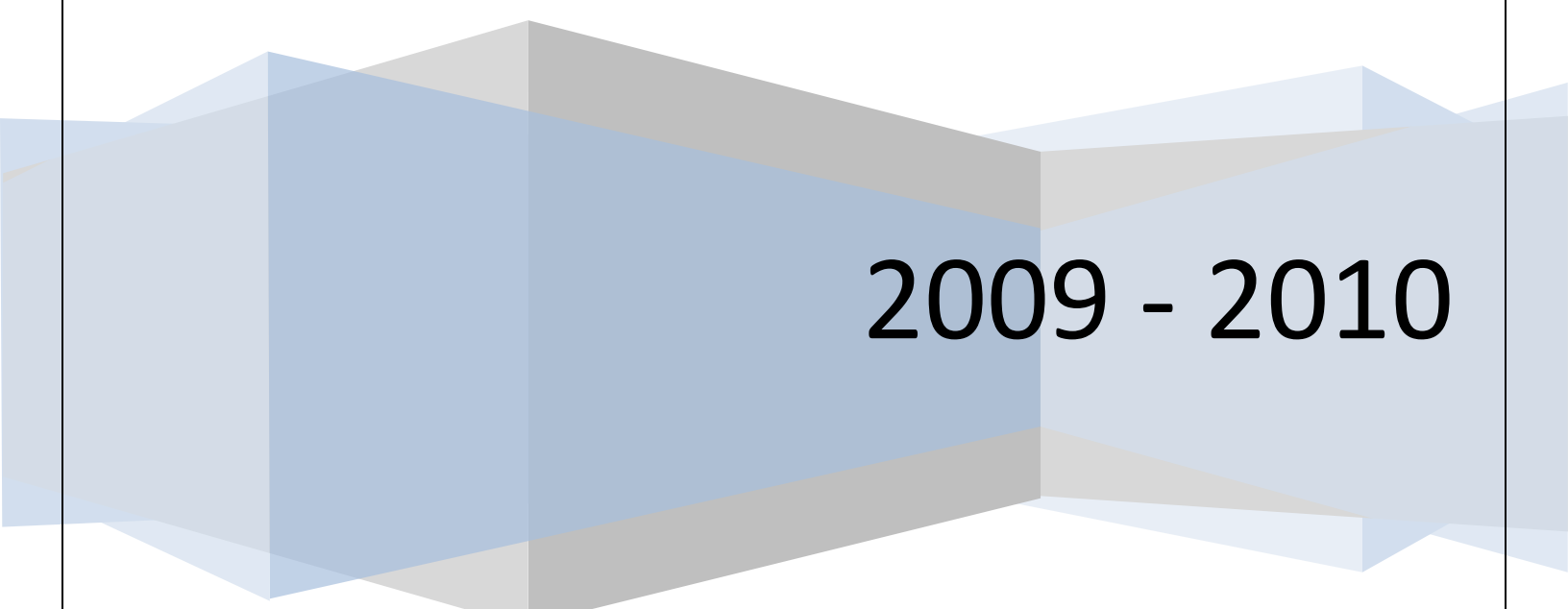


Radford University Annual Recycling Report



2009 - 2010

Executive Summary

Heightened awareness and participation, among other things, has helped Radford University achieve its highest recycling rate ever, over 31%. In comparison from last fiscal year to this fiscal year, RU increased mixed paper recycling from 68.91 to 75.2 tons (9.12 %). Container recycling increased from 10.67 to 15.79 tons (47.98 %). Cardboard increased from 74.41 to 87.55 tons (17.65 %). This year a full scale composting operation was launched at the Datlon Dining Center. Other program changes to the RU Recycling Department include the augmentation of the campus e-waste and toner cartridge recycling programs. Reflected below is a snapshot of the universities final recycling statistics for fiscal year 2010:

Annual FY2010 Recycling Rate:		
31.11%*		
Total Recyclables:	Total Solid Waste:	Composting:
516 Tons	1143 Tons	63.9 tons
Containers:	Mixed Paper:	Corrugated Cardboard:
14 tons	74 tons	85 tons

The following snapshot derived from the Environmental Protection Agency's (EPA) WASTE Reduction Model (WARM) Calculator reflects figures specifically from RU's three main recycling categories (Containers, Mixed Paper, and Corrugated Cardboard) with the addition of a new category in composting:

- Total Change in Green House Gas (GHG) Emissions: **-685** MTCO₂E (Metric Tons of CO₂ Equivalent)** compared to **-471** MTCO₂E the previous fiscal year with a difference of **-214** MTCO₂E
- Total Change in Energy Use: **-6,185** million BTU** compared to **-2,369** the previous fiscal year with a difference of **-3,816** million BTU

(This is equivalent to 58 households' Annual Energy Consumption; 1,066 Barrels of Oil; or 49,763 Gallons of Gasoline)

- Total Change in Green House Gas (GHG) Emissions for Composting: **-42** MTCO₂E (Metric Tons of CO₂ Equivalent)**

- Total Change in Energy Use for Composting: **-5 million BTU****

**Note: Recyclable construction waste may cause the overall annual recycling percentage rate to significantly fluctuate from year to year based on high tonnages recorded.*

***Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.*

(See appendix 1 for a breakdown of recycling categories and weights)

Highlights

- **RecycleMania**
 - **RU competes in a national recycling competition for the second straight year with an increase of 6%**
- **Y-TOSS**
 - **RU continues to partner with the YMCA to collect usable goods at student move-out and increased donations by 27%**
- **Composting**
 - **Full scale composting operations begin at the Dalton Dining Facility in March 2009**
- **Recycling Website**
 - **New additions were added to the recycling website front page to highlight current news and events**

Waste Minimization - Why is it important?

Waste minimization is defined as a means of reduction of any solid or hazardous waste that is generated or subsequently treated, stored, or disposed of. The first priority should be to reduce waste on the front end, basically alleviate the need to recycle in the first place. The next priority should be to reuse material, and last, to recycle materials and keep them from ending up in the landfill.

Recycling - Why is it important?

Before you know about the importance and benefits of recycling and its relationship to a better environmental condition, it is essential to understand what recycling is. Recycling refers to the process of collecting used materials which is usually considered as 'waste' and reprocessing them. In this process these used materials are sorted and processed to be used as 'raw materials' for the production of new products. Recycling varies from 're-use' in the sense that while re-use just means using old products repeatedly, recycling means using the core elements of an old product as raw material to manufacture new goods. Recycling is good for the environment, saves energy, and creates jobs.

Recycling Streams (general)

RU currently uses two comingled recycling streams. The mixed paper comingled stream is comprised of several different types of paper products, i.e. newspaper, colored paper, magazines, hardback books, pressboard etc. Another co-mingled stream is the container stream, i.e. glass (any color), aluminum/metal cans, and plastic resin codes #1 & #2. These new recycling formats streamline the entire process and take much of the guess work out of the recycling process, thus enhancing recycling opportunities for staff and students alike. Recycling at RU is available in all facilities, in administrative buildings, dining halls, and residential halls.

Recycling Website

New improvements were made this year to the [RU Recycling Website](#). Additional front page headers and categories were added. This news and events header was added to highlight current events and recycling opportunities. These improvements are geared towards making information easily accessible & increasing awareness/participation.

Fall 2009 New Student Move-In

Cardboard drop sites were designated outside all residence halls; each site was identified with a banner type sign. Hauling trailers were used to move the cardboard to the compactors for recycling. The figures below represent the specific tonnage captured during the week of fall move-in:

2008 – Cardboard recycled: 6.74 tons Landfill waste: 8.68 tons

2009 - Cardboard recycled: 4.81 tons Landfill waste: 10.25 tons

Recyclemania 2010

Radford University competed in Recyclemania for the second year. Recyclemania is a friendly competition between colleges and universities nationwide (and Canada) designed to promote waste reduction and recycling habits. This competition began in 2001 as a friendly competition between Ohio University and Miami University to promote recycling habits in residence halls and dining facilities on campus and has evolved into a nationwide competition between hundreds of schools. This year's competition began on January 17th spanning a 10 week period.



- **Summary** - There were a total of 607 entries in this year's competition. The total amount of recyclables and organic materials recovered during the 2010 competition added up to 84.5 million pounds nationwide, which in turn prevented the release of nearly 137,500 metric tons of carbon dioxide equivalent (MTCO₂E). In real-world terms, this reduction in greenhouse gases is equivalent to the annual emissions from 23,850 passenger cars; electricity use of 15,140 homes; or the burning of 650 railcars' worth of coal.
- This year RU competed against 18 other colleges & universities (Competition Division) within the State of Virginia.

2010 Statistics:

- **Grand Champion Competition** (The combined total of waste reduction and recycling weight) – RU ranked 11 out of 14 schools within Virginia resulting in a cumulative recycling rate of 17.75% during the competition. In 2009, RU ranked 12 out of 13 schools within Virginia resulting in a cumulative recycling

rate of 11.62%. Nationwide this year, RU ranked 281 out of 358 schools in this category.

- **Per Capita Classic Competition** (Largest amount of recyclables per person) RU ranked 10 out of 17 schools within Virginia resulting in a rate of 9.57 lbs. per person. In 2009, RU ranked 14 out of 18 schools within Virginia resulting in a rate of 6.49 lbs. per person. Nationwide this year, RU ranked 232 out of 493 schools in this category.
- **Gorilla Prize Competition** – In this competition schools are competing to see which can collect the highest gross tonnage of recyclables, regardless of campus population. RU ranked 7 out of 17 schools resulting in a cumulative recyclable weight of 94,280 lbs. In 2009 RU ranked 9 out of 18 schools within Virginia resulting in a cumulative recyclable weight of 65,900 lbs. Nationwide this year and despite RU's relatively smaller population, RU still ranked 179 out of 501 schools in this category.
- **Waste Minimization Category** – In this competition schools are competing to see which produces the least amount of municipal solid waste (including both recyclables and trash) per person. RU ranked 7 out of 9 schools within Virginia resulting in a cumulative waste reduction rate of 53.92 lbs. per person. In 2009, RU ranked 4 out of 8 schools within Virginia resulting in a cumulative waste reduction rate of 55.89 lbs. per person. Nationwide this year, RU ranked 152 out of 238 schools in this category.
- **Targeted Paper Category** – RU ranked 5 out of 16 schools within Virginia resulting in a cumulative rate of 5.08 lbs. per person. In 2009, RU ranked 12 out of 18 within Virginia resulting in a cumulative rate of 2.36 lbs. per person. Nationwide this year, RU ranked 96 out of 304 schools Nationwide in this category.
- **Corrugated Cardboard** – RU ranked 8 out of 16 schools within Virginia resulting in a cumulative rate of 3.30 lbs. per person. In 2009, RU ranked 11 out of 18 schools within Virginia resulting in a cumulative rate of 3.18 lbs. per person. Nationwide this year, RU ranked 134 out of 318 schools in this category.
- **Containers (Aluminum, glass, plastic)** – RU ranked 9 out of 16 schools within Virginia resulting in a cumulative rate of 1.19 lbs. per person. In 2009, RU ranked 9 out of 18 schools within Virginia resulting in a cumulative rate of

0.95 lbs. per person. Nationwide this year, RU ranked 136 out of 309 schools in this category.

- **Composting (Food's & Organics')** - RU only composted for a period of 1 week within the 10 week competition as implementation of the fulltime project was just getting underway. Now with composting at full operation, we expect to compete in this category for the full 10 week period. RU ranked 6 out of 7 schools within Virginia resulting in a cumulative composting rate of 0.75 lbs. per person. Nationwide this year, RU ranked 115 out of 160 schools in this category. (See Appendix 2)

Y-TOSS



In coordination with the local YMCA, Radford University launched the second Y-TOSS operation during the Spring 2010 move-out. Y-TOSS is a program designed to collect unwanted items from students when they vacate their residence hall rooms at move-out. These items typically include rugs, clothes, cleaning supplies, non-perishable foods, furniture, electronic

devices, and so on. These items are then sold in the YMCA Thrift Stores or donated to various charities. Also, certain household items unique to student move-in are stored and then sold to inbound students in the fall to help set up their dorm rooms. This year the number of drop sites was expanded to make donating items even more convenient to students. This year's program yielded a total of 373 items donated, with a total weight of 14,954 lbs. (7.48 tons). The total number of items donated increased this year and a more accurate weight estimate was derived by utilizing a United States Environmental Protection Agency (EPA) weight estimate chart. Our collective goal is to continue and expand this successful program in years to come. (See Appendix 3)

Recycling & Special Events

The Recycling Department was proactive in supporting various recycling events campus wide this year. In the area of sporting events, Mr. Michael Bain and his housekeeping staff played an important role in their recycling support at all RU sporting events by staging and setting up recycling collection bins at the Dedmon Center, Cupp Stadium, and alternate athletic sites.

Other activities include the "Bonnie Day's of April". This is a weeklong event at the Hurlburt Student Center comprised of a variety of activities hosted by various

groups. In one specific event the staff from Dining Services hosted a Rib Cook-Off competition. During this event the RU Recycling department provided both composting and recycling collection.

Another event included recycling contests hosted by the RU Environmental Club. Participants competed for prizes by tossing recyclable containers into recycling collection bins.

A group from Alpha Phi Omega hosted a fundraiser at the Hurlburt Student Center by recycling aluminum cans.

RA's and students at Bolling Residential Hall took the time to craft recycling signage to adorn their residence hall bulletin boards to promote recycling. (See Appendix 4)

Ford Fusion Challenge Contest - Recycling Category

This year five members from RU's IT community (Todd Joyce, Will Wirt, Travis Alley, Randy Davis, and Billy Kantsios) entered into a national competition hosted by the Ford Motor Company called "Ford Fusion41". RU's team (RU Green Team #3) was one of eight teams competing nationwide. The main goal of the competition was to put Fords new "Hybrid" Fusion to the test in various categories.



There were a total of 12 competition categories, recycling being one of them. Everyone mutually benefited when the team recycled several hundred phone directories totaling 1,080 lbs. As a result; their efforts ranked them 4th in this category. (See Appendix 4)

Earth Day



On April 22nd, 2010, Radford University recognized the 40th anniversary celebration of Earth Day. Many departments on campus participated. Outdoor recycling containers were provided for this huge event. President Kyle, along with others from campus and the community spoke on a variety of environmental initiatives including the Y-TOSS program for the upcoming student move-out.

Participants were invited to tour RU's Greenhouse, Planetarium, and The Museum of the Earth Sciences. The movie "The 11th hour" was also available for viewing. A tree was also planted on the Heth lawn in commemoration of this special day. (See Appendix 4)

Student & Staff Support

A recycling awareness event was launched by Residence Director Jessica Abarquez at Ingles Hall. Students decorated the day rooms and hall ways with recycling information to promote the annual Recyclemania competition. Resident Hall Directors and students across campus work with the Environmental Club staff to promote recycling campus wide.



The RU Recycling department employ's a student work study each semester. This additional position aids the department significantly by providing additional assistance in recycling processing across campus.

Labeling and Signage

The Recycling Department continually works with the Facilities Management Sign Shop to develop and maintain recycling labeling for all recycling streams. Banners and informational signs were created to provide general guidance and support promotional events. By updating the labeling and signage, faculty, staff, and students are better informed, taking the guess work out of recycling and directly improving recycling rates. This is a continuous process and there is still

much work to be accomplished. Individuals can also download and print various guidelines as needed from the [RU Recycling Website](#).

Composting

In August 2009, Dining Services in coordination with the Recycling Department conducted a pilot composting project in Dalton Dining Hall using a new “Cart” system. Dalton is the largest dining facility on campus and houses this composting operation. The “Cart” composting system entails the collection of compost (food items primarily) into individual wheeled receptacles which are placed in the kitchen areas at Dalton and then transported to an outdoor staging area at the Dalton loading dock awaiting pickup by a commercial composting company. Previous to this version, a pilot program was launched using a large compactor as the receptacle for compost and then delivered to the composting facility by RU. The cart system in the second pilot program proved to be a more efficient and manageable solution to composting.

These projects not only helped create valuable compost but also reduced harmful methane emissions from the landfill. Effective in March 2009, Radford University started up full composting operations at Dalton. A possible goal in composting would be to expand this operation to other dining areas of the campus. During the Fall 2009 semester, Dining Services produced an average of 700 lbs. of food waste daily and finished this fiscal year with a total of 63.9 tons of compostable material. Now, with composting at full operation, we expect higher overall tonnage in the upcoming year.

Logistical Enhancements / Supplies

Recycling supplies were procured this school year to support recycling efforts campus wide. Mobile outdoor recycling receptacles called “Clearstreams” were also deployed to support various outdoor events. Additional recycling receptacles were made available to support both mixed paper and container recycling throughout campus. Other enhancements include placing additional public square recycling receptacles across the campus. These special recycling bins are made of durable metal construction and provide a more aesthetic appearance typically found in public areas and office settings. New updated public square labeling was affixed to bins that were previously in place, and new sets of public squares were expanded in additional areas across campus to provide better recycling coverage.

Waste Minimization

A pilot program was launched in one department to promote waste minimization. Waste cans were removed from the employee's desk side areas and employees were asked to use a central trash bin nearby as an alternative. Essentially their desk side trash can was replaced with a recycling receptacle (which were already at the employees desk side in most cases), thus motivating employees consciously increase their recycling efforts overall. Some employees viewed the task of carrying non-recyclables to a central waste location for disposal as an inconvenience; while in other cases, this process caused some employees to stop and think about solid waste disposal and make a conscious choice toward recycling. While this pilot program has ended, the need to test drive new procedures in this area and many others are paramount as we continue to seek new and better ways to reduce waste and promote higher recycling rates.

Construction Waste / Recycling

The Recycling Department continues to serve as a liaison between designated contractors and various recycling vendors to recycle construction waste which typically includes cardboard from unpackaged building materials to various metals like steel, aluminum, copper, and brass.

Future Plans

A number of first time initiatives have occurred this past academic year, the coming years will focus on improving on those successes and creating additional initiatives. Initiatives and opportunities will continue to evolve as increased awareness contributes to the amount of materials recycled and as the recycling market provides additional recycling streams. Some of the future initiatives being considered:

- Continue to evaluate expansion possibilities from recycling only plastics resin codes #1 and #2 to all plastics #1 thru #7.
- Investigate expanding composting operations to other dining areas.
- Installing a pulping system to reduce the amount of water being transported to compost and/or landfill stations.
- Continue to canvass recycling vendors to enhance the RU recycling program and offset operational expenses.
- Add a photo archive to enhance the recycling website.

- Add additional work study positions as needed. Continue to solicit student involvement and maintaining an on-going volunteer list.
- Evaluate or enhance recycling options for batteries, ceiling tiles, and other recycling streams as they become available.
- Identify and work with campus partners to launch Zero Wastes events. Evaluate and subsequently develop a zero waste kit for use by partners at future events.

Closing Remarks

We are members of several recycling organizations in a concerted effort to network and continually find and exploit new and better recycling processes. Our overall goals are to reduce the amount of waste going to the landfill, increase the amount of materials recycled, reduce our campus carbon footprint and help make Radford University the most sustainable campus in the Commonwealth.



Appendix 1

Radford University Annual Recycling Rate

31.47%



Fiscal Year 2010 (Category Weights in lbs.) 1 Jul 09 - 30 Jun 10	Total
Cans/Glass/Plastic	31,580
Mixed Paper	150,417
Cardboard	175,100
Composting	127,800
Scrap Metal	78,781
Electronic Waste	4,782
Toner Cartridges	1,838
Fixer	800
Used Motor Oil	1,799
Used Antifreeze	378
Used Kitchen Grease	45,600
Auto & Misc Batteries	2,493
Tires-Small	1,420
Tires-Medium	4,440
Tires-Large	100
Fluorescent Lights/Ballasts	4,455
Pallets	132,930
Construction Material (Reused)	168,000
Yard Waste (Reused)	91,220
Y-TOSS (Items donated at move-out)	14,954
Total Overall Recyclables (lbs.)	1,038,887
Total Overall Solid Waste (lbs.)	2,262,640

Appendix 1 continued:

Radford University Archived Recycling Rates



Year	Solid Waste (lbs.)	Recyclables (lbs.)	Recycling Rate
CY-1992	2,598,000	452,000	14.80%
CY-1993	2,454,000	588,000	19.30%
CY-1994	2,650,000	770,000	22.50%
CY-1995	2,676,000	626,000	19.00%
CY-1996	2,780,000	438,000	13.60%
CY-1997	2,708,000	522,000	16.20%
CY-1998	2,780,000	474,000	14.60%
CY-1999	3,176,000	382,000	10.70%
CY-2000	2,277,484	265,701	10.50%
CY-2001	2,257,834	231,365	9.30%
CY-2002	2,493,957	274,597	9.90%
CY-2003	2,668,080	126,052	6.00%
CY-2004	2,932,220	206,351	7.90%
CY-2005	3,252,040	247,980	7.00%
CY-2006	3,489,440	368,149	9.50%
CY-2007	3,260,444	569,281	14.90%
CY-2008	3,143,610	1,185,328	27.38%
FY-2009	3,158,270	1,136,487	26.46%
FY-2010	2,262,640	1,038,887	31.47%
Total	53,018,019	9,902,178	

Note: The recycling rate chart reflected above displays annual figures based on the calendar year (1 Jan – 30 Dec) period. All future recycling rate charts after 2008 are reflected based on the fiscal year (1 Jul – 30 Jun) period to better align with fiscal and academic calendars.

Appendix 2

Recyclemania 2010 – Final Results

-
**Grand Champion, Per Capita Classic,
 Waste Minimization Competitions and Gorilla Prize**

Week	Grand Champion		Per Capita Classic		Waste Minimization		Gorilla Prize	
	Weekly recycling rate (%)		lbs/ person		lbs/ person		lbs	
	2010	2009	2010	2009	2010	2009	2010	2009
1	37.76%	10.31%	0.99	0.75	2.63	7.29	9,780.00	7,630.00
2	16.35%	10.37%	1.15	0.82	7.02	7.95	11,300.00	8,360.00
3	17.06%	9.99%	0.93	0.76	5.44	7.64	9,140.00	7,740.00
4	28.04%	9.04%	1.11	0.75	3.98	8.29	10,980.00	7,600.00
5	18.39%	12.90%	1.42	0.85	7.72	6.60	13,980.00	8,640.00
6	16.94%	9.51%	1.45	0.84	8.54	8.85	14,240.00	8,540.00
7	18.57%	18.41%	1.35	0.96	7.28	5.20	13,320.00	9,720.00
8	45.55%	16.35%	1.35	0.69	2.97	4.19	13,320.00	6,960.00
9	9.68%	10.06%	1.00	0.83	10.34	8.27	9,860.00	8,440.00
10	12.53%	11.89%	0.96	0.81	7.65	6.85	9,440.00	8,260.00

Targeted Materials Competitions

Week	Paper		Corrugated Cardboard		Bottles and Cans		Food Service Organics	
	lbs/ person		lbs/ person		lbs/ person		lbs/ person	
	2010	2009	2010	2009	2010	2009	2010	2009
1	0.47	0.44	0.43	0.26	0.09	0.05	0.00	0.00
2	0.47	0.33	0.57	0.41	0.11	0.08	0.00	0.00
3	0.47	0.28	0.35	0.40	0.11	0.08	0.00	0.00
4	0.47	0.16	0.46	0.48	0.18	0.11	0.00	0.00
5	0.82	0.33	0.41	0.41	0.18	0.11	0.00	0.00
6	0.82	0.32	0.48	0.35	0.15	0.17	0.00	0.00
7	0.82	0.32	0.38	0.47	0.14	0.17	0.00	0.00
8	0.82	0.24	0.38	0.33	0.14	0.12	0.00	0.00
9	0.43	0.36	0.42	0.36	0.14	0.12	0.00	0.00
10	0.41	0.34	0.41	0.39	0.14	0.08	0.75	0.00

Appendix 3 Y-TOSS 2010

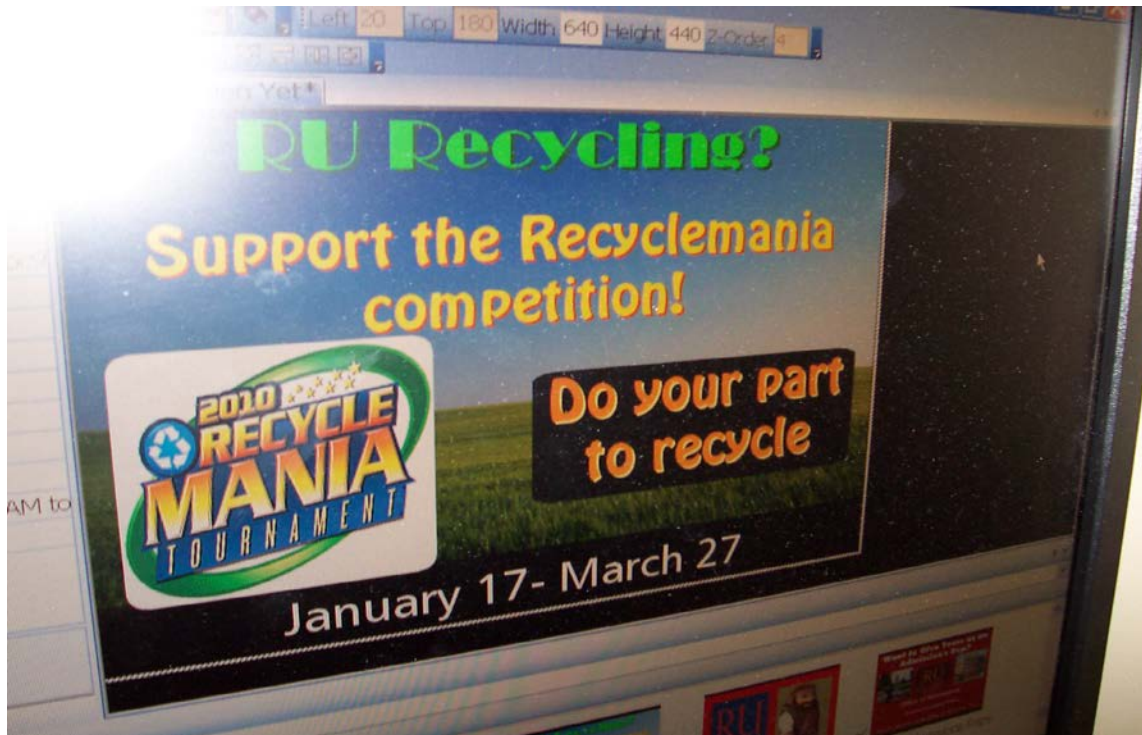


Item Description	Qty	Total Weight (lbs.)
5' x 7' Rug	30	270
8' x 10' Rug	25	500
9' x 14' Rug	15	480
Mattress	33	1,815
Mattress Pad Cover	12	50
Futon Mattress only	1	40
Futon Bed Frame	4	228
Large Couch	1	118
Desk Chairs	15	476.4
Desk/Hutch	13	1,898
End Table	9	297
Wood Bookcase/Shelves	22	2,420
Plastic Storage Bins	22	198
Lamps	25	83
Microwave	4	200
Vacuum	8	176
TV	6	234
Refrigerator - Tall	5	360
Refrigerator - Short	5	215
Box Fan	28	392
Mirror	15	135
Ironing Board	6	69
Waste Can	38	114
Box - Small House Wares	1	135
Box - Clothes (Usable)	15	2,025
Box - Clothes (Textiles)	10	1,350
Food	1	135
Box of Linens	4	540
Total	373	14,954

Appendix 4

Photo Album

2010 Recyclemania



Y-TOSS





Ford Fusion Challenge Contest – Recycling Category



The Bonnie Days of April – Rib Cook Off Contest



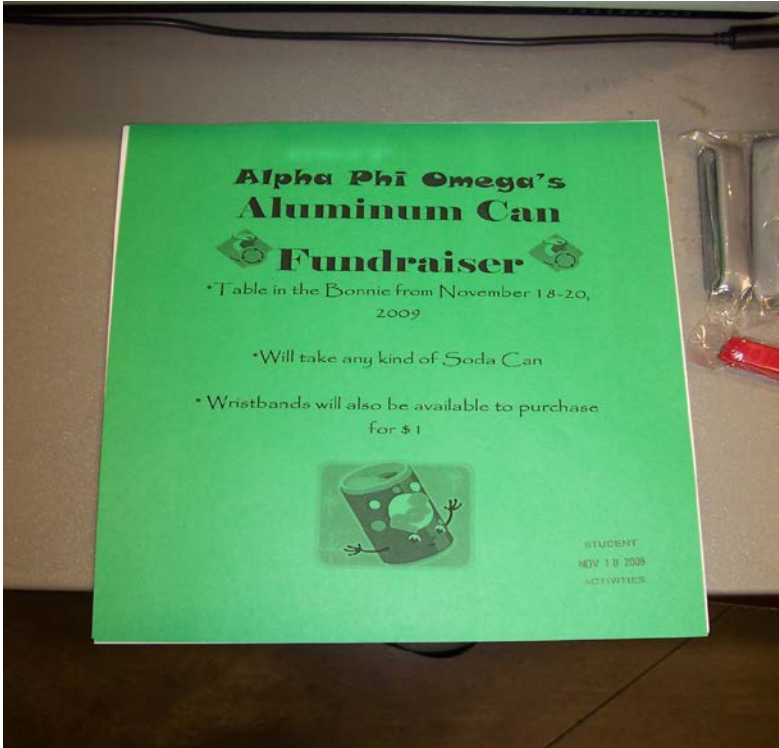


The Bonnie Days of April – Environmental Club Activities





Student Activities – Alpha Phi Omega Fundraiser



Student Activities – Bolling Hall Recycling Project



Earth Day





