

# Waste Audit Manual

## Welcome To Your Garbage

Congratulations! By opening this manual you have made a bold step in becoming more intimately acquainted with the trash that your institution produces. Most would agree that trash is gross in plastic bags and even worse piled up on land that was once a thriving ecosystem. That's also pretty sad. Dr. William Rathje, a "garbologist", from the University of Arizona conducts archaeological digs in landfills. According to Rathje, America has an acute trash problem. Americans are producing too much trash and are running out of politically and environmentally acceptable places to put landfills. Selected sites raise public outcry and no one wants a landfill on their land or adjacent to the land they use. The only clear choice is to reduce our waste stream.

## Your Part

In order to reduce the amount of garbage your institution sends to the landfill, you can conduct a waste audit. This will tell you how many pounds of waste your institution produces per day and where reduction and recycling efforts will have the most impact.

## Waste Audit Importance

Your waste audit is designed to report valuable information to your school officials. The way you implement and execute this event has a large impact on the success of the school's Earth Flag program. Each waste audit design will vary from school to school. However, this manual will provide some variations so that you can pick and choose what will work best for your school.

Waste audits provide measurements of cafeteria waste, classroom waste and office waste for an entire day's worth of trash generated by your school. The total weight calculated from the entire day's worth of trash is the estimate of trash thrown out daily. In order to earn an Earth Flag the school must reduce this number. This figure will be concluded in a second waste audit at the end of the school year to show proof of waste reduction. Waste audits are usually conducted at the beginning and end of the school year.

## Contacting School Personal and Others for Help

### *General Guidelines*

#### **Be:**

- Courteous, helpful, polite, and respectful.
- Professional, pleasant demeanor.
- Cooperative and a problem solver.

#### **Ask For:**

- Advice on how to be a better participant or facilitator during the waste audit
- Ideas on how to solve problems you may encounter

#### **Give:**

- Precise and clear reasons for the waste audit: its purpose and effectiveness.
- Basic information on the Earth Flag program if implemented in your institution or your purpose for conducting a waste audit
- The purpose of your role and expected roles of others for the waste audit and Earth Flag program.
- Results in a timely manner

### **Always:**

- Thank participants and those who help you.
- Document all information
- **CLEAN UP**

### **Recruiting Volunteers for Waste Audit**

Determine what specific activities will need volunteers. Think about how many volunteers will be needed for each activity. Will you need children or adults? Contact a parent or teacher who would be willing to distribute flyers or make a press release. Find out if any parents or faculty has a connection to the media. The best way to recruit volunteers is through the PTA or PTSA (parent, teacher, and student association). Contact the president at the beginning of the school year and let them know that you would like a spot on the agenda of the next meeting. There, discuss the Earth Flag program and the need for volunteers.

### ***Recruiting Student Volunteers***

The best way to assign tasks to student volunteers is to have teachers select who will help at what time and for how long. Consider having students assigned to specific shifts. Two students are usually enough for each grade's breakfast and lunch disposal. Students are not usually used for after school waste collection. Remember this is supposed to be a secret.

Also, consider University of Tennessee student volunteers through organizations such as Vols Corps, SPEAK (Students Promoting Environmental Action, Knoxville). Pellissippi State has a VISION volunteer network.

Make sure your goals and objectives are clearly stated before putting volunteers to work. Always be open to suggestions. Also, make sure you clearly establish yourself as the “**director**” of the waste audit.

In conclusion, show your volunteers how grateful you are. Thank them during the waste audit and always send a thank you note.

### **Pre Waste Audit Organization**

#### ***General Organizational Tips***

Before conducting a waste audit, educate yourself about the topics of recycling, reducing, and reusing. Read this entire manual and seek experienced auditors if you have questions. Resources include Todd Witcher at Ijams Nature Center, CAC AmeriCorps Earth Flag team and Knox County Solid Waste.

Work with school personnel to establish waste audit dates. Two days should be reserved, day one for collection and day two for displaying. The principal, assistant principal, custodial staff, and cafeteria staff should all work together to establish dates for the audit.

Send out waste audit information to all school staff; see enclosed memo from Corryton Elementary, **example 1**.

Choose a location preferably outside to display your garbage. The display area needs to be large enough to enable everyone to view the garbage.

Both the custodial staff and cafeteria staff should be provided with a brief explanation of the waste audit, its educational purpose and their role in the audit. Writing a letter or a brief meeting can accomplish these tasks. See letter from Corryton Elementary, **example 2**.

The cafeteria manager can provide the waste audit organizer with the lunch menu for the day of collection and a schedule of the classes as they come to and go from lunch. The cafeteria manager will also have the exact number of students served meals on collection day. Breakfast is a bit more chaotic. Students generally come and go as they please at breakfast. It's a much faster process. Volunteers are strongly recommended.

Witnessing the daily chaos at breakfast and lunch prior to the audit is important. It can provide information about the normal traffic flow and how waste is collected.

The custodial staff can provide information on how waste is discarded. The custodians are your most valuable assets during this process.

Communication to teachers and students about the audit is necessary. Students are to only be told that you are conducting a "scientific study" about garbage. You will want to make a sign up sheet for teachers to come view the display. Please specify location of the audit and time needed for discussion.

## **Materials**

### **Waste Audit Collection**

- Containers for each item to be separated
- Trash bags, preferably clear ones to make trash visible for display
- A visible sign on each container to mark each item separated
- Tables or milk crates to set containers on
- Disposable gloves for each volunteer

### **Separating the Trash**

- Scales to weigh the trash
- 4-5 tarps
- A chart mapping out items, quantities, and total weights
- Sealed leak proof containers for liquids and food
- Disposable gloves for each volunteer

### **Displaying the Trash**

- Location to display trash
- 4-5 tarps
- Clear plastic bags, tubs, clear containers to make trash viewable
- Markers, crayons, paper to make signs for display
- Disposable gloves for volunteers

### **Clean-up**

- Wheels to carry out heavy loads
- Recycle bins (you may have to take certain items to the recycling center yourself)

## **Collection Day**

Before collecting school waste make sure there is a specific area where the trash can be stored. This should be cleared with everyone involved in the waste audit. Food cannot be stored in the cafeteria refrigerators overnight. Food should be sealed and left outside until the next morning. Remind custodians that today is trash collection day and it will not be necessary to dump the trash for that day. AmeriCorps members suggest a successful collection in the order of napkins, plastic ware, liquids, mild cartons, food, unused items, non-compostable food, plastics, and last true trash. The items, which you can count on being collected are food, plastic ware, milk, milk cartons, Styrofoam, unused items, paper napkins, condiment containers, straws, true trash such as slick paper and contaminated food wrappers and plates. Food that cannot be composted can be placed in the true trash. Food that can be composted (fruits, vegetables, and bread) should go in a separate container for later composting.

The breakfast collection takes less time than the lunch period. This is probably due to fewer children and a minimal amount of food served. Most of the children mainly in elementary and middle school that have breakfast are on the school breakfast program. Waste audits in 2002-2003 accounted for 50% and up of the student population in each elementary school have breakfast.

## **Displaying the Trash**

There are many creative ways to display all the trash collected throughout your school. The space that you will be using will vary depending on the size of your school. You may be outside, in the gym or even in the greenhouse. The garbage should be displayed in plastic bags. The importance of displaying the trash is to visually impact the students and adults showing how much trash is generated in their school daily.

After collecting all the trash it time to get down for some messy fun! Lay out the necessary amount of tarps for dumping your trash onto. Have your volunteers help you sort through the garbage and separate it into different categories. Below is a listing of some categories you may want to include

- Newspaper
- Styrofoam
- Mixed paper
- Reusable items
- Corrugated Cardboard
- Milk Cartons
- Aluminum
- Compost
- Plastic
- Brown paper towels
- Forks and spoons and condiment packets
- Opened Liquid (use sealed pickle bucket)
- Unopened Liquid
- Unopened Food (chips, candy bars,ect)

**For all recyclable items; make a separate pile for amounts found in garbage**

Your display will be effected by the system you use to collect your trash. For example; if you labeled all the classroom trash by grades, you may want to display the trash to show what classroom generated the most or the least. Most schools counted certain items like straws for a stronger visual impact when throwing out everyday trash. Most students and adults were amazed of the specific quantities of forks and spoons thrown away daily. This would be a great time to suggest moving to reusable silverware. When displaying items such as Styrofoam trays or plastic ware, be sure to wash them. This will eliminate odors and make it more appealing to view. Remember all trash displayed is not necessarily set up to show how much can be recycled but also reduced and reused. Items that cannot be reduced, recycled, or reused may be displayed to show that it may not be necessary to use, suggesting that it may be an item that could reduce the school's waste stream costs.

After all the trash is sorted, it is time to set up a display. (If you are displaying indoors the display can be set up on collection day). Some ideas include a trash farm, trash zoo, trash monsters, and a trash train. It can also be as simple as a horseshoe with children allowed assembling around the structure. Add decorative signs to the various categories denoting item and weight. You may also want to add phrases such as; "118 pounds of mixed paper equals on thirty five foot tree". Make a welcome sign for students, teachers, and visitors including the school's total weight.

Walk them through the display explaining where the garbage goes and what materials can be eliminated from landfills by recycling, reducing, and reusing. Have them imagine what would be left if all items that could be recycled and reused actually were. Talk about what recycled items are made into. Check with the librarian at your school to use any appropriate environmental awareness videos and literature. These items are usually available for check out. These resources could also be used for teaching classes.

Visual aids help children learn more about caring for their environment.

There are no rules for this section but to be creative. Be sure to state your purpose of the waste audit and supply each person with an educational experience they will never forget.

### **Contacts and References**

Here is a list of people who have volunteered in the past.

- AmeriCorps Earth Flag Team 577-4717 ext. 26
- Neal Denton with the University of Tennessee Agricultural Dept. Composting and vermiculture presentations. 215-5821
- SPEAK volunteers from UT-974-6359
- Vols Corps volunteers from UT-974-2184
- Todd Witcher with Ijams Nature Center-577-4717 ext. 16

## Example Memo 1

Dear Teachers and Staff:

Corryton Elementary will have a waste audit on November 12<sup>th</sup> and 13<sup>th</sup>. The purpose of the waste audit is to establish an idea of how much waste Corryton is currently producing. On November 12<sup>th</sup>, AmeriCorps members will set up in the cafeteria to collect breakfast and lunch waste. We will also collect the garbage from the building. The waste will then be sorted, weighed, labeled, and displayed for the students and faculty to view. On November 13<sup>th</sup>, the students will have an opportunity to view the display of waste.

This audit is a very important teaching tool for the Earth Flag Program. It will help the students understand how much trash is thrown away on a daily basis. While the students are viewing the waste display, I will be giving a talk about ways to reduce the waste stream. I will be talking about recycling, reusing, and composting. It is essential for all students to have an opportunity to view the display. Sign up sheets are located in the office. The presentation will take about 20 minutes.

If you have any questions please contact me at 577-4717 ext. 27 or [sdevault@ijams.org](mailto:sdevault@ijams.org)

Thank you,

Sabrina DeVault  
Earth Flag

## Example Memo 2

Dear Cafeteria and Custodial Staff:

On November 12<sup>th</sup> I will be going around after school collecting and sorting the garbage from the classrooms. Any trash that you do collect on the 12<sup>th</sup>, please sit it beside the dumpsters. I will need to weigh and sort it. Cafeteria staff: please sit any trash that you have beside the dumpsters so I can weigh it. I will also have a pickle bucket in the kitchen for compost items (veggies—no cheese, fruit, and bread). I will collect the buckets directly after breakfast and lunch.

If you have any questions, please contact me at 577-4717 ext. 27 or [sdevault@ijams.org](mailto:sdevault@ijams.org).

Thank you,

Sabrina DeVault

## SAMPLE INTRODUCTION:

### There's going to be a **Waste Audit** Introduction

**What's a Waste Audit?** In a financial audit, a bookkeeper studies your financial records to see "what's going on"-where your money is coming from and where it is going. One can utilize this information to determine what changes need to be made to remain financially healthy. A waste audit is an attempt to get a true picture of the waste you are producing. In a waste audit, all the school's waste for one day is collected. It is then studied, weighed, and displayed. A waste audit is useful if you have a true desire to reduce your waste. It can also be useful in shocking you into wanting to reduce the amount of waste produced.

**Why reduce waste?** In order to live in harmony with the Earth and protect us from an environmental disaster reducing waste must become a priority. The average citizen produces approximately 6 pounds of garbage a day. That comes to 2290 pounds of garbage per person per year. We have been called the most wasteful civilization in history (just look at some school lunch programs where a separate plastic container is used for each menu item!). Why reduce?

- Our landfill has at most about 15 years of "life" left to it—then we have to find another 160 acres of countryside to annihilate. Maybe a poor farmer's land or in your own neighborhood.
- The city of Knoxville alone spends approximately \$5 million on trash yearly—money that could be better spent on parks, sidewalks, feeding the hungry, etc. That's \$2.772 million to BFI to collect trash and \$2.125 million to dump it in a Waste Management-owned landfill. There are even more people living in the county paying out of their own pockets.
- The nation's forests are under attack, being clear-cut at a shocking rate. Many of these trees could be saved if we recycled paper and paper products rather than sending them to the landfill. Every ton of recycled paper saves 17 trees, 7000 gallons of water and 4,100 kilowatt hours of electricity. It takes 500,000 trees to make our Sunday papers each week.
- The Earth is being dug up for metals that are ending up in landfills. Very few people recycle steel cans. However, they are recyclable over and over again.
- The frivolous use of plastics are a major cause of air pollution (Tennessee Eastman is rated the 13<sup>th</sup> worst polluting factory in the United States, and they churn out PET—"coke bottle plastic"). Americans throw away 2.5 million plastic bottles per hour. We only recycle 0.2% of plastic. Plastic litter kills thousands of sea birds, sea mammals, and fish each year.
- A glass bottle throw in the landfill today will still be there for 100,000 years. Recycling one glass bottle saves enough energy to light a 100-watt bulb for 4 hours.
- By recycling we can reduce our waste by 80%.

**What will happen during the Waste Audit?** Volunteers (AmeriCorps, parent, teacher, and/or student volunteers) will set up in the cafeteria to collect all breakfast waste. The same will happen during lunch. All the garbage from the cafeteria, classrooms, and offices must be collected. The garbage will then be sorted, weighed and displayed on the next day. Students and teachers can view their garbage and learn ways to reduce the waste stream. In order to obtain an accurate reading of the amount reduced during the

year the same process will happen near the end of the school year (the trash does not have to be displayed a second time).

**One note to the Custodial Staff**—Although the **WASTE AUDIT** will slightly disrupt the days usual waste disposal system. Please remember that the main goal of the program is to reduce the amount of waste the school produces. Therefore, in the long run this program will reduce the amount of trash removal time required by the custodial staff, thus reducing their workload.

Question—Please contact Todd Witcher at Ijams Nature Center—577-4717 ext.16 or [twitcher@ijams.org](mailto:twitcher@ijams.org).

**SAMPLE RESULTS FORM:**

**Waste Audit Results**

*School:* \_\_\_\_\_ *Date:* \_\_\_\_\_

This form is designed to aid in gathering information to determine the nature of the waste generated by schools participating in the Earth Flag program. When compiled, this information can act as a guide to inform which areas of waste reduction, (i.e. composting, recycling, reuse, etc) are effective and which areas need improving. **Make sure you look over all sections first to insure you are filling in the numbers in the correct sections.** For example: if your school currently has a system in place for recycling cans you would record the total number of lbs. from recycling bins in **Column A (Being diverted)**. If your school does not currently have a system set up for recycling cans or it does but you find them in the **TRASH**, put the total lbs. in **Column B (Could be diverted)**. When all results are recorded, this will determine the difference in % of *actual* diverted waste compared to the % of *possible* diverted waste.

<i>Compost</i>	<i>A</i>	<i>B</i>	<i>Condiments</i>	<i>A</i>	<i>B</i>
	<b>Diverted</b>	<b>Could Be Diverted</b>		<b>Diverted</b>	<b>Could Be Diverted</b>
Breakfast			Breakfast		
Lunch			Lunch		
Kitchen Preparation (if applicable)			Recycling and Reuse		
<b>Meal Items</b>			Mixed Paper		
<b>Opened Liquid (milk, juice, soda)</b>			Cardboard		
Breakfast			Reuse Items		
Lunch			Inkjet and Printer Cartridges		
<b>Unopened Liquid</b>			Plastic Bottles		
Breakfast			Newspaper		
Lunch			Aluminum		

Add both **A** Columns to get Total Diverted: \_\_\_\_\_

Add both **B** Columns to get Total that could be Diverted: \_\_\_\_\_

**Waste Audit Results Continued**

*Recycling and Reuse*

\*Make sure bins are emptied one week before weighing and recording all of the school's recycling and reuse boxes. It is best to get the totals from one week and then divide by 5

to get the average amounts. This does not necessarily need to be done at the same time as the waste audit.

Total diverted from **Column A**: \_\_\_\_\_

Total that could be diverted from **Column B**: \_\_\_\_\_

Total possible that could be diverted: **(A+B)=C** \_\_\_\_\_

*True Trash*

**Breakfast** \_\_\_\_\_

**Lunch** \_\_\_\_\_

**Cartons** \_\_\_\_\_

**After School (Classrooms, offices, and all other rooms):** \_\_\_\_\_

**Total True Trash (D):** \_\_\_\_\_

**Total Amount Collected (Diverted and True Trash) (E):** \_\_\_\_\_

**(Add C+D to get this total)**

**A/E= Total % of waste that is currently diverted:** \_\_\_\_\_

**C/E= Total % of waste that could be diverted:** \_\_\_\_\_