up, remove and dispose of materials which have been stored at a composting facility in excess of the times specified in Column 5 below.

Column 1 MATERIAL	STORAGE LIMIT		Column 4 MINIMUM LETTER OF CREDIT AND SURETY BOND ⁽²⁾	Column 5 STORAGE TIME LIMIT ⁽⁴⁾
	Column 2 PRE-PROCESSED TONNAGE (tonnes) ⁽¹⁾	Column 3 EQUIVALENT VOLUME (m ³)		
General Organic Matter	500	1,000	\$/tonne ⁽³⁾	2 weeks ⁽⁵⁾
Biosolids	50	75	\$/tonne ⁽³⁾	36 hours ⁽⁵⁾
Restricted Organic Matter	50	75	\$/tonne ⁽³⁾	36 hours ⁽⁵⁾

⁽¹⁾ Pre-processed tonnage includes total tonnage that would require removal, e.g., if 5 tonnes of restricted organic matter are mixed with 5 tonnes of yard waste, it is considered as 10 tonnes of restricted organic matter.

⁽²⁾ Minimum 50% secured as an irrevocable letter of credit; balance in irrevocable letter of credit or surety bond. Tonnage of pre-processed feedstock and compost.

⁽³⁾ The amount of the security required will be based on the estimated costs to clean up, remove and process the tonnage of pre-processed feedstock and compost, including Hartland landfill tipping fees plus clean-up and hauling fees, and these shall be verified by the solid waste manager.

⁽⁴⁾ Notwithstanding these limits, Sections 6.1 and 6.2 of the bylaw shall govern.

⁽⁵⁾ Whenever materials are mixed, the storage restriction which applies is the one pertaining to the most restricted material.

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE C

FEES

The application, administration and amendment fees payable to the CRD under this bylaw shall be as follows:

Application, Amendment and Administration/Monitoring Fees

Column 1	Column 2 Licence Application Fee (one time only)	Column 3 Licence Renewal (once every 5 years)	Column 4 Licence Amendment Fee (per amendment)	Column 5 Annual Licence Administration/ Monitoring Fee
Class 1 Recycler licence	\$1,000	\$500	\$500	\$1,000
Class 2 Recycler licence	\$1,000	\$500	\$500	\$1,000
Class 3 Recycler licence	\$1,000	\$500	\$500	\$1,000
Provisional recycler licence	\$1,000	\$500 (one renewal only for one year renewal term)	\$500	\$2,000

FEES

1. **LICENCE APPLICATION, RENEWAL, AMENDMENT AND ADMINISTRATION/MONITORING FEES**

1.1 Licence Application Fee

- a) Every person who applies for a recycler licence shall pay a licence application fee as set out in Column 2 of this schedule.
- b) The application fee is payable on submission to the solid waste manager of a completed application form as provided in Schedule A attached to this bylaw.
- c) The CRD will not process an application for a recycler licence until the application fee has been paid.
- d) The application fee is not refundable.

1.2 Licence Renewal Fee

- a) Every person who applies for a licence renewal shall pay a licence renewal fee as set out in Column 3 of this schedule. Licence renewal is required every five (5) years, except in the case of renewal of a provisional recycler licence which is required after one (1) year.
- b) The licence renewal fee is payable on submission to the solid waste manager of a completed application form as provided in Schedule A of this bylaw.
- c) The CRD will not process an application for a licence renewal until the renewal fee has been paid.
- d) The renewal fee will not be refunded if the solid waste manager does not re-issue a recycler licence.

1.3 Licence Amendment Fee

- a) Each time a request is made for an amendment to the recycler licence, the licensee shall pay a licence amendment fee as set out in Column 4 of this schedule. A licence amendment is required whenever there is a change in any of the following parts of a composting facility's operation:
 - i) method of composting (change in class of licence)
 - ii) odour management plan
 - iii) leachate management plan
 - iv) vector, litter and dust management plan
 - v) method of receiving and storing
 - vi) estimated quantities of feedstock materials per year
 - vii) maximum quantity of feedstock and compost to be stored at any one time
 - viii) a site plan and layout of facilities
 - ix) municipal/electoral area approval
- b) The licence amendment fee is payable on submission to the solid waste manager of a completed application form as provided in Schedule A of this bylaw.
- c) The CRD will not process an amendment for a recycler licence until the amendment fee has been paid.
- d) The amendment fee will not be refunded if the solid waste manager does not amend the licence.

1.4 Annual Licence Administration/Monitoring Fee

- a) A person to whom a Class 1, Class 2, Class 3 or provisional recycler licence is issued shall pay the corresponding annual administration/monitoring fee as set out in Column 5 of this schedule.
- b) The first administration/monitoring fee shall be paid upon issuance of the recycler licence.
- c) The annual administration/monitoring fee will be invoiced once per year on the anniversary date of the issuance of the licence.

- d) The CRD may suspend or cancel a recycler licence if the administration/monitoring fee is not paid within sixty (60) days following the anniversary date of the issuance of the licence.

1.5 Provisional Licence Application Fee

- a) Every person who applies for a provisional recycler licence shall pay a provisional licence application fee as set out in Column 2 of this schedule.
- b) The application fee is payable on submission to the solid waste manager of a completed application form as provided in Schedule A of this bylaw.
- c) The CRD will not process an application for a provisional recycler licence until the application fee has been paid.
- d) The application fee will not be refunded if the solid waste manager does not issue a provisional recycler licence.

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE D

COMPOSTING REGULATIONS

Every composting facility shall operate in accordance with the following regulations and requirements:

1. **RECEIVING, HANDLING, PROCESSING AND COMPOSTING OF FEEDSTOCK**

- 1.1 The receiving and blending, grinding, mixing and initial rapid phase of composting (phase 1) of all restricted organic matter must be conducted in-vessel.
- 1.2 The curing (phase 2) of restricted organic matter compost must be conducted in-vessel or on an impermeable surface.
- 1.3 The receiving and blending, grinding, mixing, composting and storage of all compostable material not covered by subsection 1.1 or 1.2 of this schedule must, as a minimum, be conducted on an impermeable surface.
- 1.4 A licensee shall not receive any materials other than those set out in the licence.

2. **STORAGE**

- 2.1 Feedstock material shall not be stored in excess of the maximum limits set out in or established under columns 2, 3 and 5 of Schedule B of this bylaw.
- 2.2 The amount of feedstock and compost in a composting facility must not at any time exceed the total provided by the licensee to the CRD under subsection 3.4 or 3.5 of this bylaw.

3. **REPORTING**

- 3.1 The licensee must, at least ninety (90) days before beginning the operation of a composting facility, give notice in writing to the solid waste manager.
- 3.2 The notification required by subsection 3.1 of this schedule must include:
 - a) the composting facility location and design capacity, name of a contact person, type of waste received and intended distribution of compost; and
 - b) a copy of a personnel training program plan that addresses the specific training needed to operate the composting facility in compliance with this regulation.

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE E

**TABLE 1
FEEDSTOCK PROCESSING
GENERAL ORGANIC MATTER**

May be composted on an impermeable surface or in-vessel and will not require a licence unless the operation contravenes subsection 6.3 of this bylaw.

Feedstock	Constituents of Feedstock
animal bedding	animal bedding derived from straw, paper, hog fuel, wood chips, bark, shavings or sawdust
brewery waste/winery waste	used or diverted grain, malt, hop flowers, berries, fruit, leaves and twigs and yeast resulting from brewing or wine-making process
Class A food waste ⁽¹⁾	uncooked vegetable matter and clean paperfibre containers used to package and transfer the uncooked vegetable matter
manure	animal excreta from pets, animals in zoological facilities, fish held in commercial aquaculture or aquarium facilities, livestock, farmed game or poultry, this does not include the management of animal excreta (manure) on farms as defined as agricultural waste in BC Reg. 131/92, but does include animal excreta (manure) not included within the scope of BC Reg. 131/92
plant matter derived from processing plants	fruit, vegetable and vegetative material derived from fruit and vegetable processing plants, these are materials which have been removed from an agricultural operation and no longer fit within the definition of agricultural waste (agricultural vegetation waste) as defined in BC Reg. 131/92
untreated and unprocessed wood residuals	clean (non-contaminated and untreated) wood from lumber manufacture, e.g., shavings, sawdust, chips, hog fuel and ground mill ends, and land clearing waste which has been ground with the majority of the greenery removed and no soil present, but does not include construction and demolition debris
yard waste	clean and untreated wood waste or non-food vegetative matter resulting from gardening operations, landscaping and land clearing; yard waste does not include wood waste derived from construction or demolition. Neither human or animal food waste that is diverted from residential, commercial or institutional sources, nor manure, is yard waste
whey ⁽¹⁾	the serum or watery part of milk that remains after the manufacture of cheese and quantities to be imported are less than 450 litres per year

⁽¹⁾ Definition modified from Schedule 12 of the Organic Matter Recycling Regulation (OMRR)

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE F

**TABLE 2
FEEDSTOCK PROCESSING
BIOSOLIDS WITH GENERAL ORGANIC MATTER**

May be composted on an impermeable surface or in-vessel and will require a Class 2 recycler licence.

Feedstock	Constituents of Feedstock
biosolids	stabilized municipal sewage sludge resulting from a municipal waste water treatment process or septage treatment process which has been sufficiently treated to reduce pathogen densities and vector attraction to allow the sludge to be beneficially recycled in accordance with the requirements of this regulation

Plus any or all of the following general organic matter:

animal bedding	animal bedding derived from straw, paper, hog fuel, wood chips, bark, shavings or sawdust
brewery waste/winery waste	used or diverted grain, malt, hop flowers, berries, fruit, leaves and twigs and yeast resulting from brewing or wine-making process
Class A food waste ⁽¹⁾	uncooked vegetable matter and clean paperfibre containers used to package and transfer the uncooked vegetable matter
manure	animal excreta from pets, animals in zoological facilities, fish held in commercial aquaculture or aquarium facilities, livestock, farmed game or poultry, this does not include the management of animal excreta (manure) on farms as defined as agricultural waste in BC Reg. 131/92 but does include animal excreta (manure) not included within the scope of BC Reg. 131/92
plant matter derived from processing plants	fruit, vegetable and vegetative material derived from fruit and vegetable processing plants, these are materials which have been removed from an agricultural operation and no longer fit within the definition of agricultural waste (agricultural vegetation waste) as defined in BC Reg. 131/92
untreated and unprocessed wood residuals	clean (non-contaminated and untreated) wood from lumber manufacture, e.g., shavings, sawdust, chips, hog fuel and ground mill ends, and land clearing waste which has been ground with the majority of the greenery removed and no soil present, but does not include construction and demolition debris
yard waste	clean and untreated wood waste or non-food vegetative matter resulting from gardening operations, landscaping and land clearing; yard waste does not include wood waste derived from construction or demolition. Neither human or animal food waste that is diverted from residential, commercial or institutional sources, nor manure, is yard waste
whey ⁽¹⁾	the serum or watery part of milk that remains after the manufacture of cheese and quantities to be imported are less than 450 litres per year

⁽¹⁾ Definition modified from Schedule 12 of the Organic Matter Recycling Regulation (OMRR)

CAPITAL REGIONAL DISTRICT

BYLAW NO. 2736

SCHEDULE G

**TABLE 3
FEEDSTOCK PROCESSING
RESTRICTED ORGANIC MATTER**

In-vessel composting only and will require a Class 3 recycler licence.

Feedstock	Constituents of Feedstock
Class B food waste ⁽¹⁾	food waste which is not Class A food waste as prescribed on Table 1 of Schedule E of this bylaw and Table 2 of Schedule F of this bylaw, and includes recyclable food for humans that has been diverted from residential, commercial or institutional sources
fish wastes	fish carcasses and parts from harvested wild stocks, commercial aquaculture operations and fish processing facilities. This would include offal, viscera and mortalities from fish and shellfish. It would also include faeces captured from commercial aquaculture net pens
hatchery waste	broken or unhatched eggs, unhatched chicks, membranes, embryonic fluids and eggshell
milk processing waste	sludge or biomass from treatment of milk or fluid milk which has been diverted from human food consumption
poultry carcasses	carcasses of domestic fowls, such as chickens, turkeys, ducks or geese, raised for meat or eggs. This would include offal and viscera as well as mortalities from fowl which died from reported "Federally Reported Diseases."
sewage sludge ⁽²⁾	sewage sludge originating from sewage treatment plants
domestic septic tank sludge	sludge removed from a septic tank used for receiving, treating and settling domestic sewage
whey ⁽¹⁾	the serum or watery part of milk that remains after the manufacture of cheese and quantities to be imported are greater than 450 litres per year

⁽¹⁾ Definition modified from Schedule 12 of the Organic Matter Recycling Regulation (OMRR)

⁽²⁾ Addition to Schedule 12 of OMRR (can only be composted with written authorization from the Ministry of Water, Land and Air Protection)

general

The Composting Council of Canada 2009 Conference proceedings
http://www.compost.org/English/Nat_Conf_proceeding
 416-535-0240 ccc@compost.org

regulatory

CRD Bylaw No. 2736 A Bylaw To Regulate The Operation Of Composting Facilities In The Capital Regional District
<http://www.crd.bc.ca/jdf/bylaws/documents/BL27360000.pdf>

Organic Matter Recycling Regulation—BC Environmental Management Act and Public Health Act
http://www.bclaws.ca/Recon/document/freeside/--%20E%20--/Environmental%20Management%20Act%20%20SBC%202003%20%20c.%2053/05_Regulations/35_18_2002.xml

Compost Facility Requirements Guideline: How to Comply with Part 5 of the Organic Matter Recycling Regulation, March 2004
<http://www.env.gov.bc.ca/epd/epdpa/mpp/pdfs/compost.pdf>

residential organics diversion in the CRD

CRD Solid Waste Advisory Committee Environmental Services Department: Residential Organics Management in the Capital Region – Progress Report— SWAC 08–11
 Organics Management – Planning Process—SWAC 08–14

CRD Residential Organics Collection Pilot Final Report Summary
http://www.crd.bc.ca/waste/organics/documents/RESIDENTIAL_ORGANICS_COLLECTION_PILOT_-_FINAL_REPORT_SUMMARY.pdf

CRD SSI SWAC Draft Salt Spring Island Community Composting Facility Scenario—Environment Sustaining Products Limited, Dec 2008
<http://www.esplimited.co.nz>

agricultural

Site Selection For Composting—BC Ministry of Agriculture, Food and Fisheries, 1996 <http://www.agf.gov.bc.ca/resmgmt/publist/300Series/382500-6.pdf>

Blending Materials For The Composting Process—BC Ministry of Agriculture, Food and Fisheries, 1996
<http://www.agf.gov.bc.ca/resmgmt/publist/300Series/382500-4.pdf>

Managing Agricultural Composting Systems—BC Ministry of Agriculture, Food and Fisheries, 1996
<http://www.agf.gov.bc.ca/resmgmt/publist/300Series/382500-7.pdf>

Composting Suggested Reading and References—BC Ministry of Agriculture, Food and Fisheries, 1996
<http://www.agf.gov.bc.ca/resmgmt/publist/300Series/382500-16.pdf>

Horse Manure Composting Program Compost Management Guide—Langley Environmental Partners Society <http://www.manuremaiden.com/>

Questions for Commercial growers

1. Do you currently purchase finished compost?
If yes:
 - a. What quantity do you buy per year? (prompt for number of yards if possible)
 - b. Do you usually buy from a Salt Spring supplier, or from off-island, or both?
 - c. Is the compost delivered or do you pick it up?
 - d. Which seasons do you purchase compost: spring, summer, fall, winter?
 - e. Do you anticipate any changes to your purchases in future? If yes, explain
2. Do you make your own compost?
If yes, what quantity?
3. Do you bring in raw materials to make compost?
 - a. No, I use materials from my farm only
 - b. I import carbon materials (sawdust, shavings, straw etc.)
 - c. I import nitrogen materials (animal manure, restaurant waste etc.)
 - d. Approximately what quantity?
4. Do you currently have any of the following feedstock materials that you would consider contributing to an on-island facility?
 - a. Carbon materials (tree trimmings, sawdust, etc) if yes, quantity?
 - b. Nitrogen materials, quantity (animal manure (if so, what kind of animal? May be useful since they have different nitrogen ratios e.g. poultry is almost double that of horse), green manure/vegetable waste, etc) if yes, quantity?
 - c. What time of year is it available?
 - d. Do you currently sell these materials, or give them away?
 - e. Do you anticipate future changes to the availability? If so, how will it change?
5. If a Salt Spring central composting facility was producing good quality compost, how likely would you be to purchase compost from it?
 - a. Very likely
 - b. Somewhat likely
 - c. Somewhat unlikely
 - d. Very unlikely
6. What factors would affect your decision to purchase compost from a Salt Spring facility?
7. Would you consider replacing part of the compost you currently make with compost from a Salt Spring facility? Yes, no, maybe
8. Would you be comfortable telling us how much you currently pay for compost? (If yes, prompt for price by the truck load, or yard, with/without delivery)
9. Any other thoughts on a central facility you would like to share?
10. Thank you for your time. Would you like to be added to our email list for updates on this study?
If yes, take email address

Questions for Restaurants, B&Bs, Seniors' Homes, and Processing Plants

1. Which of the following best describes your current waste management practices?
 - a. Comingled, no separation of organics or recyclables (it may be too early in the interview for this questions, but maybe later...if their waste is comingled, would they consider separating it so it could be used for composting).
 - b. Some separation of recyclables, with organics and other waste comingled
 - c. Organic waste is kept separate from other waste
 - d. Other (please describe)
2. If your waste is currently mixed, would your facility be willing to separate the organic materials?
 - a. Very willing
 - b. Somewhat willing
 - c. Somewhat unwilling
 - d. Very unwilling
3. Which of the following compostables are included your organic waste:
 - a. Vegetables and fruit (raw or cooked)
 - b. Flour and baked goods
 - c. Fish and/or meat and/or dairy scraps (raw or cooked)
 - d. Coffee grounds, tea leaves
 - e. Other food processing (specify)
 - f. Paper products (serviettes, plates, newspaper, cardboard)
 - g. Non-compostables such as plastic film, plastic forks, cans, etc.
4. How much compostable organic waste does your facility produce on a weekly basis? (prompt for number of garbage cans, or 50 gal drums, or whatever)
5. Which of the following describes how you currently dispose of compostable organic waste ?
 - a. Contracted garbage service
 - b. Informal free pick up by local farmers
 - c. Composted on-site
 - d. In-house garbage removal service
 - e. Other (please describe)
6. How frequently is your organic waste removed ?
 - a. Once every two weeks
 - b. Weekly
 - c. Twice a week
 - d. Daily
 - e. Other (specify)
7. The Hartland Landfill will be closed to organic waste in 2012. If there is a central composting facility on-island at that time, which of the following options would you be most likely to choose?
 - a. Use a garbage service that supplied the composting facility
 - b. Truck waste to the facility ourselves
 - c. Look for the least expensive disposal option
 - d. Continue our current disposal method
 - e. Other (please describe)
8. Are there any obstacles that would prevent you from choosing to send your organic waste to a Salt Spring composting facility?
9. Are there other materials generated at your facility (such as yard trimmings, or waste paper) that are not already being recovered for reuse/recycling that could potentially serve as compost feedstock? If yes, please describe.

10. What best describes your volume of organic waste?
 - a. Constant throughout the year
 - b. Peaks in summer, with less during fall, winter and spring
 - c. Other (please describe)
11. Do you anticipate that your organic waste quantity will change in the future?
If so, will it increase or decrease? By how much?
12. Would you be comfortable telling us how much you currently pay for organic waste removal?
13. Any other thoughts on a central composting facility you would like to share?
14. Thank you for your time. Would you like to be added to our email list for updates on this study?
If yes, take email address

Questions for Horse Operators

1. How much manure does your facility currently produce?
Does production change with the seasons (describe)?
2. How do you currently handle manure?
 - a. stockpile and sell
 - b. spread on own land
 - c. both
 - d. other (please describe)
3. If you currently sell manure, would you be willing to tell us how much you charge? (prompt, per yard)
4. Would a manure removal service be useful to you?
 - a. yes
 - b. noCan you explain your answer?
5. If you were to use a manure removal service, what frequency of pickup would you prefer?
 - a. monthly, or more frequent, pick up
 - b. quarterly pick up
 - c. pick up once or twice a year
6. If a central composting facility were set up for SSI, would you support the project by supplying manure?
 - If no, why not?
 - If yes, would you be able to supply all the manure you currently produce or a portion thereof?
7. Are there other materials generated at your facility (such as yard trimmings or waste paper) that are not already being recovered for reuse/recycling that could potentially serve as compost feedstock?
If yes, please describe.
8. Do you anticipate that manure quantity from your facility will change in the future?
If so, will it increase or decrease? By how much?
9. Any other thoughts on a central composting facility you would like to share?

10. Thank you for your time. Would you like to be added to our email list for updates on this study?
If yes, take email address

Questions for BC Hydro, Chipper Contractors, small sawmills, landscape maintenance companies

1. How do you currently dispose of potential compost feedstock such as chipped tree trimmings and other yard waste?
 - a. Do you give it away?
 - b. Do you currently sell mulch/chips? If so, at what price?
 - c. Do you ever have to pay a tipping fee to get rid of organic material?
 - d. Do you ever burn stumps and other wood debris?
2. Would you be willing to tell us your rates for chipping and hauling?
3. If a central composting facility were set up for SSI, how likely would you be to support the facility by supplying a regular quantity of clean chipped wood/yard waste?
 - a. Very likely
 - b. Somewhat likely
 - c. Somewhat unlikely
 - d. Very unlikely
4. If yes to question 3:
 1. What quantity of chips could you supply per week?
 2. What composition (percentage or weight)?
 - wood chips (carbon materials) _____
 - yard clippings (nitrogen materials) _____
 - other _____
 3. Does production of this waste change with the seasons?
 - a. No, constant all year
 - b. Peaks in summer
 - c. Peaks in spring/fall
5. If no to question 3, what are the obstacles preventing you from choosing to supply the facility?
6. Would you be interested in assisting with a central composting facility? For example by supplying equipment and operator (chipper, stump grinder, truck etc.)
7. Do you anticipate that the quantity of organic waste that you handle will change in the future?
If so, will it increase or decrease? By how much?
8. Any other thoughts on a central facility you would like to share?
9. Thank you for your time. Would you like to be added to our email list for updates on this study?
If yes, take email address



Unloading biosolids at Bevan Road, Cumberland
Mixer at Bevan Road, Cumberland





Hog fuel (wood chips) at Bevan Road, Cumberland

Air handler and exhaust ductwork supply to biofilter, Bevan Road, Cumberland





Hog fuel (wood chips) at Bevan Road, Cumberland

Screener at Bevan Road, Cumberland





Secondary composting under cover, showing 'Big-O' aeration pipes, Bevan Road

Windrow turner at Bevan Road, Cumberland





UBC—finished compost and feedstock covered storage

UBC—compost exiting Wright in-vessel unit





UBC—finished compost and feedstock covered storage



City of Vancouver yard waste composting at Delta landfill site