



**LOWER NICOLA  
INDIAN BAND**

## **SOLID WASTE MANAGEMENT PLAN**

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**Land  
Forest  
People®**

Land Forest People wishes to thank Lower Nicola Indian Band for the opportunity to be of service. We acknowledge the contributions made to this project by:

- The staff of Lower Nicola Indian Band
- Ron Sterling, Waste Contractor
- The First Nations Land Management Resource Centre

# Executive Summary

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Lower Nicola Indian Band (LNIB) has undertaken a project to examine its solid waste management program with the goal of improving its environmental and financial outcomes. The stated goals of the project are to:

- Reduce the volume of solid waste produced by the community;
- Divert as much material as possible from the residual waste stream;
- Eliminate inappropriate waste disposal on LNIB lands; and
- Reduce the financial burden of solid waste management on LNIB.

With the assistance of Land Forest People Consulting Ltd., the project team first examined the current state of solid waste management on LNIB lands. The results of that exercise are detailed in the *Issues Characterization Report* delivered under Phase I of the project. That report details a number of issues with the current system, namely:

- Poor rates of diversion;
- Inadequately constructed and distributed communal residual waste bins;
- The absence of management systems for compostable kitchen scraps and recyclable materials other than printed paper and packaging (PPP); and
- Large-scale inappropriate dumping.

In subsequent conversations, additional issues with the current system became clear: that more education and engagement with community members and residents around solid waste management would be beneficial, and that service delivery costs on LNIB are unsustainable in the long term.

This *Solid Waste Management Plan (SWMP)* contains recommendations that LNIB can use to improve the different aspects of solid waste management. Once LNIB has made a decision on which recommendations will be implemented, this SWMP must be updated to reflect that direction.

These recommendations come with advantages and disadvantages, and effects on other aspects of solid waste. As such, they must be considered within the system as a whole and within the context of the four project goals. Those considerations and effects are described in section 4.0 of this report. Our main findings and recommendations with respect to the different aspects of solid waste management are described more fully in section 5.0, but are summarized here:

### Residual Waste

- The current residual waste bins are problematic and should be replaced with more durable steel models and animal-proof residential bins;
- Residential collection should move to curbside and a \$175 annual user fee per household should be implemented; and
- The current *Independent Service Agreement* should be renegotiated such that LNIB, rather than the service provider, realizes costs savings from system improvements.

### Recycling

- Operationally, the current recycling service functions relatively well but participation rates are too low. Take advantage of educational resources and opportunities to encourage members to increase their recycling efforts; and
- There are challenges associated with participating in the Recycling BC collector program; LNIB's best opportunity is to seek an agreement with the city of Merritt to partner on recycling collection and disposal.

### Composting of Kitchen Organics

- In the short-term, leverage local resources and support community members to implement closed-loop home composting; and
- In the long-term, evaluate the range of potential opportunities to institute a composting facility in the community in partnership with the Shulus Community Garden.

### Other Solid Waste

- In the short-term, implement low-cost opportunities to address other solid waste streams such as non-PPP recyclable items and large items; and
- In the long-term, plan for additional strategies address other solid waste, including inappropriate dumping, that are dependent on other tools being implemented, such as applicable legislation and enforcement.

### Education and Engagement

- Education and engagement with the community members will be crucial to the successful implementation of an improved solid waste management systems; and
- There are many existing resources available that LNIB can leverage at minimal cost.

This SWMP should be read in conjunction with the *Issues Characterization Report*, the *Community Engagement Report*, and the draft *Solid Waste Management Policies and Procedures* which have been developed with this plan. As LNIB's environmental management planning progresses, this SWMP may also be amended reflect new plans, policies or laws as they are developed.

With its solid waste management program, LNIB has an opportunity to serve as an inspiration and model of excellence for other First Nations, just as has been articulated in the community vision.

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## 1.0 LNIB VISION STATEMENT

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This Solid Waste Management Plan has been prepared with the guidance of the vision of the Lower Nicola Indian Band:

*We, the people of the Lower Nicola Indian Band, commit ourselves to being a peaceful, prosperous, and secure community made up of healthy individuals rooted in the Nlaka'pamux culture, respecting ourselves, each other, the environment, and all of Creation. We will honour and protect our children, the sacred gifts from the Creator, and our elders, the wisdom keepers.*

*Together as one, we will take responsibility to regain control of our own destiny and rebuild our relationships with other people on a firm footing of respect and justice.*

*We will possess our traditional territories and defend our hereditary and Aboriginal rights as Nlaka'pamux people, and promote the unity and strength of the Nlaka'pamux Nation as a whole.*

*We will be a sovereign community with a government based on traditional values, guided by leaders who know and respect the language, culture and people.*

*We recognize that injustices have been committed against our people: our lands have been occupied, our culture eroded, and our sovereignty denied. We will not allow this to continue and will ensure that it never happens again.*

*In this, the Lower Nicola Indian Band will be a model community that others look to for direction and inspiration. We will realize true power, fulfill our responsibility to our ancestors, and create peace for future generations.*

## 2.0 BACKGROUND

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Lower Nicola Indian Band (LNIB), consistent with its Vision Statement and in accordance with its inherent right to self-governance and aboriginal title, is taking steps to exercise its authority to manage its lands and resources. One such step has been to close the regulatory gap that exists on Indian Reserves by enacting and administering the *Lower Nicola Indian Band Land Code* (2016) under the *First Nations Land Management Act*. The land code, among other things, enables LNIB to enact laws regarding environmental protection and the provision of local services.

Subsequently, the *Lower Nicola Indian Band Land Use Plan* (LUP) was finalized in 2018. One recommendation in the LUP is to draft a comprehensive *Environmental Management Plan* (EMP) within one year. This *Solid Waste Management Plan* (SWMP) is just one component that will form a comprehensive EMP.

LNIB administers solid waste services on its lands. In early 2019, a project team consisting of staff from the Lands and Economic Development and Public Works departments, together with Land Forest People Consulting Ltd., was struck to undertake a review of the current solid waste management system. The ultimate goal was to improve solid waste management with respect to both environmental and financial outcomes. The four specific goals with respect to developing a SWMP were to:

- Reduce the volume of solid waste produced by the community;
- Divert as much material as possible from the residual waste stream;
- Eliminate inappropriate waste disposal on LNIB lands; and
- Reduce the financial burden of solid waste management on LNIB.

The *Environmental Management Act*, which governs solid waste management by Regional Districts and Municipalities in British Columbia, defines municipal solid waste as:

- Refuse that originates from residential, commercial, institutional, demolition, land clearing, or construction sources, or
- Refuse specified by a director to be included in a waste management plan.

While solid waste management on First Nation lands is not subject to the provincial *Environmental Management Act*, we may use it as a guide when defining solid waste on LNIB lands to be:

- Refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources, or
- Any refuse that LNIB includes in its *Solid Waste Management Plan*.

In Phase I of the project LNIB submitted to the First Nation Land Management Resource Centre (the project funder) an *Issues Characterization Report* that detailed the solid waste

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management system in place at that time. Generally speaking, that report found the following issues with the current system:

- Poor rates of diversion;
- Inadequately constructed and distributed communal residual waste bins;
- The absence of management systems for compostable kitchen scraps and non-PPP recyclable materials; and
- Large-scale inappropriate dumping.

Since the submission of that report, we have also found additional issues that LNIB wished to be addressed in the SWMP, namely a lack of education and engagement with community members and residents around solid waste management and unsustainable service delivery costs incurred by LNIB.

LNIB currently collects and disposes of approximately 174 tonnes amount of residual waste and approximately 832 cubic yards of recyclable PPP annually, at a cost of approximately \$30,000<sup>1</sup>.

Costs associated with solid waste management have increased in recent years. The number of residents serviced under the *Solid Waste Reduction, Recycling and Disposal Agreement* increased from 503 in 2016 to 570 in 2018, an increase of 13.5% in two years. The annual fee payable by LNIB for disposal services per resident also increased from \$57.50 in 2016 to \$60 in 2018, an increase of approximately 4% over the same time period, which resulted in an overall increase of 18% for the annual base fee for solid waste disposal under this agreement<sup>2</sup>. It is anticipated that other costs such as fuel and insurance will only increase in the future.

The SWMP is a living document and will be updated annually as the solid waste management needs of the community evolve. It is expected that solid waste management on LNIB lands will need to adapt as the community grows, and both general solid waste management practices and specific governing documents or programs evolve over time. This plan must also be considered within the context of a comprehensive EMP and any associated laws and policies, as and they are developed and implemented in the future.

An annual reporting template is included in this report. Its purpose is two-fold: it is both a planning tool for setting actions and strategies for the year ahead and a reporting tool for measuring progress made in in the previous year towards achieving the goals.

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<sup>1</sup> Includes “spring clean-up event” in addition to regular weekly residual waste and recycling services

<sup>2</sup> Gross Annual Base Fee: \$28,992.50 in 2016 (\$5798.50 net MTSA recovery) and \$34,200 in 2018 (\$6840 net MTSA recovery)

## 3.0 COMMUNITY VISION AND SOLID WASTE MANAGEMENT PROGRAM GOALS

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LNIB's vision statement speaks to LNIB being a model community that others look to for direction and inspiration. LNIB's vision for solid waste management is to administer a high-quality solid waste management system that serves the needs of the community in a way that provides excellent financial value.

This aligns with the *LNIB Land Use Plan (2018)* which identifies environmental protection, especially water protection, as important priorities for the community and states that the LNIB leadership needs to ensure environmental protection is at the forefront when developing laws, bylaws, and policies.

LNIB aims to achieve improved environmental and financial performance of their solid waste management. The goals for a new solid waste management program are to:

- Reduce the volume of solid waste produced by the community;
- Divert as much material as possible from the residual waste stream;
- Eliminate inappropriate waste disposal on LNIB lands; and
- Reduce the financial burden of solid waste management on LNIB.

This plan sets out the strategies and actions that may be taken over time in order to make progress towards the above goals. The actions should produce specific, measurable outcomes that can be used to assess performance at the end of the reporting period.

When setting out its annual strategy and action plan, all four goals should be considered collectively. In other words, financial costs should be weighed against the environmental and financial outcomes they are designed to produce over the long term.

An annual planning and reporting template is including in Appendix A. This is a tool to be used for setting strategies for the year ahead and for reporting on the previous year's activities and outcomes.

## 4.0 STRATEGIES FOR AN IMPROVED SOLID WASTE MANAGEMENT SYSTEM

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Like any other undertaking that seeks to create change within a community, the SWMP will ideally incorporate elements that are designed to drive behavioural change as well as operational change. Such actions will increase the likelihood that the community will embrace the new plan and implement the system it is designed to produce, in turn increasing the likelihood of LNIB meeting its stated goals. Generally speaking, the recommended changes are designed to provide a range of incentives to contribute to reduction and diversion, such as ease of use, convenience, good conscience, and reduced personal cost.

It must also be recognized that some of the goals may appear to be at odds with one another. For example, implementing new stream diversion activities may require financial investments up front, which conflicts with the goal of reducing the financial burden of solid waste management on LNIB. Yet at the same time, those diversion activities should lead to reduced disposal costs over time. The entire solid waste management system must be viewed holistically, and over a long enough time horizon, to judge whether the system as a whole is achieving the stated goals. LNIB must set annual strategies and actions that are designed make progress towards its environmental and financial goals.

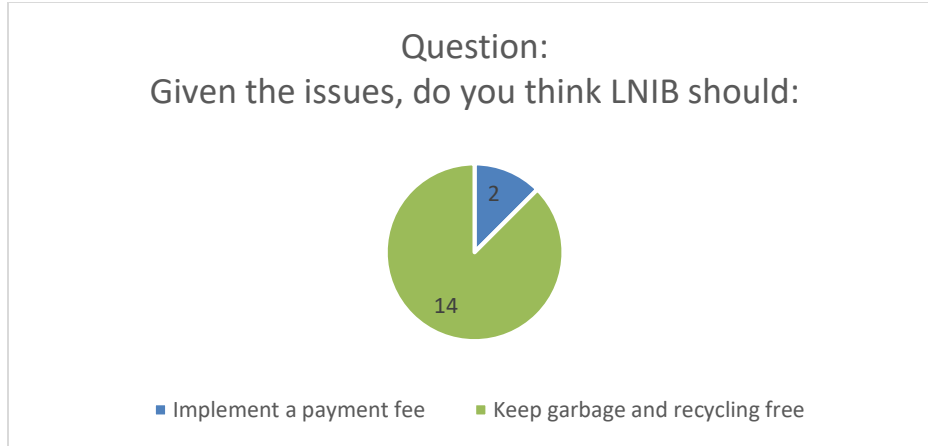
With respect to finances, the *LNIB Land Use Plan (2018)* emphasizes the value in viewing finances over the long-term, taking into consideration ongoing operational costs as well as capital investment costs. In other words, a dollar saved in reduced operational costs year after year is worth more than a dollar saved during the initial investment. Such consideration should be applied to solid waste management planning by seeking to achieve higher levels of efficiency that translate into long-term savings.

However, there is also an imperative to reduce service delivery and operational costs in the short-term in order to immediately reduce the current operational deficit. Tipping fees on residual waste volume are the one cost that is most directly within LNIB's power to control in the short-term. Working with the community on reducing the volume of residual waste will directly translate into reduced tipping fees. This may be done by:

- Increasing the number of people participating in existing solid waste services provided by LNIB and the TNRD; and
- Encouraging participants to achieve better compliance with existing solid waste services provided by LNIB and the TNRD.

In the long-term, LNIB may explore other potential options for savings.

In an online survey conducted between February 22 and March 8, 2019 community members clearly articulated their preference to keep solid waste services free for users, as illustrated in Figure 1.



**Figure 1 – February 22 – March 8, 2019 Survey Response**

The two main concerns with moving to a fee-for-service model that have been conveyed are that such a system would be a burden for certain individuals, and that inappropriate dumping would increase as a result. Some individuals who have said that they would support a fee-for-service model have expressed that other methods should be implemented first, or that the fee should be implemented with certain conditions (such as instituting curbside residual waste pickup).

*“With the free garbage disposal, there is less garbage being thrown onto the land or kept in people’s yards/property ... not everyone would pay the fee or even be able to pay the fee thus causing more problems. The free garbage disposal has more pros than cons.”*

- Anonymous survey respondent

Options for an improved solid waste management program are detailed in Appendix B.

## 4.1 RESIDUAL WASTE

LNIB provides both residential and industrial, commercial and institutional (ICI) residual waste collection and disposal services as described in section 3.1 of the *Issues Characterization Report*. Community feedback received to date indicates that residents are generally satisfied with the existing service. The service contractor has also expressed satisfaction with the current system with respect to the number of bins, their locations, and the weekly collection schedule. It is clear however, both from survey respondents and the service contractor, that the bins themselves are not sustainable long-term due to their poor design and construction, and constant need for repairs<sup>3</sup>.

<sup>3</sup> A description of the residual waste bins is included in section 3.1 of the *Issues Characterization Report*

*“Everything is running good with garbage and recycling, just need to improve the garbage bins. Improve the garbage so that maybe can get metal bins so it’s easier for the garbage man to transfer bin into truck without having to throw in garbage bags by hand one at a time.”*

- Anonymous survey respondent

The current system is also not financially sustainable in the long term for LNIB. The *Independent Service Agreement* as it is currently structured allows the contractor rather than LNIB to realize any savings associated with increasing efficiency and reducing costs other than tipping fees. Fundamental to improving residual waste services is renegotiating the *Independent Service Agreement* such that LNIB realizes any savings associated with system improvements and/or efficiencies.

Four operational improvement options were considered for the residual waste stream and are described in Appendix B-1. Ultimately, three options were rejected because of their relatively high costs compared with any savings they would generate. Our recommendation is to implement curbside residential residual waste service along with \$175 annual per-household user fee.

Recommendations for residual waste service:

**Replace ICI collection bins<sup>4</sup> with an analogous steel model and residential collection bins with an animal-proof curbside model.**

Replacing the ICI collection bins with an analogous steel model and residential bins with an animal-proof curbside model will significantly reduce the costs associated with bin repairs in the future. Transitioning to residential curbside collection also allows LNIB to institute a user-fee structure in order to offset the costs associated with delivering the service, which in our analysis is crucial for LNIB to break even financially on its solid waste service delivery.

**Move residential collection curbside and implement a \$175 annual user fee per household towards solid waste services.**

Residential curbside collection is a great operational improvement for both users and workers. LNIB’s housing department already contributes approximately \$100 per rental unit annually towards solid waste services. We recommend increasing that by \$75, and implementing a new \$175 annual fee on non-rental households. LNIB may consider implementing the user fee on a sliding scale, offering subsidies, or using other policy tools to implement the user fees in an equitable way among members.

**Renegotiate Independent Service Agreement to ensure LNIB realizes any cost savings.**

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<sup>4</sup> Economic Development office, Band School, Band Office, Health Centre, Shulus Community Arena, Fire Hall, Shulus Community Hall, Scw’emx Child and Family Services Building, Elders Building, Rocky Pines Community Centre

In our analysis, we have assumed that residential residual waste collection will require no more time to complete than the current system. However, the service contract should be renegotiated to reflect the reduction in costs associated with repair.

## 4.2 RECYCLING

LNIB provides both residential and ICI recycling collection and disposal services as described in section 3.2 of the *Issues Characterization Report*. While operationally the system functions well, improvements to participation rates (fewer than half of LNIB households participate in residential recycling currently), and diversion rates of recyclables out of the residual waste stream are possible. At the time of writing, existing operations are in transition in order to meet new requirements imposed by the TNRD as a result of their agreement with Recycle BC. Providing the service requires a significant investment of Public Works department resources. A new system would ideally create more efficiencies.

Community members have strongly expressed a desire for more information about what recycling services are available on LNIB lands and elsewhere in the region.

*“... I do utilize my recycling as much as possible and strive to keep waste to a minimum. [But] I do currently just throw the plastic garbage away as I am unsure of the process for plastic pick up.”*

- Anonymous survey respondent

The recycling program changes imposed provincially by Recycle BC, along with their limited capacity to onboard new contracted collectors leave very few practical operational improvement options for the recycling stream. The two that were considered are described in Appendix B-2. Our recommendation is to seek an agreement with the City of Merritt to be a sub-contracted collector under their collection agreement with Recycle BC as it is the only option that provides any revenue, it requires no upfront costs, and is the least disruptive to current operations.

### Recommendations for recycling service:

#### **Encourage greater participation and compliance in recycling by providing more education and resources to community members.**

Every bit of waste that can be diverted from the residual stream to the recycling stream translates into savings for LNIB. LNIB may take advantage of many educational resources that are available at no cost to encourage greater participation and compliance among its members in recycling.



**Seek an agreement with the City of Merritt for recycling collection and disposal under the city's contract with Recycle BC in order to realize a portion of the per-household incentive.**

Partnering with the City of Merritt is the only feasible way in the near-term for LNIB to realize any portion of the per-household incentive offered by Recycle BC. Such a partnership also allows LNIB to avoid incurring the significant investment and costs associated with having to transition to separated recycling stream and twice-weekly collection.

### 4.3 COMPOSTABLE ORGANIC WASTE

Literature from multiple sources indicates that compostable organics (i.e. compostable kitchen waste) typically make up approximately 30% of municipal solid waste by weight. A 30% reduction in residual waste would translate into approximately 52 tonnes being diverted from the landfill at a savings of \$900<sup>5</sup> to LNIB annually.

It is assumed that the majority of compostable kitchen waste generated on LNIB lands currently enters the residual stream. There are no local facilities that accept compostable kitchen waste, though yard waste may be disposed of free of charge at the Lower Nicola Eco-Depot. Because of the lack of local disposal facilities, local on-site composting is likely the most viable option for LNIB.

Feedback received to date indicates there is significant interest in composting among community members. There are already a few home composters in the community, as well as the Shulus Community Garden. Both are natural allies in LNIB's efforts to reduce residual waste volume and increase diversion to other streams through composting.

There are two main options for implementing a compostable organic waste management stream:

1. A closed-loop home composting system in which individual households implement their own composting system (using a backyard composter, for example). LNIB should begin in the short-term by encouraging community participation in home composting through education, as well as making other supporting resources available for interested participants. This should help to increase the number of composters in the community and drive savings on residual waste tipping fees. Educational support for solid waste management, including composting, is included in the annual base fee that LNIB pays to the TNRD under the *Solid Waste Reduction, Recycling and Disposal Agreement*. The TNRD also makes home composting equipment available at or below cost (Figure 2).
2. A community-wide system in which home collection is coupled with a centralized composting facility. This option may or may not include residential pickup service. In the

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<sup>5</sup> Net MTSA recovery

long-term, LNIB should evaluate the opportunities to expand and increase composting compliance in the community by implementing a composting facility on LNIB lands. Working in partnership with the Shulus Community Garden is likely to support the strategic objectives of both parties. Seabird Island Band in the Fraser Valley has successfully built a large composting facility to service their own community and the surrounding public, which could serve as a model for LNIB.



**Figure 2 – Examples of the types of composters available for purchase through the TNRD (L-R) backyard composter, worm composter and green cone food digester**

Operational and financial impacts that were considered for a compostable organic waste system are described in Appendix B-3.

Recommendations for composting:

**In the short-term, provide education and resources to community members that encourage participation in closed-loop home composting.**

Every bit of organic waste that can be diverted from the residual stream to the composting stream translates into savings for LNIB. LNIB may take advantage of many educational resources that are available at reduced or no cost to encourage greater participation and compliance among its members in composting.

**In the long-term, evaluate the opportunities for instituting a composting facility in the community in partnership with the Community Garden.**

A composting facility in the community may drive greater participation among community members who are either uninterested or unable to participate in home composting, or may serve the wider Nicola Valley community as a business opportunity

## 4.4 OTHER SOLID WASTE

There are currently no waste management systems in place for recyclable non-PPP items (i.e. glass, plastic overwrap, Styrofoam and other flexible plastic packaging), scrap vehicles, and large items that may end up at unauthorized dump sites on LNIB lands. There have been requests from the community for LNIB to expand its services to include these items.

Previous attempts to manage other solid waste, including a free “spring clean-up” event and a free scrap vehicle towing service in 2018, were well received by the community.

*“... I like the idea that in the fall they have that huge container for large items.”*

- Anonymous survey respondent

Eliminating the inappropriate disposal of solid waste materials on LNIB land will require a multi-pronged approach. Understanding the reasons behind why residents choose to dump items inappropriately rather than through legitimate means will allow LNIB to plan their activities to address those underlying causes. A combination of preventative and punitive actions will likely be required.

Operational and financial impacts that were considered for other solid waste streams are described in Appendix B-4 and Appendix B-5.

### Recommendations for other solid waste:

**In the short-term, implement low- or no-cost educational resources regarding inappropriate dumping, non-PPP recyclable items and existing disposal options, such as for scrap vehicles.**

Every item of non-PPP recyclable material (e.g. glass, Styrofoam, batteries, tires, appliances, yard waste, etc.) that can be diverted from the residual waste stream to their respective streams translates into savings for LNIB. Educating community members on the full range of items that are accepted at no cost as the Lower Nicola Eco-Depot should increase their participation and compliance in those programs.

**In the long-term, explore the feasibility of implementing new programs for other solid waste.**

The range of financial investment in potential new programs varies, and includes no- or low-cost option such as an online free store, moderate-cost options such centralized sorting centres for non-PPP recyclable items, and higher-cost options such as an annual spring clean up event, erecting signage at known inappropriate dumping sites, and non-PPP curbside collection service.

## 4.5 EDUCATION AND RESOURCES

Education and resources for community members are important factors to include in a new solid waste management system and will help to foster a culture of responsible waste management. Some potential strategies for reducing the volume of residual waste and increasing diversion to other streams using education and resources include:

- Educating the community on the environmental and financial impacts of solid waste;
- Identifying opportunities to provide home composters, cloth shopping bags, refillable water bottles, or other such items to community members;
- Providing incentives to participate in various initiatives;
- Promoting “rethink, reuse, reduce, and recycle” through various means;
- Educating the community about the scope of existing LNIB solid waste management services;
- Educating the community on what is accepted at the Lower Nicola Eco-Depot including any fees or conditions;
- Increasing community participation in the current LNIB, TNRD or other programs through various means; and
- Exploring the potential to expand the current LNIB recycling program.

Further information on education and resources may be found in the *Community Engagement Report* and in section 7.0 of this report.

*“We all have to protect our land, by doing our part.”*

- *Anonymous Survey Respondent*

Operational improvement options for education and resources for the various solid waste streams are described in the relevant sections of Appendix B.

### Recommendations for education and resources:

#### **Implement a comprehensive plan for ongoing community engagement.**

Making community engagement an ongoing effort will help to create a culture of responsible solid waste management in the community. Utilizing various communication methods and integrating messaging into other community events will help reinforce the message for members.

#### **Leverage existing programs and resources for waste reduction.**

There is a wealth of resources already available; it is not necessary for LNIB to invest money, time or other resources into creating their own.

## 4.6 HAZARDOUS WASTE

Hazardous waste disposal in BC is driven by product stewardship programs. LNIB is in no position to provide for the collection or storage of hazardous wastes on LNIB lands. The TNRD hosts periodic “Hazardous Waste Round Up” events across the region, which can be found on the TNRD website. Improvement of environmental performance with respect to hazardous wastes will depend on:

- Community education and promotion;
- Development and implementation of appropriate laws and enforcement; and
- Identification and development over time of more convenient options if necessary.

## 5.0 COMPREHENSIVE SOLID WASTE PROGRAM RECOMMENDATIONS

Below is a summary of the full suite of recommendations to improve LNIB’s solid waste program including their financial impacts, if they can be estimated at this time. We also indicate the non-financial benefits that each recommendation carries by indicating which of LNIB’s three non-financial goals the recommendation contributes to:

1. Reduce the volume of solid waste produced by the community;
2. Divert as much material as possible from the residual waste stream;
3. Eliminate inappropriate waste disposal on LNIB lands; and

Recommendation	Initial Cost	Annual Savings/ Revenue	Non-financial Project Goal(s) addressed
Replace ICI collection bins with an analogous steel model and residential collection bins with an animal-proof curbside model.	\$31,000 - \$81,000	\$0	n/a
Move residential collection curbside and implement a \$175 annual user fee per household towards solid waste services.	Minimal, associated with program administration	\$28,850	n/a
Renegotiate Independent Service Agreement to ensure LNIB realizes any cost savings.	\$0	TBD	n/a
Encourage greater participation and compliance in recycling by providing more education and resources to community members.	Minimal	TBD	2, 3
Seek an agreement with the City of Merritt for recycling collection and disposal under the city’s	Minimal, associated with	\$4,500 <sup>6</sup>	n/a

<sup>6</sup> Assumed 50% sharing of the Recycle BC incentive available. Does not include the savings associated with avoiding the significant financial investment that will be required to transition to separate collection under any other circumstances

contract with Recycle BC in order to realize a portion of the per-household incentive.	agreement administration		
In the short-term, provide education and resources to community members that encourage participation in closed-loop home composting.	Minimal	\$300	1, 2
In the long-term, evaluate the opportunities for instituting a composting facility in the community in partnership with the Community Garden.	TBD	TBD	1,2
In the short-term, implement low- or no-cost educational resources regarding inappropriate dumping, non-PPP recyclable items and existing disposal options, such as for scrap vehicles.	Minimal	TBD	1, 2, 3
In the long-term, explore the feasibility of implementing new programs for other solid waste.	Varies	TBD	1, 2, 3
Implement a comprehensive plan for ongoing community engagement.	Minimal	TBD	1, 2, 3
Leverage existing programs and resources for waste reduction.	Minimal	TBD	1, 2, 3
<b>Total</b>	<b>\$31,000 - \$81,000 initial investment plus other minimal costs</b>	<b>\$33,650 annual savings/revenue plus other annual saving TBD</b>	

## 6.0 PREVIOUS YEAR'S ACTIVITIES AND OUTCOMES

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LNIB will report annually on the previous year's activities and outcomes. An annual planning and reporting template is included in this document in Appendix A. As 2019 is the first year of the SWMP, the template should be used to set the first year's goals; the first report will be made in 2020.



## 7.0 OPERATIONAL DESIGN, STAFFING AND EQUIPMENT

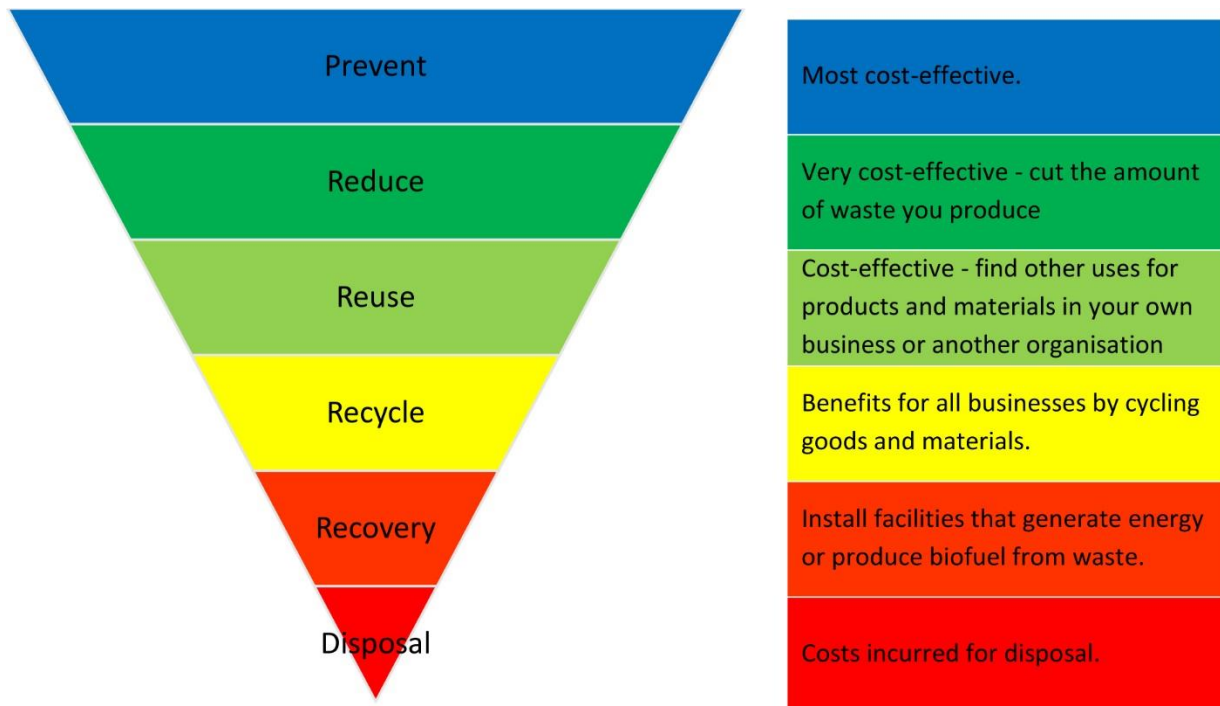
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Once LNIB have decided on which options they will pursue as part of a new solid waste management program, the necessary operational designs, staffing requirements and equipment may be confirmed.

## 8.0 COMMUNITY PARTICIPATION AND EDUCATION

Ensuring that community members are familiar with best practices and have access to certain resources is a fundamental step in achieving effective waste management.

Reducing and preventing waste is always preferable to reusing or managing waste. That concept is illustrated by the Waste Management Hierarchy in Figure 3 below.



**Figure 3 – The Waste Management Hierarchy**

Limiting waste in the community starts with behavioural change. As each person generates waste, each person must assume the responsibility to be thoughtful about the waste they produce. Education on waste reduction and our environment at the grassroots level can effectively start to change the way in which people deal with their waste, such as reducing, reusing, and recycling.

For the waste that is generated, it is imperative that community members understand how different waste streams are managed, and how to access the services. LNIB is fortunate to have a top-notch disposal facility nearby and good relationship with the solid waste and recycling department at the TNRD. Both should be leveraged to the greatest extent possible to educate and involve members in solid waste management.

Timing is as important as the message. Effective best practices must be taught and communicated at the same time as facilities and programs are being implemented so that they can be put into practice.

A comprehensive public outreach program must be a part of a new solid waste management program. A comprehensive public outreach program will involve a wide range of media to disseminate information, educate households, and continue the collection of community input.

Program initiatives may include:

- A strong presence on the LNIB website for environmental management;
- Use of social media to expand the reach of communications initiatives and create a true dialogue on continuous improvement of our environmental policies and programs;
- Newsletter articles coinciding with social media updates focusing on constantly changing and coordinated themes;
- Simple, one- or two-page handouts with information on major topics, for example:
  - For waste management, describe best practices, poor waste management practices that need to be avoided, drop off locations, program staff contact information and relevant web links for further information;
- Promote environmental solutions at community events;
- Distribution of compost bins with information packages;
- Signage throughout the community promoting environmental action and providing information with regard to waste sites and procedures;
- Undertake periodic community educational workshops on various key environmental topics and emergency procedures practice drills; and
- Establish a community awards program.

Successful educational alternatives have been carried out by many communities. LNIB can take advantage of a wealth of education materials, flyers, and school curricula already prepared by industry and other governmental agencies.

## 8.1 LOWER NICOLA INDIAN BAND SCHOOL

The LNIB school may make use of a number of available resources for educators, such as:

- Registering to become a certified Return-It 101 school to receive free recycling bins, support and resources, as well as a chance to enter their new contest, Share Your Story (<http://www.returnitschool.ca/>).
- The GREENS is a site for kids about sustainability and green living. They have created Green Games and a rich array of supporting content for teachers. The games entertain and engage kids in learning about conservation, re-use, and saving energy (<http://www.meetthegreens.org/>).
- “Road to Zero Waste!” is an educational outreach program designed by the Recycling Council of BC as a resource for teachers to incorporate environmental education in their

class curriculum. “Its goal is to empower schools and educators in bringing environmental learning to their students through a variety of activities.” (<http://www.rcbc.ca/services/road-to-zero-waste>).

## 8.2 SOCIAL MEDIA

LNIB actively use their Facebook page, *Lower Nicola Indian Band – LNIB* to share their hours of operation and contact information (telephone number, email address and website). It is good medium for instantly getting information out to the community, for building and maintaining awareness about the SWMP, and for engaging in two-way dialogue.

## 8.3 WEBSITE

The LNIB website at <https://lnib.net/> is a good medium for sharing and storing information that the community can easily access, such as:

- Information sheets, like the *Recycling Guide* by Recycle BC and the *Accepted Materials Facility Summary Sheet* by Thompson-Nicola Regional District;
- How-to video clips on topics like composting and proper way to recycle various materials; and
- Information on the different types of composters, how they may be used, and where to get them.

## 8.4 NEWSLETTER

The *Lower Nicola Indian Band N?e?iyk Spílaxms* is a monthly newsletter may be used to provide updates about the solid waste management program and to notify the community about upcoming events. It is available both in hard copy and on the LNIB website at <https://lnib.net/newsletters/>.

## 8.5 BROADCAST EMAIL AND TEXT

Community can sign up at LNIB to receive email and/or text alerts and reminders about meetings and events.

## 8.6 COMMUNITY ENGAGEMENT EVENTS

Possible partners in educational workshops or sessions include:

- Composting – Lorna Shuter, Shulus Community Garden
- TNRD Recycling Program
  - Gwayne Point, Lower Nicola Eco Depot
  - Shawna Sturgeon, TNRD
- Joy William, First Nations Field Services Specialist, Recycle BC

- LNIB community members and recycling champions Ted and Sondra Tom.

## 8.7 COMMUNICATION PLAN MATRIX

A communication plan matrix is an excellent tool that LNIB may employ to plan and manage its education and communication efforts with the community. A sample plan is included in Appendix C.

## 9.0 CAPACITY DEVELOPMENT AND TRAINING

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Capacity development and training needs may be evaluated following confirmation of the solid waste operations that will be implemented. This section should be completed annually once the Strategy and Action Plan is drafted.

## 10.0 LNIB POLICY AND LEGISLATION

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This SWMP operates within the context of and in conjunction with related policies and procedures, legislation and other strategic plans. As part of this project, the following two documents were also delivered to LNIB:

The *LNIB Environmental Management Law, 2019* provides the legislative basis for solid waste management on LNIB lands within the larger context of environmental management. With respect to solid waste, the law sets out prohibitions on improper waste disposal as well as the mechanisms for enforcement. Additional aspects of the law regarding environmental concerns such as the release of contaminants, environmental emergencies and environmental permits may be brought into force as necessary and appropriate. The draft *LNIB Environmental Management Law, 2019* is included in Appendix D.

The *LNIB Environmental Management Policy and Procedures* works in conjunction with the law as a guide for LNIB staff to implement and administer LNIB's solid waste management program. It is not a substitute for the law, but rather a layperson's guide to the law's contents. The draft *LNIB Environmental Management Policy and Procedures* is included in Appendix E.

Both of the documents described above are in draft form at the time of writing and will require vetting for local conditions and legal review and advice to ensure they meet the particular needs and situation of LNIB.

Another important element yet to be developed is the *LNIB Environmental Management Plan* (EMP), which may address other environmental matters such as climate change, land development, drinking water, flood control and wildlife habitat protection. At this point in time, the SWMP is a stand-alone document, but in the future LNIB may wish to incorporate solid waste management within an EMP.

## 11.0 IMPLEMENTATION AND ACTION PLAN

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Implementing a solid waste management plan will be an ongoing effort. Every year is an opportunity to make incremental progress towards LNIB's goals to reduce waste, increase diversion, eliminate inappropriate dumping and save money. By starting with low-cost, achievable actions LNIB can build momentum and community support that will help to fuel more significant changes in the future.

The Planning and Reporting Template in Appendix A is designed help LNIB make progress towards its goals in two ways: it is both a roadmap for achieving their goals and a measurement tool to evaluate progress. It makes the goals achievable by requiring the team to break them down into manageable strategies and actions.

The Planning and Reporting Template should be populated annually with the strategies and actions that will be taken in the coming year that, if followed, will make progress towards a given goal. It should also capture the measurable outcomes that the team is striving to complete in that year. Other details such as the person responsible, the resources required, and the time line should also be included.

At the end of the year, as well as at various points throughout the year, progress can be measured against those outcomes that were set initially. An example is described in Appendix A.



## APPENDIX A: PLANNING AND REPORTING TEMPLATE

Solid Waste Management Goal Reduce the volume of solid waste produced by the community							
Strategy	Action Steps	Measurable Outcomes	Details	Person/Group Responsible	Implementation Timeline	Resources Needed/Budget	End Date
<i>EXAMPLE</i>							
<b>1. Promote "Reduce and Reuse" principles within the community</b>	<i>a. encourage all community events that serve meals to promote "bring your own" non-disposable dishes and utensils</i>	<i>Number of events held in previous year that promoted "bring your own" non-disposable dishes and utensils</i>	<i>a. generate a list of departments or community groups know to hold events b. draft introductory email template to send to all departments and community groups to let them know about this initiative c. draft follow-up email template to send to departments and community groups once specific events are known d. create procedure for keeping current on an ongoing basis</i>		<i>a. generate list by April 30, 2019 b. draft introductory and follow-up emails by April 30, 2019 c. send emails as required on ongoing basis d. draft procedure by May 31, 2019</i>	<i>none other than assigned person responsible</i>	<i>On-going</i>
	<i>b. include one principle, fact or tip on "reduce and reuse" in the monthly newsletter</i>	<i>Number of monthly newsletters that featured a "reduce and reuse" principle, fact or tip</i>	<i>a. research sources of "reduce and reuse" principles, facts, or tips b. create procedure for ensuring inclusion in monthly newsletter</i>		<i>a. research sources by April 30, 2019 b. draft procedure by May 31, 2019</i>	<i>none other than assigned person responsible</i>	<i>On-going</i>
	<i>c. research existing "reduce and reuse" programs that LNIB can take advantage of or participate in</i>	<i>List of existing "reduce and reuse" programs that LNIB can take advantage of or participate in</i>	<i>a. research and draft list b. draft procedure for keeping current on an ongoing basis</i>		<i>a. draft list by June 30, 2019 b. draft procedure by July 31, 2019</i>	<i>none other than assigned person responsible</i>	<i>On-going</i>
<b>2</b>	<i>a.</i>						
	<i>b.</i>						
	<i>c.</i>						

## APPENDIX B: OPERATIONAL SOLID WASTE IMPROVEMENT OPTIONS

### APPENDIX B-1: RESIDUAL WASTE OPTIONS

#### Option 1: Upgraded communal bins

	Option 1a	Option 1b
<b><u>Description</u></b>	Replace existing bins with steel model, strategically reducing number and locations.	Replace bins with steel model at current number and location but reduce service frequency from weekly to biweekly.
<b><u>Details</u></b>	<ul style="list-style-type: none"> <li>• Replace current residual waste bins with a more durable steel model</li> <li>• Reduce the number of bins by 30% to drive behavioural change.</li> <li>• Renegotiate <i>Independent Service Agreement</i> to reflect the reduced costs of providing the service.</li> </ul>	<ul style="list-style-type: none"> <li>• Replacing the residual waste bins with a more durable model (possibly a larger model – more analysis is required).</li> <li>• Reduce collection frequency to biweekly.</li> <li>• Renegotiate <i>Independent Service Agreement</i> to reflect the reduced costs of providing the service.</li> </ul>
<b><u>Costs</u></b>	\$52,000 - \$78,000	\$74,000 - \$112,000
<b><u>Savings/additional revenue</u></b>	\$1,880 annually assuming 20% savings from renegotiated <i>Independent Service Agreement</i> .	\$2,350 annually assuming 25% savings from renegotiated <i>Independent Service Agreement</i> .
<b><u>Time to recoup initial investment</u></b>	27 – 42 years	32 – 48 years

Option 1 Pros:

- Implementation is relatively simple and can begin immediately
- Steel bins require significantly less maintenance compared to existing bins
- Aligns with community feedback to keep service free to users

Option 1 Cons:

- Independent service provider impacted up to 25%
- Requires users to continue to bring their residual waste to a large bin, which is challenging for elders and other community members; may require implementing additional service for these users
- Collection remains physically demanding for independent service provider
- Does little to drive behavioural change to reduce users' residual waste volume
- Not possible to implement user fee structure/volume limits that drive behavioural change
- Community likely to oppose a reduction in the number of bins (1a)

**Option 2: Residential curbside service**

	Option 2a	Option 2b
<b><u>Description</u></b>	Replace distributed communal bins with individual household curbside model. Weekly collection, \$175 annual user fee per household.	Replace distributed communal bins individual household curbside model. Biweekly collection, no user fee.
<b><u>Details</u></b>	<ul style="list-style-type: none"> <li>• Replace current residual waste bins with an animal-proof household model.</li> <li>• Replace approximately ten<sup>7</sup> ICI bins with steel model.</li> <li>• Weekly collection service.</li> <li>• Implement annual household fee of \$175.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace current residual waste bins with an animal-proof household model.</li> <li>• Replace approximately ten ICI bins with steel model.</li> <li>• Weekly collection service.</li> <li>• Renegotiate <i>Independent Service Agreement</i> to reflect the reduced costs of providing the service.</li> </ul>
<b><u>Costs</u></b>	\$31,000 - \$81,000	\$31,000 - \$81,000
<b><u>Savings/additional revenue</u></b>	\$28,850 from household user fees.	\$3,290 annually assuming 35% savings from renegotiated <i>Independent Service Agreement</i> .
<b><u>Time to recoup initial investment</u></b>	1 – 3 years	9 – 25 years

<sup>7</sup> Economic Development office, Band School, Band Office, Health Centre, Shulus Community Arena, Fire Hall, Shulus Community Hall, Scw'exmx Child and Family Services Building, Elders Building, Rocky Pines Community Centre

Option 2 Pros:

- Little impact to independent service provider (option 2a)
- Curbside collection assumed to be less physically demanding on independent service provider
- Implementation is relatively simple and can begin immediately
- Community likely to support moving from distributed bins to household bins
- Curbside bins require significantly less maintenance compared to existing bins
- Aligns with community feedback to implement user fee structure only with increase in service
- Less physically demanding for users, especially elders or other users with barriers to accessing large communal bins
- Allows for the use of policy tools (such as a user fee structure with reduced volume discounts or over-limit penalties) to drive residual waste volume reduction
- Allows for possibility to employ independent service provider to collect organic kitchen scraps or non-PPP recycling streams

Option 2 Cons:

- Some community members likely to oppose implementing a fee structure, despite the accompanying service increase (option 2a)
- Some community members likely to oppose implementing a biweekly collection schedule, despite the accompanying service increase (option 2b)
- Significant impact on independent service provider (option 2b)

APPENDIX B-2: RECYCLING WASTE OPTIONS

	Option 1	Option 2
<b>Description</b>	Agreement with the City of Merritt	Join Recycle BC Pilot in the TNRD
<b>Details</b>	<ul style="list-style-type: none"> <li>• LNIB acts as collection subcontractor under the City of Merritt’s collection contract with Recycle BC.</li> <li>• City receives Recycle BC incentive for LNIB’s 230 households (approximately \$9,000).</li> <li>• City shares portion of incentive with LNIB, depending on roles and responsibilities of the two parties (to be negotiated).</li> <li>• Agreement establishes communication process, logistics, etc.</li> <li>• Has the support of the TNRD because of operational efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>• Will require investment in second bin in order to meet separation requirements for paper and containers.</li> <li>• Will require additional Public Works staff time and resources associated with additional collection day.</li> <li>• \$200/tonne fee imposed by the TNRD on non-separated loads.</li> </ul>
<b>Costs</b>	Only those associated with administration of agreement.	\$32,500 in year 1, \$16,500 annually thereafter
<b>Savings/additional revenue</b>	some portion of \$9,000 incentive (assume \$4,500) annually	\$0

## APPENDIX B-3: COMPOSTABLE ORGANIC WASTE OPTIONS

Option	Description	Estimated Costs	Potential Savings or revenue <sup>8</sup>
<b>1. Education and Resources Only for closed-loop composting</b>	<p>This option would see LNIB sponsor or provide educational materials, workshops and/or composting equipment to members and residents to implement closed-loop composting in their own homes. Equipment is available from the TNRD at or below cost:</p> <ul style="list-style-type: none"> <li>• Backyard composter: \$25</li> <li>• Worm composter: \$50 (plus worms)</li> <li>• Green cone digester: \$100</li> </ul>	<p>\$0 to minimal depending on what is provided. Existing programs may be leveraged (e.g. TNRD may offer access to these resources under the <i>Solid Waste Reduction Agreement</i>).</p>	<p>\$300 annually if 10% reduction in residual waste by weight is achieved</p>
<b>2. Centralized Composting Centre, no collection</b>	<p>This option would see the establishment of a composting facility on LNIB lands, likely in conjunction with the Shulus Community Garden. Residents would bring their compostable kitchen scraps (and potentially other compostables such as yard waste) at their discretion. Option to offer compost disposal services to the public.</p>	<p>Costs to build and maintain a facility (offset by any funds that could be accessed in conjunction with Community Garden)</p>	<p>\$600 annually if 20% reduction in residual waste by weight is achieved</p>
<b>3. Curbside Collection</b>	<p>In conjunction with option 2, or with the sourcing of a different composting disposal opportunity, LNIB may begin offering curbside collection of compostable kitchen scraps and other compostables at curbside</p>	<p>Costs associated with infrastructure and providing the service</p>	<p>\$900 annually if 30% reduction in residual waste by weight is achieved</p>

<sup>8</sup> Net of MTSA recovery

## APPENDIX B-4: NON-PPP RECYCLABLE ITEMS OPTIONS

Option	Description	Estimated Costs	Potential Savings or revenue <sup>9</sup>
<b>1. Education Only</b>	This option would see LNIB sponsor or provide educational materials, workshops and/or other resources to members and residents on recycling non-PPP items.	\$0 to minimal depending on what is provided <sup>10</sup> . Existing programs may be leveraged (e.g. TNRD may offer access to these resources under the <i>Solid Waste Reduction</i> agreement).	\$150 annually if a 5% reduction in residual waste by weight is achieved
<b>2. Centralized Sorting Centres</b>	This option includes implementing one or more small multi-bin sorting centres throughout the community, or one larger facility.	Ranges depending on type and number of facilities; requires coordinated disposal system.	\$300 annually if a 10% reduction in residual waste by weight is achieved
<b>3. Curbside Collection</b>	In this option, LNIB would provide curbside collection of non-PPP recyclable items such as glass, Styrofoam or plastic overwrap	Costs associated with infrastructure (e.g. new bins) and with providing the service	Up to \$450 annually if a 15% reduction in residual waste by weight is achieved

<sup>9</sup> Net of MTSA recovery

<sup>10</sup> Assumption: No additional resources are required to dispose of the increase in recycling volume (i.e. that the LNIB truck can still manage volume within existing service schedule)



APPENDIX B-5: INAPPROPRIATELY DUMPED MATERIAL OPTIONS

Option	Description	Estimated Costs	Potential Savings or revenue <sup>11</sup>
<p><b>1. Education Only</b></p>	<p>It is felt that significant inappropriate dumping occurs because of a lack of understanding about existing waste management programs. Educating community members about how and where to dispose of certain items, as well as the costs to LNIB of remediation, may deter community members from engaging in this conduct</p>	<p>\$0 to minimal</p>	
<p><b>2. Online Free Store</b></p>	<p>In this option, LNIB could establish and promote an online “free store” (such as a dedicated Facebook page) where members can post usable items to give or trade.</p>	<p>\$0 to minimal</p>	
<p><b>3. Physical Free Store</b></p>	<p>This option would see LNIB establish a physical space, whether just a box or a table in an existing community building, or a new dedicated location such as a garden shed or empty shipping container. (<a href="https://www.moneycrashers.com/get-free-stuff-free-stores-swap-shops/">https://www.moneycrashers.com/get-free-stuff-free-stores-swap-shops/</a>)</p>	<p>Minimal to moderate, may be costs associated with maintenance or removing inappropriately dumped items</p>	

<sup>11</sup> The savings associated with these options are at best indirect. These options contribute more to LNIB’s environmental goals rather than financial goals.

<p><b>4. Annual Spring Clean Up event</b></p>	<p>LNIB may choose to repeat this successful event that was held in 2018 on an annual basis. Lessons learned in the first event can be used to reduce costs (e.g. separate out items that can be disposed of for free, such as tires, appliances, etc.)</p>	<p>Less than \$7,500</p>	
<p><b>5. Scrap Vehicles Programs</b></p>	<p>There are a few options for scrap vehicle removal, including the BC Scrap It program, Retire Your Ride and donation to organizations such as the Kidney Foundation. Incentives for each program vary.</p>	<p>\$0 – Minimal</p>	
<p><b>6. Signage at known dumping sites</b></p>	<p>Once appropriate laws are in place, signage at known inappropriate dumping sites advertising the law and associated penalties is recommended</p>	<p>Quotes may be obtained</p>	
<p><b>7. Enforcement of inappropriate dumping laws</b></p>	<p>Subsequent to appropriate laws being enacted, LNIB will have the ability to enforce laws prohibiting inappropriate dumping and administer fines or take other measures to deter inappropriate dumping.</p>	<p>Minimal</p>	

## APPENDIX C: SAMPLE COMMUNICATION PLAN MATRIX

Start Date	End Date	Activity	Responsible Person	Product or Deliverable	Method
<b>May 1, 2019</b>	<i>May 15, 2019</i>	<i>Survey Monkey: Communal Recycling Centre Survey</i>	<i>Jane Doe</i>	<i>Results will inform recommendations on type and locations for centralized communal recycling centres</i>	<i>Post online at Inib.net/recycling survey and distribute to membership email list</i>
<b>June 12, 2019</b>	<i>June 12, 2019</i>	<i>Film video clip on different types of composters</i>	<i>John Doe</i>	<i>Video clip #1 in compost series</i>	<i>Finished clip posted to Inib.net/composting and Facebook</i>
<b>June 30, 2019</b>	<i>June 30, 2019</i>	<i>Community Dinner and Information Session on new residual waste bins and service</i>	<i>Jane Doe</i>	<i>Presentation and handouts</i>	<i>In person</i>

## **APPENDIX D: DRAFT LNIB ENVIRONMENTAL MANAGEMENT LAW, 2019**

See attached.

**APPENDIX E: DRAFT LNIB ENVIRONMENTAL MANAGEMENT POLICY  
AND PROCEDURES**

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See attached.

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