

Final Report
Waste Assessment and Recommendations
For University of Missouri at Kansas City
By R. Kaye Johnston with Bridging The Gap, Inc.
December 1, 2003

Waste Assessment and Recommendations Table of Contents

	Page
1. Introduction	4
2. Summary	4
3. Objectives	4
4. Methodology	5-7
<i>Creation of Recycling and Waste Reduction Team</i>	5-6
<i>Facility Walk-Through</i>	6
<i>Employee Survey</i>	6
<i>Research</i>	6
<i>Data Collection Analysis</i>	7
<i>Observation of Operations</i>	7
<i>Collaboration on Written Assessment Report</i>	7
5. Results	7-9
5.1. Current Waste Handling Practices	7-8
<i>Administrative Offices</i>	8
<i>Class Rooms</i>	8
<i>Computer Labs</i>	8
<i>Common Areas</i>	8
<i>Canteen Areas</i>	9
<i>Printing Services</i>	9
<i>Dock and Receiving Areas</i>	9
<i>Parking Lots</i>	9
5.2. Waste Assessment	9
Estimated Quantities of Materials in the Waste Stream	10
5.3. Surveys	11
5.4. University Case Studies	11-12
6. Recommendations	12-18
6.1. UMKC	12
<i>Administrative Offices</i>	14
<i>Class Rooms and Computer Labs</i>	14-15
<i>Common Areas</i>	16
<i>Canteen Areas</i>	16-17
<i>Operation Services Area</i>	17

6.2. Sodexho Food Services	17
6.3. Green Purchasing	18
6.4. Zero Waste Goals	18
6.5. The Consultant's Role	18
7. Conclusion	18-19

Final Report
Waste Assessment and Recommendations
For University of Missouri at Kansas City

1. Introduction

The funds for the grant are made available through a Missouri Department of Natural Resources (MDNR) Target Grant. The grant includes the assessment of the waste stream and recommendations for a waste reduction and recycling program for University of Missouri at Kansas City (UMKC), located in Jackson County, Missouri.

2. Summary

The University of Missouri Kansas City (UMKC) campus includes more than 95 buildings, 3,100 employees, and 13,000 students. Each day, thousands of students, faculty and staff study, learn, teach, and work together on campus. Campus buildings include office space, classrooms, laboratories, cafeterias, libraries, gyms, and other varied uses. Because of the size, number of students and faculty, and the variety of activities taking place on campus, UMKC generates a great deal of waste. Some recycling programs are in place, but they are not capturing the materials and participation necessary to realize their potential. Because of the many types of buildings on campus, a blanket-recycling program cannot cover each waste material at each building sufficiently. There is a need to examine opportunities for waste reduction and recycling on a building-by-building basis. The project targets 10 buildings at UMKC selected by the staff to have the most potential for waste diversion, based on size, use, and current practices. These 10 buildings will include more than 1.5 million square feet of space. Bridging The Gap, Inc. worked with the facilities staff to perform waste assessments and provide recommendations for improvement.

Bridging The Gap has a long history of working with businesses, institutions, and organizations to examine opportunities to reduce waste and increase recycling. Bridging The Gap is experienced at performing waste assessments and providing recommendations for many types of facilities and has a proven record of helping interested parties develop programs that produce substantial results.

The only recycling efforts thus far have been placement of a few containers for aluminum can recycling in the food services area and white office paper recycling in some classroom, labs and offices. Miller Nichols Library has the most comprehensive recycling program of all the buildings. The library recycles white paper, green bar, newsprint, toner cartridges and cardboard.

As a first step toward developing a cost-effective recycling program for the targeted materials, Bridging The Gap requested funding for a comprehensive assessment of waste generated at the 10 buildings specifically Haag Hall and Royall Hall, Miller Nichols Library, Swinney Rec. Center,

Administrative Center, Performing Arts Center, Flarshiem, University Center, Newcomb Hall and Scofield Hall, Block School of Business, and the Law School all within the UMKC Campus. The targeted materials include Corrugated Containers (OCC), Mixed Office Paper (MOP), Plastic (PET) Beverage Containers, Ferrous Metal Food Containers, and Aluminum Cans. Once the waste assessment is conducted, UMKC will evaluate the data and, if favorable, move forward to create a recycling program to recover these materials.

This report is a comprehensive summary of the waste assessment and waste reduction analysis conducted for UMKC, Jackson County, Missouri, by Bridging The Gap consultants.

3. Objectives

The first objective of the grant is to assess the amount of recoverable and recyclable material (specifically, OCC, Mixed Office Paper, PET Beverage Containers, Aluminum Cans, and Ferrous Metal Food Cans) generated as a result of daily activities of students, faculty and staff at the UMKC campus within the 10 buildings listed above

Secondly, to record, summarize, and evaluate the data resulting from the waste assessment in order to recommend a cost-effective recycling plan for the recovery and diversion of these target materials.

The third and final objective is to make written recommendations to the Chancellor and the Chancellor Cabinets of UMKC for the implementation of a recycling plan for the recovery and diversion of these target materials.

4. Methodology

The following methodology was used in the waste assessments of the 10 buildings at the UMKC campus.

Creation of Recycling and Waste Reduction Team

Bridging The Gap began the process by creating a Recycling and Waste Reduction Team (RW) comprised of operations staff, maintenance staff, the janitorial staff, and the project consultant. The RW Team members are: Eric Vestal, Procurement; Henry Marsh, Facilities Management; Marny Burke, Women's Center; Anna Fraley, Student Auxiliary Services; Jim Enderle, Facilities Management Construction Services; Pat Burch, SCE; Cindy Ward, Facilities Management; Corey Key, Facilities Management; Jody Jeffries, Director of the University Center, Rachel Haughenberry, Philosophy Department; James W. Sheppard, Philosophy Department; Jayson Gale, Student Auxiliary Services; Amy Bhesania, Biological Sciences Department; Mark Dodson and Kay Johnston, Bridging The Gap. The RW Team met a total of five times. A subcommittee (Eric Vestal, Henry Marsh, Pat Burch, Cory Key, Cindy Ward, Jody Jeffries and Kay Johnston) of the RW Team met an additional seven

times to discuss detailed information for the assessment. The RW Team worked cooperatively on the project and should be commended for all the hard work they put toward this project. A special “Thanks” to the RW Team.

Facility Walk-Through

The consultant on the project, Kay Johnston, with Karen Pattinson, a Bridging The Gap volunteer, conducted walk-throughs with assistance from campus staff February 12-21, 2003. The observation areas included:

- Administrative Offices
- Printing Services
- Classrooms
- Computer Labs
- Common Areas
- Canteen Areas
- Dock Areas
- Parking Lots

Surveys

UMKC distributed surveys, both in hard copy and by email provided by Bridging The Gap, to all employees. The survey is designed to obtain employee feedback on how much recycling is actually occurring, what materials are being generated and recovered, and the overall perception of employees about waste reduction and recycling. The survey provided space for comments and suggestions employees might have about current and future activities in the areas of waste reduction and recycling. Bob Nold with Sodexo provided a free lunch valued at \$15.00 as an incentive for participants to respond to the survey in a timely fashion. The returned surveys were reviewed, tabulated and summarized. See Exhibit A for a copy of the survey instruments.

Research

A great deal of time was spent to research and collect data for the project. Amy Bhesania, RW Team member, and Kaye Johnston with Bridging The Gap provided all of the research for the project. Research results on other university campus recycling programs are provided within this report.

Data Collection Analysis

Data collection and analyses were major parts of the assessment process. The BTG consultant working on the project spent time analyzing the data and determining how to apply the data to the project. A great deal of time was spent gathering actual data from the facilities management staff of UMKC and Sodexo Food Services. Abitibi Consolidated and Batliner Paper also provided data for the project.

Observation of Operations

On a dozen separate occasions, the consultant gathered to go over campus operations observing different activities of students, staff and faculty. Two event observations occurred at the Swinney Recreation Center and another 10 occurred at the other nine buildings on campus. Additionally, four separate meetings were held with each of the three facilities management staff to go over data particular to each buildings operation.

Collaboration on Written Assessment Report

This report is a result of the collaboration between Bridging The Gap and UMKC campus staff, faculty and students.

5. Results

5.1. Current Waste Handling Practices

Each of the 10 target buildings on campus were carefully evaluated. The buildings were broken down into seven categories: the Administrative Offices, Classrooms, Computer Labs, Common Areas, Canteen Areas, Printing Services, Dock and Receiving Areas and Parking Lots. The UMKC campus has an average yearly attendance of 13,000 students. There are 3,100 employees who work at the campus, and about half that number work full-time year round. There are typically two materials being recycled on the campus, white office paper and aluminum cans. Recycling rates are low due to lack of signage and unidentifiable bins being currently used for recycled materials. Another factor that contributes to the low recycling rates is the cleaning staff frequently moves the recycling containers around to different locations in the various areas. The Miller Nichols Library has the

most comprehensive recycling program on campus. It currently recycles white office paper, green bar, newsprint, toner cartridges, cardboard and aluminum cans. The amounts recycled are also undefined due to lack of a tracking system. The current amount of white paper being recycled monthly is approximately 6 tons as reported by Abitibi Consolidated.

Outside of these attempts to recycle, most materials generated at the UMKC campus simply go into the trash and are disposed of by the waste hauler. The annual estimated cost of waste disposal is \$160,000.

Administrative Offices

There is one material, white office paper, currently being recycling in the administrative offices. A visual walk-through of the offices found some brown and black tall containers set up for white office paper recycling located in office hallways. There is a lack of desk-side recycling containers, and because the larger containers located in the hallways do not have a permanent location and are moved around frequently by the cleaning staff, general apathy exists about the notion of recycling as an activity that pairs with normal daily activities. Some departments collect aluminum cans, and a few employees then take the materials home to recycle them.

Classrooms

There is white office paper currently being recycled in most classrooms. There are old corrugated boxes used as bins for the collection of paper. Most of the waste cans located in the classrooms have considerable amounts of white paper in them. There is a general lack of signage designating containers for recycling contributing to low use of the recycling containers.

Computer Labs

There is a great quantity of white paper being generated in the computer labs. The recycling bins are generally corrugated boxes that are in some instances overflowing with white paper. Waste bins located near the entrances of each room also contain white paper as well.

Common Areas

There are some white paper recycling containers in some of the hallways and common study areas through out the 10 target buildings. Again, there is a lack of signage and there is not a permanent location for the bins. Each time the space is cleaned the recycling containers are moved to a new location. There are also a few aluminum can recycling containers sprinkled throughout the common areas, and because of lack of signage, the bins draw contamination in the form of plastic bottles, white paper and snack-wrappers.

Canteen Areas

There are several types of aluminum can recycling containers in each of the food court areas on campus. There is a lack of signage designating the containers for recycling. There is not a permanent location for the bins, which are moved around daily.

Printing Services

White paper is collected at the printing services located in Royall Hall. Outside of the computer labs the printing services generates the largest quantity of paper on campus.

Dock and Receiving Areas

The dock and receiving areas are where trash and recycling collections culminate. The Procurement Department staff daily loads opaque bags of recycling.

Parking Lots

There are currently two Abitibi Consolidated 7-yard bins in the parking lot that are the collection points for all the white paper generated on campus. There is an average of 6 tons of white paper being collected and recycled on campus each month.

5.2. Waste Assessment

The estimated quantities of waste generated on campus are based on data provided by UMKC staff and observations made by the project consultants. An estimated 43 percent of the waste generated at the UMKC campus is Corrugated Containers (OCC). OCC is estimated to also makeup 43 percent of the waste at the 10 target buildings. The table below shows the waste stream materials in descending order. The material categories include:

- Corrugated Containers (OCC)
- Food Waste and Packaging
- Paperboard
- Plastics
- Construction Materials and Pallets
- Non Recyclable Consumable Paper Waste and Misc. Waste
- Aluminum
- Mixed Office Paper (MOP).

**Estimated Quantities of Materials in the Waste Stream
(Annual tons)**

UMKC			10 Target Buildings #		
Materials	Tons*	Percentage of waste stream	Materials	Tons*	Percentage of waste stream
Corrugated Containers (OCC)	379	43%	Corrugated Containers (OCC)	227.4	43%
Food Waste and Packaging	37.09	4%	Food Waste and Packaging	22.25	4%
Paperboard	94.75	11%	Paperboard	56.85	11%
Plastics:	6	.7%	Plastics:	3.6	.7%
• #PET	5.5		• #PET	3.3	
• HDPE	.2		• HDPE	.12	
• Polystyrene foam	.2		• Polystyrene foam	.12	
• Plastic strapping, packaging and crates	.1		• Plastic strapping, packaging and crates	.06	
Construction Materials	116	13%	Construction Materials	69.6	13%
Pallets	3.86	.4%	Pallets	.02	.4%
Non-Recyclable consumable paper waste and misc. waste.	7.74	.85%	Non- Recyclable consumable paper waste and misc. waste	4.64	.85%
#Aluminum	.5	.05%	#Aluminum	.3	.05%
# Mixed Office Paper	240	27%	#Mixed Office Paper	144	27%
*Totals	884.94	100%	*Totals	530.96	100%

**This information was derived from confidential files from UMKC waste hauling contracts.*

#This information was derived from visual inspection; size of containers and confidential information on purchases by Sodexo and cost of waste hauling.

5.3. Surveys

Surveys were distributed to all employees via the operations team members. There was a combined total response rate of 26 percent from the UMKC faculty and staff. Seventy-three percent of all the

employees who responded stated they would be glad to or willing to recycle at work. The four top items employees throw away are:

- a. Mixed Office Paper
- b. Corrugated Containers
- c. Aluminum Cans
- d. Plastic bottles

Employees also gave suggestions on ideas that could be used in the workplace to reduce waste and improve recycling efforts. The following ideas are listed in the order as prioritized by the employees:

- Provide desk-side recycling bins for all employees.
- Locate bins in each department by copiers and printers.
- Use email in place of printed memos.
- Provide durable mugs instead of polystyrene foam (Styrofoam) cups.
- Use bulk spring water in kitchens instead of individual plastic serving bottles.
- Orient new employees on waste reduction and recycling practices.

Overall, 91 percent of all employees responded that they currently do some recycling at work and are interested in a more consistent and comprehensive waste reduction and recycling program. It is important to note that: “Every year, Americans throw away enough office and writing paper to build a wall 12 feet high, stretching from Los Angeles to New York City.” Quoted from The Earth Works Group, *50 Simple Things You Can Do To Save The Earth*.

5.4. University Case Studies

Research was conducted on several university campuses elsewhere that have recycling programs. Several universities around the United States have had great success in their recycling programs by using community-based social marketing as their platform. UMKC’s Recycling Team plans on utilizing information gathered from other successful university programs in order to implement UMKC’s program.

Washington State University

According to the Washington State University’s (WSU) website, “WSU Campus Recycling program won the 1998 National Recycling Coalition award for Outstanding School Program. Each year the WSU campus recycles 1,200 tons of paper, cardboard, glass bottles, tin cans, aluminum cans, and plastic bottles. The campus also reuses or recycles scrap metal, animal

bedding, landscape waste, houses, tires, motor oil, batteries, antifreeze, refrigerants and many more items.” WSU has successfully used behavior change principles such as prompts, rewards/incentives and norms to encourage recycling throughout campus.

North Carolina State University

According to North Carolina State University’s (NCSU) website, they increased their waste disposal savings from \$35,457.23 in 2001-2002 to a projected \$73,386.26 for 2002-2003. The recycling effort at NCSU is heavily based on student, faculty and staff volunteers who help collect, sort and haul recyclable materials. NCSU relies heavily on credibility and role models as part of the success of the program.

Valparaiso University

Valparaiso University (VU) has also successfully implemented a campus-wide recycling effort. Several psychological studies regarding campus recycling have been conducted on campus to uncover effective use of education, signage, feedback and sorting techniques for the university.

There is a wealth of knowledge to uncover regarding other university recycling programs and how best to incorporate their successes into our program. UMKC’s Recycling Team will continue to research and understand what elements make other programs successful.

6. Recommendations

6.1. UMKC Campus

The recommendations for waste reduction, recycling and education at UMKC are as follows:

Administrative Offices

The four top materials to recover through recycling in the Administrative Offices are Mixed Office Paper, OCC, PET and Aluminum Beverage Containers. Seven hundred fourteen offices are located in the 10 focus buildings.

Mixed Office Paper can be recycled at each desk using desk-side recycling containers, and larger containers can be placed in the areas where copiers are located in each department.

Seven hundred smaller containers are needed for the desk-side recycling. The total cost for the containers is \$3,770 plus shipping and tax, not including any discounts.¹ Employees would empty their desk-side containers into the larger containers located in each department. The custodial staff would be responsible for taking the full containers to the Central Service Area.

The number of larger containers to be used by copiers is 70, and the total cost for the containers is \$770 plus shipping and tax, not including any discounts.² For collection of OCC, larger three compartment containers will be needed in each of the three kitchen areas. Employees could breakdown cardboard items and place in the containers for collection. The other two items, PET Beverage Containers and Aluminum Cans, can be recycled in the 18-canteen areas. Rubbermaid makes a set of three containers that can accommodate all three materials and make the most of the compact space. The cost of three sets of the three Rubbermaid Slim Jim Trolley Container System sets for this purpose would be \$3,170.³ Please see Exhibit B and C of the attached container specification sheets and the cost per container.

Additional waste reduction tips and ideas can be found in Exhibit H, *Simple Steps for Businesses*, a publication of Bridging The Gap.

Education is also a very important part of a successful office-recycling program. Materials include signage to remind employees about the recycling program. ***Social marketing** techniques and resources are the most effective ways to educate on waste reduction and recycling and to encourage participation. See more about **Social Marketing** later in this section. The recommendations include a comprehensive education program where existing employees have an event to launch the new recycling program. The event should highlight the new system as well as give staff, faculty and students an opportunity for feedback on how the new program works. Recycling containers and handouts should be created to show what materials go where and an itemized list of all items accepted in the Mixed Office Paper collection. Commitment cards should be provided to each employee so that each employee can make their pledge to support the new program. Food and fun prizes could be given out to give the day a festive theme. The RW Team should set up a voicemail or email where employees can give their feedback and access is easy for members of the RW Team to

¹ Rubbermaid, item number 6703, 13 5/8 quart size, blue containers with “We Recycle” imprinted, cost is \$5.28 each.

² Rubbermaid item number 6954, 41 ¼ quart size, blue containers with “We Recycle” imprinted, cost is \$10.92 each)

³ Rubbermaid Slim Jim Container Trolley System cost per set is \$176.70, item numbers 7052 15 7/8 gallons base blue containers and item numbers 7028, 7030 and 7032 top containers in colors brown, green and blue plus the Slim Jim Trolley.

check in on progress. The voicemail number or email address should be included in the handouts. The team should then discuss any reports on the program and create solutions to handle any problems that might arise. Orientation materials and a commitment card for recycling and waste reduction should be included in the new employee orientation packet. The RW Team will create an electronic newsletter showcasing the programs success and post a printed version in all break rooms for employees who do not have access to email. A system to record and track quantities of materials recycled will be created to monitor the success of the program. A budget of \$2,400 should be set aside for the launch of the program and handouts.

Signage should be placed on each container explaining what materials are acceptable to go in each bin. In addition, signage should be placed in areas that help any visitors understand how to use the recycling system. A budget of \$3,500 should be allocated for signage.

The program should be able to divert 55 percent of the 7 tons of Mixed Office Paper currently being thrown away during the first year of the new program. The goal for the second year should be 80 percent and the third year 90 percent. With constant monitoring and education, this active program could reach 100 percent materials recycled by the administrative office staff within five years. For every ton of paper recycled, 17 trees are saved and more than 7,000 gallons of fresh water are saved. To go one step further, 1 ton of paper recycled saves three cubic yards of landfill space!

The total cost of initially setting up the New Recycling and Waste Reduction Program for the Administrative Offices is approximately \$12,840.

Classrooms and Computer Labs

The recommendations for waste reduction, recycling and education at the classrooms are as follows: There are numerous opportunities for waste reduction and recycling in the classrooms and labs. There are a combined 568 classrooms, lecture halls, and computer labs. The top three materials to target are Mixed Office Paper, Aluminum Cans and plastic PET bottles.

There are currently 144 tons of Mixed Office Paper being generated at UMKC in the 10 focus buildings and approximately 86.5 tons are coming directly from the classrooms and labs. Less than 1 ton of plastic PET bottles and aluminum cans annually are estimated to be disposed of in these areas. It is recommended that one small blue recycling container¹ for paper recycling be placed in each classroom and lecture hall. Also it is recommended that one large blue recycling container² should be

¹ Rubbermaid, item number 6703, 13 5/8 quart size, blue containers with “We Recycle” imprinted, cost is \$5.28 each.

² Rubbermaid item number 6954, 41 ¼ quart size, blue containers with “We Recycle” imprinted, cost is \$10.92 each)

placed beside or under each printer in the computer lab rooms. Additionally, a small blue container¹ for collection of beverage bottles should be placed in the common areas near the entrance of each cluster of rooms. Proper labeling, identifying the containers as beverage container recycling will be the key to reducing contamination in the bins. Four hundred sixty-eight small blue recycling containers¹ are needed for recycling Mixed Office Paper in the classrooms at the cost of \$2,472. In addition, one hundred large blue recycling containers² are needed for the computer lab areas at a cost of \$1,092.

Education and signage is a very important component of successful management of the current waste generated and the recycling efforts that occur during class time at UMKC. Once the program is designed there are several effective methods to educate the faculty, staff and students. Signage for the classrooms is estimated at \$6,200. The use of ***Social Marketing** tools and resources is the most effective way to affect behavior change and encourage participation. It is important to make sure faculty and students can locate and recognize recycling bins. Signage and labels on top of containers that can be seen across the room would ensure that people know where they can take their materials. Selective signage that is conspicuous on the containers is very important to identify what material is accepted in each container. There are many other areas where incorporating the recycling and waste reduction theme would raise the awareness of faculty and students. Recycling bins for plastic PET bottles and aluminum cans are discussed in the common area part of the report. Recycling one aluminum can saves enough energy to make 20 more cans.

The total cost of implementing a recycling and waste reduction program in the classrooms and computer labs is estimated at \$9,764.

Common Areas

The common areas of campus are where faculty and students enter the classrooms and labs. Students often carry a drink with them from the canteen areas, and it makes sense to target collection of beverage bottles along the common areas. PET beverage container collection can be tied into the existing aluminum can collection by providing signage that tell students the containers are for plastic PET beverage containers as well. Since there are already ample containers for collection of aluminum cans in each building the only additional cost is for signage to update the containers. The estimated cost for labels and signage is \$750. There is no reason why 80-90 percent of these two materials cannot be recycled throughout all 10 buildings.

Education, including signage, again is very important to the success of getting faculty, staff and students to recognize and use the recycling containers. Using signage on the containers that is

purposeful and focused on identifying the containers and what materials are accepted in each container are key so that faculty, staff and students do not even have to think which containers to use. It becomes second nature to place PET and aluminum in the beverage recycling containers. Educational efforts should be coordinated with other recycling efforts in other areas of the campus. Special events that focus on specific materials could raise student awareness of the recycling program.

*The use of **Social Marketing** techniques, tools and resources are the most effective ways to reach the faculty, staff and students with the message of waste reduction and recycling. **Social Marketing** refers to the application of basic marketing principles to the design and implementation of programs and information campaigns that advance social causes such as waste reduction and recycling activities. The term **Social Marketing** is sometimes misused to describe any advertising or mass media campaign that is intended to advance a social cause. In fact, a **Social Marketing** campaign always involves a disciplined and iterative process for developing programs, services, and informational materials that are fundamentally consumer-oriented in nature. A social marketing campaign that applies the consumer orientation can be especially helpful in changing social norms and in promoting a climate of support for broad environmental changes that will affect the decisions faculty, staff and students make about how to treat the waste they generate and how the systems set up to collect materials are used.

Canteen Areas

The materials most often observed in the canteen areas of the campus are PET, aluminum cans and food waste. Food waste is very difficult to recycle or compost because of the lack of space and the fact that most foods served have high dairy and meat content.

Creating signage on the beverage collection bins that is focused toward the action of getting students to *only* put PET containers and aluminum cans into the collection bins is of utmost importance to reduce contamination. Using educational techniques, such as social marketing, that help change the behavior of the faculty, staff and students regarding placement of the waste they generate will result in higher amounts of recycled materials being collected. Prompts in the form of signage on bins and awareness by using various communications tools such as the campus newspaper and message boards will be the most effective ways to encourage participation. The estimated cost of new signage for bins along with signage to designate the permanent location of bins is \$2,500.

Building Operations

Building operations is a shared service for the whole campus. There is one main area where trash is collected in compactors onsite. In order to collect and store the large volumes of OCC and Paperboard from the campus operations and food service, a baler is needed to minimize the space needed for collection and recovery. A space has been identified for the baler in the operations services area. See Exhibit F for specifications and details regarding the V-3630 Marathon baler. The cost of the baler including tax and shipping is \$8,800. This cost does not include cost of installation.

Abitibi Consolidated has two bins for Mixed Office Paper collection currently onsite, and it recommended that a total of five 7-yard bins be placed in various locations throughout the campus. It is important that the placement of additional bins facilitate the staff that will transport the recyclables from each of the buildings.

UMKC staff currently transports aluminum cans to the Community Recycling Center located at 48th and Forest. It is recommended that staff continue to transport the plastic PET containers and aluminum to the recycling center.

6.3. Sodexho Food Services

There are several areas behind the canteen areas where food services staff will be asked to recycle. Following are the recommendations for recycling by Sodexho Services:

The top three materials discarded in the areas Sodexho Food Services supervises are OCC, Paperboard, Aluminum and PET beverage containers. Recycling is a natural for OCC, Paperboard and beverage containers. Servers are already segregating aluminum cans in the canteen areas. OCC and Paperboard containers are being flattened before they are thrown away. The next step in the process is to specify bins for collection of the materials. There really should not be any additional cost to begin recycling these materials. The restaurants and the private seating areas will need a system in place to handle the materials. An ad hoc committee of staff from these areas should work in conjunction with the RW Team in order to design a system of collection that works for each specific area.

6.4. Green Purchasing

Many private businesses and government entities have created, developed and implemented environmentally preferable procurement (EPP) programs that among other goals, institute the purchasing of recycled paper and numerous other items such as recycled toner cartridges, etc. In addition to these EPP programs, some organizations have begun to implement waste reduction practices such as a 'Reuse Center' where employees can bring their surplus items for others to use. Both programs work to conserve natural resources and support recycling practices. UMKC and Sodexho Food Services should develop policies on green purchasing that include reuse and other waste reduction strategies. The RW Team will work on drafting initiation policies and goals during the first year of the program.

6.5. Zero Waste Goals

The RW Team will take the lead in developing and creating a vision statement that will be used by all of the organizations involved regarding the development of environmental policies. Further steps to promote sustainability by creating strategic goals and plans will be the focus of the RW Team. How soon will it take for the UMKC campus to reach the goal of Zero Waste? The answer to this important question lies within RW Team as they strive toward a more sustainable future for their organizations.

6.6. The Consultant's Role

The consultant's role in the implementation of the program is primary to the overall success of the program. The consultant will lead the RW Team in setting goals and implementing all areas of the program. The consultant will provide research and other tools and resources to the project. Using the expertise of the consultant in the areas of education and social marketing will be invaluable to whether the program moves ahead or dwindles. The complete focus of the consultant will be to follow the timeline that is developed for the project and making sure implementation goes forward in a timely fashion and to make sure that systems are set up in such a way to ensure the sustainability of the program long-term.

7. Conclusion

In conclusion, there is much opportunity to reduce waste and recycle at UMKC campus year round. The amount of waste that can be diverted from the waste stream is substantial. Bridging The Gap recommends that the first step toward maintaining a successful program is keeping the RW Team intact. There is a need for ongoing work with the consultant that will keep the group focused on the program and will help the RW Team develop a strategic plan and goals for the future. It is important to understand that setting up a program is one small part in the process of becoming sustainable. As this RW Team continues down the path of sustainability, the rewards will be great for our community and our environment.

The opportunities for reducing waste through recycling and waste reduction strategies at the UMKC campus are great! Currently there are more than 800 tons of waste being generated and thrown away annually at UMKC. The cost of waste removal is significant averaging \$160,000 a year. An initial goal of reducing the waste by 55 percent will result in 486 tons less waste going into area landfills. The amount of money saved could be \$90,000-\$96,000 within the first year. The accumulative amount after five years would be well over \$450,000-\$483,000 saved in hauling cost alone. Other economic benefits would be the savings of waste reduction strategies and proceeds from the materials recycled.

The estimated cost for initially setting up the program for the 10 focus buildings is \$34,000 for supplies and equipment and \$10,000 for the time, leadership and expertise of the consultant. The total operating cost is \$44,000 for the first year of the program in the 10 designated buildings.