# Think Global, Act Local Project WASTE - UVA Dining West Range Café

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#### **Abstract:**

This waste audit initiative addresses the primary waste issues with UVA Dining at West Range: waste stream, disposal receptacles, and food consumption. The community partner for this project was Chris Stevens, the Aramark Sustainability Manager, as well as the point of contact for UVA's Green Dining Initiative. The West Range Café is a University owned dining hall that attracts many students and faculty. The stakeholders of this project are UVA students, faculty, dining staff at West Range, and Aramark. These individuals and organizations may be affected by the conclusions that were drawn from this project once more sustainable practices are implemented.

#### Waste audit objectives:

- Determine the composition of waste and the quantities being generated at the West Range Café.
- 2) Measure the effectiveness of current UVa Dining waste management systems.
- 3) Identify improvement opportunities for the current waste management system.

The primary goal of this project was to collect useful and reliable data on the waste stream at the West Range Café by performing a waste audit. A waste station set up at the entrance to the facility was used to collect compostable materials, recyclables, and trash. We recorded the weight and volume of all bags collected from 9:00 AM to 8:00 PM at the West Range Café. Once this data was collected, it was further analyzed to determine what sort of future work would be appropriate to improve sustainability. By looking at the waste stream, we gained insight on how UVA Dining can reapportion their waste receptacles to match that of their waste stream. By changing the ratio of compost to trash bins, the dining facility could create a more sustainable environment which accurately accommodates the waste stream proportionally.

The West Range waste audit formed the basis for making current recommendations and will serve as the control for determining future implementation success. By understanding the composition of waste, the team saw what solutions could be used to minimize or, in the future, possibly eliminate waste. The unexpected volume of compostable material demonstrated a need for more composting containers and less trash containers, as well as clear directions for customers. After the data is further analyzed, a future group could build off of our research and establish a waste reduction plan. Our data will serve as the baseline for determining the success of future waste minimization strategies.

#### **Introduction:**

Each year, Americans produce millions of tons of trash. In 2010, the Environmental Protection Agency reported that, "Americans generated about 250 million tons of trash and recycled and composted over 85 million tons of this material" (EPA). This data suggests that as of 2010, Americans were recycling and composting at a rate of 34.1 percent. To achieve the goal of having a zero waste facility would mean that these practices would have to improve by 65.9 percent. As a first step to understanding the waste stream at UVa, we decided to perform a waste audit at the West Range Café and see if our data correlated with the statistics reported by the EPA in 2010. We were fortunate to find that with the proper bins, labeling, and directions, we have a significantly higher recycling and composting rate than the US average.

The disposal of waste from cafeteria and dining facilities at UVA has become a topic of interest in the discussion of sustainable use of resources. This is due to the inefficient and improper practices that the facilities implement in their operations. In conjunction with a class initiative for the Global Sustainability course at the University of Virginia, our group project addresses the campus-wide issue of proper disposal of excess food and garbage, with the goal of understanding the breakdown of trash, recyclables, and compost among the articles that are thrown out by the typical dining patron. By looking at various precedents, including the Runk Dining Hall Waste Audit, The Newcomb Waste Audit, and the O Hill Waste Audit, our team was able to understand the process and what types of recommendations could be made using the data collected. The location for our food waste audit is the West Range Café, a roughly 30-person capacity dining facility near the Lawn that serves sandwiches, salads, and snacks. This food waste audit provided us with raw data to present to the university and the community in

order to 1. Encourage students to reduce their amount of food waste and 2. Promote sustainable waste disposal through classifications of waste type.

On April 1, 2013, our student group conducted a waste audit between the full service hours of 9 AM and 8 PM. We set up three large plastic containers next to the entrance and exit to the dining room, which were used to collect and separate the waste that patrons intended on disposing inside the venue. At the end of the audit, we had collected and weighed 68lbs of compostable material, 13lbs of recyclable material, and only 2lbs of total trash. These results indicate that the vast majority of dining waste can be diverted from trash containers, which ultimately end up in a landfill or an incinerator, impacting the environment detrimentally. Additionally, many students also informed us of their interest in having a permanent system for proper and sustainable waste disposal. If UVA can foster this student involvement to a level of strong and consistent participation, the university can move towards sustainable dining waste disposal as quickly and as responsibly as possible.

# **Body:**

#### **Timeline:**

## January 2013

1/31 Group formed in discussion

We discussed our shared interests in food waste at the university, as well as our hopes for creating change in how people view waste.

## February 2013

2/6 Project Definitions due, met with Rosemary Ho, Sustainability Advocate

Project definitions addressed the issues that we hoped to solve, identified community partners, stakeholders, and our project's effects on these people, possible approaches, and our personal interests in the project.

Rosemary told us about the make-up of the UVa's waste system. For example, recycling is mainly taken care of by Black Bear Recycling. Composting does not occur at all dining locations.

2/14 Attended waste audit at UVa Shea House dining hall

This waste audit served as a precedent for our own. We learned about how a typical audit should be conducted, as well as which products are recyclable and which are compostable. We also met Chris Stevens, who would serve as our community partner later on.

2/20 Precedent Analysis and Process Plan due

For the precedent analysis, we narrowed down our project definition so that it summarized the overall goals and objectives of the group. We formulated an estimate for the project's schedule, as well as the possible costs and materials needed. At this point, we decided that we wanted to conduct a waste audit at our site, West Range, to analyze the amount of waste that people were producing, specifically including how much was recyclable or compostable.

2/20 Initiated contact with community partner, Chris Stevens, Sustainability Manager at the UVa Dining Services

### **March 2013**

3/5 Met with Chris Stevens at West Range to discuss details of audit

At the meeting, we determined that the best date for the audit would be March  $22^{nd}$ , as this was the most convenient day for the majority of the group.

3/19 Contact community partner, Rosemary Ho

We notified her of our intent to go through with the audit, as well as request supplies of scale and bins.

- 3/21 Attempt to contact Rosemary again
- 3/22 Postpone audit to later date

Lack of communication with community partners proved to be our group's greatest setback. Due to a lack of supplies, we were unable to conduct audit on the initial date

we had planned, putting us behind schedule.

3/28 Group meeting to determine new audit date

The second date for audit was set for April 1st, from 8 am-8 pm

- 3/28 Notified Chris Stevens of new audit date
- 3/28 Contacted Jason Snow, member of UVa Recycling Team

We notified him of our new audit date and times, as well as requested materials.

3/29 Jason returned email

Jason notified us that the scales were needed elsewhere until 9 am on the 1<sup>st</sup>, and the recycling facilities closed at 3:30 pm, restricting our audit schedule to 9 am-3 pm.

## **April 2013**

4/1 Conduct waste audit at site

8:45 am: set up

Jason did not bring the bins or the scales to West Range so we had to use bins and a scale that were already at the site. Fortunately, we were able to borrow bins and a scale from West Range facilities. We do not believe that this significantly affected our data, although the new scale was not ideal for weighing the bags of waste. This also allowed our audit to be extended until 8 pm, when West Range closed.

9:00 am: began collection and sorting of waste

11:35 am: weigh and dispose of composting bag 1

11:35 am: weigh and dispose of recycling bag 1

1:05 pm: weigh and dispose of composting bag 2

2:40 pm: weigh and dispose of composting bag 3

3:15 pm: weigh and dispose of recycling bag 2

6:25 pm: weigh and dispose composting bag 4

8:00 pm: end audit

8:05 pm: clean up, weigh and dispose composting bag 5

8:05 pm: weigh and dispose recycling bag 3

4/2 Group meeting to compile draft project report

4/3 Draft Project Report due

4/23 Final poster due

#### May 2013

5/4 Final project report due



Waste Audit Bin Set-Up



Waste Audit Signs to Direct Customers

#### **Documentation and Assessment:**

In order to collect and document the waste, a waste station was set up at the entrance of West Range Café. It was necessary to prevent waste from avoiding our stream, so other trash receptacles were blocked off or hidden. Signs were also placed throughout the location, directing customers to bring their trash towards the audit station. The bins were labeled with signs titled "compost", "recycling", and "trash" that were color coded such that organic matter was green, recycling blue, and trash black.

At the audit station a group member was positioned to assure that materials were allocated into the proper bins. All food, as well as napkins, paper cups, to-go food carriers (non-Styrofoam), sugar packets and paper liners from the eat-in food trays were composted. Plastic in the form of bottled drinks, utensils, and plastic food containers, was placed into the recycling bin. Only sauce packets, soiled plastic containers, and Styrofoam containers were placed in the trash bin.

The presence of at least one team member at the waste station throughout the day proved to be absolutely necessary. While each bin was labeled with a sign, customers were largely unaware of what materials could be composted. Most people tried to separate food from paper and dispose of the paper goods in the trash bin. As such, compostable materials were later listed on the bin's sign, (i.e. sugar packets, napkins, paper, and food). This helped curb the issue, however a very large number of customers still headed straight for the trash bin upon disposal. It proved most effective to place the trash bin in the least convenient location, to the side, by the group member on duty, in order to trigger customers to be more aware of their waste disposal. Also, frequently customers would ask our group members how to properly dispose of their waste. Without team member's assistance most of that waste would have undoubtedly ended up

in the trash stream rather than the compostable or recycling streams. The allocation of waste into the proper categories was imperative for accurate data to be collected.

All waste materials were kept until the end of the day so that they could be weighed.

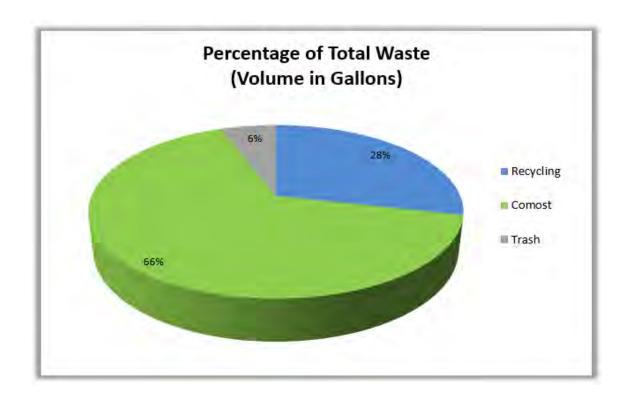
When a bin became full, the time and the type of waste was noted and then the bag was carried outside for storage until the end of the audit. When all customers had deposited their trash and left the facility, the waste was weighed on a scale to determine the weight of each type of waste.

The weight and volume measurements were then recorded on a data collection form.

**Waste Audit** 

Material	Shift	Weight (lbs)	% of total <u>wt</u>	Cumulative wt %	Volume (gal)	% of total vol	Cumulative vol %
Recycling	9am-2pm	5	6.02%		23	13.10%	
Recycling	2pm-8pm	8	9.64%	15.66%	27	15.40%	28.50%
Compost	9am-2pm	30	36.10%		46	26.30%	
Compost	2pm-8pm	38	45.80%	81.90%	69	39.40%	65.70%
Trash	9am-2pm	0	0%		0	0	
Trash	2pm-8pm	2	2.40%	2.40%	10	5.70%	5.70%
Totals:		83			175		

Data collected from West Range Café from 9am-8pm.



As is evident from the data, by weight over 80% of the waste generated at West Range Café is compostable. Around 15% of waste generated is from recyclable goods, while only slightly over 2% of the waste was trash. When the data was assessed in terms of volume, we found that 65.7% of the waste generated

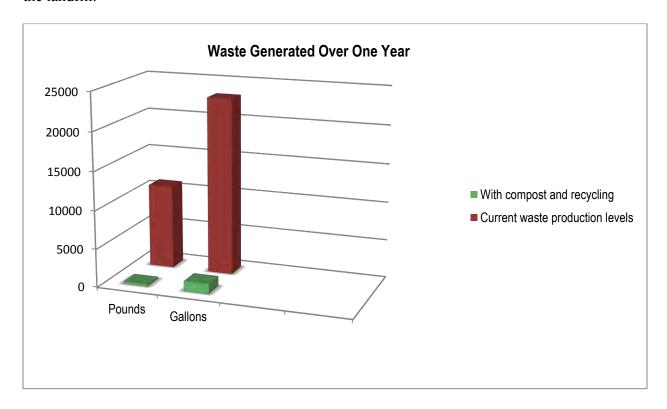


Example of Waste at West Range

was compostable, 28.50% of the waste was recyclable and only 5.7% of total waste was trash.

These figures carry enormous significance in determining the amount of waste diverted from landfills. Composting and recycling saved 165 gallons and 81 pounds of trash from entering a land fill in just one day at West Range Café. If we can conclude that the day of our audit was relatively typical for West Range Café in terms of the number of customers and the amount of waste produced, then it is reasonable to say that the same amount of waste has the potential to be diverted from the landfill every day that the dining facility is open. The café is open Monday through Thursday 8am-8pm, and is open on Friday from 8am-3pm. If we assume the café operates four days a week at a similar waste productivity level as the day of our audit, for 33 weeks out of the year, then without taking Friday into account, they are likely generating 10,956 pounds and 23,100 gallons of trash each year. By implementing recycling and composting, these numbers could be reduced drastically. With compost and recycling receptacles available, rather than 10,956 pounds and 23,100 gallons of trash heading to the landfill each year, that amount could be reduced to a mere 264 pounds and 1,320 gallons of trash. This results in 10,692 pounds and 21,780 gallons of trash averting the landfill. In other terms, 97.6% of waste by weight and 94.3% of the waste by volume would be diverted from the landfill. Over the course of even a year this makes a huge impact; however, over a span of around ten years the

results are overwhelming, with around 109,560 pounds and 231,000 gallons of waste avoiding the landfill.



As was learned from our experience with trash disposal habits typical of West Range's customer base, in order for this initiative to work it would be necessary to provide ways for composting and recycling to be more accessible waste disposal options. It would also be necessary for compostable items to be labeled, perhaps with images, on signs above the compost bin, as many people are not aware of the type of materials that are compostable.

## Approach:

Our objective was to determine the best method for effectively reducing waste in the West Range Café. As such, it was necessary to investigate the waste produced at West Range Café, specifically from food and the associated goods. In order to determine the best approach for assessing waste production, we studied precedents, which had been conducted in other dining

locations on grounds. More specifically, we used previous waste reports from Runk, O'Hill, and Newcomb Dining Halls as examples, as well as a waste audit conducted at the Shea House.

From the precedents, which were all previous Global Sustainability projects, it was evident that a waste audit would be a necessary foundation for the transformation of West Range

Café into a low or zero waste facility. When we started the project, West Range Café was among the remaining dining locations on campus that were not composting food waste. This was an immediate area of interest for our group. From studying the



Compostable To-Go Containers at West Range

precedents, it was evident that sending food to landfills was a huge source of waste. We then set out to conduct the waste audit with the intention of determining exactly how much waste could be averted from landfills if compost and recycling were used as alternative methods of waste removal.

Our precedents approached their project with various methods. The O'Hill and Newcomb projects focused primarily on conducting waste audits followed by public media campaigns aimed at increasing awareness. The Runk project followed the same standard, however a survey during the audit was also conducted in order to gain additional information about the patrons. We studied the results of the survey and ultimately decided that the information gained would not be relevant to the objectives of our project. By studying the groundwork laid by these projects we were able to come up with a successful approach for our research.

One of our team members was able to attend a waste audit conducted at the Shea House in order to learn more about the process before our project. In this manner, our group was informed about how to properly separate the waste as well as the best methods for data

collection. This was undoubtedly a good introduction to the procedure and helped our audit run smoothly.

Initially, we approached West Range
Café with the inclination that it would be
necessary to come up with a plan to convert
the food containers used, such as disposable
cups, and to-go containers, into ones that



Non-Recyclable/Compostable Container Example

could be composted. As such, it would have been necessary to research alternative options and determine how they could be feasibly implemented into the café's budget and regime. However, by the time of our audit all materials used by the café were compostable products, except ketchup packets and a few to-go containers. Most of the to-go containers were compostable, with an infrequent Styrofoam container finding its way into the waste stream.

Therefore, we determined that the best method for approaching the issue would be to conduct a waste audit at the dining facility for one day and then determine the amount of waste that is unnecessarily sent to landfills due to lack of composting. From this information we would determine what measures will be necessary in order to incorporate composting into the dining facility.

With the results of our data, we intend to do public media campaigns aimed at increasing awareness about waste in dining halls and compelling people to become more conscious of their waste disposal habits. We hope that these initiatives will help create an environment of people sensitive to issues associated with wastefulness and which are inherently disinclined to be wasteful themselves. Only in this manner can as much waste as possible be diverted from landfills.

## **Conclusion:**

We have collaborated and brainstormed to establish a framework to address sustainability and waste at the University of Virginia. These ideas and standards for sustainability led us to the decision to perform a waste audit. Our group successfully conducted a waste audit at The West Range Café, a part of UVa Dining Services. During the audit, we monitored the disposal of three separate materials: trash, compostable materials, and recyclables. We used three separate bins and the majority of the waste was placed in the correct receptacle. The bins' contents were emptied periodically during the day and at the end of our audit, the three separate materials were weighed and the data were collected: 68 pounds for compost, 13 pounds for recyclables, and 2 pounds for trash. We used scales provided and bins provided



Weighing Compost after Collection

by UVa Dining. We were able to accomplish our goal in determining the levels of waste in the West Range Café and from this we were able to determine waste material. As a side effect, during the audit we were able to educate and inform various members of the University about composting, recycling, and trash. There were varying levels of interest and we were able to answer questions and address concerns about waste and why we were performing an audit. Not only were we auditing, but also we were educating. Our group was able to successfully

collaborate with UVa Dining Services and Sustainability at UVa employees to run a cohesive and informative operation. Employees of both organizations were proven to be readily accessible in helping us with our project.

There were several barriers and questions we were left with at the conclusion of our audit. The first question to the validity of our audit was the fact that not all the waste was contained to West Range Café. People take their trash and food with them as they head across grounds or head home. Obviously, waste cannot be audited if it leaves the building. Although a small percentage of waste leaves West Range, our data strongly suggests that the material leaving the building is compostable. While we did not monitor the waste on a day in which people were not encouraged to choose recycling and composting, the availability and size of trashcans compared to recycling and compost bins suggests that the trash levels/pounds on a "normal" day are much higher than just 2 pounds. A barrier will be switching from all trash to the accommodation of compost. Not only will there be a physical and financial barrier, but there will be barrier in altering the patterns of behavior in society, specifically the University community, to accept and process the idea of composting.

#### **Future work:**

There is much future work to be done in the realm of sustainability and waste at UVa. From our data, we can establish that the proper amount of trash, recycling, and compost bins

needs to be reevaluated at UVa Dining Services locations. Compost held the clear majority in West Range and trash held a clear minority. However, there was only one compost bin inside and outside respectively, and there were four trash bins outside and at least two inside. UVa Dining and UVa Sustainability will be the main actors in the implementation of the proper number of bins. They have the funding and the budgeting to make the switch between bins. The resources required for the implementation will either be new bins, or perhaps less of a financial burden, stickers with different graphics to place on the already existing bins to reapportion them. The sooner the public learns about the benefits of composting, the sooner they can



Example of Trash Receptacle – Currently No Compost Receptacle Available

participate in reducing waste. UVa Dining and UVa Sustainability can change the proportions of bins distributed, i.e. make the majority compost and the minority trash, and people in the community will adapt to accept what needs to happen with their waste.

#### **Lessons learned:**

#### 1. Communicating with Sustainable Dining Leadership to Organize the Audit

Although we began our project discussion with an introductory presentation by Rosemary Han, a student contact within UVA Sustainable Dining, we were left to design and implement our plan for conducting the waste audit without any of her guidance. We were genuinely surprised to find that we were unable to reach Rosemary by email, and it became apparent to us during the initial stages of planning the audit that she would be unresponsive to any requests for assistance in organizing the audit and acquiring the necessary materials. Nevertheless, we were able to make contact with Chris Stevens, a UVA Food Sustainability Manager employed by Aramark. Chris was able to step in for Rosemary as a mentor for our audit; he instructed us on the crucial details to follow with carrying out the audit procedure and made sure that we had the West Range location reserved for the day with all of the requisite supplies on hand. Without his involvement in the project, we may have not overcome the roadblocks that impeded our progress.

Lesson Learned: Future waste audit groups must ensure that they contact the head of Sustainable Dining (Chris Stevens) rather than the UVA student proxies (Rosemary Han). We learned that cafeteria managers have strong incentives to usher student groups through waste audit initiatives, as it aids in their career goals of shifting the paradigm of student consumption towards sustainable resource use. On the other hand, student leaders may have weaker incentives to assist peer groups, and may not promptly engage with these groups in guidance or support.

## 2. Scheduling a Date and Time for the Audit

Due to our inability in contacting Rosemary, our group was disadvantaged in regards to scheduling a date and time for which to collect waste materials at West Range. The process of which we experienced, first-hand, in receiving permission to conduct the audit was bureaucratic to say the least. Many concerns were drawn from the individuals that were responsible for operations management at West Range, and we had to ease concerns with the help of Chris' approval and vocal support.

In addition, concerns arose from the staff about our presence within the dining room throughout the entire school day. They were worries that the collection of wastes in such a flagrantly open manner would displace students and other customers from eating at the venue. Eventually, those thoughts were dispelled by the student interaction with the waste audit bins; most students showed excitement in regards to learning about where their trash went and why it was important to discard particular wastes in specific containers.

**Lesson Learned:** Plan future waste audits with a considerable amount of advanced notice and address all concerns raised by stakeholders. It is important that the UVA community, as a whole, places buy-in to the project. For this to occur, transparency and prudent organization must be paramount.

#### 3. Direct Coordination with West Range Employees

Throughout our audit at the West Range, we were in consistent communication with dining room staff when we needed to rearrange dining furniture and waste receptacles, acquire new sets of supplies, and send collected wastes to the weight scale for mass calculation. And while the staff was always cooperative and friendly to our requests, we noticed a distinct

unfamiliarity with our intended goals and that addressing our needs was an unplanned burden on their daily routines. While this was the overall dynamic between our group's audit and the employed staff, they were extremely accommodating to us, which was greatly appreciated and made known to them by us.

**Lesson Learned:** Ensure that the staff is familiar with your intended goals and protocol before the waste audit is conducted. In this manner, they will be able to serve both the student/customer population while tending to the needs of your sustainability initiative for completeness and accuracy.

#### 4. Affecting change amongst the UVA Student Population

Although the primary goal of our waste audit was to measure waste production by categorical classification, an ancillary agenda was to instruct students as to why they would be separating their garbage into trash, recycling, and compost. It is not enough to tell the students what they need to do; in order to engage the public in a progression of sustainable waste deployment, we must educate and provide incentives for their buy-in. If the students are just dumping their garbage into bins because we tell them to do so, there is no permeating lesson to be learned that will aid in altering their behaviors for the betterment of sustainability.

**Lesson Learned:** Future waste audits must support informational dialogue as to why separating our garbage is important for the environment and our own personal benefit. If a message is drafted to which the students have a clear and compelling idea of what is occurring and is attractive to them, then we will have their support and the notion of sustainable dining will be relevant to all affected stakeholders.

#### **Goal Assessment:**

Overall we were able to achieve our original goals from the beginning with the data collected from the West Range Café waste audit. Initially, we set out to determine what would be the best way to encourage the proper disposal of excess food and garbage, with the goal of understanding the breakdown of trash, recyclables, and compost among the articles that are thrown out by the typical dining patron. From the beginning, we set achievable objectives because we anticipated the difficulty and time constraints that would occur as a result of scheduling a waste audit. We want our data to serve as a foundation for future projects in other Global Sustainability classes.

During discussions at the beginning of the course, we brainstormed ideas on how the physical containers used at the West Range Café could be changed to all recyclable or compostable but once we looked at the products sold at the location, it would have been nearly impossible to find alternatives within our time frame. Through our analysis of the precedents, we determined that it was not practical or effective to establish any further initiatives due to the time constraint. A future group could successfully implement awareness initiatives.

When we found out that West Range was one of the only dining facilities not participating in composting, we knew that the switch from trash to recycling and composting would be a manageable issue to address. We learned that creating change is a slow process that must happen in steps. Setting manageable goals that can be achieved within a timeframe is vital to success. When working with such a large institution, it can be difficult to encourage change without supplying accurate and relevant data for your cause. At first, others were reluctant to assist us with our waste audit and it was difficult trying to manage the situation when no one in our group had prior experience. It was important to make sure that everything was in place,

organized, and not rushed in order to ensure a smooth operation on the day of the event. Even

though creating change is a slow process, we were able to establish a foundation for future

change, and therefore make the work of future groups very efficient.

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# **Appendices:**

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#### **Bill of Materials:**

- Recycling, Composting, and Trash Signs
- Directional signs for where to dispo se of trash
- Plastic wrap to cover other waste receptacles
- Gloves
- Trash bags
- Scales to measure the weight of trash bags
- Appropriate bins to collect waste

#### **Costs and Budget:**

There was no funding for this project. The group supplied their own plastic wrap, gloves, and signs. The scales and bins were obtained through Chris Stevens, the UVa Dining point of contact and Jason Snow.

#### Thanks you to those who assisted with the West Range Waste Audit:

- Chris Stevens Aramark Sustainability Manager, Point of Contact for UVA's Green Dining Initiative
- Jason Snow Point of Contact for UVA's Green Dining Initiative
- West Range Café Staff
- Brianne Doak Workshop Leader/ Mentor