

# **Zero Waste Action Plan**

*Prepared for the*  
**Waste Management Task Force**  
**City of Nelson, British Columbia, Canada**

*Prepared by*  
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**And**  
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**December 23, 2003**

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December 23, 2003

Waste Management Task Force  
City of Nelson  
502 Vernon St.  
Nelson, BC V1L 4E8

Attention: Donna Macdonald, Chair, Waste Management Task Force

Dear Donna,

**Re: Zero Waste Action Plan**

MJ Waste Solutions and Gary Liss & Associates are pleased to provide you with the *Zero Waste Action Plan* for the Waste Management Task Force.

We enjoyed meeting with the Task Force and various Zero Waste Stakeholders. It is exciting to see the diversity of people interested in moving a Zero Waste strategy forward in the Nelson community.

Zero Waste is a process that involves many stakeholders. The success of the strategy will depend upon effective communication and active engagement with each of the stakeholders to harness their interest and energy to turn solid waste problems into resource recovery solutions.

Thank you for the opportunity to conduct this work. Please contact me at your convenience if you have any questions regarding the *Zero Waste Action Plan*. Gary and I would be pleased to help you in any way to implement its recommendations.

Yours truly,

A handwritten signature in black ink that reads "Mary Jean O'Donnell".

Mary Jean O'Donnell  
Principal

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# 1 Executive Summary

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In 2003, Nelson City Council struck a Waste Management Task Force to review the City's waste management system including its relationship with the Regional District of Central Kootenay, Central Waste Management Sub-Region (RDCK). The objective of the Task Force is to determine how to reduce the cost of solid waste through strategies such as operational changes and increased diversion opportunities. As part of this work, the Task Force decided to develop a Zero Waste Action Plan. In August 2003, with funding from the British Columbia Ministry of Water, Land and Air Protection, the Task Force retained MJ Waste Solutions and Gary Liss & Associates to assist with development of a Zero Waste Action Plan (ZWAP).

This Zero Waste Action Plan is different from other waste management plans in that it assumes that solid waste disposal to landfill can eventually be eliminated with the adoption of a variety of policies and programs by the City of Nelson and the Regional District of Central Kootenay (RDCK). The policies and programs recommended will make it more economic to eliminate, reuse, recycle or compost waste, than to dispose of it in landfills. This ZWAP has sought to find homes for all materials generated, with a focus on local solutions. As some wastes are more challenging to eliminate, reuse, recycle, or compost than others; options are proposed to work with the producers of those products and packaging for them to assume responsibility for them, or to ban them from sale in Nelson or disposal at Nelson and RDCK facilities.

The following are key next steps that should be priorities for implementation.

- Adopt a Zero Waste Resolution;
- Adopt Proposed Budget for Zero Waste;
- Negotiate with the Regional District of Central Kootenay (RDCK) for approval for Nelson to pursue its own recycling collection and processing programs;
- Draft RFP for residential curbside recycling program (including separate options for collection *and* processing, and blue bag *and* blue box systems).

Section 2 summarizes the current solid waste disposal, reuse, recycling and composting operations, in the City of Nelson. Interviews were conducted with the City of Nelson Public Works Department, the Regional District of Central Kootenay Waste Management Department, and several businesses and non-profits providing solid waste collection and recycling services in the City of Nelson.

Section 3 describes the results of the Service Needs Analysis and highlights how properly designed avoided collection and disposal costs can become the economic engine that drives the system to Zero Waste. Direct disposal cost savings alone at \$100/tonne could generate up to \$205,000 annually to offset the costs of an expanded recycling program. The proposed ZW budget includes capital and operating costs for the City of Nelson to implement the initiatives outlined in this ZWAP. Approximately \$90,000

## City of Nelson Zero Waste Action Plan

has been allocated for initial capital investments, while \$208,000 has been budgeted for on-going operational costs.

Funding for Zero Waste initiatives may come from a wide variety of sources. Section 2.5 identifies stakeholders and service providers who are willing to assist with the expansion of solid waste, reuse, recycling and composting services in Nelson. A couple of these (At Source Recycling and Kootenay Co-op) offered to provide equipment and financial support. As the project unfolds, others in Section 2.5 may assist in finding local business people who would like to invest in new ventures outlined in this ZWAP (such as the Resource Recovery Park), or would self-finance the expansion of new reuse, recycling and/or composting services by diversifying existing unrelated businesses.

Section 4 presents the Key Elements of a Zero Waste System including policies and incentives that would harness the forces of the marketplace to achieve Zero Waste. The City of Nelson and the RDCK can have major impacts in defining what is economic, through the policies adopted in bylaws, contracts, permits, zoning, and rate structures. By adjusting policies as recommended, the City and the RDCK can help everyone benefit that eliminates and recycles waste, and let those who choose to waste, pay higher fees for those services.

Presented below is an overview of the recommended actions that the City of Nelson should take to implement a Zero Waste Strategy. Each point is presented in more detail in the body of the report.

### **1.1 Adopt a Zero Waste Strategy**

To support implementation of this Zero Waste Action Plan, Nelson should:

1. Adopt the Zero Waste Resolution proposed in Appendix A.
2. Include Zero Waste as a guiding principle in Nelson's revised Official Community Plan.
3. Request that the RDCK also adopt a Zero Waste goal, develop and adopt a Zero Waste Action Plan for the RDCK, and work with Nelson to develop a user fee/taxation structure that would provide more incentives to waste generators, haulers, and member cities to encourage waste diversion.

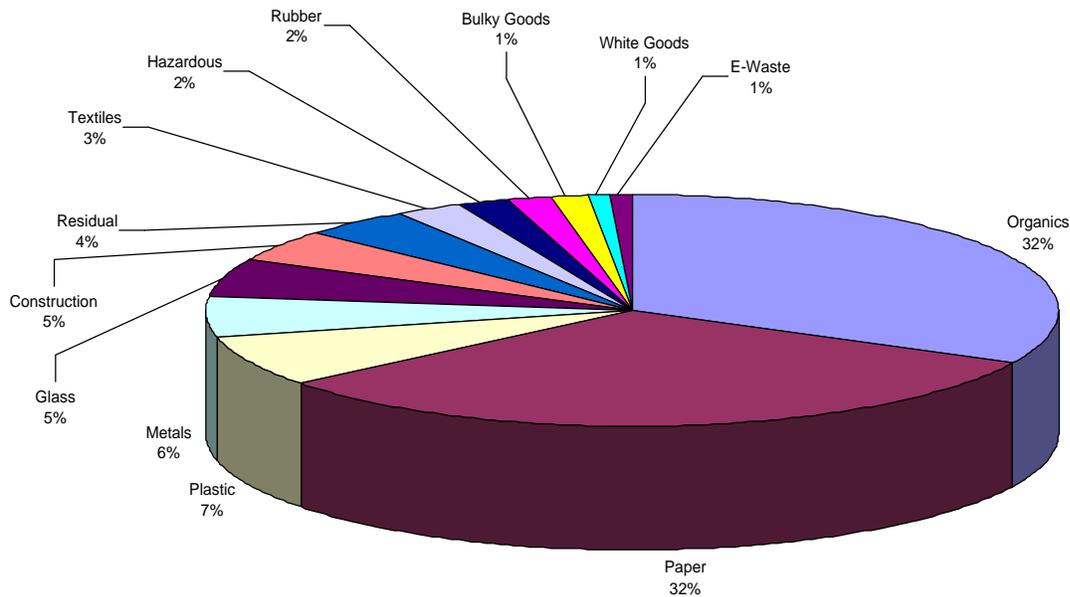
### **1.2 Zero Waste Coordinator**

To ensure the effective and efficient delivery of Zero Waste programs, the City of Nelson and the RDCK should jointly hire a Zero Waste Coordinator. The Zero Waste Coordinator will be responsible for implementation of the programs outlined in this ZWAP for the City of Nelson and RDCK respectively.

### 1.3 Know Your Waste

Solid waste composition data was obtained from a 1993 study conducted in Castlegar and the Slocan Valley. This study appears to have included the full range of sources of data that are comparable to the waste streams found in Nelson. That data is summarized in Figure 1 below, and is the basis for the analysis in this Plan.

**Figure 1 Nelson Solid Waste Composition**



1. The City of Nelson should request that the RDCK conduct a detailed waste composition study to establish a regional solid waste generation baseline before implementation of new residential recycling collection programs and other major initiatives recommended in this ZWAP. A follow-up waste composition study should be conducted again in 5 years to determine waste diversion progress.
2. The City of Nelson should also request that the RDCK initiate detailed tracking of existing solid waste disposal and waste diversion quantities, by material (e.g. cardboard, mixed paper, newspaper, beverage containers, scrap metal, plastics, yard trimmings, wood waste, food waste, other organics and reusables).

## 1.4 Build on Existing Investments

The City of Nelson should work with the RDCK to build on existing investments in reuse, recycling and composting in the area to minimize public investments required. The RDCK has invested significantly in recycling to achieve its current waste diversion rate. Many businesses and nonprofits offer a variety of reuse, recycling and composting services in Nelson. To achieve Zero Waste, Nelson should work to expand upon these existing programs to the degree the operators of them desire to expand.

## 1.5 Service Needs

The following are key solid waste diversion services that are currently missing in Nelson. The services outlined below are needed to achieve Zero Waste:

- Residential curbside recycling collection and processing
- Residential organics collection and composting
- Expanded institutional and commercial recycling
- Institutional and commercial organics collection and composting
- Deconstruction services
- Used building materials recovery, reuse and recycling
- Construction, remodeling, landclearing and demolition debris recycling

In addition, the following materials have been identified as items that would benefit from producer responsibility programs:

- Difficult to recycle plastics (e.g. PVC, film plastics and styrofoam)
- Electronics, including televisions and computer equipment
- Dairy Containers (e.g. HDPE milk jugs)

## 1.6 Design Out Waste

1. Increase incentives in Pay as You Throw rates to encourage residents to recycle more and waste less, subsequent to the implementation of a new residential recycling collection program.
2. Work with local businesses, to develop a Shop Smart Program that encourages residents to buy reusables, recycled content products and durable products.
3. Continuously update and expand RDCK's "virtual directory" that provides comprehensive listings of options for residents to reuse, recycle or compost all unwanted materials.
4. Encourage businesses to eliminate wastes, take back their products and packaging, reduce the toxicity of wastes, and buy reusable, recycled, composted and durable materials and products.
5. Develop a Zero Waste Tool Kit for local businesses and provide businesses with technical assistance. The tool kit will assist businesses with understanding their waste streams and identifying options to reduce, reuse and recycle their waste. The technical assistance could include waste audits, on-site reviews and review of past practices and public and private services available.

## 1.7 Reuse

1. Promote antique and thrift stores, local electronic equipment, furniture and appliance resellers, local repair shops, materials exchanges, donation of edible food to food-banks and other discarded food to animal-feed.
2. Create a “free store” at the City Transfer Station to provide a place for the community to share reusable goods at no cost.
3. Help develop deconstruction services and a used building materials store.

## 1.8 Recycle

1. Promote existing buyback and drop-off recycling centres.
2. Provide collection containers for paper products and refundable beverage containers next to street garbage containers in the downtown core.
3. Encourage community festivals and events to be "Zero Waste" events (including food waste collection containers in the food-service areas at such festivals).
4. Draft a Request for Proposals (RFP) for Residential Curbside Recycling Collection and Processing Services.
5. Order a Split Truck for City to implement Residential Curbside Recycling Collection Services if more beneficial to the City than proposals submitted under the above RFP.
6. Encourage businesses to source separate recyclable materials and meet a Zero Waste goal.
7. Initiate tracking of the quantity of garbage and recyclables collected from each business. Encourage private haulers to do the same and provide an annual report to the City.
8. Offer industrial, commercial and institutional customers recycling collection services.
9. Require recycling plans for all Construction, Demolition, Landclearing and Remodeling projects and require deposits for major projects over 10,000 square feet in gross floor area.
10. Encourage retailers of electronic products in Nelson to voluntarily takeback their products and packaging, or arrange for a third-party to do so (e.g. as done in the City of Ottawa).
11. Encourage manufacturers of recycled content products to locate in the region.

## 1.9 Organics

1. Actively participate in the regional “*Organics Recovery Study*” that is currently underway to ensure that a wide range of organics recycling services is arranged for Nelson businesses and residents.
2. Encourage the siting of a regional composting facility that can process yard trimmings, discarded food and food-contaminated paper.
3. Develop specifications for the use of compost in municipal projects and encourage all new major developments to use compost in their landscaping.
4. In the interim, work with Career Development Services/WalDan to implement curbside yard-trimmings collection.

## 1.10 “Eco-Industrial” or “Resource Recovery” Park

1. Support the development of a Resource Recovery Park (RR Park) in the region. A regional RR Park could co-locate composting and recycled product manufacturing businesses, and other related innovative technologies, in or near the City.
2. Support the expansion of existing services to recover and safely dispose of household hazardous wastes (e.g. batteries, oil, paint, pesticides) as part of an RR Park.

## 2 Existing Services

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To summarize current solid waste disposal, reuse, recycling and composting operations, interviews were conducted with the City of Nelson Public Works Department, the Regional District of Central Kootenay Waste Management Department, and several businesses and non-profits providing solid waste collection and recycling services in the City Nelson. The consulting team also provided the Task Force with a summary of Key Elements of a Zero Waste system and a questionnaire, for the Task Force to use in identifying existing reuse, recycling and composting services in Nelson.

### 2.1 Background

Incorporated in 1897, Nelson currently has approximately 3,400 households with a population of 9,298. Nelson is located in the Southern Interior of British Columbia in the Central Kootenay Regional District, and is bordered by Electoral Areas E & F, with populations of 3,531 and 3,907 respectively. The total population of the RDCK Central Subregion is 19,590. The regional district and municipalities function as a partnership to provide and co-ordinate services in both urban and rural areas.

By highway, Nelson is about halfway between Vancouver and Calgary (663 km from Vancouver, 624 km from Calgary), and it is 237 km from Spokane Washington. Nelson is situated at the junction of provincial Highway 3A and Highway 6, and sits on the shores of Kootenay Lake. Historically, the economy of Nelson has been primary-resource based (forestry and mining). While this sector still represents a vital component of the area’s employment, Nelson is also the centre of many government offices and services. In 1996, the three sectors employing the most people in Nelson and Areas E & F were Retail Trade, Health and Social Services, and Educational Services.

Tourism is an up and coming sector of the local economy. Nelson is “known as one of the leading small arts towns in Canada and one of the top recreation destinations”<sup>1</sup> in British Columbia. Nelson also has many restaurants, boutiques, sporting good stores, heritage hotels, bed and breakfasts and full service resorts. Some of the major attractions that draw people to Nelson include hiking, mountain biking, climbing, golf, canoeing, kayaking, fishing, skiing (cross-country and downhill) and snowboarding, along with spectacular mountain, glacier and lake views. Nelson is the starting point for many tourists exploring Kootenay Lake and the Purcell and Selkirk Mountains. Nelson is also recognized as the

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<sup>1</sup> *Visitor’s Choice*, Visitor’s Choice Publications, Ltd., p. 2

## City of Nelson Zero Waste Action Plan

Heritage Capital of British Columbia, as the City has carefully preserved over 350 heritage buildings and historic sites. Nelson is also rich in arts and culture.

Zero Waste offers an opportunity for Nelson to become a focus for eco-tourism. In fact, one of the driving forces for the adoption of Zero Waste in New Zealand was that country's desire to strengthen tourists' perception of New Zealand as dedicated to maintaining the highest environmental standards.

### 2.2 Municipal Services Summary

To gain a better understanding of the services provided and to begin to identify service "needs" in the solid waste and recycling services provided, Mary Jean O'Donnell of the consulting team conducted a site visit of Nelson. The site visit accomplished several tasks, including:

- Visual examination of existing solid waste and recycling services.
- Face to face interviews with key stakeholders.
- Zero Waste public information meeting.
- Distribution of Key Stakeholder Questionnaire.
- Zero Waste presentation to the RDCK Central Sub-Region Waste Management Committee.
- One television and three radio interviews to publicize the work of the Task Force.

The public meeting was conducted to inform the Nelson community about the project, in addition to obtaining information for the study. A major benefit of the meeting was to identify key stakeholders in the development of the Zero Waste Action Plan. To further support and gain public input into the Zero Waste Action Plan Process, the consultant made a presentation to the RDCK Central Waste Management Sub-Region Committee and was the subject of one television and three radio interviews.

This section of the report summarizes the existing solid waste and recycling services available in Nelson as well as provides a list of businesses and organizations that may be interested in expanding their services.

The Public Works and Services Department provides solid waste collection services for all 3,400 households and 85 – 90% of businesses in Nelson. One two-person crew operates a side load truck and carries out four runs per week to collect residential solid waste. Commercial solid waste is collected with a rear-load truck; one two-person crew provides four day a week collection. In addition, one staff person operates the "litter" truck; this run empties the street-side waste containers in the downtown area. The City also has one collection truck used for backup of these services. The City has budgeted for purchase of a replacement garbage vehicle in FY 2004.

City crews deliver full loads of garbage to "the Mound". The Mound is a solid waste transfer station that is situated on land owned by the City and the CPR. The RDCK operates the transfer station and owns the infrastructure. The Mound is located near Nelson's waterfront, adjacent to the Public Works Yard and the Nelson Air Strip. The Official Community Plan identifies that a long-term goal is to move the transfer station away from its current waterfront location. However, Public Works staff indicates that the

## City of Nelson Zero Waste Action Plan

current location is convenient and cost effective and therefore is not anxious to move these functions away from the Mound in the short to medium term.

At this time, the City offers no recycling collection services. If businesses and/or residents wish to recycle, they must bring their source-separated materials to one of two RDCK recycling depots, or arrange for recycling services from private or nonprofit recyclers. The largest recycling depot is located at the entrance to the Mound. This depot offers a convenient place for “self-haulers” to source separate recyclable waste in advance of the scales. There are also several reuse, repair and recycling options available to Nelson residents and businesses, which are summarized in Table 2.

To reduce the quantity of solid waste disposed by residential customers, the City introduced a Pay-As-You-Throw program in April 2003; this program requires residents to pay for every bag of waste set out for disposal. While waste disposal tonnages have not decreased since program implementation, it is anticipated that residents will decrease the amount of waste disposed when more convenient curbside recycling and composting collection services are provided. Readily available information on waste reduction techniques is also lacking.

The Pay-As-You-Throw program is an excellent tool to communicate to residents the need to reduce the amount of waste disposed; however, in the future, the City should consider increasing the Pay-As-You-Throw rate to encourage increased waste reduction. It is recommended that this strategy be implemented after the implementation of curbside recycling and composting collection.

When the RDCK increased the cost per tonne for solid waste disposal at the Transfer Station from \$65 to \$100 per tonne in 2003, the City considered several options for their solid waste. After review of these options, Public Works staff recommended collecting recyclables with municipal crews, and delivering the collected materials to a recyclables processing facility run by a third-party. Public Works staff recognizes that the \$100/metric tonne disposal fee that would not be paid for disposal at the transfer station could offset the costs of additional recycling collections.

Public Works staff also highlighted that the City could keep combined garbage and recycling collections operations to 4 days/week if it purchased a split truck to co-collect garbage and bagged “commingled” recyclables. State-of-the-art recyclables processing facilities are able to separate recyclables that are collected in “commingled” collection programs. In this region, the closest commingled recyclables processor is located in Kelowna. However, other private recyclers have indicated that they could expand their current operations to process commingled materials; if that were the way the City would like to proceed. One advantage of collecting recyclables in bags is that the collector doesn’t return the collection container to the curb, or the back of the house. The City would need to address the problem of bears and dogs tearing the bags (although that would be less of a problem for clean recyclables than garbage). In addition, this collection method creates waste in the form of the bags and the quality of the materials is often compromised.

Other alternatives for curbside recycling collection would be to collect recyclables in blue boxes, or in rolling carts. For Nelson, the topography, narrow back alleys and snowfall are not conducive to the use of rolling carts. In blue box programs, residents generally keep rigid containers separate from household

paper and newspaper. Therefore, blue box programs typically require less processing and tend to create higher value materials than blue bag programs. In Nelson, the depot materials are currently are shipped to the Regional District of Kootenay Boundary (RDKB) Material Recovery Facility (MRF) in Trail. The RDKB MRF is designed to process source separated materials, including those from blue box programs.

In 2001, the City contacted the City of Spokane and looked at their incinerator and recycling facilities. The Spokane incinerator would charge US\$97 to dispose of solid waste, which is more expensive than other options. Spokane was also open to the idea of processing recyclables from a blue bag program.

### 2.3 Regional District Services Summary

The Regional District of Central Kootenay (RDCK) encompasses an area of 23,300 hectares and serves a population of approximately 60,000. The geography of the region poses a challenge for solid waste service delivery as it is divided by two mountain ranges and three lake systems. When the RDCK developed its Solid Waste Management Plan (SWMP), it outlined a strategy to reduce the existing system of eleven landfills and five transfer stations to a more manageable and cost-effective form of waste management. The RDCK also played a vital role in promoting waste reduction and recycling in the area.

The RDCK SWMP was designed to upgrade existing landfill sites to meet environmental standards and close sites that were no longer economically or environmentally acceptable. The plan recognized that this was a better strategy than opening new landfills. The plan shifted emphasis from waste disposal to waste reduction through the implementation and promotion of recycling programs. Positive results of the initiatives include a significant reduction in the quantity of waste being landfilled, favourable cost recovery levels and a reduction in groundwater pollution.

The RDCK added a recycling depot at the Nelson transfer station in the late 1990s, and another one at the end of Baker Street on Canadian Pacific Railroad (CPR) property. The recycling depot at the transfer station is located ahead of the scales, so people can recycle materials first, before paying for their remaining wastes to be transferred to landfill. The depot has a series of collection containers for glass and metal food containers, plastic milk jugs, mixed paper, newspaper and corrugated cardboard. These two un-staffed depots replaced a staffed depot in the late 1990s.

All transfer station users are required to pass by the scale house where their vehicle is weighed. For cars, a basic per bag rate is applied, while trucks pay a per tonne rate for disposal. Waste is separated into household waste, wood, metal, yard waste, and dry mixed waste, which are all processed for a fee. The user places household waste into a compactor. The remaining wastes are collected in roll-off bins. The layout of the transfer station is reasonable, but there is limited space for additional source separation options given the current quantity of waste materials flowing through the facility. However, if the RDCK were to develop one or more new transfer stations outside Nelson, it is estimated that 60-70% of the 8,800 tonnes of waste per year currently disposed in Nelson might flow to those facilities. This change could free up a significant amount of space for additional reuse and recycling services in Nelson.

## 2.4 Private Haulers Summary

To reduce the cost of solid waste disposal, several Nelson businesses have opted to contract with private haulers for collection services. Over the past 3 - 4 years, private haulers have begun offering solid waste collection and source separated cardboard collection using a front-load system. Initially cardboard collection was provided at no-charge. At present, there is a small fee for this service; however, it is less costly than solid waste collection. Private firms collect an estimated 10 – 15 % of the commercial solid waste accounts in Nelson.

The consulting team conducted several telephone interviews with private firms to begin to identify solid waste diversion options for the City of Nelson. The following points briefly summarize our findings:

- The material recovery facility (MRF) in Kelowna accepts commingled recyclables. At the Kelowna MRF, bagged recyclables are tipped into a pile, and then a bobcat pushes the material onto a conveyor. Once on the conveyor, bags are opened, and hand-sorted for glass, metals and plastics. Paper goes off the end of the conveyor. A “two stream blue bag” system would provide a cleaner stream of materials at the MRF, which might command a higher value. In a “two-bag” system, residents would be encouraged to keep a separate bag for paper, and one for glass, metal and plastic containers. Crown Packaging Ltd. owns and operates the Kelowna MRF. Contact: Deanne Stephenson (250) 491-2242 or 491-7206.
- The MRF in Trail is owned by the Regional District of Kootenay Boundary and is leased to Alpine Disposal and Recycling, which operates it. Recyclables from Nelson and the RDCK are currently processed at the Trail MRF. The Trail MRF requires materials to be source separated by material type (e.g. rigid containers, paper products). Alpine prefers to receive source separated blue box materials, as they feel that this approach maintains a higher quality of materials. Contact: Ed Canzian (250) 367-0099.
- Canadian Waste Services operates a small MRF in Brilliant, near Castlegar. At this time, Canadian Waste is only baling cardboard collected through its own programs. Canadian Waste would like to provide residential recycling services however specified by the City. Contact: Ron Armbruster (250) 365-7007 or (250) 365-6372.
- Kedon Waste Systems made a proposal to Nelson in 2002 to take Nelson’s wastes to a landfill in Lethbridge. Although Kedon is no longer interested in doing that, the City of Lethbridge has indicated that it would be open to someone delivering wastes to their landfill from Nelson.<sup>2</sup>
- Rabanco contacted the City in 2001 to explore interest of going to the Roosevelt landfill in the State of Washington, in the United States. Contact: Dennis McGlaughlin, 206-652-8896.<sup>3</sup>

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<sup>2</sup> Info provided by the Nelson Public Works Department.

<sup>3</sup> info supplied by the Nelson Public Works Department.

## 2.5 Existing By-Laws and Policies that Support Zero Waste

Table 1 outlines the existing by-laws and policies of the City of Nelson and the Regional District of Central Kootenay that support the Zero Waste Action Plan. A menu of additional policy and by-law options was developed and presented as a separate document for consideration and selection by the Task Force. The Task Force's policy selections have been included as key elements of the Zero Waste Action Plan. They can be found in Section 4.2 of this document.

**Table 1 Existing By-Laws and Policies**

<b>Government</b>	<b>By-Law/Policy</b>	<b>Content</b>
Nelson	By-Law 2575	Sets out the definition of garbage and current waste diversion goals (50% diversion by 2000).
Nelson	By-Law 2575	Bans collection of tires, auto and truck batteries, used motor oil and filters, yard trimmings and old corrugated cartons.
Nelson	By-Law 2575	Requires businesses to report on the volume of waste removed and recycled each year.
Nelson	By-Law 2575	Sets the rates for the current residential "Tag A Bag" program.
RDCK	By-Law 1552	Requires businesses to report on the volume of waste removed and recycled each year.
RDCK	Sign at Front Gate	Bans landclearing debris from the RDCK transfer station (must be disposed at the Canex Landfill).
RDCK	By-Law 1552	Establishes that loads of waste containing more than 20% recyclables will be charged twice the normal tipping fee.
RDCK	By-Law 1552	Prohibits disposal of lead-acid batteries, motor oil & filters and substances prohibited under Ozone Depleting Substances Act.
RDCK	SWMP- Section 2	Sets out Guiding Principles and sets the Waste Reduction Goal of 50% diversion by 2000.
RDCK	SWMP- Section 3	Sets out Policy for Reduction, Reuse, Recycling and Recovery Activities
RDCK	SWMP - Section 4	Sets out an Implementation Timeline for the above activities

## 2.6 Community Partners and Service Providers

The Task Force identified several stakeholders for consultation in the development and implementation of Nelson's Zero Waste Action Plan. The consulting team provided the Task Force with a survey form for use in identifying the specific interests of these stakeholders in a Zero Waste system.

Table 2 summarizes a preliminary list of existing service providers and potential community partners that expressed an interest to the consulting team in assisting with the development of a Zero Waste system for the City of Nelson. The ZW Coordinator should expand and update this list annually and update the RDCK website Disposal Options Directory accordingly ([www.rdck.bc.ca](http://www.rdck.bc.ca)).<sup>4</sup>

**Table 2 Solid Waste and Recycling Services Summary**

<b>Service Provider</b>	<b>Current Service Provided</b>	<b>Expansion Interests/Needs</b>
City of Nelson	Commercial and Residential Solid Waste Collection	Recycling and composting collection.
RD Central Kootenay	Transfer Station Operations (including Waste Transfer to Landfill and Landfill Operations) Recycling Depot Operations (Mixed Paper, OCC, Rigid Non-Refundable Containers, Scrap Metal, Wood Waste, and Yard Waste)	
Alpine Disposal and Recycling	Commercial Solid Waste and Recycling Collection, Processing and Marketing Processing and Marketing of recyclable materials from RDCK Recycling Depots Operates Material Recovery Facility in Trail	Commercial and residential recycling collection and processing.
Alternative Solutions	No service currently provided	Interested in developing an anaerobic food digester.
At Source Recycling Systems	Manages recycling programs for grocers (e.g. Save On Foods).	Looking for markets for food waste from Kootenay grocery stores. Is willing to finance equipment such as balers and compactors. Will broker recyclables collected by others.

<sup>4</sup> To access the RDCK Directory, go to [www.rdck.bc.ca](http://www.rdck.bc.ca) and click on “Waste Management”, then click on “Disposal Directory”.

**City of Nelson Zero Waste Action Plan**

<b>Service Provider</b>	<b>Current Service Provided</b>	<b>Expansion Interests/Needs</b>
Canadian Waste Services (Castlegar)	Provides front load collection of commercial solid waste and cardboard (OCC) bins. Provides roll-off bins for office paper and OCC. Operates Material Recovery Facility in Brilliant (OCC and mixed paper only).	Is willing to design and develop residential recycling collection and processing for Nelson. Currently negotiating with RDCK to provide 30 cy roll-offs for recyclables in West Region.
Career Development Services	Supports Wal Dan in the collection of office paper, cardboard and rigid containers from downtown businesses and delivers to RDCK recycling depots.	Will collect yard trimmings 2x/year for recycling from residents.
Changes Recycling Centre	Beverage container refunds and takes back some industry packaging.	
Community Red Bike Program	Converts "Junk" Bikes into "New" Bikes, to be used by the community for transportation - focus on folks who can't afford a bike of their own.	Needs community support through communications.
Crown Packaging	Operates Material Recovery Facility in Kelowna.	Is interested in materials from the Kootenays.
Earth Matters	Education Programs, Fruit Tree Program, Litter Clean-up.	Needs financial support.
Henry's Appliance Service	Collects, Repairs, Resells Used Appliances.	
JF BioEnergy	No service currently provided.	Wants to produce energy from source separated organics (e.g. wood waste and biosolids) or mixed solid wastes.
Jr. Leaf's Bottle Depot	Takes back refundable beverage containers.	Residential recycling processing.
Kootenay Co-op	Natural Foods Grocery Store donates edible food. Composts produce wastes. Pays deposit returns on small quantities of beverage containers. Returns wax boxes to local growers for reuse.	With more space, could take more beverage containers, plastic milk jugs and tetra-paks (wants \$ to help on latter, to take to Burnaby). Would like to recycle waxed OCC, plastic wrap from pallets and packing material Would like Nelson to develop "free store" for reusables, community garage sale, and used building materials store. Willing to help financially or with staff time to do above.
Kootenay Waste Services	Operates Product Care Depot (paint, solvents, pesticides, fuels).	Needs more space to expand.
Kutenai Marketing Group	Marketing Services	Interested in developing an Eco-Industrial Park.
Kutenai Quality Soil Products	No service currently provided	Interested in Zero Waste.

## City of Nelson Zero Waste Action Plan

Service Provider	Current Service Provided	Expansion Interests/Needs
McLeod By-Products	Collects and refines used cooking oil.	
NAPA Auto Parts	Accepts car batteries for recycling.	
Nelson Food Cupboard	Donates food to families in need	
NuTech Enterprises	Collects old computer equipment and re-furbishes it. Teaches youth to do repairs and maintenance.	Needs more space to expand.
Pharmacies (various)	Collect old pharmaceuticals for safe disposal.	
Shorty's Auto Service	Purchases and resells automobiles.	
Wal Dan Recycling	Provides recycling collection services to Nelson businesses. Supported by Career Development Services.	Needs ½ tonne truck or good-sized panel wagon to expand. Needs place to sort, store and deliver recyclables.
Western Auto Wreckers	Scrap Metal Dealer	
Used Clothing Stores (various)	Collect and sell used clothing	
Zero Waste Services	Zero Waste Consultant	Interested in developing an Eco-Industrial Park.

### 3 Service Needs

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This section of the report provides an analysis of the solid waste and recycling service needs in Nelson. Recommendations are identified in each sub-section.

#### 3.1 Know Your Waste and Recyclables

The more specifically Nelson can identify which materials are disposed to landfill, the more clearly it can develop policies and programs to develop reuse, recycling and composting programs to target those materials.

In 2002, Selkirk College conducted a residual waste composition analysis of residential waste for the Regional District of Kootenay Boundary (RDKB) at the McKelvey Creek Regional Landfill in Trail. Waste samples were sorted into 13 Primary and 27 Secondary categories. Samples were collected from each of the five municipalities and two Electoral Areas comprising the Greater Trail Area, and from the residential disposal bin located at the McKelvey Creek Landfill. As the focus of this study was residential solid waste, it did not examine waste from self-haul vehicles from businesses or residents, except for the residential disposal bin. As the bin is primarily used for oversized items that are excluded from curbside collection programs, it was determined that the residential disposal bin results were not representative of “typical” self-haul residential waste generation.

## City of Nelson Zero Waste Action Plan

In Nelson, approximately 6,100 of the 8,800 tonnes/year discarded at the Nelson Transfer Station are from residential and commercial self-haul sources. As residential and commercial self-haul accounts for two-thirds of the waste disposed at the Nelson Transfer Station, the ZWAP consultants did not feel the data from the RDKB study was representative of what would likely be found in the waste at the Nelson Transfer Station. Further, as residential recycling programs are more thoroughly established in the Eastern Sub-Region of the RDKB (e.g. curbside blue-box programs in Trail, Montrose, Warfield and Fruitvale) the ZWAP consultants felt that the Selkirk College study was an inappropriate point of reference for the purposes of this report.

To find a more relevant point of comparison, the consultants reviewed several waste composition studies. Findings from a 1993 study conducted in Castlegar and Slocan Valley were found to have included a fuller range of data sources that are more comparable to the Nelson situation. Therefore, data from the 1993 waste composition study is summarized in Table 3, and forms the basis for analysis in this Plan.

The data from the 1993 study is adequate for the purposes of the projections presented in Table 3, however, it is clear that one of the priorities for the RDCK should be to conduct a detailed waste characterization study that includes at least as many categories and samples as the study conducted in the RDKB. The sampling should include both summer and winter data, to identify seasonal variations in the waste stream. Sampling should be conducted from municipal collection vehicles throughout the service area, commercial haulers and recyclers, and self-haul vehicles from both businesses and residents. Ideally, this study should be initiated before the start of a new residential recycling collection program and other major initiatives recommended in this ZWAP. Waste composition studies should be conducted every 5 years to track on-going waste reduction progress. This approach would provide an appropriate baseline for comparing results of new programs.

Until the RDCK completes this analysis, the City could obtain a general understanding of what are the largest materials being wasted in Nelson by conducting a visual waste assessment. This would involve a professional studying the contents of a variety of collection vehicles in advance of the waste being disposed at the Nelson transfer station. Based on prior work and their careful review of the wastes, they should be able to estimate the major components of the waste stream. Alternatively, Selkirk college students or volunteers from the Nelson Waste Management Task Force could be trained by a professional to perform a visual waste assessment. This would not substitute for hard quantitative data needed to properly plan for and evaluate new programs. However, this could provide sufficient information to confirm that the recommendations of this ZWAP are on target.

### 3.2 Waste Reduction Opportunities

Data from the 1993 study indicate that the two largest categories of materials discarded are organic materials and paper products, each representing 32% of the total waste stream. These two categories eclipse the other material categories, and highlight the urgency to develop viable paper and organics recovery programs to meet a Zero Waste goal. The next largest material categories were plastic, metals, glass and construction materials, at 7, 6, 5 and 5% respectively. In Nelson, construction materials may be somewhat higher than 5% of the total waste stream, due to the relatively large amount of remodeling,

## City of Nelson Zero Waste Action Plan

renovation and construction projects. In Nelson, the commitment to maintaining heritage buildings also means that there is a significant need for reuse and salvaging services that will carefully dismantle old structures, so that the original materials are maintained in a usable condition. This is generally referred to as “deconstruction”.

The remaining materials in the solid waste stream are: textiles; household and small quantities of commercial hazardous wastes; rubber (largely from tires); bulky goods (e.g. furniture, bicycles and water heaters); white goods (large appliances like washers, dryers and dishwashers); and “E-Waste” (anything with a plug). These materials represented 3%, 2%, 2%, 1%, 1% and 1% respectively. Although the latter materials are not disposed of in large quantities, some of them are *very* expensive to properly dispose of (particularly the hazardous and E-wastes). As a result, these materials are the focus of attention in provincial and federal laws requiring the takeback of these products by the manufacturers, or requiring other financial or physical responsibility being assumed by the manufacturers or retailers that sell such products.

The disposal data in Table 3 was provided by the City of Nelson. As 2003 disposal data was only available to the end of August; 2003 when this report was written, solid waste data from 2002 was utilized to generate Tables 3 and 4.

Table 3 applies a “capture rate” to each of the materials. The rates that are applied here are the best judgments of what might be possible, with a well constructed Zero Waste program including incentives for waste diversion and disincentives for wasting. Although the capture rates are somewhat arbitrary, they recognize that not all recoverable materials will be saved through the systems put into place by this ZWAP. As a result, this ZWAP also has a section on new rules for landfills, because it is recognized that there will be a need for disposal of at least some of the materials that are discarded for some time to come. This ZWAP assumes that striving for Zero Waste means that Nelson will work strategically and diligently to get to *Zero* Waste, or darn close.

## City of Nelson Zero Waste Action Plan

**Table 3 Nelson Waste Diversion Projections**

Material	Waste Composition*	Tonnes Disposed	Capture Rate	Capturable Tonnes
Organics	32%	858	75%	643
Paper	32%	842	90%	758
Plastic	7%	188	75%	141
Metals	6%	146	80%	117
Glass	5%	143	80%	114
Construction	5%	119	75%	89
Residual	4%	106	-	-
Textiles	3%	69	75%	52
Hazardous	2%	53	90%	48
Rubber	2%	40	60%	24
Bulky Goods	1%	34	80%	28
White Goods	1%	24	80%	19
E-Waste	1%	24	90%	21
<b>Totals</b>	<b>100%</b>	<b>2,645</b>	<b>79%</b>	<b>2,054</b>

\*Waste composition data from 1993 study conducted in Castlegar and Slocan Valley. 2002 solid waste data - City of Nelson.

### 3.3 Projected Cost Savings

Table 4 highlights the potential cost savings that will accrue to the City of Nelson from the recovery of materials from the solid waste stream. The disposal costs for Nelson wastes at the transfer station are \$100 per tonne. If each of the materials indicated as “captured” were recovered and not thrown away, the City of Nelson would potentially avoid paying disposal costs of up to \$205,000 each year.

**Table 4 Potential Cost Savings**

Material	Current Disposal Cost	Projected Tonnes Captured	Potential Cost Savings
Organics	\$85,795	643	\$64,346
Paper	\$84,206	758	\$75,786
Plastic	\$18,801	141	\$14,101
Metals	\$14,564	117	\$11,651
Glass	\$14,299	114	\$11,439
Construction	\$11,916	89	\$8,937
Residual	\$10,592	0	\$0
Textiles	\$6,885	52	\$5,164
Hazardous	\$5,296	48	\$4,766
Rubber	\$3,972	24	\$2,383
Bulky Goods	\$3,442	28	\$2,754
White Goods	\$2,383	19	\$1,907
E-Waste	\$2,383	21	\$2,145
<b>Totals</b>	<b>\$264,535</b>	<b>2054</b>	<b>\$205,379</b>

## City of Nelson Zero Waste Action Plan

The cost avoidance identified in Table 4 should be viewed as one of the key sources of revenue that could support investments in equipment and programs needed to move towards Zero Waste. Cost avoidance figures will vary over time and in response to changes in taxes and fees set by the RDCK based on their analysis of their fixed vs. variable costs. To protect the City's finances, user fees for the collection of garbage should be implemented that accurately reflect the combined costs of recycling and waste disposal to the City.

RDCK By-law 1552 and Nelson By-law 2575 require businesses to report on the annual quantity of wastes disposed and recycled. Unfortunately, these by-laws have not been enforced and the data has not been collected. The RDCK reports that it tracks waste from businesses delivered to the Nelson Transfer Station, but the RDCK cannot tell if the waste came from Nelson or from elsewhere in the Central Subregion. Through the interview process, it was identified that the RDCK has requested information on the quantities of materials collected for recycling from private haulers. However, this information was not forthcoming, as the haulers stated that provision of this information could affect them negatively due to competition issues.

The Nelson and RDCK by-laws may need to clarify the type of information required and design an enforceable system of reporting this data on an equal basis for all operators in the system. All haulers of waste and recyclables (including the City of Nelson) should track every pickup they do for the commercial waste generators. The waste tracking policies should be amended to require annual reporting of the volume of materials collected from businesses (which haulers already keep to maintain their billing system), and the total amount of commercial waste and recyclables collected each day.

In addition, the Nelson Public Works Department should initiate a "set-out" rate tracking study for its residential customers to identify a baseline of residential waste generation. This study should be repeated again subsequent to the implementation of curbside recycling and increased Tag-A-Bag programs.

### 3.4 Gaps in Services

Comparing Tables 2 and 3 highlights the major gaps in services in Nelson. Gaps in services that could be filled for the remaining wastes disposed are:

#### 3.4.1 Organics

There are currently no collection programs for organics in Nelson. As organics represent approximately 32% of the solid waste stream, this is clearly the largest service gap that needs to be filled for Nelson to move towards Zero Waste. Residents and businesses may drop-off wood waste and yard waste to the RDCK Transfer Station. However, City staff indicates that the majority of households do not have the capacity to transport these wastes. Career Development Services (CDS) is in the process of developing a yard trimmings collection program for residents that would be done twice per year. In the interim, implementation of a yard trimmings collection program would begin to divert this valuable resource.

## City of Nelson Zero Waste Action Plan

The Kootenay Co-op donates un-saleable but still usable food to local food banks and soup kitchens. The Kootenay Co-op also composts their discarded produce for personal composters or animal feed. Save-On Foods has also identified the need for a local organics diversion option. In communities with organics processing facilities, Save-On Foods successfully diverts over 90% of its solid waste from landfill. These two examples clearly identify willingness and need on the part of the grocery industry for a viable organics diversion option.

As Nelson continues to grow its tourist industry, the amount of discarded food and food-contaminated paper from restaurants is also likely to grow substantially. As a result, there is a need for both residential and commercial organics collection programs that would collect yard trimmings, discarded food, and food-contaminated paper on a regular basis. The regional “*Organics Recycling Study*” underway should identify *how* Nelson and the region should establish such collection programs and one or more regional processing facilities.

### 3.4.2 Paper

There are a variety of paper recycling programs in Nelson, including drop-off at the RDCK transfer station, and collection of commercially generated paper and cardboard by Alpine Disposal and Recycling (Alpine), Canadian Waste Services (CWS), and WalDan Recycling/Career Development Services (CDS). However, 32% of the remaining waste is still comprised of recyclable paper products including office paper, newspaper and cardboard. As a result, it is clear that there is still a large gap in both services being provided, and, incentives to recycle more paper.

Both the School District #8 and Selkirk College have identified the need for additional paper recycling services. Each of the schools needs both indoor and outdoor recycling collection containers and associated educational programs.

### 3.4.3 Plastics

The RDCK and local beverage container recyclers (e.g. Jr. Leaf’s Bottle Depot, Changes, WalDan and Kootenay Co-op) do not collect all recyclable plastics. As plastics continue to proliferate in their uses, it is incumbent upon Nelson and the RDCK to either develop programs to recycle these materials, or develop policies to make retailers and producers take responsibility for the plastics used in their products and packaging.

### 3.4.4 Metal

Metal is reused and recycled by a variety of programs in Nelson, including the Community Red Bike Program, Henry’s Appliance Service, NAPA Auto Parts, Shorty’s Auto Service, Western Auto Wreckers, beverage container recyclers (e.g. Bottle Depot, Changes, CDS and Kootenay Co-op) and the RDCK. Due to the low value of ferrous metals in today’s markets, support may be needed for the *collection* of those through residential and commercial collection programs. Policies establishing total waste diversion goals for businesses would encourage increased recovery and recycling of metal.

### 3.4.5 Glass

Glass beverage and food containers are collected. The RDCK then crushes the glass and uses it for cover material at the landfill. It is likely that a large amount of the remaining glass could be recovered through the implementation of a residential recycling collection program and a commercial program targeted to the hospitality industry (e.g. bars, restaurants and lodging).

### 3.4.6 Construction, Remodeling, Landclearing and Demolition Debris (C&D)

With the commitment of Nelson to its heritage buildings, the deconstruction and reuse of C&D debris could generate a number of business opportunities. Existing reuse operators (e.g. IODE and Salvation Army) or others may be interested in expanding into this area. This expansion could be facilitated by policies adopted by Nelson and the RDCK that encourage the deconstruction of buildings and the *reuse* of used building materials. Similarly, other recyclers may be interested in expanding into the *recycling* of C&D debris, if policies are adopted that support it. For example, the Greater Vancouver Regional District (GVRD) requires recycling plans for all large construction projects and encourages deconstruction of buildings through a “Code of Practice.”<sup>5</sup>

### 3.4.7 Textiles

There are a number of operations that collect and/or sell used clothing in Nelson (e.g. IODE, Salvation Army, Silver Lining and WIN). The City could promote these operations (as recommended below), as well as include the collection of clean, bagged textiles in the residential recycling collection program. If the latter is done, the City should encourage the collaboration of existing textile recyclers with residential recyclers proposing services to the City.

### 3.4.8 Reusables

In the waste composition charts, reusables appear to be a small percentage of the total waste stream, as “white goods” or “bulky goods.” However, within several of the other categories, there may be a number of reusable items that are prominently made of one material type or another (e.g. ceramics, glass, metals, plastics). In a similar rural area of northern California, reusables comprised 6% of the materials discarded by generators.<sup>6</sup> Reusables often produce the highest value materials and products recovered from discards.<sup>7</sup> Many discarded items may be reused, depending on its condition and function. Nearly everything that is reusable could also be recycled, but usually for a much lower value. Reusable goods are useful to buyers either for their original intended purpose, or for a creative reuse function. For example, used wrought iron gates can be sold individually as-is for hundreds of dollars, but their value is reduced to pennies on the dollar by treating them as scrap. Reuse operators are business people who specialize in attracting, receiving, organizing, and selling discarded reusable goods. Reuse operators vary in the amount of effort they take to upgrade their products by cleaning, sorting, organizing and/or

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<sup>5</sup> For more information see the GVRD’s 3Rs Code of Practice for the Building Industry at <http://www.gvr.bc.ca/recycling-and-garbage/business-services.htm>.

<sup>6</sup> Del Norte Resource Recovery Park Cluster Analysis, Del Norte Solid Waste Management Authority, prepared by Gary Liss & Associates, February 2001, Page 6.

<sup>7</sup> Ibid, page 4.

repairing them. The average value of reusables (not including used clothing) could be as much as \$400 per tonne.<sup>8</sup> Reuse operators in Nelson currently include Community Red Bike Program, Henry's Appliance Service, Earth Matters, IODE, Salvation Army, and WIN.

### 3.5 Education and Outreach

Development and implementation of a public education program, for both businesses and residents is critically important to expanding reuse, recycling and composting programs to achieve Zero Waste. A communications program should be developed subsequent to the design of new waste diversion programs. Implementation of the education program should begin in advance of the implementation of any new programs. Communications with the Nelson community is critical to the success of any new programs.

### 3.6 Criteria for Filling the Gaps

The City of Nelson has identified the following criteria to be considered in evaluating the merits of different policies and programs needed to fill the gaps identified above:

- Potential for largest impact in diverting waste from landfill
- Potential for most immediate impact in diverting waste from landfill
- Potential for greatest visibility in diverting waste from landfill
- Potential for involving community in diverting waste from landfill
- Potential cost to implement
- Ease of Implementation
- How dependent on viable markets

These were considered in making the recommendations of the Key Elements of the Zero Waste Action Plan.

### 3.7 Proposed Zero Waste Budget

Table 5 outlines the potential capital and operating costs for the City of Nelson to implement the initiatives outlined in this ZWAP. Approximately \$90,000 has been allocated for initial capital investments, while approximately \$208,000 has been budgeted for on-going operational costs. This budget does not include capital or operating costs for RDCK to implement the recommendations outlined in this Plan.

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<sup>8</sup> Resource Recovery Park Feasibility Study, Del Norte Solid Waste Management Authority, prepared by Gary Liss & Associates, March 2001, page 18.

## City of Nelson Zero Waste Action Plan

**Table 5 Proposed Zero Waste Implementation Budget**

<b>Item</b>	<b>Capital Costs</b>	<b>Operating Costs</b>
Collection Vehicle (Incremental Cost)	50,000	2,500
Processing Contract	0	45,625
Collection Contract	0	136,000
Zero Waste Coordinator (0.5 FTE)	0	20,000
Blue Boxes	25,000	1,000
Graphic Design	5,000	1,000
Printing	5,000	1,000
Web	5,000	1,000
<b>Totals</b>	<b>\$ 90,000</b>	<b>\$ 208,125</b>

### 3.7.1 Capital Costs

The cost of a traditional garbage truck is approximately \$150,000. The incremental cost of a “split-body” collection vehicle is about \$50,000.

This budget allocates \$25,000 for the purchase of blue boxes for a curbside collection program. If the City should decide to go with a blue-bag program, this cost could be significantly reduced or eliminated depending whether or not the City decided to offer the initial bags at no cost to residents.

A budget of \$15,000 has been allocated for the development of communications materials (graphics, printing, and web) in the first year, with \$3,000 allocated for subsequent years.

### 3.7.2 Operating Costs

The annual operating cost for a new collection vehicle is estimated to be 5% of the incremental cost, or \$2,500 per annum.

While recyclables processing costs and the type of service delivery (private vs. public collection) will best be determined through an RFP process, estimates have been provided to facilitate the City’s budgeting needs. The annual operating cost of a recyclables processing contract is estimated to be \$45,625 per year; this figure is based on the recovery of 1,825 tonnes of source-separated, blue box materials with a processing cost of approximately \$25 per tonne. Should the City decide to go with a blue-bag program, processing costs could be as high as \$70 per tonne. Collection costs are estimated to be approximately \$40/household per year; this cost is based on a contracted blue-box curbside service. The estimated annual cost would be \$136,000 based on 3,400 households in the City of Nelson.

If the City and the RDCK choose to share one Zero Waste Coordinator position, half the annual salary is estimated to be \$20,000. As identified in other sections of this report, this position is critical to the success of this ZWAP.

## City of Nelson Zero Waste Action Plan

Table 6 summarizes the quantity of materials diverted to recycling in the Central Sub-Region in 2002. As the RDCK does not provide a detailed breakdown of the materials collected at the two depots in Nelson, it was necessary to extrapolate the material quantities. The recyclable quantities presented for Nelson were estimated using Nelson's population of 42% of the Central Sub-Region. If the entire Central Sub-Region diverts 3,000 tonnes of recyclables per year, it might be reasonable to assume that the City of Nelson diverts 42% of this figure, or 1,280 tonnes.

**Table 6 Recyclables Tonnages (2002)**

Material	Central Sub-Region*	Nelson*
Newspaper	364	153
Mixed Paper	375	157
OCC	346	145
Glass	62	26
Tin	26	11
Plastic	8	4
Wood	695	292
Yard Trimmings	309	130
Scrap Metal	593	249
Appliances	268	113
<b>Totals</b>	<b>3046</b>	<b>1280</b>

\*Central Sub-Region data from the RDCK website [www.rdck.bc.ca](http://www.rdck.bc.ca); Nelson data extrapolated.

Table 7 identifies the increase in the quantities of materials that would be included in a curbside residential recycling processing contract. These figures were calculated by assuming that Nelson's current diversion to recycling in these categories will double.

**Table 7 Projected Diversion Increase w/ Improved Recycling**

Material	Tonnes
Paper	500
Plastic	8
Tin	11
Glass	26
<b>Total</b>	<b>545</b>

If the approximately 545 tonnes of material, currently disposed to landfill, were diverted to an improved recycling program, the potential annual cost of processing these materials is anticipated to be \$13,625 per year at a cost of \$25/tonne, for processing. When added to the current diversion of 1,280 tonnes, the total annual cost to process recyclables is predicted to be approximately \$45,625.

## 4 Key Elements of a Zero Waste Action Plan

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This section of the Plan outlines key elements of the Zero Waste Action Plan. Outlined are new policies, incentives and new programs that the City of Nelson may consider adopting to assist with the implementation of a Zero Waste Strategy.

### 4.1 Zero Waste Coordinator

To ensure the effective and efficient delivery of Zero Waste programs, the City of Nelson and the RDCK should consider jointly hiring a Zero Waste Coordinator. This position could be created on a contract basis (one-year term). The Zero Waste Coordinator will be responsible for implementation of the programs outlined in this ZWAP respectively for the City of Nelson and RDCK. It is recommended that the person hired have at least 3 years experience in the field of waste reduction and recycling, with preference given for local experience and knowledge. The position should be filled by someone who is particularly familiar with provincial landfill and transfer station regulations, in addition to their background in waste reduction. In addition, the successful candidate should be familiar with residential recycling programs implementation, as well as the concept of eco-industrial parks. Communications excellence will also be a key attribute for this important position. Grants may be available to help fund this position (e.g. Human Resources and Development Canada).

### 4.2 Policies and Incentives

The Nelson Solid Waste Task Force reviewed a menu of policies and incentives, prepared by the consultants, to assist the City in achieving Zero Waste. Those policies included economic incentives and disincentives, challenges to generators of waste to reduce and recycle their wastes, retail and landfill bans, and policies that would hold retailers and/or producers physically or financially responsible for the products and packaging that they waste. These options highlight that there are many tools that Nelson could use to influence the marketplace. In most communities that have achieved high rates of waste diversion, these tools are used incrementally, with voluntary approaches and partnerships tried first before more challenging policies are adopted. However, businesses also need to know that the City is committed to the goal of Zero Waste before they invest substantial resources in changing their operations. Therefore, the most critical policy of all is for the City to adopt its Zero Waste goal, and ask all stakeholders in the community to participate in working towards the goal, to achieve it, or darn close, by the target deadline.

The Task Force selected the following policies and programs that complement each other, and provide an integrated system that is logically consistent and makes economic sense. The priority for Nelson's Zero Waste policies and incentives is to restructure rates and fees to provide a clear price signal to reward those who waste less and recycle more. The City will also work with the Regional District of Central Kootenay (RDCK) to adopt a variety of policies that will keep recyclable materials (e.g. C&D debris) from being landfilled. In addition, the City will help expand existing reuse, recycling and composting activities by working to provide a site for an "eco-industrial park."

## City of Nelson Zero Waste Action Plan

In the event that significant progress is not made towards the goal of Zero Waste after adoption of the following policy options, the City should further consider the other policy options that were proposed by the consultants. The list of options not selected by the Task Force is included in Appendix B.

### 4.2.1 Official Community Plan (OCP)

1. City Council to Adopt Zero Waste Resolution as proposed in Appendix A.
2. To ensure that the Zero Waste strategy is included in all elements of City Planning, it is recommended that Zero Waste be incorporated as a guiding principle of Nelson's Official Community Plan.
3. Incorporate Zero Waste in zoning bylaw and other regulatory tools.

### 4.2.2 Incentives for Waste Generators

1. While developing business recycling programs, ensure that programs are offered that make it affordable for small businesses to participate.
2. Provide Zero Waste promotion and outreach to businesses.
3. Provide waste audit tools for businesses.
4. Provide technical assistance to businesses (including identifying specific recycling options for individual businesses).

### 4.2.3 Retailer and Producer Responsibility

1. Support the inclusion of dairy products in the beverage container recycling regulation.
2. Encourage Nelson businesses to adopt Zero Waste goals for greater efficiency and sustainability of the local economy.

### 4.2.4 Incentives for Recyclers

1. Identify and involve existing businesses and nonprofits that could provide reuse, recycling and composting services. Build on existing private and nonprofit reuse, recycling and composting operations to minimize public investments.
2. Facilitate and/or provide equipment, containers, land, building space and financing support to make reuse, recycling and composting more economic, including help from market partners (e.g., providing balers and containers).

### 4.2.5 Incentives for Waste Haulers

1. Provide recycling services to multi-family residential dwellings at least equal to those of single-family curbside recycling services.
2. Work with RDCK to ban the disposal of construction & demolition (C&D) debris at landfills.

3. Work with RDCK to move to a user pay incentive system.

#### **4.2.6 Funding**

1. Nelson should work with the RDCK to set rates sufficient to pay for both RDCK and individual community costs of implementing waste prevention, reuse, recycling, composting, buy recycled and recycling market development programs. The City should not be penalized for reducing the amount of garbage by having the total amount of its fees for transfer services raised by the RDCK to compensate for fewer tonnes disposed. If the RDCK adopts the recommendations of this ZWAP and shifts its revenues from taxes to user fees, and operates its landfills at higher standards, the unit costs for tipping fees at the transfer station might rise. However, the higher the unit rates go for tipping fees at the transfer station, the more economic reuse, recycling and composting become as alternatives. Increases in waste elimination, reuse, recycling and composting programs will decrease the number of tonnes requiring disposal at the transfer station. The total amount of fees for both recycling and garbage should be reduced or comparable to the City's current garbage transfer and disposal costs, even if the unit costs for garbage transfer and disposal are higher. If additional funding is needed to make recycling more competitive, then new systems of producer responsibility should be pursued.
2. Nelson should negotiate with RDCK to obtain a "host community fee" for all wastes discarded from outside Nelson at RDCK facilities in Nelson. The rate should be \$20/tonne as an offset for Nelson transfer and disposal costs. All users of RDCK facilities in Nelson should be required to show their driver's license or other government identification to confirm the source of the waste. Nelson should recognize such offsets in an enterprise fund, to justify funding Nelson programs recommended in the ZWAP.

#### **4.2.7 Incentives for Transfer Stations**

1. Work with RDCK to set lower rates for clean source-separated materials.
2. Work with RDCK to provide areas for drop-off of reused toys, furniture and appliances and used building materials.
3. Work with RDCK to provide areas for retail sales of reused, recycled and compost products.
4. Work with RDCK to set a goal for RDCK to divert from landfill or incineration at least 75% of all incoming materials received by their facilities.
5. Work with RDCK to accept waste only from local governments that have met waste diversion goals.

#### **4.2.8 New Rules for Landfills**

1. Work with RDCK to require source separation of all materials that can be reused, recycled or composted.
2. Work with RDCK to ban toxics, recyclables and compostables from transfer stations and landfills.

## 4.3 New Programs

This section outlines new programs the City should implement to further the development of the Zero Waste strategy.

### 4.3.1 Design Out Waste

1. Increase Tag-A-Bag rate to include the cost of curbside recycling and organics collection and processing. Increase cost per bag after curbside recycling & composting services adopted to provide greater incentive to reduce waste.
2. Offer a variable rate structure for Tag-A-Bag to include a "small bag" option to encourage residents to dispose of garbage weekly, rather than storing garbage. This approach is recommended to encourage "small" waste generators to put their garbage out on a weekly basis, rather than storing it. This is recommended to mitigate bear attraction issues, as identified by the Bear Aware Program.
3. Develop a Shop Smart Program that encourages residents to buy reusables, recycled and durable products and assist with community acceptance of increased Tag-A-Bag rates.
4. Work with the Economic Development Office and the RDCK to continuously update and expand RDCK's "virtual directory" that provides comprehensive listings of options for residents to reuse, recycle or compost all unwanted materials (see Table 2).
5. Encourage businesses by policies and incentives to take back their products and packaging; design products and packaging to reduce the volume and toxicity of wastes; to maximize their reuse, recycling and/or composting; buy reusables, recycled, composted and durable materials and products; and eliminate wastes and packaging by redesigning manufacturing processes.

### 4.3.2 Reuse

1. Promote antique and thrift stores in the community with a community-wide brochure and cooperative advertisements in tourist literature.
2. Create a "free" store at the City Transfer Station to provide a place for the community to share reusable goods at no cost.
3. Help develop deconstruction services and a used building materials store in Nelson (e.g. a ReStore<sup>9</sup>)
4. Encourage residents to utilize local repair shops (e.g. appliances, autos, furniture) with garbage bill inserts, on the City's website, and with other City promotional tools such as a community directory of resources.
5. Promote the donation of edible food to food-banks and other discarded food to animal-feed from restaurants, grocers and florists.

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<sup>9</sup> See <http://habitat.ca/restores.html> and <http://www.habitat.org/env/restore.html>

## City of Nelson Zero Waste Action Plan

6. Promote local electronic equipment, furniture and appliance resellers.
7. Promote materials exchanges such as Trash to Treasures Day and electronic databases such as [www.rcbc.bc.ca](http://www.rcbc.bc.ca).

### 4.3.3 Recycle

1. Promote existing buyback and drop-off recycling centres (e.g. Jr. Leafs Bottle Depot, Kootenay Waste Services Paint Exchange, scrap metal dealers) with a community-wide brochure, utility bill inserts, on the City's website, and in the City's bi-weekly newsletter.
2. Provide collection containers for paper products and refundable beverage containers next to street garbage containers in the downtown core.
3. Encourage community festivals to be "Zero Waste" events. The success of this approach was demonstrated by the 2003 Kaslo Jazz Festival that dramatically reduced solid waste to landfill.
4. Provide food waste collection containers in the food-service areas at community festivals.
5. Obtain formal RDCK approval for City implementation of residential curbside recycling collection.
6. Draft Request for Proposals (RFP) for Residential Curbside Recycling Collection and Processing Services when approval has been obtained from RDCK. Include options in the RFP, for processing materials from both "blue bag" and "blue box" programs and include a separate section for the cost of collection. After proposals are received, allow the Nelson Public Works department to propose a price for the expansion of City garbage collection services to include recycling collection services by municipal crews and vehicles as an alternative. Determine which collection program (blue box or blue bag, and public or private) is more cost effective for the City to implement based on pricing received through the procurement process. Compare the total residential recycling collection *and* processing costs to evaluate the system costs for public and private proposals, and only compare the *incremental* cost of a split garbage and recycling truck (as the City needs to replace one garbage collection truck regardless of the outcome of this process). Let the contracted curbside recycling firm keep the revenues from the sale of recyclables. Do not pay landfill disposal fees for residues from residential recycling processing firm. Require the residential recycling processing firm to produce no more than 10% residue. Send the RFP to Alpine Disposal and Recycling, Canadian Waste Management, Crown Packaging, the City of Spokane, Zero Waste Services, and anyone else that expresses an interest in submitting a proposal.
7. Proceed with ordering an appropriate truck to implement Residential Curbside Recycling Collection Services for both single and multi-family homes if the RFP identifies that municipal collection services are the most cost-effective option. Clarify whether the City will proceed with a "blue-bag" system or a "blue-box" system through the evaluation of the proposals from the Residential Recycling Collection & Processing RFP.
8. Leave promotional materials, and then warnings to residents to make sure they are aware of what types of materials can be recycled in the residential collection system. Require residents to

## City of Nelson Zero Waste Action Plan

pay for additional garbage service if they repeatedly contaminate their recyclables, to make sure the overall system works as planned.

9. Ask businesses to meet a goal of Zero Waste and to work to achieve Zero Waste Business Principles adopted by the GrassRoots Recycling Network.<sup>10</sup> Provide training in these Zero Waste Business Principles and technical assistance on how to achieve them. As a first step, require businesses to source separate all materials designated by the City. Designate all materials recyclable that are collected by the residential curbside recycling program or accepted at RDCK recycling facilities.
10. Require the City and private haulers collecting wastes and recyclables from businesses to track the amount of waste and types of recyclable materials collected from each business, and make that information available upon City request as required under existing City and RDCK policies. Information reported should be readily available, such as volume of materials collected by type (i.e. waste, type of recyclable) and tonnes sent for processing or disposal.
11. Ask the RDCK to extend their hours of operation of the Nelson transfer station, at least for drop-off of recyclables, and at a minimum, restoring hours on Sunday. Ask the RDCK to expand its recycling depot at the Nelson transfer station to include drop-off for the following materials in addition to those currently collected for recycling.
  - a. Reusables, such as used building materials, furniture, equipment and supplies
  - b. Recyclables, such as, construction and demolition debris and textiles
12. Request that RDCK move its garbage transfer functions for waste from non-Nelson self-haul users to another site outside of the City, and the City should assume responsibility for the Nelson transfer station if the RDCK is not interested in or able to provide these additional services at this site.
13. Offer Industrial, Commercial and Institutional customers Recycling Collection Services after obtaining RDCK formal approval for City implementation. Include in the 2005 capital budget the purchase of containers and equipment for providing these services.
14. Require recycling at all Construction, Demolition, Landclearing and Remodeling projects and require deposits be left for major projects over 10,000 square feet in gross floor area. Require all private developers, construction and demolition contractors, waste haulers and others handling these materials to report the quantities diverted and disposed to the City.
15. Support provincial and federal legislation requiring producers of electronic products (anything with a plug or batteries) to take physical or financial responsibility for taking back their products and packaging. Encourage retailers of such products in Nelson to voluntarily takeback their products and packaging, or arrange for someone else to do so in Nelson (like Ottawa system).<sup>11</sup>

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<sup>10</sup> See <http://www.grn.org/zerowaste/business/>

<sup>11</sup> The Ottawa Take It Back! Program includes over 35 products and 260 local retail locations that conveniently 'take back' and properly dispose of many previously problematic household items. Products included are: motor oil, antifreeze, automotive parts, pharmaceuticals, propane tanks, and garden supplies. The City promotes and lists stores that commit to properly disposing or recycling of these products upon receipt. For more info, see <[http://city.ottawa.on.ca/gc/takeitback/index\\_en.shtml](http://city.ottawa.on.ca/gc/takeitback/index_en.shtml)>

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16. Encourage manufacturers of recycled content products to locate in the region. Adopt environmentally preferable purchasing specifications in public projects and as conditions of land use permits for major new commercial developments. Target such manufacturers as priorities for economic development by the City and other government agencies in the region.
17. Include opportunities to recycle household hazardous wastes on an on-going basis (e.g. batteries, oil, paint, pesticides) at the Mound, and at all other RDCK transfer stations.

### 4.3.4 Composting

1. Actively participate in the regional organics recycling study that is currently underway. Request that the study ensure that the following types of organics recycling services are arranged for Nelson businesses and residents:
  - a. Residential and Institutional on-site composting programs
  - b. Shared chipping services. There are several ways that chipping services have been offered by other communities, including:
    - 1) a central location open on Saturdays with a City staff person there to chip yard trimmings brought in from residents, with chips provided back to the residents;
    - 2) a central location open for deposits of yard trimmings all the time, with a mobile chipper brought in periodically to chip the materials, and the chips then made available to users of the facility; or
    - 3) a mobile chipper operation, like arborists use, with residents having the option of yard trimmings left on the curb being taken away or left for them to use as mulch.
  - c. Residential organics collection services (e.g. yard clippings, discarded food and food-contaminated paper)
  - d. Commercial Organics On-site (e.g. leased and managed by composter or waste hauler)
  - e. Commercial Organics Collection Services (e.g. grocery stores, florists, restaurants and hotels)
2. The City should encourage the siting of a regional composting facility that can process yard trimmings, discarded food and food-contaminated paper.
3. The City should develop specifications for the use of compost in municipal projects and encourage all new major developments to use compost in their landscaping.

### 4.3.5 “Eco-Industrial” or “Resource Recovery” Park

1. The City and RDCK should support the development of one or more Resource Recovery Parks (RR Park) in the region. RDCK should want to help develop a RR Park so that they could maintain a larger role in the system in the future when waste sent to landfill is dramatically reduced. The City and RDCK could support Resource Recovery Park development by: providing space on public lands or in public facilities (e.g. the Mound or other RDCK transfer stations); assisting in the use or acquisition of CPR buildings and land on a permanent or temporary basis; providing low-cost loans or grants for site improvements; deferral of property taxes in the first 10 years; adoption of one or more locations for potential RR Parks into the Official Community Plan; and general endorsements, technical assistance and promotions of the concept. The City should make this a priority for local economic development but treat this like any other economic development project. Some of the benefits provided by the City could be offset through negotiations with proponents for the City to obtain a portion of the revenue from sale of materials or a portion of subleases to additional tenants, as the activities there are expanded.
2. A small-scale RR Park could be located in the commercial/industrial area of Nelson to co-locate collection and processing for reuse and recycling activities, as well as retail sales of used building materials, used furniture and appliances, and compost products and a free store for appropriate household hazardous wastes (e.g. paint and garden supplies) and reusable products. The Nelson RR Park could also include the collection of organics for shipment to a larger RR Park on the outskirts of Nelson, or within the region. This Nelson RR Park could include the processing of residential curbside recyclables, if the proponents of this project make the best proposal to the City in response to the City’s RFP.
3. The OCP says the goal is to move the transfer station from the Mound area on the waterfront in the long-term. The OCP calls for converting this area to “light industrial” uses. This site might be a good prospect to continue as a small-scale eco-industrial park as long there is no heavy industrial processing there.
4. A larger RR Park could co-locate composting and recycled product “heavy industrial” manufacturing businesses, and other related innovative technologies. This could be a regional facility, developed with support of both RDCK and RDKB. The composting study currently underway by RDCK and RDKB should consider this as an option for siting a regional composting facility. In addition, this facility could include a new transfer station for RDCK to service residents from the electoral areas that currently use the Mound transfer station. This would free up additional space at the Mound for more reuse and recycling activities. If it was developed in close coordination with Castlegar, there could be an agreement reached that would allow Nelson access to the Ootischenia landfill in Castlegar, if enough traffic could be diverted from that landfill to this new facility to keep the number of vehicles using the Ootischenia landfill constant. This would also help the RDCK reduce the impacts at the Canex Landfill, and decrease the potential liabilities to Nelson associated with those activities.

## 4.4 Innovative Technologies and Approaches

### 4.4.1 Nelson Sustainable Technologies Eco-industrial Park (nSTEP)

Proponents of “n STEP” propose to build an eco-industrial network dedicated to achieving zero waste in the City of Nelson.<sup>12</sup> It will be a resource recovery park where recyclers, composters, and reusers all compete for items in the discard stream and cooperate in the use of machinery and technology on the site.

The CDS recycling collection program in the downtown area is one of the first new services resulting from the discussions of the nSTEP proposal. The CDS focuses on recycling corrugated cardboard, high-grade office paper, glass, and plastics. Other initial tenants of the eco-industrial park may include the Nelson Jr. Maple Leaf's Bottle Depot and the Product Care Depot. A used building materials store, a reuse store, a small appliance repair and resale business, and a computer refurbishing and resale business are also proposed.

The nSTEP proponents propose also to explore target waste exchanges and to recruit potential manufacturing firms that may be able to use portions of the existing waste stream as raw material feedstock. In addition, nSTEP proposes to form a technical panel to analyze potential new recycled content products that could be used by businesses in the region.

The nSTEP proponents commit to creating living wage jobs with training and education opportunities, especially for persons with a broad range of abilities. They propose to promote local self-sufficiency, diversify and strengthen the local economy, and serve as a model of sustainable development using the industrial ecology principle of closing the industrial process loop (i.e. using waste streams as inputs for complementary industrial processes).

This approach provides a unique opportunity for the community to create jobs and protect the environment and is consistent with the general concept described above. The City should work with the nSTEP proponents to explore potential City sites that could be used to launch this endeavor. The City should require only minimal rent for the use of the City site initially, in trade for a percentage of lease payments and/or revenues from materials sold from that site after target profitability is achieved by the initial businesses. In addition, the City should obtain assurances from nSTEP that they will be open to other nonprofit organizations and private businesses joining as tenants of the eco-industrial park so that it is an open and inclusive process whereby all reuse, recycling and composting efforts in the Nelson area are supported and expanded.

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<sup>12</sup> For further information, contact Roy Heuckendorff at 250/352-0404 or [royh@telus.net](mailto:royh@telus.net), or Michael Jessen at 250/229-5632 or [zerowaste@netidea.com](mailto:zerowaste@netidea.com).

#### 4.4.2 JF BioEnergy Proposal

JF BioEnergy Inc. (JFB) has proposed to establish a plant in the Nelson area to reduce the amount of organic waste (biomass) currently being landfilled or disposed of in other environmentally non-friendly ways. JFB indicates that a standard plant is designed to handle 120 tonnes of biomass per 24-hour period based on 50% moisture content feed. Almost any non-hazardous biomass feedstock can be used. This will produce approximately 10 million BTUs per hour of direct heat, plus approximately 3,000 gallons of bio-oil and 20 tonnes of fuel grade charcoal per day. Both of these fuels are portable and storable.

JFB proposes that a standard plant would cost approximately \$2 million, plus ancillary costs for site preparation and heat exchangers, if required. JFB indicates that revenues from the sale of alternate fuels will cover the cost of operation and amortization of financing costs.

JFB indicates that the technology lends itself to a number of value added opportunities. JFB proposes that charcoal and bio-oil that the plant would produce could displace natural gas in a host of industrial applications and wood fires from homes. JFB charcoal could be pelletized and marketed as a home heating fuel, which JFB says, is low in emissions, free of sulfur and could provide residential fuel at half of the rate of natural gas. JFB proposes that the wood producers in the area could be brought into the venture as a partner. There are two companies in the Nelson area considering JFB technology. One is Celgar/P&T, which could use the heat for drying pulp and P&T could use it for heating their kilns. Another option JFB proposes would be to develop a plant in the City of Nelson, so that the downtown core, recreation facilities and greenhouses could be heated from hot water piping, as proposed in Prince George.

Additionally, JFB indicates that the technology could be used to develop an electrical generating plant in the range of 3 to 5 megawatts. This requires a significantly higher capital cost (\$8-12 million). JFB indicates that this could be turned into a profitable venture, if a secondary use of the heat generated from the boiler and turbine operation could be incorporated in the plant design. This is an area for development that JFB believes the Columbia Basin Trust could be actively involved.

JF BioEnergy has been struggling, since moving the pilot plant to the Greater Vancouver Regional District, to get their plant permitted in order to demonstrate their capabilities. JFB believes that they are going to be in a position to do so in the near future. When they are operating, they offered to provide a tour of the facility for decision makers from Nelson.

The consulting team reviewed a video supplied by JFB and other background information. Based on the review of this material, and other work in the field, it is recommended that Nelson adopt the policy proposed in Appendix C to govern proposals such as JFB's. Nelson should advise JF BioEnergy that JFB should concentrate on the use of clean, source separated organic materials that are currently landfilled as their priority feedstocks. The City of Nelson should not support the development of this technology for use with mixed municipal solid waste (MSW). As a result, the JFB proposal should be considered by the Organics Recycling study underway for the region, to identify if there are any source separated organic materials that are currently landfilled that JFB should pursue for further development of their approach.

## 4.5 Landfills as a Last Resort

Why discuss landfills in a Zero Waste Action Plan? Because the policies and economics that govern landfills will impact on the perceived cost effectiveness of alternatives to landfilling, such as waste reduction, reuse, recycling and composting. In addition, although Zero Waste is the goal, it will not be achieved overnight, and therefore well-designed and operated landfills should be viewed as a scarce resource to be optimized and conserved as much as possible.

Landfills generally are also one of the largest contributors to greenhouse gas emissions in North America, and many landfills have leaked toxics underground to neighboring properties, causing major liabilities for the owners.

As a result, it is critically important for the City of Nelson to work actively with the RDCK to make sure that all landfills used by Nelson residents and businesses meet the highest environmental standards, and reflect their full past, present and reasonably anticipated future costs in their user fees.

The RDCK commissioned a study earlier this year, *Draft Central Waste Management Sub-Region Operations Review* that analyzed landfill, recycling, economics and policy issues. Most of the data below is taken from an analysis of that Draft Report.

The RDCK currently charges only a small portion of their overall capital and operating costs in their tipping fees. The total costs for RDCK Central Sub-Region in 2003 are expected to be \$2,154,000. Of that, the new user fee of \$100/tonne for mixed waste, and other user fees support only \$711,000 of the RDCK's costs. The remainder of the budget (\$1,443,000) is generated from a combination of taxation, grants and borrowing.

If the full cost of the current operations (\$2,154,000) were assessed solely as a user fee for each of the 12,000 tonnes of waste disposed in the Central Sub-Region, the tipping fees would be \$179.50/tonne. If that fee were assessed on all tonnes of waste and recyclables currently handled by the RDCK, the tipping fee would be \$163/tonne.

Similarly, the Draft Report also indicated that it thought RDCK recycling costs could be reduced to about \$150/tonne. If those costs of recycling by RDCK are compared to the costs of waste hauling, transfer and landfilling currently, recycling would be more competitive. From the Draft Report, it indicates that 12,000 tonnes (91% of total tonnages reported) were wasted. The General Administrative Costs totaled \$603,067. If 91% of the General Administrative costs were allocated to wasting according to their percentage of overall activities, then waste hauling, transfer and landfilling costs are calculated to be \$154/tonne.<sup>13</sup>

The Draft Report also indicated that most of the transfer stations have been sited on landfills that have not been properly capped and closed, representing a potentially significant financial liability to the RDCK.<sup>14</sup> The Draft Report appropriately recommended that the RDCK proceed with a final closure plan

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<sup>13</sup> RDCK, *Draft Central Waste Management Sub-Region Operations Review*, 2003, page 9.

<sup>14</sup> *Ibid*, p. 15.

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for all of its landfills,<sup>15</sup> and to have that closure plan signed off by the provincial Ministry of Water, Land and Air Protection (WLAP). The Draft Report also noted that the RDCK could reduce its long-term liability by shifting from a policy that relies on natural attenuation to one that ensures that all gas and leachate (liquids) are collected, treated and monitored at existing sites.<sup>16</sup>

The RDCK should incorporate into the user fees for the RDCK landfills:

- Capital and operating costs (including site acquisition costs)
- Liability for contamination and cleanup of existing sites (e.g. Canex)
- Improvements needed to collect all gas and leachate
- Current and future gas and leachate monitoring costs
- Closure and post-closure costs
- Long-term liabilities from future contamination due to leaks of gas or leachate.

If all the above costs were factored into user fees charged today, the total cost to users of the RDCK transfer and landfill system might more appropriately be recognized as exceeding \$200-300/tonne.

This cost should be viewed as the basis for the City of Nelson evaluating what is “economic” to do with regard to waste management and recycling in Nelson. That reflects the current costs and potential liability to the City from past and present practices.

In the future, RDCK should:

- Ensure that all landfills used by Nelson are properly lined to eliminate leachate leaks.
- Ensure that all landfills used by Nelson are properly designed to control ALL gases and productively use the gases as much as possible.
- Ensure that all landfills used by Nelson are properly monitored for gas and leachate.

Nelson should:

- Ask RDCK to commit to perpetual maintenance and cleanup of the landfills, to make sure that those costs are planned for and budgeted over the life of the operating facilities.
- Suggest that RDCK set aside dedicated funds or obtain insurance to cover the long-term liability of perpetual maintenance and cleanup of all landfills used by Nelson.
- Suggest that RDCK pre-process all wastes in an anaerobic digester before burying them to leach out all toxics and gases and bury only materials tested to be inert.<sup>17</sup>

Nelson should also adopt a goal of only using landfills that minimize the City’s long-term liabilities, and it should strive to extend as long as possible existing landfills that can be upgraded to the standards described above. As the Canex landfill does not meet these standards, Nelson should try to shift to using the Ootischenia landfill,<sup>18</sup> if the number of trucks using the Ootischenia landfill can be kept the same.

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<sup>15</sup> Ibid, p. 16

<sup>16</sup> Ibid, p. 16

<sup>17</sup> This is the approach taken in Halifax, Nova Scotia. For more info on that, get the videotape made by Paul Connett entitled *Nova Scotia: Community Responsibility in Action*, 2001, 30 minutes. To order copy, go to <http://www.grrn.org/Cart/description.php?II=8&UID=20031023202806209.165.52.156>

<sup>18</sup> The Ootischenia landfill in Castlegar is a flat drive from Nelson, following the river and would be a better site for Nelson waste disposal. The Canex landfill is uphill, and in an unlined old mine site.

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To decrease the number of trucks using the Ootischenia landfill, self-haul users from outside of Castlegar could be directed to dispose of their wastes at alternate transfer stations. This would complement other ZWAP recommendations to direct self-haul users from outside of Nelson to dispose of their wastes at alternate transfer stations, to provide more space at the Nelson transfer station to expand reuse and recycling activities there. It is therefore in Nelson's interests to work with Castlegar to help them implement a comprehensive residential recycling collection program and organics recycling collection program.

### 4.6 Funding of Zero Waste Initiatives

Funding for Zero Waste initiatives may come from a wide variety of sources. Section 3.5 identifies stakeholders and service providers who are willing to assist with the expansion of solid waste, reuse, recycling and composting services in Nelson. A couple of these (At Source Recycling and Kootenay Co-op) offered to provide equipment and financial support. As the project unfolds, others in Section 3.5 may assist in finding local business people who would like to invest in new ventures outlined in this ZWAP (such as the Resource Recovery Park), or would self-finance the expansion of new reuse, recycling and/or composting services by diversifying existing unrelated businesses.

Section 4.3 highlights how properly designed avoided collection and disposal costs can become the economic engine that drives the system to Zero Waste. Direct disposal cost savings alone at \$100/tonne could generate up to \$ 205,000 each year for the City to offset expanded costs of recycling.

Section 5.2 and Appendix B highlights policies and incentives that could be adopted that would harness the forces of the marketplace to achieve Zero Waste. The City of Nelson and the RDCK can have major impacts in defining what is economic, through the policies adopted in bylaws, contracts, permits, zoning, and rate structures. By adjusting policies as recommended, the City and the RDCK can help everyone benefit that eliminates and recycles waste, and let those who choose to waste, pay higher fees for those services.

The City of Nelson should become a strong supporter of Retailer and Producer Responsibility initiatives. Once retailers and/or producers assume responsibility for their products and packaging, they incorporate the costs of reuse, recycling and/or composting within the purchase price of the products. This essentially becomes a self-funding system, and is one of the most powerful opportunities that exist to move towards Zero Waste, particularly for currently difficult to recycle products and packaging.

Socially responsible investors would be interested in investing in projects like the Resource Recovery Park and new reuse, recycling and composting ventures. There is strong interest in investments in sustainable development and Zero Waste certainly qualifies as a tool to achieve a sustainable local economy. Adopting Zero Waste as a goal will also distinguish Nelson from most other communities at this point in time, which will immediately attract more interest and attention for outside funders to support Nelson's initiatives.<sup>19</sup>

The Social Venture Network ([www.svn.org](http://www.svn.org)) is where socially conscious entrepreneurs meet, teach, support and create new ventures. The Business Alliance for Local Living Economies ([www.livingeconomies.org](http://www.livingeconomies.org)) was established by the Social Ventures Network to not only help on

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<sup>19</sup> One of the considerations in Del Norte County, California was how a Zero Waste goal would attract the interest of private investors and state and federal agencies to fund required initiatives.

## City of Nelson Zero Waste Action Plan

sustainable development projects, but also to develop programs that encourage the reinvestment in local communities. The Canadian Venture Capital & Private Equity Association ([www.cvca.ca](http://www.cvca.ca)) represents over 850 venture capital and private equity professionals promoting the use of venture capital to support the development of small and medium-sized growth businesses in Canada.

Other socially responsible investors can be identified through a variety of sources, including:

- Investors Circle ([www.Investorscircle.net](http://www.Investorscircle.net))
- Target Zero Canada ([www.earthday.ca](http://www.earthday.ca))
- Green Biz Com ([www.greenbiz.com](http://www.greenbiz.com))
- Institute for Local Self-Reliance ([www.ilsr.org](http://www.ilsr.org))
- Ctr. for New American Dream ([www.newdream.org](http://www.newdream.org))
- Business for Social Responsibility ([www.bsr.org](http://www.bsr.org))
- CERES ([www.ceres.org](http://www.ceres.org))

There are many foundations that are particularly interested in funding Sustainable Development. The Environmental Grantmakers Association ([www.EGA.org](http://www.EGA.org)) has a Sustainable Consumption and Production Committee that is composed of many foundations around North America that are funding such initiatives.

Funding is also available from the federal and provincial governments, as part of environmental protection, economic development and climate change initiatives. Specific grants and loans vary by the type of project, but include the following:

- ***Climate Change Action Fund (CCAF)***  
Intended to help Canada meet its commitment to the Kyoto Protocol. Funding for projects that reduce greenhouse gas emissions (e.g. landfill diversion).
- ***EcoAction Community Funding Program***  
Financial support to community groups for projects that have measurable positive impacts on the environment.
- ***Green Environmental Infrastructure***  
Investments in local infrastructure such as facilities for recycling and composting.
- ***Eco-Efficiency Partnership (EEP)***  
Assistance to small and medium sized manufacturing enterprises to become more competitive through process efficiency.

Nelson's Zero Waste Coordinator should work with the RDCK and local stakeholders to develop and submit proposals for project funding as one of their priority tasks.

## ***Appendix A – Nelson Zero Waste Resolution***

WHEREAS, the placement of materials in waste disposal facilities, such as landfills and incinerators, is costly to taxpayers, causes damage to ecosystem health, wastes natural resources, and transfers liabilities to future generations; and,

WHEREAS, a resource recovery-based economy will create and sustain more productive and meaningful jobs; and,

WHEREAS, through the application of Extended Producer Responsibility programs, recycled content regulation, landfill bans, design for the environment, composting programs and other readily available tools, virtually all resources can be recovered; and

WHEREAS, with the understanding that government is ultimately responsible for leading by example and establishing criteria needed to eliminate waste, and

WHEREAS, the Nelson Zero Waste Action Plan dated November 14, 2003, outlines a methodology to eliminate waste and pollution resulting from the traditional disposal of resources to our common environment (land, air and water).

THEREFORE, be it resolved that the Council of the Corporation of the City of Nelson supports the implementation of the Zero Waste Action Plan, dated November 14, 2003 and endorses a Zero Waste *or Darn Close* Goal by 2020, with an interim goal of 75% diversion of solid waste from landfills and incinerators by 2010.

## ***Appendix B - Other Proposed Policies & Incentives***

The following policies and incentives could be considered by the City and/or RDCK to adopt in the event that more actions are needed to achieve Zero Waste. For some of the proposed local actions, they may require additional provincial or federal authority to be provided to cities to adopt such policies.

### **Incentives for Waste Generators**

1. Require businesses to submit a 2-page form annually as a “Business Recycling Plan.”
2. Ask businesses to achieve waste diversion goals (e.g., 50% 1st year, and 10% more each year).
3. Require businesses to source separate designated materials.
4. Require public and private commercial waste haulers to offer recycling services for free or a substantial discount to businesses.
5. Require public and private commercial waste haulers to offer a substantial discount to businesses for all materials source separated.
6. Require public and private commercial waste haulers to provide at least an equal volume of recycling and garbage bin, cart or can capacity to each business.
7. Require public and private commercial waste haulers to decrease their rates if businesses recycle more.
8. Eliminate “volume” discounts for large waste generators in commercial garbage rate structure.
9. Require as condition of land use permits the recycling of construction, renovation and demolition (C&D) debris, use of recycled content products, provision of space for recycling containers, and/or the establishment of comprehensive recycling and composting services for new construction.
10. Require deposits on new construction waste that will be refunded if waste diversion requirements are met as conditions of building permits.

### **Incentives for Recyclers**

1. Waive/reduce taxes on innovative reuse, recycling and composting businesses, as needed.

### **Incentives for Waste Haulers**

1. License all commercial waste haulers and require one or more of the following recycling policies as a condition of doing business in Nelson.
2. Require public and private commercial waste haulers to provide Annual Recycling Plan and report on past year’s data and activities.
3. Require public and private commercial waste haulers to recycle designated materials.
4. Require public and private commercial waste haulers to provide specific additional recycling services that are missing in the community.
5. Structure license fees for licensed haulers to decrease as waste diversion increases and structure to allow City to adjust local fees and taxes unilaterally and at any time.
6. Charge a differential license fee to licensed haulers, based on whether or not they have a City-approved recycling program.
7. Provide recycling services to multi-family residential dwellings at least equal to those of single-family curbside recycling services.
8. Ban the disposal of construction & demolition (C&D) debris at landfills.

## ***Appendix B - Other Proposed Policies & Incentives***

9. Ensure that C&D debris used in landfills as road material or other beneficial uses does not exceed the need for that function.
10. Require haulers to take all C&D debris to mixed or source-separated C&D processing facilities after such facilities are developed.
11. Require haulers to achieve a waste diversion goal for their overall operations (e.g., 50% initially and 10% more each year).
12. Require haulers to meet a waste diversion goal for each company serviced. Allow haulers to get credit for any recycling done by waste generators with others.
13. Require waste haulers and recyclers to collect source separate designated materials. May be enforced by a material ban at the landfill.
14. If license or franchise fees are established for commercial waste haulers as a percentage of gross receipts, exempt recyclables from calculating the gross receipts basis.

### **Retailer and Producer Responsibility**

1. Require retailers or producers take physical or financial responsibility for takeback of discarded electronic products (anything with a plug). Support Federal and Provincial Product Stewardship legislation.
2. Tax other materials or products that cannot be cost effectively reused, recycled or composted in Nelson.
3. Ban other materials from transfer stations and landfills that cannot be cost effectively reused, recycled or composted and/or that have EPR program in place in Nelson.
4. Ban other materials from retail sales that are toxic and cannot be cost effectively reused, recycled or composted in Nelson (e.g., mercury thermometers).
5. Require takeback of other products and/or packaging that cannot be cost effectively reused, recycled or composted in Nelson.
6. Endorse EPR Principles of the EPR working group at [www.GRRN.org/epr/epr\\_principles.html](http://www.GRRN.org/epr/epr_principles.html).
7. Establish “advanced recycling fee” on other products that cannot be cost effectively reused, recycled or composted in Nelson.
8. Encourage Nelson businesses to lease products and provide services instead of products.

### **Funding**

1. Establish license fees on commercial waste haulers to pay for community costs of implementing waste prevention, reuse, recycling, composting, buy recycled and recycling market development programs.
2. Adopt permit fees on new construction to cover the costs to the community of implementing community-wide recycling programs.
3. Establish grant program to provide seed capital for new reuse, recycling and composting initiatives by local businesses and nonprofits.

## *Appendix C - Proposed “Waste-to-Energy” Policy*

The City of Nelson recognizes that some waste-to-energy technologies can make a positive contribution to sustainable resource conservation. Some technologies directly convert resources to electricity while others create liquid or gaseous fuels. Making methanol and ethanol from some organic wastes could help meet air pollution control goals for transportation. However, many waste-to-energy facilities are polluting and very costly. There is far greater benefit in reusing or recycling the material into new products.

It is preferable to use organic materials for reuse, recycling, compost, and soil amendments, than as feedstock for waste-to-energy technologies. Those technologies that directly generate electricity should be end-of-the-line. They should receive resources otherwise destined for landfilling only after all useful composting and recycling resources have been separated. The key to determining when waste-to-energy is consistent with Zero Waste lies with whether feedstocks are source-separated and what temperatures are used.

The City of Nelson considers waste-to-energy technologies using mixed garbage feedstocks or high temperatures to be incompatible with Zero Waste systems.

The City of Nelson believes that use of homogenous feedstocks without alternate markets (e.g. wood by-product biomass) can be compatible with Zero Waste systems, provided that equal or greater investment is made in developing environmentally superior end uses. The City of Nelson will not support public subsidies of any form for technologies that use mixed garbage as a feedstock. For example, the City of Nelson will not enter into any “put-or-pay” contracts that may be requested to support waste-to-energy facilities – particularly those using mixed waste feedstocks. These contracts may deter competition, damage recycling and composting businesses, and discourage waste reduction.

The City of Nelson considers waste-to-energy technologies that operate within the range of biological temperatures (temperatures of living things) to be compatible with Zero Waste. Those technologies mimicking biological processes, creating a stable fuel product without requiring high temperature combustion to do so, may be acceptable.

Technologies that operate at high temperatures are intrinsically dangerous and should be avoided, particularly for mixed waste feedstocks. At high temperatures used in burning, pyrolysis and gasification, toxic metals are volatilized and poisonous substances, like dioxins and furans created. Such toxins are dangerous at minute levels. Since failsafe systems have not been demonstrated to control migration of these toxins to the environment, it is better to apply the Precautionary Principle<sup>20</sup> and seek safer waste disposal alternatives.

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<sup>20</sup> For more info on the Precautionary Principle, see Ted Schettler, Katherine Barrett, and Carolyn Raffensperger, "The Precautionary Principle: Protecting Public Health and the Environment" at: <http://www.rachel.org/library/getfile.cfm?ID=187>