

## Introduction

The following document is a summary of the existing waste management system for the Regional District of Mount Waddington (RDMW). This review represents Stage 1 of the 2011/12 process to update the Regional Solid Waste Management Plan (RSWMP). Within this summary of the waste management system, the following elements will be covered:

1. 1996 Regional Solid Waste Management Plan versus 2011 Actual Operations
2. Detail Review of Existing RDMW Solid Waste Operations
  - 2.1. Local Versus Regional Waste Management Services
  - 2.2. Local Municipal Solid Waste (MSW) Collection Services
  - 2.3. Local Recycling Collection Services
  - 2.4. Local Bio-Solid Generation
  - 2.5. Regional MSW Disposal Services
  - 2.6. Regional Recycling Processing Services
  - 2.7. Regional Bio-Solid Composting Services
  - 2.8. Regional Contaminated Soils Disposal Services
  - 2.9. Regional Re-Use Services
  - 2.10. Non-Governmental MSW Disposal Services
  - 2.11. Non-Governmental Recycling Processing Services
  - 2.12. Non-Governmental Re-Use Services
  - 2.13. Anti-Dumping Initiatives

After members of the Public/Technical Advisory Committee (P/TAC) have reviewed this summary, the update process for the RSWMP will then proceed to Stage 2 where changes to the existing RSWMP will be developed to meet the solid waste management challenges confronted by the Regional District's communities. All proposals must be approved by the Plan Review Steering Committee (PRSC) whose members are made up of the RDMW Board and leadership from the First Nation communities who participate in the Regional Solid Waste Service (RSWS). The final step will be the submission of the proposed plan to the Minister of Environment for approval. Throughout the process to update the RSWMP, the public will be consulted as per the RDMW Public Review Consultation Process document.

## 1. 1996 Regional Solid Waste Management Plan versus 2011 Actual Operations

In 1996, the RDMW's RSWMP was approved by the Minister of Environment. The following table summarizes the status of solid waste management for all communities within the RDMW in 1996:

Community/ Sector	Solid Waste Management (1996)	Solid Waste Management (2011)
Port McNeill	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Port McNeill Landfill</li> <li>• Est 4000 tonnes/year of MSW taken to Port McNeill Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7 Mile Landfill and Recycling Center (7MLRC)</li> <li>• 1 manned recycling station.</li> <li>• Curbside recycling based on subscription.</li> <li>• 1,444 tonnes of MSW collected through Port McNeill's (also includes Hyde Creek and Woss) garbage collection service (2010)</li> </ul>
Port Hardy	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Port Hardy Landfill</li> <li>• Est 7000-8000 tonnes/year of MSW taken to Port Hardy Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7MLRC</li> <li>• 2 unmanned recycling drop stations</li> <li>• 1 manned recycling/transfer station (Fox Property)</li> <li>• 2,369 tonnes of MSW collected through Port Hardy's (also includes Coal Harbour) garbage collection service (2010)</li> </ul>
Port Alice	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Port Alice Landfill</li> <li>• Est 1500 tonnes/year of MSW taken to Port Alice Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7MLRC</li> <li>• 1 partially manned recycling/transfer station.</li> <li>• 400 tonnes of MSW collected through Port Alice's garbage collection service (2010)</li> </ul>
Alert Bay	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Alert Bay Landfill</li> <li>• Est 1200 tonnes/year of MSW taken to Alert Bay Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7MLRC</li> <li>• Curbside recycling collection</li> <li>• 1 manned recycling/transfer station.</li> <li>• 505 tonnes of MSW collected through Alert Bay's garbage collection service (2010)</li> </ul>

<b>Community/ Sector</b>	<b>Solid Waste Management (1996)</b>	<b>Solid Waste Management (2011)</b>
Woss Camp	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Port McNeill Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Manned recycling/transfer station.</li> <li>• Garbage disposed of at 7MLRC</li> </ul>
Telegraph Cove	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Port McNeill Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage disposed of at 7MLRC</li> </ul>
Beaver Cove	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Port McNeill Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage disposed of at 7MLRC</li> </ul>
Hyde Creek	<ul style="list-style-type: none"> <li>• No Documentation of any Solid Waste Management Program</li> </ul>	<ul style="list-style-type: none"> <li>• Curb side collection managed by subscription.</li> <li>• Collected garbage disposed of at 7MLRC.</li> </ul>
Coal Harbour	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Hardy Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage disposed of at 7MLRC</li> </ul>
Quatsino	<ul style="list-style-type: none"> <li>• Garbage Disposed of at Unlicensed Quatsino Dump</li> </ul>	<ul style="list-style-type: none"> <li>• Garbage disposed of at Unlicensed Quatsino Dump</li> </ul>
Winter Harbour	<ul style="list-style-type: none"> <li>• Garbage Disposed of at WD Moore/Winter Harbour Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Garbage disposed of at 7MLRC via Winter Harbour Transfer Station</li> </ul>
Sointula	<ul style="list-style-type: none"> <li>• Garbage Disposed of at Unlicensed Malcolm Island Dump</li> <li>• Est 500 tonnes/year of MSW taken to Malcolm Island Dump</li> </ul>	<ul style="list-style-type: none"> <li>• Residential garbage pickup every other week.</li> <li>• 1 manned recycling/transfer station.</li> <li>• Garbage disposed of at 7MLRC</li> </ul>
Holberg	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Holberg Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly residential garbage pickup</li> <li>• Garbage disposed of at Holberg Landfill</li> </ul>
Quatsino First Nation	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Hardy Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Unmanned transfer station in community</li> <li>• Garbage disposed of at 7MLRC</li> </ul>
Namgis First Nation	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Alert Bay Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly residential garbage pickup</li> <li>• Garbage disposed of at 7MLRC via Alert Bay garbage collection service.</li> </ul>

Community/ Sector	Solid Waste Management (1996)	Solid Waste Management (2011)
Kwakiutl First Nation	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Hardy Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7MLRC</li> </ul>
Gwa'sala- 'Nakwaxda'xw First Nation	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Hardy Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7MLRC</li> </ul>
Tlatlasikwala First Nation	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at Hardy Landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly Residential Garbage Pickup</li> <li>• Garbage Disposed of at 7MLRC</li> </ul>
Commercial/ Institutional	<ul style="list-style-type: none"> <li>• Waste mostly paper/cardboard and some food</li> <li>• Limited recycling, most going to landfills</li> </ul>	<ul style="list-style-type: none"> <li>• Waste mostly paper/cardboard and some food</li> <li>• Recycling collected by private service provider and sent to 7MLRC</li> </ul>
Industrial	<ul style="list-style-type: none"> <li>• Mining industrial waste handled generator</li> <li>• Wood waste handled by generator by either landfilling, burning, waste to energy or left at harvest site</li> <li>• Fish waste handled by generator by either landfilling, rendering or disposal at sea. Fish boats dispose waste at community dock facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Wood waste handled by generator by either burning, at harvest site or by private chipping or composting service providers.</li> <li>• Fish waste handled by private composting service provider or by rendering or disposal at sea. Fish boats dispose waste at community dock facilities.</li> </ul>
Nuisance Solid Waste	<ul style="list-style-type: none"> <li>• Fish waste from salmon farms largest nuisance waste source</li> <li>• Used/discarded petroleum products</li> <li>• Abandoned motor vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Asbestos and contaminated soils disposed of at 7MLRC</li> </ul>
Recycling/ Diversion	<ul style="list-style-type: none"> <li>• Metal salvaged</li> <li>• Wood piled for burning</li> <li>• Recyclables divert by individuals/organizations and sent to depots in Campbell River</li> <li>• No bottle depots in RDMW</li> <li>• Salvagers periodically come up from down island to collect abandoned vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Metal salvaged</li> <li>• Clean wood piled for hog fuel and then composed.</li> <li>• Recyclables divert by communities and sent to 7MLRC for processing.</li> <li>• Bottle depots in Port McNeill and Port Hardy</li> <li>• Abandoned vehicles processed by auto wrecker in Port Hardy or by metal salvagers.</li> </ul>

The following table summarizes the key goals/issues of the plan and their current status.

<b>Goal/Issues</b>	<b>Status</b>
Ad-hoc arrangements to recover costs of local landfills	7 Mile Landfill and Recycling Center (7MLRC) recovers the cost of all material brought to the landfill by tipping fees or various forms of requisitions assessed to the communities of the RDMW
Landfill site standards	7MLRC latest capital investments bring the landfill up to provincial site standards
Lack of regional coordination of recycling (storage/ processing/ education)	Since 2009, regional coordination of recycling has been largely achieved through centralization of processing at 7MLRC and the development of recycling depots in RDMW communities.
Lack of bottle depot	Bottle depots have been established in most of the larger communities and at 7MLRC
Lack of composting of sewage sludge and fish waste	7MLRC composts the sewage sludge of the RDMW and a private composter processes fish waste.
Lack of facilities for special wastes	7MLRC handles most special wastes through various Product Stewardship Programs
Need to minimize impact on local tax payers through a “user pay” cost recovery system. Lack of waste reduction program at the time of this report impeded progress on this goal.	This goal was partially accomplished through the establishment of a scale office at 7MLRC so that weight based tipping fees can be assessed. Municipal waste costs are still recovered through a tax requisition based on property value.
Need for Regional Solid Waste Transportation Program to equalize hauling costs for all of RDMW communities.	Transportation subsidies for more remote communities such as Winter Harbour, Alert Bay, Sointula, etc are designed to offset extra hauling costs due to ferries and distance.
Operate a regional landfill at 7 Mile Site to serve Port Hardy, Port Alice, Electoral Areas “A”, “C” & “D” and the three First Nations in Electoral Area “C”. Port McNeill will start to use 7 Mile Site in 1996 and Malcolm Island in 1997	7MLRC presently services all communities except Holberg.

Goal/Issues	Status
<p>Establish a central processing facility for recyclables, compost and collect/store hazardous waste including:</p> <ul style="list-style-type: none"> <li>• Upgrading baling/storage facility</li> <li>• Construct tipping floor/waste receiving facility</li> <li>• Construct septage pit and composting area</li> <li>• Construction of Bottle Depot</li> <li>• Fencing Site to exclude traffic from landfill area</li> <li>• Install weigh scale</li> <li>• Construct leachate treatment and disposal facility</li> </ul>	<p>7MLRC is the RDMW central processing facility.</p> <ul style="list-style-type: none"> <li>• Facility now consists of 3 sheds, 2 balers and 2 forklifts.</li> <li>• Waste goes directly to the landfill face to enhance efficiency.</li> <li>• Composting area has been established but ideally should be lined for leachate capture.</li> <li>• Bottle depots have been established in municipalities and a bottle drop-off is located at 7MLRC</li> <li>• Active landfill area surrounded by electric bear fence.</li> <li>• Scale has been installed at 7MLRC entrance</li> <li>• Leachate treatment system construction completed in 2010</li> </ul>
<p>RDMW will license and operate landfills in Winter Harbour, Quatsino and Holberg</p>	<p>The RDMW could not take over the landfills at Winter Harbour and Holberg as it would contravene the Local Government Act since it would be a form of subsidizing a private business assuming a liability. To establish a proper landfill in Quatsino would be cost prohibitive given the community's size.</p>
<p>Stump and land clearing debris sites will operated by RDMW at Port Hardy, Woss and at other sites on an interim basis</p>	<p>RDMW does not operate land clearing sites at the local community level. 7MLRC does accept certain types of woody debris but to date wood waste strategy needs to be developed.</p>
<p>Possibility that RDMW will license and operate landfills in Port McNeill and Alert Bay</p>	<p>The landfills in question are no longer operated and Alert Bay/Port McNeill take their waste to 7MLRC.</p>
<p>Maintain existing waste collection services of Port Alice, Port Hardy and Port McNeill as municipal services.</p>	<p>Port Alice, Port Hardy and Port McNeill still operate their waste collection services.</p>
<p>Maintain or establish waste collection services for unincorporated communities as local services.</p>	<p>The communities of Coal Harbour, Woss, Malcolm Island and Winter Harbour have various forms of waste collection as local services. Only the communities of Hyde Creek, Telegraph Cove and Quatsino do not have solid waste local services.</p>
<p>Achieve 50% reduction in waste per capita landfilled ie reduce waste from estimated 15,000 tonnes (1996) to 7,500 tonnes.</p>	<p>Currently less than 7500 tonnes of waste are interred at 7MLRC on an annual basis. The initial estimate of 15,000 tonnes of waste for the region cannot be confirmed making it debatable that the goal of 50% reduction has been achieved.</p>

Goal/Issues	Status
<p>Diversion Targets of 41% of waste stream</p> <ul style="list-style-type: none"> <li>• Paper/Cardboard 2964 tonnes/year</li> <li>• Metals 780 tonnes/year</li> <li>• Glass 160 tonnes/year</li> <li>• Plastic 416 tonnes/year</li> </ul>	<ul style="list-style-type: none"> <li>• Currently 7MLRC diverts approximately 600 tonnes of paper products from the landfill despite having a ban of cardboard from the waste stream. To divert 2964 tonnes of paper material is likely impossible as there is not that volume of paper to be diverted.</li> <li>• A more realistic target for metal diversion at 7MLRC is 200 tonnes/year. Metal recycling is relatively lucrative and most material is diverted prior to arriving at 7MLRC by private ventures.</li> <li>• Glass recycling has been phased out by most regional solid waste programs due to the relatively minor impact glass has on the environment and landfill life expectancy. Other considerations related to this management decision are worker safety and its low revenue return.</li> <li>• Currently 7MLRC is diverting less than 20 tonnes/year of plastic. If 100% of plastic is diverted, it is still unlikely that 416 tonnes can be diverted annually. Plastic is the most expensive diversion stream to manage but it may become more cost effective if the proposed packaging product stewardship program comes into effect and key capital investments can be made to improve productivity.</li> </ul>
<p>60% reduction of compostable waste accomplished at 7 Mile Site and municipal sites in conjunction with at home composting</p> <ul style="list-style-type: none"> <li>• Composting 550 tonnes/year</li> </ul>	<p>This target was exceeded in 2010 when 1007 tonnes of bio-solids were composted. New waste water treatment plants are generating significantly more sludge which is being dewatered.</p>
<p>Continue to distribute home composters and provide support for users</p>	<p>7MLRC continues to sell subsidized home composters at landfill site and at recycling depots in the RDMW</p>
<p>Reduce wood waste by 3250 tonnes/year</p>	<p>RDMW tipping fee bylaws provide for preferential rates for wood waste which is processed into hog fuel for composting program. Experience shows that it is unlikely that more than 300 tonnes/year can be diverted from waste stream. Significant diversion is occurring offsite at Northland Power Chip</p>

Goal/Issues	Status
Establish special waste facility for: <ul style="list-style-type: none"> <li>• Medical waste</li> <li>• Bottle depot</li> <li>• Batteries</li> </ul>	<ul style="list-style-type: none"> <li>• 7MLRC permit does not permit the disposal of medical waste other than non-biohazard recyclables</li> <li>• Bottle depots have been established in most communities and at 7MLRC</li> <li>• Batteries can be dropped off at 7MLRC</li> </ul>
Monitor waste streams	7MLRC staff track incoming materials for type and source. Outgoing recyclables are also tracked

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## 2. Detail Review of Existing RDMW Solid Waste Operations

### 2.1. Local Versus Regional Waste Management Services

Solid waste management services within the RDMW are either local or regional services.

**Local services** focus on an individual community such as Port McNeill, Woss, etc. Generally these local services deal with the collection of materials whether it is MSW, recyclables or utilities that generate bio-solids such as waste treat plants. The level of service and the associated cost to the users varies from community to community depending on the establishment and rules/regulation bylaws that govern them. Some communities have garbage pickup on a weekly basis where as others do so every other week. Likewise recycling collection services range from manned depots that collect all types of materials to unmanned drop off sites which focus exclusively on a small number of waste streams.

Funding for local services is sourced through a number of different mechanisms which are listed in the table below:

Revenue Mechanism	Description	Cost/Benefits
Mandatory Service Fees (MSF)	MSF are collected through invoicing a property and represent the dominant source of funding for a local service. The amount on the invoice is governed by the Rules and Regulation Bylaw (R&RB) that governs the service. Generally the basic dwelling unit is the baseline for the service fee determination with properties having commercial operations such as bed and breakfasts or businesses being charged additional fees. Property owners who do not pay these fees run the risk that the service fees will be transferred to their property taxes.	<p><b>Local Benefits:</b> Provides a source of reliable and easy to administer revenue to help fund the service.</p> <p><b>Regional Benefits:</b> There are no benefits to the RSWS</p> <p><b>Local Costs:</b> MSF does not make users proportionally responsible for the amount of MSW they generate. This lack of accountability does not contribute to MSW reductions which can allow for the reduction of service needs which provide cost savings to rate payers.</p> <p><b>Regional Costs:</b> MSF does not make users proportionally responsible for the amount of MSW they generate. This lack of accountability does not contribute to MSW reductions which can extend the operational life of solid waste infrastructure.</p>

Revenue Mechanism	Description	Cost/Benefits
Tipping Fees (TF)	TF can be collected by local services with manned transfer stations. The attendant charges fees for use of the transfer station based on the service's R&RB.	<p><b>Local Benefits:</b> Provides a source of revenue to help fund the service and allows for a direct link to the cost of the service and those who use it..</p> <p><b>Regional Benefits:</b> TF make users proportionally responsible for the amount of MSW they generate which contributes to MSW reductions which extends the operational life of solid waste infrastructure .</p> <p><b>Local Costs:</b> The collection of TF requires an attendant with the associated wage burden to the service. This mechanism has other administrative burdens in its delivery.</p> <p><b>Regional Costs:</b> There are no regional costs.</p>
Diversion Revenues (DR)	A limited number of waste diversion streams have the potential to produce revenue at the local service levels. When a sufficient amount of material in one of these waste streams is accumulated, it can shipped to a broker or user who will reimburse the local service based market driven commodity prices. Examples of these material streams are metal or reuse items	<p><b>Local Benefits:</b> Some DR streams can be quite lucrative depending on the location of the local service and offset the costs to the service.</p> <p><b>Regional Benefits:</b> DR provide an extra incentive for diversion which reduces tonnage of waste to the landfill extending its life expectancy.</p> <p><b>Local Costs:</b> This revenue source requires the presence of an attendant to manage these waste streams with the associated wage burden to the service. Likewise there are administrative burdens also associated with these transactions.</p> <p><b>Regional Costs:</b> There are no regional costs.</p>
Extra Bag Tags (EBT)	EBT are purchased by users when then the amount of garbage needing collection exceeds their normal allocation. Examples may be at Christmas time when the post-holiday debris exceeds the normal two can limit.	<p><b>Local Benefits:</b> This revenue source is relatively simple to manage and does to require extra personal to administer. An EBT also ties the cost of the service to the level of use by an individual and can effectively restrain the amount of MSW being generated at the household level.</p> <p><b>Regional Benefits:</b> There are no regional benefits.</p> <p><b>Local Costs:</b> There are minimal costs but little revenue is generated.</p> <p><b>Regional Costs:</b> EBT represents an opportunity for extra waste to be allowed into the system with likely no opportunity for the regional service to recoup the cost of the extra burden on solid waste infrastructure.</p>

Regional services are those that are used by more than one community such as the Regional Solid Waste Service (RSWS) centered on 7 Mile Landfill and Recycling Center (7MLRC) which now disposes of the MSW of all communities in the RDMW with the exception of Holberg and several isolated First Nations on the mainland. Funding for the RSWS comes from five principal sources, Tax Requisition, First Nation User Fees, Tipping Fees, Compost Fees and Recycling/Salvage Revenue. Each of these types of revenue sources that are used to fund the RSWS are listed in the following table:

Revenue Mechanism	Description	Cost/Benefits
Tax Requisition (TR)	The TR is based on the sum of funding approved by the RDMW Board for the RSWS and property owners contribute their portion of the requisition based on their property value.	<p><b>Benefits:</b> This source of revenue is reliable and allows for greater assurance in regards to long term planning</p> <p><b>Costs:</b> This mechanism for revenue generation is not tied to individual use of the service (ie MSW tonnage generated) and does not contribute to waste reduction.</p>
First Nation User Fees (FNUF)	The FNUF is the contribution that First Nation communities provide the RSWS. The FNUF is based on the per capita cost of the TR and the population of individual First Nation communities.	<p><b>Benefits:</b> This source of revenue is reliable and allows for greater assurance in regards to long term planning</p> <p><b>Costs:</b> This mechanism for revenue generation is not tied to individual use of the service (ie MSW tonnage generated) and does not contribute to waste reduction.</p>
Tipping Fees (TF)	TF are the costs assessed to waste brought to 7MLRC outside of the municipal collection services and usually charged on a per tonnage basis. The tonnage rate charged is based on a bylaw passed by the RDMW Board.	<p><b>Benefits:</b> This source of revenue is tied directly to use and allows for the management of individual waste streams providing incentives for users.</p> <p><b>Costs:</b> This source of revenue is susceptible to the impacts of the economy making it difficult to rely upon for long term planning.</p>
Compost Fees (CF)	CF are the costs assessed to bio-solids brought to 7MLRC and charged on a per tonnage basis. The tonnage rate charged is based on a bylaw passed by the RDMW Board.	<p><b>Benefits:</b> This source of revenue is tied directly to use and allows for the management of individual waste streams providing incentives for users. Due to the bio-solids being generated from an essential service, the revenue is stable making it easier for long term planning</p> <p><b>Costs:</b> None</p>
Landfill Surcharges (Low Density Materials)	Loads containing materials whose density is very low are charged based on the volume consumed in the landfill's airspace as opposed to the load's tonnage.	<p><b>Benefits:</b> Allows for targeted management of materials whose volume significantly consumed the available airspace but whose weight would have resulted in minimal tipping fees if charge by tonnage.</p>

<b>Revenue Mechanism</b>	<b>Description</b>	<b>Cost/Benefits</b>
Landfill Surcharges (Controlled Waste)	Loads containing materials listed on the 7MLRC tipping fee bylaw as Controlled Waste are subject to a punitive surcharge for the entire load.	<b>Benefits:</b> Allows for targeted management of different portions of the waste stream to encourage diversion.
Recycling/Salvage Revenue (R/SR)	R/SR is the revenue that the RSWS recycling program generates from the sale of processed materials.	<b>Benefits:</b> This revenue stream provides a direct reward for efforts in waste diversion. <b>Costs:</b> Revenue fluctuates significantly as commodity prices are dependent upon current economic conditions making planning difficult. The labour costs consumed a significant portion of this revenue stream.

Historically, tipping fees have represented 20-35% of the revenues for the RSWS but this can change significantly depending upon the health of the local economy.

## **2.2. Local Municipal Solid Waste (MSW) Collection Services**

The collection of a community's MSW and its transportation to the regional landfill is a local service whether it is managed by a municipality or by the RDMW for an unincorporated community. These collection services include both residential and regular commercial collection. Collection services not part of the local services include contracted large bin rentals used in onetime construction projects or for larger commercial operations. The two principal contractors that provide these services are Watson Ventures (Port Alice) and Four B Enterprises (Coal Harbour, Port Hardy, Port McNeill, Sointula, Winter Harbour, Woss, Quatsino First Nation (FN), Kwakiutl FN, Gwa'sala-'Nakwaxda'xw FN, and Tlatlasikwala FN). Alert Bay's municipal services provides the solid waste collection services for the village and the 'Namgis and Whe-La-La-U FNs. The following table itemizes the level of service for the RDMW's communities:

Community	Curb Side Collection	Manned Transfer Bin	Unmanned or Partially Manned Transfer Bin	Comments
Port McNeill	✓	✗	✗	
Port Hardy	✓	✓	✗	
Port Alice	✓	✗	✓	
Alert Bay	✓	✓	✗	
Woss Camp	✓	✓	✗	
Telegraph Cove	✗	✗	✗	
Beaver Cove	✗	✗	✗	
Hyde Creek	✓	✗	✗	Curb side collection is by voluntary subscription and is not a local service.
Coal Harbour	✓	✗	✗	
Quatsino	✗	✗	✗	
Winter Harbour	✗	✗	✓	Transfer bin is unmanned but access is controlled by a locked gate with restricted access.
Sointula	✓	✓	✗	
Holberg	✓	✗	✗	
Quatsino First Nation	✗	✗	✓	
Namgis First Nation	✓	✗	✗	
Kwakiutl First Nation	✓	✗	✗	
Gwa'sala-Nakwaxda'xw First Nation	✓	✗	✗	

### 2.3. Local Recycling Collection Services

Most communities provide their residents with local recycling services ranging from curbside collection (Alert Bay/Port McNeill (Private Subscription Service)), recycling depots (Port Alice, Port McNeill, Sointula, and Woss) or recycling drop off bins (Port Hardy). All these services ship their recyclable materials to 7MLRC.

The cost per tonne of recyclables varies depending on the level of service. Generally curbside collection is the most intensive level of service with the service provider being required to pick up and then sort the materials prior to transporting them to 7MLRC. Curbside collection provides the greatest

convenience to users as there is little need for sorting and no transport to a receiving site. Recycling depots if run properly require no collection and little sorting if the attendants provide proper guidance to their clientele.

Recycling Service Type	Benefits	Liabilities
Curb Side Collection	<ul style="list-style-type: none"> <li>• Greatest convenience to users for materials types collected.</li> </ul>	<ul style="list-style-type: none"> <li>• Likely highest cost per tonnage collected as service provider must sort materials into proper streams</li> <li>• May be limited in the number of material types that can be accommodated.</li> <li>• High unit costs as individual collection sites (ie households) generate relatively little material in comparison to commercial or industrial collection sites.</li> </ul>
Recycling Depot	<ul style="list-style-type: none"> <li>• If properly managed, minimal sorting required if attendants provide proper direction to the users.</li> <li>• Able to accommodate the greatest variety of material types.</li> <li>• Sorted product has a higher market value.</li> </ul>	<ul style="list-style-type: none"> <li>• Challenge to users as depots are open only during set hours.</li> <li>• Relatively high labour costs per unit of material collected.</li> </ul>
Recycling Drop-Off Site	<ul style="list-style-type: none"> <li>• Provides recycling drop off opportunities 24/7</li> <li>• Likely the lowest initial cost per tonnage for materials collected</li> </ul>	<ul style="list-style-type: none"> <li>• Limited variety of materials that can be collected</li> <li>• Lack of supervised access leads to abuse/cross contamination and greater hazard to workers processing materials at 7MLRC.</li> <li>• Significant amounts of material collected are disposed of in landfill due to operational and safety concerns.</li> <li>• Post collection sorting increases the unit cost for recycled materials.</li> </ul>

The following table itemizes the level of local service provided for recycling for the communities of the RDMW:

Community	Curb Side Collection	Manned Recycling Depot	Unmanned or Partially Manned Recycling Drop-Off	Comments
Port McNeill	✓	✓	✗	Curb side collection is by voluntary subscription and is not a local service.
Port Hardy	✗	✗	✓	
Port Alice	✗	✗	✓	
Alert Bay	✓	✓	✗	
Woss Camp	✗	✓	✗	
Telegraph Cove	✗	✗	✗	
Beaver Cove	✗	✗	✗	
Hyde Creek	✗	✗	✗	
Coal Harbour	✗	✗	✗	
Quatsino	✗	✗	✗	
Winter Harbour	✗	✗	✗	
Sointula	✗	✓	✗	
Holberg	✗	✗	✗	
Quatsino First Nation	✗	✗	✗	
Namgis First Nation	✗	✓	✗	
Kwakiutl First Nation	✗	✗	✗	
Gwa'sala-Nakwaxda'xw First Nation	✗	✗	✗	

## 2.4. Local Bio-Solid Generation

A significant waste stream entering 7MLRC is that of bio-solids from wastewater treatment plants. The communities of Namgis FN, Port Alice, Port Hardy, Port McNeill, Coal Harbour, Holberg, Hyde Creek, Sointula, Telegraph Cove and Woss all have secondary waste water treatment facilities which also serve adjacent FN communities or in the case of the Namgis facility, Alert Bay. Most of these facilities generate sludge or bio-solids (residues of the suspend solids in waste water which cannot be broken down easily whose consistency is only 2% solids and the rest water) as an end product which needs to be disposed of. Port Alice disposes its bio-solids at the Port Alice Mill whereas the Namgis FN, Port McNeill, Port Hardy, Coal Harbour, Hyde Creek, and Sointula facilities dispose of their bio-solids at 7MLRC. The Namgis FN, Port Hardy and Port McNeill facilities prior to shipping their bio-solids carryout

a dewatering process which raises the solid content to approximately 18% which significantly reduces transportation and tipping fee costs.

Currently 7MLRC receives approximately 1000 tonnes of biosolids, the overwhelming bulk of which comes from the Port Hardy facility. In the later part of 2011, a new source of bio-solids will be the water treatment facility operated by Marine Harvest which could potentially generate several hundred tonnes per year.

The following table itemizes waste water treatment systems in the RDMW and the nature of sludge management:

<b>Community</b>	<b>Waste Water Treatment Service</b>	<b>Generates Sludge</b>	<b>Dewatering of Sludge</b>	<b>Comments</b>
Port McNeill	✓	✓	✓	
Port Hardy	✓	✓	✓	
Port Alice	✓	✓	✓	Sludge normally disposed at Neucel
Alert Bay	✓	✓	✓	Owned and operated by Namgis First Nation
Woss Camp	✓	✗	✗	Engineered Lagoon
Telegraph Cove	✓	✓	✗	
Beaver Cove	✗	✗	✗	
Hyde Creek	✓	✓	✗	
Coal Harbour	✓	✓	✗	
Quatsino	✗	✗	✗	
Winter Harbour	✗	✗	✗	
Sointula	✓	✓	✗	
Holberg	✓	✓	✗	
Quatsino First Nation	✓	✓	✓	Owned and operated by RDMW
Namgis First Nation	✓	✓	✓	
Kwakiutl First Nation	✓	✓	✓	Owned and operated by Port Hardy
Gwa'sala-'Nakwaxda'xw First Nation	✓	✓	✓	Owned and operated by Port Hardy

## 2.5. Regional MSW Disposal Services

7MLRC is one of two permitted landfills in the RDMW and the only one that serves most of the communities of the Regional District. The other permitted landfill is located in the vicinity of Holberg and is managed by Western Forest Products and permits MSW from only its camp community. Prior to the establishment of a regional landfill, most communities had small local landfills which were gradually phased out in the 1990's at the encouragement of the Province. These previous generation landfills were regulated with pre-1993 standards which required less treatment for leachate and other environmental concerns.

7MLRC, which started serving the North Island in 1995 is projected to provide landfill airspace until the mid-2060s. Key to achieving this life expectancy is the effective management of the landfill's airspace without compromising environmental concerns. These priorities are met by the following management practices:

- Encouraging waste diversion as much as possible using the following considerations to determine whether a material type should be targeted:
  - Does the volume of the material under consideration great enough to justify its management?
  - Does the nature of the material pose a significant environmental risk?
  - Do the resources required to manage the diversion of a material type make it feasible?
  - Does a significantly developed processing system downstream of 7MLRC exist to allow for the material's diversion?
- Tying the contract to operating the heavy equipment at the landfill with the following performance standards:
  - Compaction of MSW must exceed 700 kg/m<sup>3</sup> to avoid a claw back penalty
  - Compaction of MSW must exceed 750 kg/m<sup>3</sup> to earn a 5% bonus
  - The ratio of MSW to cover material must be greater than 5:1
- Adoption of innovative techniques to extend the landfill life expectancy such as an alternative cover system made of Q-Decking
- The use of an excavator to place and compact MSW at the landfill face which also allows for diversion of recyclable materials even when mixed in the general MSW stream.
- Monitoring the development of the landfill through annual engineered survey and the use of LIDAR imagery
- Development of leachate monitoring system that determines water quality for both surface and subsurface conditions
- Construction of the fully lined Phase 3 Expansion which will capture all leachate and processed through the leachate treatment system.
- Construction of a 4 Phase leachate treatment system that includes the following:
  - Pre-treatment through the use of aeration of leachate in the Equalization Pond
  - Intensive aeration by the Sequence Batch Reactors (SBR) to reduce organics and metals in the leachate.

- Settling of oxidized metals and other non-soluble contaminants in the Settling Pond.
- Treatment of nitrates through a sprinkler field to improve phyto-treatment by vegetation

## 2.6. Regional Recycling Processing Services

As mentioned previously, all recyclable materials collected by local services are transported to 7MLRC for processing and are then transported to markets in the southern portion of Vancouver Island or in the lower mainland. The tonnage of recyclables is also augmented by other sources including materials generated by commercial enterprises which use none local services to transport their materials to 7MLRC and the recycling drop off area at the landfill.

Recyclables are processed into two major streams as shown in the following table:

Recycling Commodity Brokers	Product Stewardship Programs	Materials Diverted for Landfill Operational Use
<ul style="list-style-type: none"> <li>• Cardboard</li> <li>• Newsprint</li> <li>• Glossy Magazines</li> <li>• Mixed Paper</li> <li>• Ferrous Metal</li> <li>• Non-Ferrous Metal</li> <li>• Plastics</li> <li>• Large Appliances</li> </ul>	<ul style="list-style-type: none"> <li>• Tires</li> <li>• Paint</li> <li>• Household Chemicals</li> <li>• Electronics</li> <li>• Batteries</li> <li>• Oil</li> <li>• Light Bulbs</li> <li>• Thermostats (Mercury containing devices)</li> <li>• Electrical Appliances</li> <li>• Returnable Beverage Containers</li> </ul>	<ul style="list-style-type: none"> <li>• Clean Wood Waste</li> <li>• Garden Waste</li> <li>• Biosolids</li> <li>• Asphalt Shingles</li> <li>• Contaminated Soils</li> </ul>

When determining which material streams to divert from the landfill, the following matrix is used to assess priorities:

Assessment Factor	Material Streams Rated as "High"	Material Streams Rated as "Medium"	Material Streams Rated as "Low"
Intensity of Environmental Impact when a material stream is landfilled	Batteries, house hold hazardous chemicals, organics, cardboard, paper, paint, etc.		Plastics, Glass, etc
Ease of management for diversion	Metals	Cardboard, paper, plastics	Glass, Organics
Level of development of downstream receiving market	Metals, cardboard, paper, Product Stewardship materials, Plastics		Glass, Organics
Quantity of material within a stream to be diverted	Cardboard, metal, organics,	Electronics	Glass, batteries, paint

Based on the results contained in the table, a material stream like glass would have a low priority whereas metals would have a high priority to be managed.

**Recycling Commodity Brokers** are companies who either redistribute recyclable materials to users or actual users of the recyclable materials. Revenue generated from materials disposed of in this manner is dependent upon current commodity prices. In 2008 ferrous metal went from over \$200/tonne to less than \$25/tonne. The best price is usually derived by directing 7MLRC recyclable materials to actual users of the materials as opposed to the brokers who expect a significant cut of the revenue for the materials. 7MLRC must take most of these materials and compact them into bales prior to shipping to reduce transportation costs as well as delivering the materials in a form that the broker can utilize. Creating a bale of material can take from one hour for newsprint to over a day for a recycled plastic bale. The largest stream that is disposed of in this manner is cardboard which generally requires 1.5 to 2 hours of labour per bale. In contrast metals require very little handling other than the use of an excavator to load a metal bin truck.

**Product Stewardship Programs (PSP)** are industry managed diversion programs mandated by the Province. British Columbia periodically mandates an industry to become responsible for the full life of their products ie from manufacturing to disposal when their product's use is complete. Remuneration that the 7MLRC receives for handling these products is fixed by signed contracts and does not vary by the status of the economy. The norm is for the PSP to cover the cost of the transportation. The contracts also specify set conditions for the processing of these materials. Handling can include construction of pallet loads wrapped in syran-wrap or use of containment systems that prevent the exposure of the environment to harmful substances.

Transportation of recycled materials is conducted through the use of semi-trailers that would normally return southward empty. This freight system is called back hauling and is less expensive than normally contracting a transport truck.

Currently the regional recycling processing services are dependent upon two vertical balers for compacting, two forklifts for transporting materials within the confines of the landfill and three large sheds for the storage of materials prior to processing or being shipped south to buyers. Given the use of vertical balers, current processing is heavily focussed on manual labour.

## **2.7. Regional Composting Services**

As mentioned earlier, bio-solids are generated at various communities within the Regional District from waste water treatment plants. To divert these materials from being disposed of in the landfill, 7MLRC has an active composting program which converts bio-solids into a high organic soil suitable for use as capping material for retired landfill cells. Key to composting bio-solids is to add additional carbon based material to kick start the microbial based process. Since 2010, 7MLRC has ceased burning clean wood and instead stockpiles this material for periodic conversion to hogfuel through tub grinding. An additional source of carbon for composting is garden waste which has the added benefit of reducing dumping along logging roads and the corresponding risk of spreading aggressive invasive plant species.

Currently all generated material is used on site and not exported away from 7MLRC for other uses. Should the Regional District decide to commit to an aggressive organics diversion program in the future, it is likely that the amount of compost generated would exceed 7MLRC internal needs and standards for the end product would need to be established to allow exporting off site.

## **2.8. Regional Contaminated Soils Disposal Services**

A major challenge facing 7MLRC is that over the long term operation of the landfill, there is a deficit of cover material. To overcome this shortfall, 7MLRC accepts contaminated soils. The RDMW has a contractual relationship with Hazco Environmental Services (HES) that gives HES exclusive rights to bring contaminated soils at 7MLRC, subject to RDMW management's approval. Currently a large supply of soils has been accumulated and management will likely curtail further acceptance of materials to sources within the Regional District until such time as the supply has been decreased.

## **2.9. Regional Re-Use Services**

Frequently items are disposed of at 7MLRC that can be used with little or no repair. To make use of this waste diversion potential, the Regional District has several reuse strategies. Materials such as pipes, floats, rope, netting, etc are diverted from the landfill face and stockpiled as salvage material. During the time that 7MLRC has operated, various parties within the RDMW have come to rely on the landfill as a source of salvage materials which can be purchased at a reduced cost.

Another initiative is the regular salvaging of bikes which are taken to the Bike Shed located in Port McNeill. Discarded bikes are repaired if possible or parts salvaged. The Bike Shed sells repaired bikes at a significantly reduced price making cycling more accessible.

One area where reuse is not possible involves electronic devices due to a contractual arrangement related to the electronic PSP.

Currently management is receptive to other reuse diversion opportunity proposals.

## **2.10. Non-Governmental MSW Disposal Services**

As mentioned previously, 7MLRC is not the sole source of MSW disposal in the Regional District. Previously, all the municipalities and many unincorporated communities had waste disposal sites of various levels of legal status. In the last couple of decades most of these sites have been retired with the resulting MSW being redirected to 7MLRC for disposal. In 2011, the illegal dumping sites at Woss and Malcolm Island and the WD Moore's landfill near Winter Harbour were retired. The only other waste disposal sites currently in operation are the Western Forest Products' landfill serving Holberg and an unlicensed site at the community of Quatsino. Quatsino is accessible by water only and has no ferry service.

On the mainland, the Kwakwaka'wakw First Nations currently use an onsite incinerator to dispose of their solid waste and are not part of the RDMW solid waste program.

## 2.11. Non-Governmental Recycling Collection and Processing Services

Non-government recycling services active in the RDMW are listed in the following table:

Business Name	Recycling Services
Boris Mobile Mechanic	Operates a vehicle wrecking yard and accepts unwanted metal
Doug Lloyd	Contracts to local business to collect cardboard and other recyclables and delivers them to 7MLRC. Also under contract to operate the Port McNeill recycling depot.
Steel Pacific	Collects metals throughout the RDMW
Curbside Recycling Services	Collects household recyclables in Port McNeill on a paid subscription basis.
Fox Disposal	Operates a recycling depot in the District of Port Hardy
ABC Recycling	Collects metals throughout the RDMW
Sea Soil	Accepts waste/fish waste and processes the material into high quality compost soil.
Northland Power Chip	Accepts wood waste and chips it into hog fuel

It should also be noted that numerous commercial businesses also participate in various PSP and will receive materials post use.

## 2.12. Non-Governmental Re-Use Services

Throughout the RDMW there are organizations that operate thrift/second hand stores where items are resold instead of being landfilled. A list of these known commercial operations is as follows:

Business Name	Recycling Services
Second Look Thrift Shop (Port McNeill)	Used cloths, house hold items, etc
W A Thrift Shop (Port Hardy)	Used cloths, house hold items, etc
Port Alice Thrift Store	Used cloths, house hold items, etc
Namgis (Alert Bay)	Used cloths, house hold items, etc
Hospital Auxiliary (Alert Bay)	Used cloths, house hold items, etc
Harvest Food Bank (Port Hardy)	Used cloths, house hold items, etc
Sointula Second Hand Store	Used cloths, house hold items, etc
A Frame Book Store (Port McNeill)	Used Books
Book Nook (Port Hardy)	Used Books
Bike Shed	Used/salvaged bikes

## 2.13. Anti-Dumping Initiatives

As users are made more financially accountable for the solid waste they generate, a very small minority will resort to illegal dumping. The RDMW has worked with various organizations to enforce solid waste disposal regulations as well as taking actions that will mitigate the impact of dumping. The following table documents the RDMW initiatives:

Initiative	Description
Waiving tipping fees for yard waste	Yard waste whose diameter is less than 5 cm is not charged a tipping fee and is directed towards composting. Deterring yard waste dumping in the woods avoids the initial act which often escalates into a significant problem aka “Broken Window Theory”
No tipping fees for recyclables	By not charging tipping fees on recyclable materials, there is less burden on the public to channel these materials into proper disposal stream.
Waiving tipping fees for waste collected from dump sites on public land.	Several community cleanup efforts have been undertaken on logging roads and along the shoreline which the RDMW has assisted on. The Board has approved the waiving of tipping fees for these materials.
Restorative Justice	Restorative justice has been used several times and shows potential to quickly resolve instances where evidence shows who has been dumping illegally.
Closure of dumping sites in conjunction with establishing solid waste services.	The closure of dumping sites at Woss and Malcolm Island with the corresponding of services being established or expanded has reduced the tonnage that is illegally disposed of.
Subsidized Home Composters	Home composting encourages the disposal of garden waste away from the surrounding forests
Community Gardens (Quatsino, Malcolm Island, Port Hardy)	Community gardens encourage the disposal of garden waste away from the surrounding forests