

*An Assessment of Campus Sustainability at
the University of Kentucky*

APPENDIX

Natural Resource Conservation & Management

Senior Capstone Project

Spring 2003

Instructor: Mary Arthur

Coarse Collaborator: Cheryl Edge

Table of Contents

Appendix A: Campus Sustainability Brochure.....	3
Appendix B: Energy and Water.....	6
Appendix C: Procurement and Disposal.....	11
Appendix D: Transportation.....	17
Appendix E: Land.....	21
Appendix F: Education.....	24

APPENDIX A

Brochure: *University of Kentucky Campus Sustainability Initiative*

Compiled by the 2003 Natural Resource Conservation and Management Senior Capstone Class for dissemination at UK Earth Day, April 22, 2003

Did You Know?

- Every student, faculty, and staff member at UK sends approximately 337 pounds of waste to the landfill each year.
- If all the electricity UK purchased over the last ten years was produced solely from Kentucky coal, an average of 1.94 tons of carbon dioxide per person per year would be emitted into the atmosphere.
- It has been estimated that idling and stop-and-go traffic costs motorists 753 million gallons of gasoline a year, or \$1,194 per driver in wasted fuel and time
- The Top 20 Task Force at UK lists the "environment" as one of 6 areas to track as an indicator of UK's progress toward Top 20 status. Specific aspects to track include "environmental literacy," "recycling," air quality," and "water quality."
- Only 3.74% of UK's Lexington Campus is defined as open space.
- One full, 40-foot bus takes 58 single passenger cars off the road. A 10% nationwide increase in transit rider-ship would save 135 million gallons of gasoline a year.

What Are Other Campuses Doing?

- **ENERGY STAR Showcase Dorm Room:** Tulane University's Office of Environmental Affairs has sponsored an energy efficient dorm room using products that have been labeled energy efficient by the EPA. For more information visit www.energystar.gov.
- **The Green Cup at Yale:** The Yale Student Environmental Coalition has established the Green Cup. The contest scores the recycling performance of each residential complex and encourages students to conserve heat, water, and electricity. The twelve residential complexes compete for cash prizes and the Green Cup, a trophy blown from glass collected in student recycling bins. For more information about

this program visit
<http://www.yale.edu/recycle/left5.htm>.

For more information about campus sustainability...

- Visit our class website at http://forestry2.ca.uky.edu/student_work. Our report will be posted by May 10, 2003.
- Attend the NRC 471 presentation on campus sustainability on May 1, 2003 at 1:00 pm in the Auditorium of the W. T. Young Library.

Sponsored in part by the UK Tracy Farmer Center for the Environment

Campus Sustainability



"Change Requires Initiative"

*-Eric Amon
UK NRCM Student*

This brochure was produced by students of the University of Kentucky College of Agriculture, Natural Resource Conservation and Management (NRCM) Senior Capstone Course.

Designed by Erin Vachon
Photo by Dave Maehr

UK
UNIVERSITY
OF KENTUCKY

What is Sustainability?

"Sustainability means living, working and behaving in a way that will sustain the integrity and biodiversity of the local, regional and planetary ecosystem upon which all life depends."

-Guy Dauncey, *Penn State Indicators Report*

Why is Sustainability Important?

Sustainability requires using all resources efficiently, decreasing consumption and waste. Proper sustainability objectives will ensure a healthy environment for generations to come.

-A. Crabtree, *Implementing Sustainability Knowledge into the Built Environment: An Assessment of Current Approaches*

Campus Sustainability

A sustainable campus meets the needs of the present without compromising the needs of future generations, while operating in a manner that is ecologically sound, socially just, and economically viable.

-Jake Royse, *UK NRCM Student*

Why Start Here?

As a part of the foundation of Kentucky's future, UK has a responsibility to lead the state in the global shift towards more sustainable living, providing a vision for sustainable practices on a large scale. More efficient resource use and emphasis on the ecological literacy of all members of the University community are the first steps toward building a sustainable future for the campus, the community, and the state. Improvements in the efficient use of resources leads to greater economic viability. As a major

employer in the state, the University of Kentucky can set an example for its employees by encouraging the efficient use of resources in their daily lives.

How Can You Help?

Reduce:

- Print on both sides of the paper and set smaller margins whenever possible.
- Bring your own cup to campus cuisine locations and save money.
- Let the natural light in! Turn off lights and open windows to conserve electricity.
- Install low flow showerheads to save water.
- When you're shopping, buy products with the least amount of packaging.

Reuse:

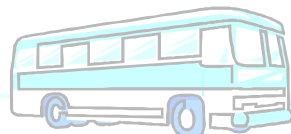
- Don't recycle your paper until both sides have been used.
- Refill your empty plastic bottles instead of buying new ones.
- Going to the grocery store? Take your own bags; save the plastic ones for someone else.

Recycle:

- Put aluminum cans, cardboard, paper and plastics in recycling bins on campus. If you live off campus, use your Rosie or recycling bin to recycle all of the above and glass.
- Purchase products that have the highest post-consumer/recycled content available.

Other things you can do...

- Encourage faculty and staff to print/copy on both sides of paper.
- If you spot a burned-out or flickering light, running toilet, or leaky faucet report the wasted electricity or water to the building manger. If you live in UK housing you can report similar problems via the web. Go to <http://www.uky.edu/AuxServ/housing.html> and then click on "Maintenance Request."
- If your computer is going to be inactive for more than 16 minutes, turn it off. After 16 minutes, the energy needed to run the computer outweighs the start-up cost.



- Leave your car at home, ride Lextran and CATS to save money and time when coming to campus. For routes and schedules visit http://www.lextran.com/bus_routes.html and www.uky.edu/parking/buses.htm.

To Learn More...

Sign up for a class...

There are a number of classes you can take to better educate yourself on sustainability and other environmental issues. The classes listed below address sustainability *and* fulfill a University Studies Program Requirement.

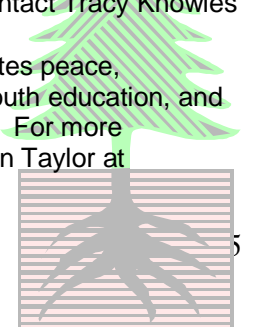
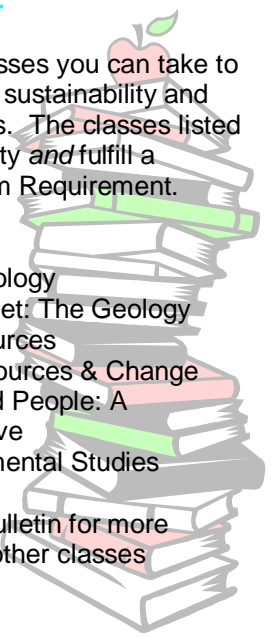
BIO 102 Human Ecology
BIO 103 Basic Ideas of Biology
GLY 120 Sustainable Planet: The Geology of Natural Resources
SOC 260 Population, Resources & Change
PLS 104 Plants, Soils, and People: A Global Perspective
ENS 200 Intro to Environmental Studies

*consult your University Bulletin for more information on these and other classes

Join a club...

UK offers many clubs and organizations that focus on environmental issues. Here are a few you should check out.

- **Green Thumb** is a student club that helps save the earth. For more information contact ukgreenthumb@yahoo.com.
- **Students for Responsible Ecological Awareness and Management (STREAM)** is an environmental organization at LCC. For more information contact Tracy Knowles at tknow2@uky.edu.
- **Roots & Shoots** promotes peace, humanitarian service, youth education, and environmental activities. For more information contact Kevin Taylor at ktay12@uky.edu.



- **Students to Save Robinson Forest**
actively opposes strip-mining or any other environmentally destructive activities in the University's research and teaching forest. For more information visit their website at www.robinsonforest.org.

APPENDIX B

Energy and Water

Mary Risen and Emily Salt

Contacts

- **Jack Applegate**, Physical Plant Director, University of Kentucky
211c Peterson Service Bldg.
Phone: 859-257-3875
E-mail: jack.applegate@ppd.uky.edu
Jack Applegate can provide data about the electricity and water used on campus. He provided the data we utilized when looking at the electricity and water use across UK main campus from Kentucky Utilities.
- **Bill Reesor**, Physical Plant Manager III, University of Kentucky
215 Peterson Service Bldg.
Phone: 859-257-2726
E-mail: bill.reesor@ppd.uky.edu
Bill Reesor was very helpful in getting specific information to us regarding the electric and water loop for main campus and the Kirwan-Blanding dorm complex. He was easier to reach via email than phone.
- **Jerry Smyth**, Administrative Staff Officer II, Physical Plant Division, University of Kentucky
204 Peterson Service Bldg.
Phone: 859-257-8497
E-mail: gerald.smyth@ppd.uky.edu
Mr. Smyth assembled the data concerning the electric/water loop and the Kirwan-Blanding dorm complex at the request of Bill Reesor.
- **Galen Tolliver**, Delta Room Supervisor, University of Kentucky
216 Peterson Service Bldg.
Phone: 859-257-2830
E-mail: galen.tolliver@ppd.uky.edu

He is a great source of information on what the University does to manage energy consumption. We scheduled an interview and tour of the Delta Room with him through Bill Reesor. The Delta Room is the “nerve center” of all energy management technology currently used by the University. This facility is staffed 24 hour a day, 7 days a week by highly trained technicians monitoring 5 energy management computer programs.

- **Dan Trammel**, Institutional Effectiveness & Planning, Lexington Community College

208 Oswald Bldg., Lexington Community College

Phone: 859-257-4872 ext. 4154

E-mail: dtram2@uky.edu

Dan Trammel answered an information request I made to his office. I would recommend getting in touch with the office directly if you need information for LCC. The LCC Office of Institutional Effectiveness & Planning is fairly new so they may not have records dating back very far.

Websites

- **BIG Campus Electrical Efficiency, Brown University**

www.brown.edu/Departments/Brown_Is_Green

BIG refers to Brown is Green. This website provides information about Brown University’s initiatives to become a sustainable campus.

- **Energy Affairs Council, Tufts University, EAC Summary Report**

www.tufts.edu/tie/tci/energy/SummaryReport.htm

This report was written by Tufts Administrative Council’s Energy Affairs Council. The report focuses on reducing energy use at Tufts University.

- **Harvard Green Campus Initiative**

<http://www.Greencampus.Harvard.edu/>

This website describes what is being done at Harvard University to achieve “cost-effective, high-performance and environmentally sustainable campus operations.”

- **Northern Illinois University**

<http://www.kostic.niu.edu/energy-unit-conversions-equivalents-cpt.pdf>

This website is from a physics class at NIU. It is a pdf of energy unit conversions. I used it for electric kWh conversions to BTUs and in determining CO₂ emissions from coal combustion.

- **Princeton University**

<http://www.Princeton.edu>

This is Princeton's main website; from here you can access their 2000 Environmental Audit. Their study has similar resource areas as our study, which is good for comparison.

- **United Nations Environmental Programme**

<http://www.unep.org>

This site gives a global perspective on environmental issues

- **University of Kentucky's Annual Operating Budget**

<http://www.uky.edu/PR/News/0203budget.htm>

This website allowed us to see what percentage of the annual operating budget is spent on energy and water.

- **University of Kentucky Institutional Research**

<http://www.uky.edu/IR>

This website has current fact books online. Lots of data concerning the University of Kentucky can be found using this website.

- **University Leaders for a Sustainable Future**

<http://www.ulsf.org>

Website about sustainability and higher education. Lots of information.

- **University of Michigan Guide to Energy Conservation, Energy Management**

http://www.energymanagement.umich.edu/utilities/energy_management

This website offered information concerning energy conservation measures currently in place at the University of Michigan.

- **Wisconsin K-12 Energy Education Program**

<http://www.uwsp.edu/cnr/wcee/keep/Mod1/Whatis/energyresourcetables.htm>

This website provides energy conversion factors. I used this to check the accuracy of the conversion factors I got from the NIU website.

Files

(Available from Dr. Mary Arthur, UK Department of Forestry)

- **Kirwan-BlandingUtilities2.xls**

Microsoft Excel file containing the energy consumption in kWh for the Kirwan-Blanding Dorm Complex, along with the electrical and water loop. These numbers are from Bill Reesor, emailed to Mary Risen on 3/24/03. These were the data Jerry Smyth got together.

- **NRC471-2.xls**

This is the main file we used in quantifying our indicators. There are four sheets in the file containing information on campus population, coal burned by UK, utility files (emailed from Jack Applegate PPD Director 1/28/03 to Mary Arthur), and our indicators. The population sheet has information from the UK Fact Books about enrollment numbers at UK and LCC, employment numbers, and square footage for the campus over time. The square footage from the Fact Books are for the “university system” and we didn’t find out what exactly that means. We didn’t use the square footage in our indicators; if you plan to use these numbers I would suggest finding out exactly what that means, from Institutional Research probably. What I would recommend doing is using the Utilities sheet and the UK Population section from the Indicators sheet. All information we used is available from the Indicators sheet.

Other Resources

- **Interview with Galen Tolliver - Physical Plant Division, March 8, 2003**

As a part of the Physical Plant Division, the Delta Room has three main goals: 1. human safety 2. human comfort 3. energy management. The Delta Room is staffed twenty-four hours a day seven days a week by highly trained employees. Before an employee even begins the required computer training they have spent six months in the field observing the intricacies of every building.

The University currently has an energy consumption goal of 50 Mega watt peak per day. In order to meet this goal the University has implemented some of the following energy management methods:

Optimum Start/Stop (OSS)- The computer program maintains a database of the relationship of outside air temperature to the interior temperature. With this information it is then able to calibrate the amount of time necessary to maintain comfort range temperatures without fans being in operation. The Duty Cycle works in conjunction with the OSS program. The fans, which run on a thirty-minute cycle, will cease function for a period of time not exceeding ten minutes, if the interior air temperature is within the comfort range. If the fans are on a sixty-minute cycle they

can remain idle for a fifteen-minute time period. The Night Cycle program runs independently of the OSS and the Duty Cycle. The Night Cycle allows the temperatures in the building to exceed comfort range limits. During this cycle the building's temperature may range anywhere from sixty to eighty degrees Fahrenheit. The program maintains temperatures within this range so they are able to recover when the temperatures are needed to resume comfort level standards. Some buildings on the University's campus are continually on the Night Cycle; for example, the Singletary Center is kept on this cycle because it is only occupied when special events are held. The Delta Room receives an event schedule so they know when to turn on the fans so the building will be at the desired temperature during the event.

- **University of Kentucky's Fact Book**

Faculty and Staff employment from 1990-1991, 1991-1992, 1992-1993, 1993-1994, 1994-1995, 1996-1997, 1997-1998, 1998-1999, 1999-2000. Land and space data from the same years is also included in the fact books. Complete Fact Books are kept at the King Library-Archives Department.

Useful Information

- The employment numbers for LCC from FY 1992-1995 are estimated because we could not get the information from the Fact Books (prior to 1995, all community colleges are lumped together) or from LCC's Office of Institutional Effectiveness & Planning. To estimate the employment numbers, I determined the average annual percent increase for the six years I did have (.45%). Then I subtracted that answer from the employment number of the year after the year I was estimating. For example, to determine the estimation used for 1995 employment, we found the average annual increase in employment from 1996-2001 to be .45%. Then we subtracted .0045 from the 210 known employees of LCC in 1996. For 1995 we estimate there were 209 LCC employees. The employee numbers are estimated because they were not available from the UK Fact Book past 1996 and the LCC Office of Institutional Planning and Effectiveness did not have them.

APPENDIX C

Procurement and Disposal

Patrick Haynes, Ben Parrot, and Ryan Pinkston

Contacts

- **Libby Allen**, General Manager of Campus Cuisine, University of Kentucky
Phone: 859-257-9482
Fax: 859-257-8379
Email: eaalle1@email.uky.edu
She has information about recycling and composting in the campus cuisine areas of UK.
- **Bill Bagley**, Recycling Coordinator, State University of New York at Buffalo
Phone: 716-645-5958
Email: wbagley@facilities.buffalo.edu
Contacted him to ask specific questions about waste generation and recycling at Buffalo. No response.
- **Erin Cala**, Environmental Educator, State University of New York at Buffalo
UB Green Office
Phone: 716-829-3535
Fax: 716-829-2704
Email: ecala@facilities.buffalo.edu
Contacted her to ask specific questions about waste generation and recycling at Buffalo.
- **Kenneth Carlson**, Director of Purchasing, Brown University
Phone: 401-863-2206
FAX: 401-863-2208
Email: Kenneth_M_Carlson@brown.edu
Contact that provided information about the amount of money spent on purchasing paper at Brown University.
- **Jack DeBell**, Recycling Director, University of Colorado at Boulder
Phone: 303-492-8307
E Mail: debell@colorado.edu
Sent question regarding the amount of recycled paper products they purchased for the last fiscal year. I used this data to compare/contrast with UK in a graph format.
- **Bill Ellsworth**, Grounds Supervisor, State University of New York at Buffalo
Phone: 716-829-2282
Email: wellswor@facilities.buffalo.edu

Contacted him to ask specific questions about waste generation and recycling at Buffalo. No Response

- **Tom Gregory**, Recycling Program Coordinator, University of Kentucky
Phone: 859-257-8788
Fax: 859-257-4878
Email: tgregory@ppd.uky.edu
Key Contact. He has information about UK recycling and composting, as well as information about materials and statistics for recycling further back than is posted on the website.
- **Sarah Ketchem**, Program Manager, Office of Waste Reduction and Recycling, North Carolina State University
Phone: 919-515-9883
FAX: 919-513-3871
Email: sarah_ketchem@ncsu.edu
Contact that was able to provide information about purchasing requirements at North Carolina State University with regard to post-consumer recycled content.
- **Ray Lanier**, Solid Waste Division Operations Manager, University of North Carolina at Chapel Hill
Phone: 919-962-7175
E Mail: rlanier@fac.unc.edu
Sent question regarding the amount of recycled paper products they purchased for the last fiscal year. I used this data to compare/contrast with UK in a graph format.
- **Peter Lowery**, Refuse and Recycling Operations Supervisor, University of Wisconsin at Madison
Phone: 608-262-1324
E Mail: plowery@fpm.wisc.edu
Sent question regarding the amount of recycled paper products they purchased for the last fiscal year. Received information on 4/8/03 and I used this data to compare/contrast with UK in a graph format.
- **Scott Mouw**, Environmental Supervisor/Section Chief, NC Division of Pollution Prevention and Environmental Assistance,
Phone: 919-715-6512
FAX: 919-715-6794
Email: scott.mouw@ncmail.net
Mr. Mouw, who works for the state of North Carolina, was able to elaborate on information provided by Sarah Ketchem at North Carolina State.
- **Rebecca Purcell**, Contracting Officer II, University of Kentucky
UK Purchasing Department
Phone: 859-257-9100 ext. 266
FAX: 859-2571951

Email: rpurcell@email.uky.edu

Contact for UK purchasing procedures and policies.

- **Mark Renfro**, Director of Stores, Auxiliary Services, University of Kentucky
Phone: 859-608-5010
FAX: 859-257-2493
Email: Mark.Renfro@uky.edu
Contact that provided information about the amount of paper UK has purchased over the past few years.
- **George Riddle**, Superintendent, Grounds Department, University of Kentucky
Phone: 859-257-3105
Email: george.riddle@ppd.uky.edu
He has information about what is done with the yard waste that is generated from the UK grounds and what was done with the debris created from the ice storm in February of 2003.
- **B.J. Tipton**, Director of Solid Waste Program, University of North Carolina at Chapel Hill
Phone: 919-962-7251
E Mail: btipton@fac.unc.edu
Sent question regarding the amount of recycled paper products they purchased for the last fiscal year. Received information on 4/10/03 and I used this data to compare/contrast with UK in a graph format.
- **Will Toor**, Director of Environmental Center, University of Colorado at Boulder
Phone: 303-492-8308
E Mail: William.toor@colorado.edu
Sent question regarding the amount of recycled paper products they purchased for the last fiscal year. Received information on 3/30/03 and I used this data to compare/contrast with UK in a graph format.
- **University of Colorado**
Recycling Program
Phone: 303-492-8307
Facilities Management Collections Service
Phone 303-492-5321
Housing Department Environmental Information
Phone: 303-735-3013
Email: cure@colorado.edu
Contacted them to get numbers on recycling at the University of Colorado. No response.
- **University of Michigan**
Recycling Program
Email: environmental.stewardship@umich.edu or recycle@umich.edu

Sent question regarding the amount of recycled paper products they purchased for the last fiscal year. Received information on 3/30/03 and I used the data to compare/contrast with UK in a graph format.

- **John Vitale**, Lexington-Fayette Urban County Government Recycling Center
Phone: 859-231-7604
Email: jvitale@lfucg.com
He has specific information about the costs of recycling and composting to the city of Lexington and some good ideas about how the city and UK could work together with recycling.

Websites

- **Bates College**
<http://www.bates.edu/dining-environment.xml>
This website contains information about their environmental program. They have an innovative program and some very good ideas that could be used at UK.
- **Bluegrass Regional Recycling Corporation**
<http://www.kyeqc.net/eday99/mills.html>
This website contains background information about the BRRC.
- **Green Destiny Council for Ecological Responsibility at Pennsylvania State**
Steps Toward a Sustainable University
<http://www.bio.psu.edu/Greendestiny/steps.shtml>
This website contains a written mission that the UK assessment is modeled after. This is a very useful tool for getting an idea of how to go about doing an environmental assessment and indicators that could be useful.
- **How Stuff Works**
<http://people.howstuffworks.com/landfill7.htm>
This website contains information that is very easy to read about different environmental issues.
- **Morehead State University**
<http://www.morehead-st.edu/units/plant/recycling/factsh.html>
This website has specific recycling and composting figures for other universities in the state of Kentucky.
- **Morehead State University: National Wildlife Federation Campus Ecology Fellow**
<http://www.nwf.org/campusecology/fellowprofile.cfm?fid=16>
This website does not have information included in the report but is a great source of information about environmental initiatives and their procurement information.

- **Recycling at the University of Louisville**
<http://newsbreak.louisville.edu/010309/recycle.html>
 This website contains figures for the amount of waste and recycled material at the University of Louisville.
- **Yale University**
<http://www.yale.edu/recycle/home.htm>
 This website contains information about Yale University's recycling program and information about the Green Cup project that Yale has started that was used in the UK brochure.
- **Seattle University**
http://seattleu.edu/home/news_events/news/news_detail.asp?recordID=12102002122836&eYear=2002
 This website contains information about Seattle University's on campus compost facility; first of its kind in Washington State.
- **State University of New York at Buffalo**
<http://wings.buffalo.edu/ubgreen/index.htm>
 This website contains information about their environmental program. They have an innovative program and some very good ideas that could be used at UK.
- **United States Environmental Protection Agency**
 Municipal Solid Waste
 Recycling
<http://epa.gov/epaoswer/non-hw/muncpl/recycle.htm>
 This website contains definitions and statistics about recycling as defined by the government.
- **University of Colorado at Boulder**
<http://www.colorado.edu/recycle>
 This website contains information about their environmental program. They have an innovative program and some very good ideas that could be used at UK.
- **University of Kentucky Recycling Program**
www.ppd.uky.edu/recycle.htm
 This website contains the official figures for recycling and other UK recycling information.
- **Yale-New Haven Teachers Institute**
<http://yale.edu/ynhti/curriculum/units/1992/5/92.05.08.x.html>

This website contains general information about recycling and waste production in the United States. This information was used as background information for the importance of recycling at UK.

Other Resources

- **The Campus and Environmental Responsibility (1992)**
New Directions for Higher Education
Editors: David J. Eagan and David W. Orr
Jossey-Bass, Inc., San Francisco, CA
Used this book to obtain information about the amount of resources that are saved by recycling products instead of using virgin materials.
- **ResLife Recycling Annual Report (2001-2002)**
Office of Residence Life, University of Kentucky
Recycling Coordinator: Cheryl Edge
Information about the 2002 end-of-year movement was taken from this report.

Methods

- All of the graphs in the Waste Materials Management section were produced using information from the Recycling Operations Statistics section of the UK Recycling Homepage. The figures for the “Tons of Materials Recycled” graph are not exact because UK has been recycling fly ash for many years but it has not been included in their statistics until the 2002-2003 fiscal year.

APPENDIX D

Transportation Appendix Eric Amon, Jake Royse, Lucas Tuggle

Contacts

- **George Alexiou**, PE, University of North Carolina at Chapel Hill
Martin/Alexiou/Bryson, PLLC
2414 Wycliff Road, Suite 101
Raleigh, North Carolina 27607
Phone: 919-881-1243
Fax: 919-881-8081
Email: georgealexiou@mabtrans.com
The 2002 UK Masterplan contains a section on transportation observations and recommendations. The appendix of this section of the masterplan was obtained from George Alexiou. Mr. Alexiou was a UK consultant for the new campus plan. This document compares UK transportation trends to other universities in the nation.
- **Rob Hammons**, Division of Planning-Transportation Planning, Lexington-Fayette Urban County Government
10th floor, Government Center
200 East Main Street
Lexington, KY 40507
Phone: 859-258-3165
Rob Hammons was helpful in explaining the process and procedure for using the Traffic Count System (CTS) data and offered his help with any future questions. CTS data were obtained from the Kentucky Transportation Cabinet Division of Planning, which allows you to download the CTS file. The count data is updated monthly and upgrading requires deleting the old file and downloading the latest file. The CTS can be down loaded from: <http://www.kytc.state.ky.us/planning/data/cts/cts.shtm>
- **Dr. Ronald E. Langley**, Director Survey Research Center, University of Kentucky
304 Breckinridge Hall
Lexington, KY 40506-0056
Phone: 859-257-4684
Fax: 859-323-1972
E-mail: rlangley@uky.edu
Reviewed the transportation survey and made helpful comments regarding the form of questions and conducting a random sample.
- **Carla Maki**, Office of Research Integrity, University of Kentucky
Phone: 859-257-2934
E-mail: cmaki@uky.edu
Reviewed and approved the transportation survey.

- Charlie Smith**, Traffic Planning, Lexington-Fayette Urban County Government
 7th floor, Government Center
 200 East Main Street
 Lexington, KY 40507
 Phone: 859-258-3487
 Charlie Smith was helpful in explaining the process and procedure for using CTS and offered his help with any future questions.

Methods

- Traffic Flow Analysis**
 Streets chosen for analysis were ones that are adjacent to or pass through the University of Kentucky. Data points were acquired from the Lexington Area Metropolitan Planning Organization’s Directory of “Adjusted Average Daily Traffic Counts for Lexington-Fayette County.” The data points reference the state of Kentucky’s Transportation Cabinet Division Of Planning’s Traffic Count System.

Data point identification numbers for Fayette County used:

Limestone St.

Rosemont Garden to Cooper Dr.	A22
Cooper Dr. to Rose St.	C61
Rose St. to Scott St.	B16
Scott St. to Euclid Ave.	G56
Euclid Ave. to High St.	A78
High St. to Main St.	A74
Main St. to 4 th St.	F07

Rose St.

Rose St. to Hilltop Ave.	A83
Hilltop Ave. to Euclid Ave.	E87
Euclid Ave. to Maxwell St.	A84
Maxwell St. to Main St.	E22
Main St. to 4 th St.	G99

Woodland Ave.

Hilltop Ave. to Euclid Ave	C20
Euclid Ave. to Main St.	A86

Euclid Ave.

High St. to Woodland Ave.	C14
Woodland Ave. to Upper St.	A85

- **Survey Procedures**

Ronald Langley, the Director of University of Kentucky Survey Research Center, critiqued the transportation survey and made constructive remarks. He also told us about the procedures for conducting a survey on campus. For a survey to be credible, the sample must be randomly selected.

The Registrar's office offers a service to randomly select a sample of students. In order for the Registrars' office to generate a random sample, the proposed survey must be approved by the Office of Research Integrity's Internal Review Board. We submitted a request for 1200 fulltime UK and LCC undergraduates' first and last names and local telephone numbers. In order for the Registrar's office to release this information the survey must approved by the Office of Research Integrity.

The form we had to fill out was Nonmedical Institutional Review Board Exemption Application Packet, which can be found at

<http://www.rgs.uky.edu/ori/ORIForms/Exempt.doc>.

This process takes about 10 business days. Our contact at the Office of Research Integrity was Carla Maki. Once the survey was approved, the survey sample was obtained. We called approximately 500 people and obtained an interview with 139. Responses were analyzed in Excel.

Transportation Survey

Random sample of full-time UK undergraduates, to be administered via telephone

(Introduction) Greetings, my name is _____, you have been randomly selected for a transportation survey conducted by Natural Resource Conservation and Management students. This survey is totally voluntary. If you do not wish to participate, you may now decline this survey. If you wish to participate your answers are confidential. Your responses to this survey will give us an understanding of transportation use by UK students. If you have any questions about this survey you may contact the Office of Research Integrity at 257-2924. The following 8 questions will only take 2 minutes, would you like to continue?

1. Are you over the age of 18?

(If no, thank the participant for their time)

2. How far do you travel to get to UK campus (in miles)?

3. How long does it take you to get to campus (in minutes)?

4. Do you own a car? (if yes) What kind of car do you drive?

Make _____ Model _____ Year _____

5. How do you get to campus (check all that apply)?

Walk ____, Lextran ____, CATS ____, bike ____, drive ____, carpool ____, other ____

If more than one, which mode is your primary mode of transportation? _____

6. If you drive, where do you park?

permit ____, residential streets ____, Meter ____

If you have a UK parking permit what lot do use? _____

7. Once on campus do you use the CATS bus system on campus?

Yes ____ No ____

8. Are you aware that Lextran is free for UK students, faculty, and staff?

Yes ____ No ____

That is the end of the questions. Thank you for your time.

APPENDIX E

Land Use

Andrew Berry, Michael Carter, and Alex Faught

Contacts

- **Warren Denney**, University Architect, University of Kentucky
Peterson Service Building
Phone: 859-257-5688
E-mail: wedenn00@email.uky.edu
Aided with the 2002 Capital Request publication.
- **Nancy DeMarcus**, Acquisition and Access Archivist, University of Kentucky
University Archives and Records Program
204 King Library 0039
E-mail: nancyd@uky.edu
Located the Physical Development Plans from archives.
- **Jason E. Flahardy**, Audio Visual Archives, University of Kentucky
Special Collections and Archives
King Library
Phone: 859-257-2684
E-mail: jasonf@uky.edu
Assisted with scanning of pictures from University Archives.
- **Jim Lempke**, Curator of Natural Areas, University of Kentucky Arboretum
500 Alumni Drive
Lexington, KY 40503
Phone: 859-257-6955
E-mail: jlempke@uky.edu
Provided insight on Walk Across Kentucky and Arboretum sustainability initiatives.

Other Resources

- **The Capital Request 2000-2002**
The Capital Request is a University land-use publication of the Office of Planning, Budget, and Policy Analysis.
 - This publication contains current data concerning UK land acreage, farms, and development patterns.

- **Pictures**, University of Kentucky Archives, MLK Library
 Call Number 2001UA025: Campus Scenes and Views (1) and (3), Aerial (2)
Physical Development Plan: August 20,1991
 Special Collections and Archives
 Campus land use map
UK Central Campus Development Plan: September 1963
 Crane & Gorwic Associates, Inc., Planning & Urban Design Associates, Detroit, MI.,
 In collaboration with Lawrence Coleman, UK Campus Planner. Ann Arbor Press,
 Inc- Picture of central campus expansion over time and parking sites in 1963.
- **UK Archives and Special Collections** MIK Library
 Sept. 1977: *UK Fact Book*
 Oct. 1986: *UK Fact Book*
 Jan. 1997: *UK Fact Book*
- ***UK Central Campus Development Plan (September 1963)***
 Crane & Gorwic Associates, Inc., Planning & Urban Design Associates, Detroit, MI.,
 In collaboration with Lawrence Coleman, UK Campus Planner. Ann Arbor Press, Inc.
- ***UK Central Campus Development Plan (September 1965)***
 Crane & Gorwic Associates, Inc., Planning & Urban Design Associates, Detroit, MI.
 Ann Arbor Press, Inc.
 Source for 1965 acreages of central campus and parking.

Websites

- **State University of New York at Buffalo**
http://www.wings.buffalo.edu/ubgreen/content/policies/policy_naturalgas.html
 Shows steps taken by SUNY-Buffalo to conserve greenspace.
- **Clemson University**
<http://www.strom.clemson.edu/teams/enviro/index.html>
 Identifies the Clemson University land initiative.
- **Clemson University Greenspace Initiative**
http://trw.umbc.edu/articles/1846?Newspaper_Session=d9c4a69c735d9d9b50fd1e9e98c25a38
 Explains ways Clemson University is striving for greenspace.

- **University of Wisconsin**
Professor Paul Zedler: *Deciding on Restoration and Management Outcomes: What Kind of Landscape Do We Want?*
<http://www.ies.wisc.edu/emcl/cases/arboretum.htm>
- **Environmental Law Institute's Sustainable Use Land Program**
<http://www.eli.org/research/SUL.htm>
Shows example of sustainable land use program.
- **University of South Florida's Transportation Land Policy**
<http://www.fccdr.usf.edu/projects/tlushtml/default.htm>
Identifies USF's transportation policy initiative.
- **Harvard University**
<http://www.greencampus.harvard.edu/>
Site for Harvard University green campus initiative.
- **Land Stewardship Resource Center**
<http://www.landstewardship.org>
Defines and examines proper land stewardship.
- **Ohio State University Master Plan**
<http://www.fpd.ohio-state.edu/mp/regional/wcampus.html>
- **Stanford University Open Space & Conservation**
<http://gup.stanford.edu/openspace/>
- **University of Florida Master Plan**
<http://www.masterplan.ufl.edu/2000-2010/pdf/08-recreation.pdf>
- **University of Michigan**
http://www.snre.umich.edu/faculty-staff-directory/list.html?unit_id=39
University of Michigan Sustainable Systems Page
- **University of Vermont Master Plan**
<http://www.uvm.edu/~plan/masterplan/topics/G3openspace.html>

APPENDIX F

Education

Elizabeth Allinder and Erin Vachon

Contacts

- **Tom Greider**, Department of Community and Leadership Development, University of Kentucky
Phone: 859-257-3275
E-mail: greider@uky.edu
Dr. Greider is knowledgeable about environmental education at the University of Kentucky and its benchmark universities.
- **Dave Newton**, Campus Progressive Coalition, University of Kentucky
Phone: 859-258-9928
E-Mail: Dave_HN@yahoo.com
Mr. Newton is knowledgeable about environmentally oriented campus initiatives and organizations on UK's campus.

Websites

- **Center for Ecoliteracy**
<http://www.ecoliteracy.org/pages/ecologicalit.html>
This website contains information about the Center for Ecoliteracy, which is a public foundation that supports a grant making program for educational organizations and school communities in the San Francisco Bay Area. The website includes a definition of ecological literacy.
- **Pennsylvania State University**
http://www.bio.psu.edu/Greendestiny/publications/gdc-indicators_2000.pdf
This website contains the Green Destiny publications, including the indicators report, which is a good framework for an indicators approach to campus sustainability assessment.
- **University of Georgia Bulletin**
<http://bulletin.uga.edu/bulletin/prg/index.html>
This website contains the Education requirements for the University of Georgia and all the courses available to its students.

- **University of Illinois at Urbana-Champaign**

<http://www.provost.uiuc.edu/gened/index.html>

This website contains information about the General Education Requirements at the University of Illinois at Urbana-Champaign.

- **University of Kentucky Undergraduate Bulletin 2002-2003**

<http://www.uky.edu/Registrar/bull0203/front/bullusp.html#X>

This website contains all courses available at UK and the USP requirements.

Methods

- The education group's only indicator was ecological literacy. The questions of the survey are modeled after the ecological literacy survey given by Pennsylvania State University. To measure this we administered a telephone survey to UK students with senior standing. After the survey questions were completed, they were sent to the University of Kentucky Survey Research Center c/o Dr. Ronald Langley. The remainder of the procedure to obtain IRB approval and a list of students from the Registrar Offices, as well as a list of survey contacts, can be found in Appendix D: Transportation.

Student Ecological Literacy Survey

A random sample of students with senior standing at the University of Kentucky will be surveyed via telephone.

Introduction

Hello, my name is _____, you have been randomly selected to participate in an Ecological Literacy Survey conducted by the Natural Resource Conservation and Management Capstone Course. Participation is completely voluntary. If you wish to participate, your answers will be completely confidential. Your responses to this survey will help us to understand the level of environmental knowledge you have gained throughout your education, including your time spent at the University of Kentucky. If you have any questions about this survey you may contact the Office of Research Integrity at 257-2924. The survey consists of 14 questions and takes approximately 2-3 minutes to complete. Would you like to participate in this survey?

1. Are you graduating in May 2003?
Yes_____ No_____
2. What is your major? _____
3. Can you name one federal or state law that protects the environment?
Yes_____ No_____
- * If yes, please name the law.

4. Can you name two green house gases? Yes_____ No_____
- * If yes, please name the gases.

5. Rachel Carson wrote the book Silent Spring (1962); what was the topic of this book? _____
6. Can you name two tree species found on campus that are native to Kentucky?
Yes_____ No_____
- * If yes, please name the species.

7. In what physiographic region is Lexington, Kentucky located?

8. Can you name one current pressing environmental issue in Kentucky?
Yes_____ No_____
- * If yes, please name the issue.

9. What is the world's population to the nearest billion?

10. Which of the following materials can be recycled at UK? (check all that apply)

- Glass
- Cardboard
- Plastic bottles
- White paper
- Colored paper
- Newspaper
- Aluminum cans

11. From what fuel source does UK produce its electricity and heat?

12. Have you ever had a class focused on, or related to, environmental sustainability, or other environmental issues?

Yes _____ No _____

* If yes, please name the class(es).

13. Would you be interested in an environmental course being incorporated into the University Studies Program requirements?

Yes _____ No _____

* Why or why not?

14. How would you rate your own ecological literacy? (circle one)

Excellent Good Fair Poor