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To: Merrick Anderson, Electoral Area D Director
Sean McGinn, Manager of Community Services, Powell River Regional District
Lasqueti Island Solid Waste Advisory Committee

From: Maura Walker

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Re: Solid Waste Management Options

The "Existing System" memorandum of March 17, 2011 describes the current methods for managing solid waste on Lasqueti Island and identifies a number of issues that need to be addressed. A "long list" of options to address these issues was developed and discussed at the February 17th, 2011 meeting of the Solid Waste Advisory Committee. With the input provided by committee members, the options were shortlisted. This memorandum outlines those shortlisted options.

The Solid Waste Advisory Committee also outlined a vision for solid waste management on Lasqueti Island to help guide the selection of options, namely:

That Lasqueti Island be a model community for zero waste, embracing waste minimization, reuse and recycling, and ultimately eliminating the need for landfilling of our discards.

The options are presented in this memo in the following categories:

- Reduction and Reuse
- Recycling Depot
- Extended Producer Responsibility Programs
- Scrap Metal and Auto Hulks
- Disposal
- Education

At the end of the memo, the options are organized into two scenarios and estimated costs are presented for each scenario. Once these options and scenarios have been considered and refined by the Solid Waste Advisory Committee, they can be presented to the community for their input.

Reduction and Reuse

Due to the lack of access to retail stores and access to services, waste reduction and reuse are part of the culture of Lasqueti's residents. Durable goods tend to be maintained and repaired to the greatest extent possible before they are replaced and reuse of packaging, such as reusing jars for canning, is

commonplace. There is also a Free Store for the reuse of small household goods such as books, clothing and small appliances.

The options for enhancing reduction and reuse include:

- 1. Develop a web-based swap board/free store for the reuse of larger goods (or larger volumes of small goods), such as the one shown below from the Columbia Shuswap Regional District.



- 2. Research methods to incorporate used materials into recycling depot improvements, such as is done with earthships.
- 3. Encourage and support local artisans and innovators to use waste materials in their projects. An example would be storing broken glass at the recycling depot for an artist interested in using the glass for making slump glass art, as shown in one of the photos below.



Art Made from Waste Materials

4. Encourage events and festivals on the island to practice waste minimization. For example, a zero waste best practices checklist could be prepared and distribute to event organizers.

The cost for the above options is expected to be minimal as these options would be done by volunteers or under the existing operating contract for the recycling depot.

Recycling

The recycling depot accepts cardboard, metal food containers, soft plastics (clean plastic bags and wrap), rigid plastics (containers, bottles, and other plastic items like broken chairs and laundry baskets), and beverage containers. At the depot, beverage containers are sorted by container type and stored in large sacks, and the cardboard and plastics are separately baled and stored until they can be transported to recycling processors on Vancouver Island. The most significant issues associated with the recycling depot are:

- There is a lack of space and infrastructure for people to sort their recyclables.
- There is a lack of space for storage of baled and bagged recyclables prior to transporting off-island.
- The above two conditions result in an appearance of disorganization.
- Some depot users drop off garbage or contaminated recyclables (e.g. plastic containers with food remnants inside) which is both a health and an aesthetic issue for site staff and users.
- It is difficult to find reliable and affordable transportation to ship the recyclables to a recycling processor or bottle depot on Vancouver Island.

The options to address these issues are:

1. Redesign and expand the recycling depot to allow and encourage users to sort their recyclables. Depots of this style are common on other Gulf Islands, including those shown on the next page.
2. Develop a storage area to stockpile recyclables between off-island shipments. This would require the construction of a covered area and a pad (such as the one shown to the right) plus the purchase of a small forklift so that materials could be piled.
3. Restrict access to the recycling depot to staffed operating hours only.



Photographs of Recycling Depots Where Users Sort Their Recyclables



*Hornby Island
Recycling Depot*

*Mayne
Island
Recycling
Depot*



*Recycling
Depot
(Unknown
Location)*

Rough cost estimates for the recycling depot options are presented in the table below. For all of the options listed, there would be no increase in the cost to operate the depot.

Option	Expenditure	Capital Cost
1. Recycling sorting area	Construction of a sorting and baling shed	\$5,000 - \$15,000
2. Develop a covered storage area to stockpile recyclables between off-island shipments	Covered storage area	\$10,000 - \$15,000
	Pad	\$2,000 – \$7,000
	Forklift (used)	<u>\$5,000</u>
	Subtotal	\$17,000 - \$29,000
3. Restrict access to the recycling depot to staffed operating hours only	Signage	\$250

Extended Producer Responsibility Programs

Products and packaging covered under BC's EPR regulations are intended to make the manufacturers, retailers and consumers of these products responsible for their collection and proper disposal. For most products, a depot-based return system has been set up for collections. For residents of Lasqueti Island, the closest depots are located in Parksville and Nanaimo.

Many of the products covered by EPR regulations are considered toxic in nature and therefore keeping them out of the local landfill is of particular importance. Options to ensure that EPR-regulated materials are kept out of the landfill include:

1. Increase promotion and education activities regarding the range of products covered by EPR and where they can be returned for proper disposal; and
2. Collect EPR products at the recycling depot and have the collected materials removed at the same time as recyclables are removed.

The cost to increase promotion and education activities regarding where to take EPR-regulated materials is expected to be minimal, as it would be done either through the effort of volunteers or as part of the recycling depot operating contract.

The costs to collect EPR materials at the depot are expected to be largely paid for by the organizations set up to provide the collection services (e.g. Product Care, Encorp, BC Used Oil Management Association). At the February 2011 meeting of the Advisory Committee, it was suggested that collection of EPR-regulated materials should *only* be undertaken if EPR organizations agree to pay for:

- Provision of collection/shipping containers that meet health, safety and transportation requirements;
- The cost of transporting the collected products off of the island; and
- The cost for recycling or proper disposal of the products.

Under this scenario, staffing of the on-island collection system and the provision of space for collection of EPR-regulated materials would be provided as part of the operation of the recycling depot or transfer station. (See the section on “Disposal” for a discussion of the transfer station.)

Scrap Metal and Auto Hulks

The existing scrap metal pile at the landfill may be causing environmental contamination and needs to be removed and recycled. Additionally, the company that current accepts auto hulks, the Lasqueti Fish Company, plans to cease this operation in roughly two years. Consequently, a new method for managing scrap metal and auto hulks is required.

The existing pile of scrap metal at the landfill can be moved to the Lasqueti Fish Company property and incorporated into their scrap metal storage. The metal will be removed from their property, along with any remaining auto hulks, as part of closing down the scrap metal operation on this site. After this point, options for future management of scrap metal and auto hulks include:

1. Site a new storage location for scrap metal and auto hulks, and remove as required; and
2. Site a new scrap metal storage area (and remove as required), but have auto hulk collection events every 5 years.

A rough estimate of costs associated with managing scrap metal and auto hulks are:

- To remove the existing metal at the landfill for recycling: \$7,300
- To construct a cement pad for future storage of scrap metal: \$6,100
- To remove auto hulks from the island: \$10,000 per event
- To remove scrap metal from the island (in trucking containers): \$6,000 per event

Disposal

As noted in the “Existing System” memo, the landfill site is out of compliance with its landfill permit and does not comply with current BC landfill guidelines. There are two options to address this issue:

1. Close the landfill and replace it with a transfer station; and
2. Improve the landfill site to comply with current landfill regulations.

The option of siting and constructing a new landfill on Lasqueti Island was not considered a realistic option because the location of the current landfill is considered by the community to be the most appropriate, both environmentally and socially.

The Transfer Station Option

A transfer station is a location where garbage can be dropped off and stored in containers prior to being “transferred” off the island to a landfill on Vancouver Island; most likely the Regional District of Nanaimo (RDN) landfill in south Nanaimo.

This option would include siting and construction of a transfer station facility and closure of the existing landfill site. For purposes of developing a rough cost estimate for this option, a transfer station concept was developed and includes the following elements:

- Co-locating the transfer station and the recycling depot since both operations require storage of waste materials and transportation of the island¹.
- A sorting area for household recyclables (beverage containers, cardboard, plastic, tin cans, etc.)
- Separate roll-off bins for storage of garbage, scrap metal, and baled recyclables (see photos of roll-off bins below).



*Roll Off
Bins*

- Removal of the bins 3-4 times per year by roll-off truck and barge to French Creek
- Trucking of the bins to the RDN's Church Road Transfer Station (near Parksville) and the recyclables to pre-arranged recycling processor(s)
- Payment of tipping fees to the RDN (\$110/tonne in 2011).

At this time, only a preliminary review of potential sites for a transfer station has been undertaken. Potential sites include the community centre property and land beside the Lasqueti Fish Company operation. The location of the current recycling depot is considered too small to incorporate collection of garbage and scrap metal. However, it is anticipated that if a transfer station is constructed, the Free Store would remain in its current location.

The cost of the transfer station scenario is estimated to be \$113,000 per year. This does not include cost for land. Details regarding these costs are provided in Table 2 at the end of this memo.

¹ Co-locating the recycling depot and the garbage transfer operation maximizes efficiencies for both space and the cost of the solid waste management system. It also increases the convenience to island residents when disposing of their waste materials and may increase the amount of materials recycled.

Landfill Option

The landfill option requires improvements to the current landfill site to achieve compliance with the current regulatory environment. Michel Lefebvre, a landfill engineer with XCG Consultants, visited the landfill site in January 2011 and subsequently prepared a report on the site's conditions, applicable regulations, the existing permit for the site, and measures required to improve the site. These measures are presented below as a two-step process.

The first step would include:

- Undertake test pit investigation to confirm site conditions, surficial geology, minimum depth of groundwater, and the ability of the current site to operate as a natural attenuation landfill. This action would determine if there are any physical conditions that would prevent the on-going operation of a landfill at this location.
- If no "fatal flaw" with the site is found, an Action Plan will be developed for formal submission to the BC Ministry of Environment (MOE) for approval prior to undertaking any remedial activities listed under the second step.

The second step would be the implementation of the Action Plan, which would include:

- Extension, upgrade and repair of perimeter ditching to ensure that surface water is not adversely impacted by landfill activities;
- Construction of a sedimentation pond to reduce impact to surface water courses by landfill related runoff;
- Upgrade and remediation of existing perimeter berms to reduce impact to surface water courses and to improve litter control;
- Fencing and site security as per the BC Landfill Criteria for Municipal Solid Waste;
- Up gradient and down gradient groundwater monitoring wells to monitor the performance of the attenuation zone, facilitate the implementation of an annual environmental monitoring program, and confirm compliance with applicable regulations;
- Establish formal surface water monitoring locations (upstream and downstream of the landfill site) to facilitate the implementation of an annual environmental monitoring program, and confirm compliance with applicable regulations; and
- Establish an environmental monitoring program.

The cost of the landfill scenario is estimated to be \$89,500 per year. Details regarding these costs are provided in Table 2 at the end of this memo.

Education

To ensure that island residents are informed of how to properly manage their solid waste, the following options are available:

1. Continue having a solid waste-focused column in the local newsletter
2. Develop an information poster that could be up permanently on the ferry
3. Prepare an info sheet for distribution to all island homes and businesses regarding where and how to reuse, recycle and dispose of their various waste streams, including where to take EPR regulated items.

It has been assumed that the work for each of these options would be undertaken by volunteers. Costs for poster printing and laminating and printing of the information sheet are expected to be less than \$300.

Scenarios for Consideration

The options discussed above have been organized into two scenarios that are based on the system selected for garbage disposal. Scenario "A" is based on maintaining a landfill operation on Lasqueti Island. Scenario "B" is based on closing the landfill and setting up a transfer station to ship garbage to a engineered landfill in the Regional District of Nanaimo. The Table 1 below summarizes the key features of each scenario and Table 2 provides the estimated costs of each.

Table 1 Features of Scenarios A and B

Waste Management Activity	Scenario A: Landfill	Scenario B: Transfer Station
Free store	<ul style="list-style-type: none"> • No change 	<ul style="list-style-type: none"> • No change
Recycling Depot	<ul style="list-style-type: none"> • Improvements to existing operation 	<ul style="list-style-type: none"> • Move to waste management centre
Extended Producer Responsibility Programs	<ul style="list-style-type: none"> • Educate and promote existing return locations 	<ul style="list-style-type: none"> • Educate and provide collection for some products as agreements reached with EPR agencies
Scrap metal	<ul style="list-style-type: none"> • Remove existing stockpile • Build proper storage pad • Remove metal every 3 years 	<ul style="list-style-type: none"> • Remove existing stockpile • Collect at waste management centre in roll-off containers
Auto hulks	<ul style="list-style-type: none"> • Collection event every 5 years 	<ul style="list-style-type: none"> • Stockpile at waste management centre, if space is available • Remove every 5 years
Garbage Disposal	<ul style="list-style-type: none"> • Improve landfill site and operation 	<ul style="list-style-type: none"> • Close landfill • Site and construct waste management centre • Transfer garbage to RDN's landfill
Education	<ul style="list-style-type: none"> • Continue 	<ul style="list-style-type: none"> • Continue

Table 2 Detailed Cost Estimates for the Scenarios

Scenario A: Landfill		Scenario B: Transfer Station	
Capital			
Administration and Execution Requirements (10%)	\$ 8,650	Land	\$ -
Site Investigation	\$ 6,000	Clearing and Grubbing	\$ 2,500
Action Plan and Approvals	\$ 8,000	Gravel pad	\$ 37,500
Ditch rehabilitation	\$ 6,250	Cement Pads for buildings	\$ 6,300
Sediment retention pond	\$ 8,000	Site access preparation allowance	\$ 15,000
Perimeter berm rehabilitation	\$ 15,000	Roll-off Bins	\$ 45,500
Fencing	\$ 12,500	Construction of recycling sorting shed & storage shed	\$ 30,000
Tarp for cover	\$ 1,500	Fork lift	\$ 5,000
Monitoring wells	\$ 30,000	Landfill Closure	\$ 61,000
Clean up of scrap metal pile	\$ 7,300	Install 2 monitoring wells	\$ 31,000
Construction of pad for scrap metal storage	\$ 6,100	Clean up of scrap metal pile at landfill	\$ 7,300
Establish surface water sampling locations	\$ 750		
Engineering (10%)	\$ 9,515		
Total Capital Costs	\$ 119,565		\$ 241,100
Operating			
Water monitoring program	\$ 9,400	Water monitoring program	\$ 9,400
Staffing	\$ 30,000	Barging	\$ 13,200
Covering	\$ 2,500	Trucking	\$ 2,850
Contribution to reserve	\$ 5,000	Tipping Fees	\$ 2,750
Scrap metal removal	\$ 2,050	Staffing	\$ 35,000
Auto hulk removal	\$ 1,920	General operating costs	\$ 30,000
Recycling Depot	\$ 31,000	Auto hulk removal	\$ 1,920
		Fuel	\$ 500
Total Operating Costs	\$ 81,870		\$ 95,620
Total Annualized Costs			
Capital	\$ 7,600	Capital	\$ 17,340
Operating	\$ 81,870	Operating	\$ 95,620
Total Estimated Annual Cost	\$ 89,470	Total Estimated Annual Cost	\$ 112,960

Note: Annualized capital costs are based on applying \$25,000 of PRRD solid waste reserves to the capital costs and amortizing the remaining capital costs over 20 years at 5% interest.

Costs

The current solid waste systems costs are \$60,000 per year, which translates into \$34 per \$100,000 of assessed property value on for property owners on Lasqueti Island. Scenario A, the “improved landfill” scenario, would increase the annual cost by an estimated 50%, or \$17 per \$100,000 of assessed property value. Scenario B would increase the system cost by 88%, or \$30 per \$100,000 of assessed property value. As a result, the changes in the waste management system are expect to make the annual cost for waste management be \$51-\$64 per \$100,000 of assessed property value.