



# Compost at Work

**On-Site Composting for Businesses  
in Alameda County**

**STOPWASTE.ORG**  
*Reducing the Waste Stream for Alameda County*

## On-Site Composting Success Stories



### Chabot Community College

Chabot wanted to capture food waste from student cafeterias. They had an existing composting operation for landscape debris, however, they were concerned about how their neighbors would react to food waste being composted in open windrows. Their solution was to purchase an Earth Tub in-vessel composting system. Food scraps are mixed with equal parts wood chips or leaves. The Earth Tub's motorized auger mixes the material; odors and excess moisture are contained by a built in biofilter (also see picture bottom of page 6, and Appendix G. Chabot Community College Case Study).



### East Bay Regional Park District *Large Multi-bin*

The East Bay Regional Park District generates large quantities of bulky plant waste. They built a multi-bin and use a small front-end loader to periodically move the plant debris between bins, mixing and aerating it, and allowing a continuous flow of new material and finished compost (also see picture on page 5).



### Oakland Zoo *Ag-Bag Composting System*

The Zoo composts manure from elephants, giraffes, zebras and other herbivores, along with spent straw animal bedding. They use an Ag-Bag composting system that stuffs the material into a giant tube-like plastic bag. Initially, big clumps of straw were not mixing with the manure, which prevented the material from breaking down. The Zoo purchased a special machine called the scrapper (pictured left). The scrapper breaks up and mixes the material and has improved the quality of the finished compost.

*“Besides saving money and producing a usable product, composting has raised the economic and environmental awareness of our employees.”*

—TOM FULLER, Chabot Community College Grounds Manager

# Compost at Work

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## Introduction

With proper planning and support, a successful on-site composting program can be implemented at the workplace. On-site composting happens at the location where the material is generated. Different systems are available depending on the types and amounts of organic material being generated. There are systems for composting landscape plant debris and systems for composting food scraps, and some that can do both.

On-site composting has its benefits and challenges. It requires effort by staff and management. It requires changing old habits. There is a time commitment, though once the program is established, it is often minimal. The benefits for your business include improving its environmental performance, potentially reducing disposal costs, and producing a valuable soil amendment. On-site composting can also cut transportation costs and congestion, divert material from the landfill, and increase public awareness of important stewardship practices. Composting is an important part of returning fertility and vitality to Alameda County gardens and landscapes. It builds soil health, creates habitat for beneficial bacteria, increases the tilth and water holding capacity of soil, and reduces the need for chemical inputs.

StopWaste.Org offers assistance to small businesses through mini-grants, composting and recycling information, and this guide to on-site composting at work.

To determine if on-site composting will work at your business, start with the On-Site Composting Checklist (Appendix A). If on-site composting is not feasible, a number of communities have collection services for food scraps (Appendix D).



The Bread Workshop in Berkeley collects over 70% of its waste for composting



## STEP 1: Learn More About Composting

If you are going to implement an on-site composting program, someone at your organization will need to know how to compost. In Appendix B we offer some basic information about how to compost. We also provide a list of resources and grant opportunities that may help you learn more about composting and/or help fund your project.

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## STEP 2: Audit Your Waste

Knowing how much and what type of material is available for composting is the first step in choosing a composting system. A waste audit will help you choose the right system for your needs. Start by gathering records of disposal costs and amounts.

In order to get the most reliable results, participants — whether office co-workers, landscape maintenance staff, or custodial staff — must be prepared and well-informed with advance memos and clear signs announcing the waste audit, what the purpose is, and how to participate correctly. Signs explaining what to do should be clear and in all the languages needed to convey the instructions to staff. Pictures are very effective.

The minimum recommended amount of time for a waste audit is one week. It should be done during a week that can be considered typical. With landscape plant debris, an audit should be done at two different times of a year to take into account any seasonal variations. This may mean waiting before you construct your composting system or it may just mean looking back over older records for information.

The compostable materials that are generated at your business are most likely food scraps (along with paper towels, napkins, and coffee filters) or landscape plant debris, or both. The technique for auditing these two material streams is slightly different.

### Food Scraps

Food scraps are easiest to measure closest to where they are generated, such as in kitchens or break rooms. Use special, sanitary, well-marked containers. Place audit containers of known volume close to where food scraps are generated. Ask employees to put food scraps in the audit containers instead of the trash can for the duration of the audit. Meat should not be composted on-site.

Some food residuals are quite heavy. In general, do not use a container larger than 20 gallons unless it has wheels.

At the end of each day, measure the volumes of the scraps in the containers. If the containers aren't full, visually estimate the volume (e.g. half of a 32-gallon can). If a scale is available, weigh the containers. Record all the estimates and the methods you used to come up with them. See the Sample Audit Tracking Sheet in Appendix C. You might also want to peek in trash cans to make sure employees are participating.

### Landscape Plant Debris

Often, plant debris generated in the landscape is so voluminous that using separate audit containers is impractical. Instead, look in the bins where this material is stored right before they are collected for disposal and visually estimate what percentage is plant debris (e.g. half of a 2 cubic yard container). If you are uncertain what size containers your business uses and when they are collected, call your waste hauler, or refer to your waste bills.

Make sure to only count materials that are readily compostable. Plant debris such as palm fronds and large bulky branches take too long to decompose. On the other hand, leaves, wood chips, and grass clippings can be readily composted on-site without heavy equipment. Record all the estimates and the methods you used to come up with them. See the Sample Audit Tracking Sheet in Appendix C for ideas.



## STEP 3: Choose a Composting System

Now that you know your feedstock type and amount it is time to find the best composting system for your workplace. Choose a system that can handle the amount of organic material generated by your business. Each of the options described below has different capacities and requirements. Read the Chabot College Case Study (Appendix G) to learn more about some of these systems. In some large volume situations permits may be required, find more information about State Regulations at the bottom of page 6.

### Systems for Landscape Plant Debris (with or without food scraps)



#### Backyard Bin

- *Space required:* 3' X 3'
- *Equipment needs:* Garden fork or shovel for turning/harvesting
- *Availability:* Backyard compost bins can be purchased from local garden supply and hardware stores, and online retailers. Bins can also be built from common materials, see [www.BayFriendly.Org](http://www.BayFriendly.Org) for design plans.
- *Cost:* Starts at \$75
- *System considerations:* Often, more than one bin is used to allow for batches to mature. Harvesting finished compost requires that you stop adding fresh material for a time. Visit [www.BayFriendly.Org](http://www.BayFriendly.Org) for more information.



#### Multi-Bin System

- *Space required:* Minimum of 3' X 9'
- *Equipment needs:* Garden fork or shovel for small systems. Large systems may need front-end loader for efficient turning.
- *Availability:* Can be built from common materials. See [www.BayFriendly.Org](http://www.BayFriendly.Org) for small system design plans.
- *Cost:* Starts at \$200
- *System considerations:* Custom made bins can be scaled from backyard-size to large-scale systems that use front-end loaders for turning.



#### Turned Windrow System

- *Weekly capacity:* 10 cubic yards minimum
- *Equipment needs:* Front-end loader and chipper
- *Cost:* Front-end loaders start at \$5,000 used and \$15,000 new, and can be rented locally for about \$150/day. Chipper cost is highly variable.
- *System considerations:* Large open piles are turned with a front-end loader. Only businesses that currently have material handling as part of their operation, such as landscape contractors, stables, parks, and public works agencies, should consider this method.

# Systems for Food Scraps

## Backyard Worm Bin

- *Weekly capacity:* A quart of food scraps per square foot of bin surface area.
- *Space required:* Minimum of 12" X 24"
- *Equipment needs:* None
- *Availability:* Backyard worm bins can be purchased from local garden supply and hardware stores, and online retailers. Bins can also be built from common materials, see [www.BayFriendly.Org](http://www.BayFriendly.Org) for design plans and more information.
- *Cost:* Start at \$75
- *System considerations:* Using scrap or new lumber, virtually any size worm bin can be built. First determine how much food scraps you generate and then scale your worm bin appropriately.



## In-Vessel System: Earth Tub

- *Weekly capacity:* 400 pounds per week of food and 400 pounds per week of dry plant debris.
- *Space required:* Minimum of 10' X 10'
- *Equipment needs:* 240 volt electrical connection
- *Availability:* Commercially available
- *Cost:* Approximately \$12,000 installed
- *System considerations:* In-vessel hot composting (not worms) utilizes an electric motor to turn and mix material. It requires a source of dry, brown organic materials to be mixed with wet food waste. There should be an existing maintenance or grounds crew to operate it.



## State Regulations

The California Department of Resources Recycling and Recovery (CalRecycle) regulates compost operations in California. Worm composting is always an allowable activity without permits. In general, small businesses are exempt from regulatory requirements if: (1) only materials generated on-site are composted, and (2) less than 500 cubic yards of organic waste are on-site at any one time. Permits are required if more than 500 cubic yards of organic waste is on site at any time or if material is being composted in a container with a capacity of more than 50 cubic yards. How much is 500 cubic yards? A typical backyard compost pile is about one cubic yard. Most businesses in Alameda County don't generate 500 cubic yards of organic material very often. For more information on regulations and permits, and for questions about whether an activity is in compliance with state-wide composting regulations, see the CalRecycle website at: [www.calrecycle.ca.gov/Laws/Regulations/default.htm](http://www.calrecycle.ca.gov/Laws/Regulations/default.htm).

## STEP 4: Choose a Coordinator and Gain Support

### Choose a Coordinator

A coordinator is the one person who takes the time to implement this important project, and is essential for the success of an on-site composting program. It could be the owner of the company, a manager, or a staff person. Identify a coordinator who is enthusiastic about composting or recycling and capable of communicating well with co-workers, custodial staff, landscape maintenance staff, and management. This person should be willing to spend some time learning about composting. The coordinator does not necessarily do all the day-to-day work, but does make sure all the work gets done and that everything runs smoothly.

In the long term, support from upper management, co-workers, and any “hands-on” custodial or landscape maintenance staff is essential for success. After all, you can't do it alone. On-site composting needs the participation of other employees and everyone involved to make the program work.

### Gain Support

Discuss the potential for organics recycling with the facility, office, or building manager, as well as the landscape maintenance contractor and custodial manager, to assess their support and address their concerns.

Talk with others in the organization about the idea. Depending on the type of business, a support-building memo that discusses the benefits of the compost program might be appropriate. See Appendix E for a sample support-building memo for a food scrap composting program.

If your organization is large, consider forming an “organics recycling team” of support volunteers from different departments. This could be the beginning of your business' waste reduction policy or “zero waste” plan!

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## STEP 5: Operations and Planning

### Site Considerations

Composting is usually an outdoor activity—it is a natural process that is affected by, and affects, the local environment. Read the Chabot College Case Study (Appendix G) to learn more about compost operations. When planning your program take the time to identify a good site that provides sufficient space and access, any needed utilities, and allows for good neighbor relations.

Above all, make sure you have enough space for your system. You will not only need enough room for your composting bin, but also potentially to store tools, containers, feedstock, and finished compost. Make sure there is sufficient access for feedstock to be delivered and finished compost to be removed. Slopes greater than 4% should not be used because of potential run-off. Access to a water source is another important consideration. In California's hot dry season piles may need additional water for optimum decomposition. Water may also be needed for cleaning out empty collection bins.

Don't let neighbors learn about your composting project through their noses! Sweet smells or foul odors can be generated, depending on the success of the operation. Ideally, composting systems will be

downwind from neighbors and as far away as possible. Consider telling your neighbors about your composting plans before you implement your project.

### Roles and Responsibilities

A successful on-site program will require some staff time. **Training of all staff involved in the project is a must!** Some common titles and roles include: coordinator, worm feeder, pile turner, equipment operator, and/or record keeper. Often these roles can be filled by volunteers, contracted janitors or landscapers, or staff and management. Cooperation and coordination are vital. The degree to which there is a division of labor will vary from one workplace to another. There are many benefits to having several people involved, including the ability to back each other up, provide stability to the program, and avoid burnout by one dedicated composter.

### Making a Budget

The following items should be in the budget:

- *Compost bins.* Prices of manufactured bins are easy to come by. Costs for constructing your own bins are less apparent, but the StopWaste website can help—visit [www.BayFriendly.Org](http://www.BayFriendly.Org).



- *Equipment & tools.* You might just need a shovel and some gloves. Large programs might invest in a front-end loader.
  - *Collection containers.* Containers will be needed to collect and transport the discarded organic materials. The type and volume of material, as well as budget constraints of the business, are primary determinants of the type, size and number of containers to use. Some offices will only need small, dedicated step-cans to collect the food scraps, others may require large two-wheeled toters.
  - *Labor.* Include labor for collecting raw feedstock and for maintaining your operations. Keep in mind, composting might not increase labor. Personnel is already handling this material; the only difference might be that it now goes in the compost bin instead of the trash.
  - *Utility hook-up.* For most systems, a hose spigot is all you need. In a very few cases, electricity may be required.
  - *Disposal charges.* The composting program might allow you to reduce your garbage service level. If disposal charges go down this will help off-set new program costs.
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## STEP 6: Start Your Program!

- Promote the program to all employees using memos, e-mail, newsletters, and staff meeting presentations. See Appendix E for a sample promotional e-mail for a food scrap composting program.
  - Consider a special event to officially kick-off the program.
  - Make sure everyone knows the organics collection schedule, procedures, and their roles.
  - Do something fun, like hanging posters or handing out snacks to build enthusiasm.
  - Put composting signs above or next to the organics collection containers. List what can and can't be composted, and include a contact phone number for people to use when they have questions. Go to [www.StopWastePartnership.Org](http://www.StopWastePartnership.Org) for a downloadable composting poster.
  - When the program first starts, walk around and make sure it's working. Talk and listen to co-workers, as well as landscape and custodial staff, and make adjustments as necessary.
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## STEP 7: Keep it Going and Growing

Congratulations! You have implemented an on-site composting program. But don't stop there. Work to continuously expand and improve your system.

- Continue to promote the program using signs and other materials. Keep it fresh.
- Get feedback from your co-workers, as well as landscape and custodial staff. Use group e-mails to explain the program, invite feedback, and distribute updates.
- Keep track of any reductions in your organic waste. Ask for weight tags from your garbage hauler. Track any cost savings. Refer to Appendix F for a sample organics waste tracking spreadsheet.
- Reward and celebrate success. Use savings from reduced disposal costs for a company party or movie ticket raffle.
- Tell your customers what you are doing. Recent studies have shown that environmental projects can improve customer loyalty and generate new business.
- Send a press release describing your program to industry newsletters, local newspapers, and other publications. And let us know how you are doing! We would love to hear about your experience. Send an email to [Partnership@StopWaste.Org](mailto:Partnership@StopWaste.Org).

### Compost Operations Troubleshooting

One of the best ways to increase your composting skills is to troubleshoot problems as they arise. Appendix H is a Troubleshooting Guide designed to help you through this process. Check out the Resource section of Appendix B for leads on more in-depth help.



## APPENDIX A: On-site Composting Checklist

### *Are You a Good Candidate for On-Site Composting?*

The following questions may help you decide if on-site composting is a good match for your workplace. “No” answers indicate areas that need to be addressed before proceeding. Questions marked with an asterisk (\*) are especially important. If after filling out this checklist you feel that an on-site composting program would not be successful, refer to Appendix D to see if commercial organics collection is available in your area.

CRITERIA	YES	NO
<b>Organization &amp; Personnel</b>		
*Is there support from key management and staff for composting?		
Do recycling programs already exist at your business/workplace?		
Are there dedicated compost enthusiasts on staff? Is there someone who can be a “compost coordinator?”		
Could the duties associated with composting be written into job descriptions?		
Will most everyone be agreeable to a small, on-site composting system?		
<b>Site</b>		
*Is there a potential site for a compost system that is relatively flat and has access to water?		
Is there landscaping at your site where finished compost can be applied?		
<b>Feedstock</b>		
Do you know what types of organic materials are generated (e.g. leaves, food scraps, sawdust, grass clippings, etc.)?		
*Would it be possible to easily separate the organic material from trash or other recyclables?		
Do you know how much organic material is generated, and how often?		
<b>End Product</b>		
*Would the finished compost be a valuable resource for your business or to your employees?		

## APPENDIX B: Composting Resources

### Compost Basics

Decomposition naturally occurs when micro-organisms transform organic matter (their source of food) into compost. Composting, then, is the human control and speeding up of this natural process of decomposition. Four basic elements are necessary for *thermophilic*, or hot, composting. These “**Big Four**” are: browns, greens, air, and water (all of which are necessary for microbial life). The relative lack of, or abundance of, each of these elements determines the speed of decomposition and the quality of the finished compost.

(1) **Browns** are dry materials (such as fallen leaves, twigs, prunings, straw, wood chips, sawdust, and even shredded newspaper) that are a carbon source for the micro-organisms.

(2) **Greens** are fresh, soft, and/or green materials (such as grass clippings, food scraps, coffee grounds, and herbivore manures) that are a nitrogen source for the micro-organisms.

(3) **Air** enters the system through the spaces provided by the large particle-size of material in the pile and by turning the pile periodically. Compost breaks down faster when it is properly aerated.

(4) **Water** a pile as you build it and as you turn it. It will compost faster if it doesn't dry out.



The **Three Basic Steps** of hot composting are to: chop, mix, and maintain moisture.

(1) **Chop** materials to less than 6 inches long.

(2) **Mix** browns (carbon) and greens (nitrogen) 50/50 by volume.

(3) **Maintain air and moisture** by making sure the pile is about as wet as a wrung-out sponge.

**Worm Composting** is a slightly different system that incorporates redworms to aid in decomposition. It differs from thermophilic composting in that you do not want to produce heat. You do that by keeping out the brown materials. It is used when food scraps are the primary material.

### Harvesting and Using the Compost

Harvesting the compost varies according to the system being used. Batch hot-composting systems, like the multi-bin system and the Earth Tub, are periodically harvested in large quantities, and care should be taken not to mix fresh materials to be composted with mature compost. Some worm composting bins are “continuous flow,” meaning the finished compost can be harvested without disturbing the worm population. In some cases, compost has to go through a “curing” phase to be usable. It does not have to be actively handled during this time.

How the compost is used depends on the type of grounds or landscaping at the business. Some businesses don't have much outdoor landscaping and will want to reward volunteer composters by letting them take the compost home for their houseplants and vegetable gardens. Some businesses might use the compost for beautifying the work space with potted plants. Finished compost can be either incorporated into soil or left on the surface as a top dressing. As a rule of thumb, the more woody the finished product, the less it should be incorporated into the soil or used as a potting medium.

See Other Publications below for resources on harvesting and using compost.

### Note on Grass Clippings

The best method for composting grass clippings is to simply leave them on the lawn. This is called grasscycling. Visit [www.BayFriendly.Org](http://www.BayFriendly.Org) for a free copy of “A Bay Friendly Guide to Grasscycling: Save Time, Save Money and Create Beautiful Lawns” (also available in Spanish).

## Appendix B: Composting Resources (continued)

### StopWaste.Org Resources & Support



#### www.StopWaste.Org

StopWaste.Org is a public agency dedicated to reducing the waste stream for Alameda County. Visit [www.StopWaste.Org](http://www.StopWaste.Org) for general recycling information as well as more in-depth resources for the agency's four major programs: Green Building in Alameda County, StopWaste Business Partnership, iRecycle@School, and Bay-Friendly Landscaping and Gardening.

#### www.BayFriendly.Org



The Bay-Friendly Landscaping and Gardening program promotes landscaping practices that foster soil health and conserve water and other valuable resources while reducing waste and preventing pollution. Visit [www.BayFriendly.Org](http://www.BayFriendly.Org) for information about composting, a list of vendors that sell compost bins, and a schedule of nursery events. The Bay-Friendly Coalition, [www.BayFriendlyCoalition.Org](http://www.BayFriendlyCoalition.Org), is a non-profit organization that provides Bay-Friendly resources throughout the Bay Area.

#### Brochures & Publications

Visit [www.BayFriendly.Org](http://www.BayFriendly.Org) to download publications or order printed materials.

**"Compost: A Bay-Friendly Garden Starts with Healthy Soil,"** provides detailed information on basic and worm composting. *Free brochure.*

**"Bay-Friendly Gardening: From your Backyard to the Bay,"** provides general information on Bay-friendly gardening. *Free publication for Alameda County residents.*

**"Bay-Friendly Landscape Guidelines: Sustainable Practices for the Landscape Professional,"** provides detailed information for landscape professionals on Bay-friendly landscaping principles and practices. *Free publication for landscape professionals working in Alameda County.*

#### Grant Funding

Individual awards in the **Mini-Grant** program from \$1,000 up to \$5,000 are available for projects in the areas of waste prevention, composting, reuse, recycling, market development, and educational programs. The program is open to all applicants — private firms, non-profit organizations, schools, public agencies, and individuals. Application packets available online at [www.StopWaste.Org](http://www.StopWaste.Org) or by e-mailing [Partnership@StopWaste.Org](mailto:Partnership@StopWaste.Org).

#### www.StopWastePartnership.Org



The StopWaste Business Partnership offers companies and institutions in Alameda County free help to lower operating costs, increase efficiency and protect the environment through recycling and waste prevention improvements.

No matter if you are looking to set up an on-site composting program at your small business, or bring sustainability to the entire supply chain, our team has the expertise and tools you need. Check [www.StopWastePartnership.Org](http://www.StopWastePartnership.Org) for more information, or e-mail [Partnership@StopWaste.Org](mailto:Partnership@StopWaste.Org).



#### Books about Composting

*The following books are available at the Ecology Center in Berkeley and at other local or on-line book stores.*

***Worms Eat My Garbage***, by Mary Appelhof. The definitive book on worm composting. Flower Press.

***Let It Rot***, by Stu Campbell. Highly-recommended book on the basics of composting. Storey Publishing.

***The Rodale Book of Composting***, by Grace Gershuny & Deborah L. Martin, editors. Highly-recommended book on the basics of composting. Rodale Press.

## Appendix C: Sample Audit Tracking Sheet

Use this sample worksheet to help track the information from your audits. The worksheet can be used to record either volume or weight measurements.

	Audit 1	Audit 2	Audit 3	Audit 4
1. Date				
2. Material (food or plant debris)				
<b>Volume</b>				
3. Volume of container (cubic feet)				
4. Percent full of compostable material				
5. Calculate volume of compostables (row 3 X row 4)				
<b>Weight</b>				
6. Weight of empty container				
7. Weight of full container				
8. Calculate weight of compostables (row 7 - row 6)				

### Converting Volume to Weight - Guidelines

Some materials are easier to measure by volume than by weight. For example, it can be difficult and cumbersome to weigh a cubic yard of plant debris. And it may be easier to “eye ball” the volume of food scraps generated than to find a scale to weigh them with. If you want to convert your volume measurements to weight use the following guidelines.

#### Food Scraps: Converting Gallons to Pounds

Multiply the number of gallons by anywhere between 4 and 6 to get the weight in pounds. Lighter foods like lettuce would be a 4, heavier foods like cooked grains and pasta a 6. For a mixture you can use 5.

*Example:* 10 gallons of vegetable scraps X 5 = 50 pounds.

#### Landscape Debris: Converting Cubic Yards to Tons

Multiply the number of cubic yards estimated by between .2 and .3 to get the weight in tons. Dry tree prunings would be .2 and fresh green prunings .3.

*Example:* 30 cubic yards of chipped tree prunings X .2= 6 tons.

*Notes:* These conversion values are just typical amounts within a range. Use your judgment to determine which conversion factor to use.



## Appendix D: Collection Services for Commercial Food Scraps

If on-site composting is not practical for your organization, a number of communities offer commercial collection services for food scraps. Use the table below to find out what options are available in your area. By keeping compostable materials out of the trash, you may be able to reduce your garbage bill. This table was created in July, 2011. For the most current information check [www.StopWastePartnership.Org](http://www.StopWastePartnership.Org).

City	Collection Available	Vendor(s) Offering Service	Vendor Phone Numbers
Alameda	YES	Alameda County Industries (ACI)	510-483-1400
Albany	YES	Waste Management	510-613-8710
Berkeley	YES	City of Berkeley	510-981-7270
Castro Valley Sanitary District	YES	Waste Management	510-613-8751
Dublin	YES	Amador Valley Industries (AVI)	877-479-9545
Emeryville	YES	Waste Management	510-613-8700
Fremont	YES	Allied Waste Services	510-657-3500
Hayward	YES	Waste Management	510-537-5500
Livermore	YES	Livermore Sanitation, Inc.	925-449-7300
Newark	NO		
Oakland	YES	Various, call for information	510-238-SAVE
Oro Loma Sanitary District	YES	Waste Management	510-613-8710
Piedmont	YES	Richmond Sanitary Service	800-320-8077
Pleasanton	Service Pending in 2012	Pleasanton Garbage Service	925-846-2042
San Leandro	YES	Alameda County Industries (ACI)	510-357-7282
Union City	YES	Allied Waste Services	510-657-3500

## Appendix E: Gain Support

Use the following support building memo and promotional e-mail to gain support for your program. Feel free to customize these documents for your situation.

### Sample Support-Building Memo:

To: All Staff  
From: (Compost Coordinator or Senior Manager)  
Subject: On-Site Composting Program for Food Scraps

(Organization) will soon start reducing our trash load by initiating an on-site composting program for food scraps, such as coffee grounds, banana and orange peels, and lunch leftovers. This will accomplish two primary objectives: (1) to reduce the amount of “waste” generated by our organization, and (2) to produce finished compost that can be used here on the landscape or for employees to take home for your gardens and/or house plants.

Our on-site composting program will help conserve energy by minimizing the transportation and disposal of our food waste, and will help preserve natural resources by keeping our organic matter out of the landfill. By implementing this program, (Organization) will help Alameda County move closer to its goal of diverting “75% and beyond” of its waste from the landfill.

We will first be conducting an audit of the food scraps that we generate on a regular basis at (Organization) in order to determine what type of composting system to use. We will then design and set up our program. You will receive regular updates on our progress with information on how you can contribute to the success of the program.

*On-site composting* is the controlled decomposition of organic material at the location where it is generated. Compost systems are designed to mimic nature’s way of recycling organic matter. The result is a dark, rich, soil amendment called compost. In home gardens and landscapes, compost builds soil health, creates habitat for beneficial bacteria, increases the tilth and water holding capacity of soil, and reduces the need for chemical inputs. Compost is an important part of returning fertility and vitality to Alameda County soils.

If you have any specific questions or concerns, or would like to assist with the start-up of our on-site composting program, please contact (coordinator name) at (phone number/extension and/or email).

Thank you for helping (Organization) demonstrate our commitment to the environment through the adoption of sustainable business practices.

# Appendix E: Gain Support (continued)

## Sample Promotional E-mail:

To:All Staff

From:(Compost Coordinator)

Subject:"Worm Workers" Needed for the New On-Site Composting Program for Food Scraps

(Organization) will soon start reducing our trash load by launching our new on-site composting program for food scraps. Through our audit, (Organization) has identified a significant amount of organic matter in the waste stream destined for the landfill. Diverting these materials with a worm composting system will save us money and help the environment, too.

I am looking for a minimum of 4 staff volunteers so that we can launch the new office-wide composting program for our food scraps. There are incredible bonuses, such as a pizza kick-off party, surprise morning bagels once in a while to keep up our spirits, even gift-certificates.

In addition to these exemplary volunteers, we will need the support of everyone in the office to be conscientious about putting the right materials in each bin, and more importantly, not putting the wrong materials in the composting container. Signs will be posted to remind you what can and cannot be composted.

Each of the volunteer "worm workers" will be responsible for "feeding" one of the containers to the worms on a weekly basis. If we can recruit 8 volunteers, each volunteer will feed the worms once a week for a one week stretch every two months. At 20 minutes per week, that amounts to a time commitment of just over two hours each year. If more volunteers sign-up, then it is even less effort.

With your help, we will be able to separate most of our food scraps for feeding to the worms. The following is a list of materials that can and cannot be composted in our worm bins:

YES	NO
Coffee Grounds	Grains / Bread
Coffee Filters & Tea Bags	Meat / Dairy
Fruit & Vegetable Scraps	Plastic
Paper Towels	Trash

The training and kick-off for the volunteer "worm workers" will be on (date; often the friday before the launch). Our targeted launch date is set for (date). Please email me as soon as possible if you want to be one of our dedicated "worm workers."

**Job:** "Worm Workers" (aka Worm Feeding Volunteers) — a minimum of 4 people needed.

**Duties:** Once a week, empty outside collection container into worm bins, clean out container, and monitor worm bins for health, sufficient bedding, moisture, odors, rodents, etc. Report problems to (Compost Coordinator).

**Time Commitment:** 20 minutes per week, once a week, 6 times per year for a total of 2 hours a year.

(Compost Coordinator)

## Appendix F: Waste Tracking Spreadsheet

This worksheet will help you quantify the success of your composting program. You may need to ask for weight tags from your hauler, or estimate based on sample observations you have taken.

	Material A (plant debris)	# of Cubic Yards per month	Convert to weight	Material B (food residuals)	# of Gallons per month	Convert to weight	Total weight of Compostables (diversion)	Total weight of Trash still being hauled	Diversiom Rate (divide diversion by total trash)
Jan.									
Feb.									
March									
April									
May									
June									
July									
Aug.									
Sept.									
Oct.									
Nov.									
Dec.									
Year Total									

### Converting Volume to Weight - Guidelines

Some materials are easier to measure by volume than by weight. For example, it can be difficult and cumbersome to weigh a cubic yard of plant debris. And it may be easier to “eye ball” the volume of food scraps generated than to find a scale to weigh them with. If you want to convert your volume measurements to weight use the following guidelines.

#### Food Scraps: Converting Gallons to Pounds

Multiply the amount of gallons by anywhere between 4 and 6 to get the amount of pounds. Lighter foods like lettuce would be a 4, heavier foods like cooked grains and pasta a 6. For a mixture you can use 5.

*Example:* 10 gallons of vegetable scraps X 5 = 50 pounds.

#### Landscape Debris: Converting Cubic Yards to Tons

Multiply the amount of cubic yards estimated by between .2 and .3 to get the weight in tons. Dry tree prunings would be .2 and fresh green prunings .3.

*Example:* 30 cubic yards of chipped tree prunings X .2= 6 tons.

*Notes:* These conversion values are just typical amounts within a range. Use your judgment to determine which conversion factor to use.



# Appendix G: Chabot Community College Case Study



## Composting and Recycling Case Study

### Chabot College

Chabot College is part of the Chabot–Las Positas Community College District, which was founded in 1961. Located in Hayward, Chabot College employs 1,400 people and has 15,000 students.

#### Facts-at-a-Glance

##### Challenges

- How to cost-effectively compost food scraps
- Controlling odors from food composting
- State law requiring waste reduction
- Limited budget for environmental projects

##### Solutions

- On-site composting technical assistance
- \$10,000 grant for on-site composting
- Composting equipment purchase with grant funds
- Inclusion of construction and demolition debris language in contracts
- \$5,000 grant for campus recycling bins

##### Benefits

- Provides \$10,000 cost savings
- Composts 47 tons of organic materials each year
- Improves quality of landscape compost
- Creates healthier soils and landscape

#### The Story

Chabot College already had a high recycling rate—over the level mandated by State law. In addition to traditional recycling, its composting operations took care of most campus plant debris, turning it into soil amendment, mulch, and top dressing for campus turf. To improve its environmental performance even more, the college contacted the StopWaste Partnership to take advantage of waste reduction funding opportunities. A positive relationship developed that has led to many successful projects, increased waste diversion, and cost savings.

*“It is not difficult to predict that the cost benefits of composting for Chabot College could double, or even triple, in the next few years.”*

TOM FULLER  
Grounds Manager

#### Challenges

The goal was to improve Chabot's landscape composting operations and initiate on-site food scraps composting, despite the college's limited capital to fund environmental projects.

Chabot College staff knew that food scraps composting wouldn't be acceptable to neighbors of the college unless the compost was contained, which would require a separate system from its open windrows. Also, meeting California requirements for composting this much material would be challenging.

In addition, Chabot needed funds to purchase containers and equipment, and technical assistance to select a system, and start a new program. But the district was experiencing budget short-falls and money was not available for the project.



Chabot uses a self-dumping “tipper” to load food waste into its earth tub composter.



## Appendix G: Chabot Community College Case Study (continued)



### Chabot College

## Solutions

Increase the effectiveness of Chabot's landscape composting operations and develop a food scraps composting system.

*"Besides saving money and producing a usable product, composting has raised the economic and environmental awareness of our employees. People are starting to look more aggressively for ways to recycle, reduce waste, and save even more money."*

TOM FULLER  
Grounds Manager



### The StopWaste Partnership

The StopWaste Partnership is a free technical assistance service dedicated to improving the environmental performance and reducing costs of Alameda County businesses and public agencies. The program provides expert support and funding to prevent waste, conserve water and energy, and use all resources more efficiently.



### Landscape Composting

For over 20 years, Chabot College has been composting grass clippings, wood chips, and leaves. Virtually no plant debris generated on this 93-acre campus is landfilled. Materials are mixed and a windrow built, usually 8 feet high and up to 100 feet long, with a front-end loader. With assistance from StopWaste, the college was able to purchase professional compost covers that keep moisture in but rainwater out. Piles used to take three years to decompose to marginal quality. With the windrow covers, they now take only 18 months and produce high-quality compost, with minimal turning or labor needed. Finished compost is used throughout the campus as soil amendment.

### Food Scraps Composting

Pre-consumer food scraps from the cafeteria are now diverted into special bins by the very cooperative kitchen staff. Then the Grounds department puts the waste into a "tipper" that a forklift takes to a Green Mountain Earth Tub for composting. The scraps are mixed with equal parts wood chips or leaves. The Earth Tub has a biofilter and a motorized auger that mixes the materials; odors and excess moisture are contained. After about five weeks, the tub is emptied and another batch is started. StopWaste provided research and training for the project, and provided grant funding for equipment.

### Other Projects

Chabot has accomplished more than composting. Paper, cardboard, bottles and cans, and scrap metal are collected for recycling. The StopWaste Partnership provided construction and demolition debris contract language that the college has incorporated into new construction contracts to help ensure waste reduction. Surplus campus property is reused as much as possible; for example, the newest compost bins were made from old bleachers.



### The bottom line:

- \$7,500 annual garbage bill reduction
- \$2,500 annual reduction in soil amendment purchases
- \$15,000 in environmental grants
- \$10,000 compost equipment purchase

Visit [www.stopwaste.org/partnership](http://www.stopwaste.org/partnership) or call 1-877-STOPWASTE.

## Appendix H: Troubleshooting Guide

Symptom	Problem	Solution
<b>Basic Composting Systems — plant debris</b>		
Materials in pile not breaking down	Too dry	Add water until thoroughly damp & turn the pile.
	Too much “brown,” carbon-rich material	Turn pile & add “greens” (grass clippings or manures). Keep the pile moist and aerated. It will take time for the chips to break down.
	Too wet	Turn the windrow and allow it to dry out.
Pile smells rotten and/or attracts flies	Too wet or too much “green,” nitrogen-rich materials.	Turn pile & add “browns” (dry, woody material).
	Food scraps and/or dog or cat feces in pile	Stop adding these materials.
Rodents in pile	Food scraps in pile	Turn the pile to destroy nests, keep the pile moist to discourage nesting, increase frequency of pile turning & use traps to discourage population growth.
Pile creates a dust cloud when turned	Material is too dry	Wet the pile thoroughly as it is being turned.
	Material is too fine	Pile has decomposed fully. No need to turn.
<b>Worm Composting Systems — food only</b>		
Worms are dying	Food & bedding all eaten	Harvest compost, add fresh bedding & food.
	Too dry	Add water until slightly damp.
	Extreme temperatures	Move bin so temperature is between 50 & 80 degrees F.
Worms are trying to escape	Usually too moist; worms are drowning	Stop feeding for a while & let the bin air out; might have to purchase more worms.
Bin attracts flies and/or smells bad	Food exposed/overfeeding	Add 4” - 6” layer of bedding & stop feeding for 2-3 weeks; throw away collected material, if necessary.
	Non-compostables present	Remove non-compostables, such as meat, pet feces, etc.
Sowbugs and/or beetles in bin	These are good for your worm compost!	
Ants in the bin	Bin is too dry	Not a problem, but more water or moist food could be added.
Red mites in the bin	High acidity	Light sprinkling of calcium carbonate on surface.



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