



the **gaia** project
realistic environmentalism

Barnhill Memorial School: Waste Audit Summary

April 18th, 2013

The Gaia Project

270 Rookwood Ave
Fredericton, NB
E3B 2M2

1 (506) 442-9030

www.thegaiaproject.ca

contact@thegaiaproject.ca



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R. Howard Webster
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Barnhill Memorial School: Waste Audit Summary

A summary of the results from the waste audit conducted on April 18th, 2013.

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The Gaia Project is a charitable organization whose mission is to empower youth to make informed decisions about energy and its impact on the environment.

We develop projects, provide professional development, technical support and ongoing project support for teachers and students. Our projects aim to incorporate three key principles, which symbolise our focus on realistic environmentalism.

1. **Data-Informed Decisions** – We want students to be able to explain why, and quantify the effect of each decision they made along the way to their final solution.
2. **Economic Assessments** – We expect students to be able to assess the cost effectiveness of their solutions, and be able to optimize their projects with limited budgets.
3. **Environmental Impact and Lifecycle Assessments** – We need students to take a holistic view to their projects. This means looking at their projects from cradle to grave, as opposed to just examining the use phase, and acknowledging that greenhouse gas reduction is not the only environmental issue at stake.

For more information, please visit www.thegaiaproject.ca

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Canada
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The Gaia Project is supported by donations and grants from:

- Environment Canada's EcoAction Program
- New Brunswick Department of Environment Environmental Trust Fund
- TD Friends of the Environment Foundation
- The McCain Foundation
- The R. Howard Webster Foundation
- Dillon Consulting
- NSERC/CRSNG

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Overview

The Gaia Project collaborated with grade 7 students at Barnhill Memorial School to conduct a waste audit on April 18th, 2013. The process, results, and recommendations are detailed herein.



Photo credits to Drew Murdock, student at Barnhill Memorial School—thank you!

The Process

The Gaia Project launched this collaborative waste audit project on April 17th by talking with all grade 7 students about energy, consumption and the waste hierarchy—reduce, reuse and recycle—and why each of these are important, and how they might relate to the waste audit we were about to do. Students discussed the type of things they would typically find in the school garbage cans, and used this to decide on sorting categories in which to separate the waste.

Two students were chosen from each grade 7 class to participate directly in the audit that

took place on April 18th.

The custodial staff collected all of the garbage at the school on April 17th, bagged it and placed it outside for us.

Sorting categories

We decided on 6 sorting categories for the waste:

- * Returnable bottles
- * Recyclable plastics
- * Paper & cardboard
- * Compost
- * Milk Cartons
- * Garbage



Weighing and Sorting

After deciding on our 6 sorting categories. Students were provided with gloves, divided into 2 teams and provided with a kit of supplies.

Before any bags were opened, the weight of each bag was recorded so that the starting amount of waste was known and could be checked against the final amount.





Groups then opened the bags and sorted its contents.

We subsequently weighed the contents of each sorting category at the end of the audit. Additionally, since there were a lot of large black garbage bags, we weighed the weight of all garbage bags at the end of the audit.

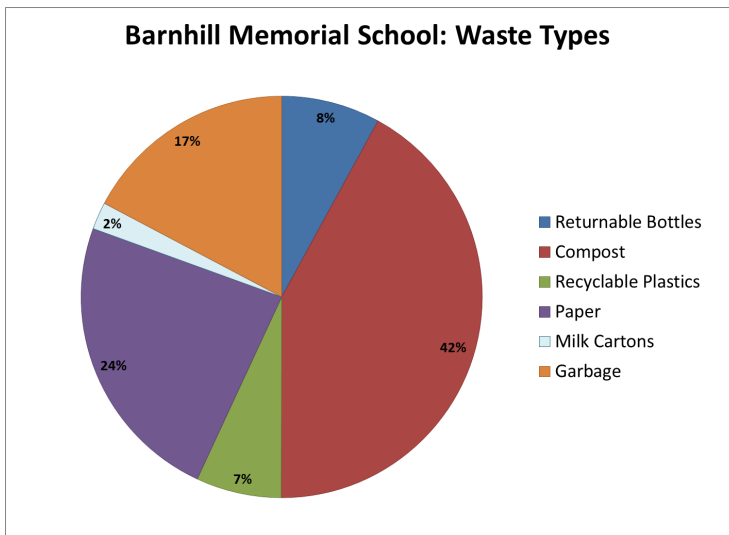
The data from each group was entered into an excel spreadsheet so that we could build a picture of how much waste the school produces in a day from each of the 6 sorting categories.



Results

The total weight of waste collected from a typical school day is **approximately 13 kg**. Assuming 195 school days in a year, Barnhill Memorial School produces **approximately 2,500 kg annually**. You can find the actual weight from each sorting category (our raw data) in Table 1 in the Appendix..

The total weight of waste by category can be seen in the pie chart below.



Annual projections per sorting category can be found in Table 2 in the Appendix. This is a very rough estimate.

After weighing discarded bags only, it was discovered that 4 kg of bags are disposed of daily. This is an approximate **760 kg in weight of discarded garbage bags per school year**.

Out of the 6 large garbage bags collected from April 17th, we sorted 4 of the bags. Results per sorting category are estimated assuming that the proportion of waste in the 2 unopened bags were similar to those sorted.

Summary

Through the process of measuring how much and what type of waste Barnhill Memorial School produces, it was discovered that:

- * 8% of the waste was returnable for a refund (returnable bottles)
- * 42% of the waste was compostable material

- * 33% of the waste could have been recycled. This includes paper, cardboard, milk cartons and recyclable plastic. 24% of this was paper, 2% was milk cartons, and the remaining 7% was recyclable plastics.
- * 17% of the waste was actual garbage that needed to be there.



Returnable Bottles

This category represents an opportunity to not only increase the recycling rates at the school, but also to make a small profit from redeemable drink containers/bottles. A goal may be to reduce this category to 1% of the waste stream.

Compost

Almost half (43%) of the sorted waste was compostable material. This included food as well as paper towels.

Students were surprised to see that there was a lot of wholly uneaten food in the garbage. There are many opportunities to discuss reducing lunch-related waste at the school.

Setting up a composting system, perhaps with Saint Rose School next door, may also be an option for reducing the amount of waste in compost at the school.

Additionally, since a large portion of this

category was paper towel, there is an opportunity to encourage the school population to reduce the amount of paper towel used per use.

Recyclables

One third (33%) of the waste was recyclable in the form of recyclable plastics, paper or milk cartons.

Additional paper recycling bins, alongside an awareness campaign, may reduce the waste from recyclable paper at the school.

Garbage

Only 17% of the waste we examined actually needed to be there. If we found ways to divert all of the recyclable/returnable/compostable materials, **Barnhill Memorial School could reduce their waste from 2,500 kg in a year to only 430 kg**—that's an almost 85% reduction in the amount of waste produced!



Garbage Bags

The audit revealed that almost 4 kg of garbage bags were used on a daily basis—this represents **10% of the total weight of waste at the school**. By reducing the amount of garbage produced at the school, we can indirectly reduce waste at the school by reducing the amount of garbage bags going to the school. This also results in cost savings through purchasing fewer bags.

Summary

Of course, these types of programs take a lot of time and resources to develop and maintain, and The Gaia Project would really like to help the school in their sustainability endeavours. We can help through setting up a Sustainability Team at the school, which acts as a managing body for sustainability initiatives at the school. This team engages all stakeholders at the school including students, teachers, administration, custodial staff, community members and parents and sets SMART sustainability goals for the school to achieve.

The Gaia Project looks forward to collaborating with Barnhill Memorial School in brainstorming waste reduction solutions arising from this waste audit. We hope that this audit is able to provide some concrete data that can be used to help the school set SMART (specific, measurable, attainable, realistic, and timely) goals towards waste reduction at the school.

Congratulations on a job well done, Barnhill Memorial School!

Contact Us

If you would like more information, we would be happy to talk to you. Please get in touch.

Vanessa Paesani, Program Delivery Officer
vanessa.paesani@thegaiproject.ca
www.thegaiproject.ca
1 (506) 442-9030



Appendix

Table 1. Weight (kg) per sorting category

Group	Returnable Bottles (kg)	Compost (kg)	Recyclable Plastics (kg)	Paper (kg)	Milk Cartons (kg)	Garbage (kg)	Total (kg)
1	0.3	2.4	0.5	1.1	0.0	0.7	5.0
2	0.7	3.0	0.4	1.9	0.3	1.5	7.8
Total	1.0	5.4	0.9	3.0	0.3	2.2	12.8

Table 2. Estimated annual weight (kg) per sorting class

Sorting Category	Daily (kg)	Annual (kg)
Returnable Bottles	1	200
Compost	5.4	1050
Recyclable Plastics	0.9	170
Paper	3	590
Milk Cartons	0.3	60
Garbage	2.2	430
Total	12.8	2500