

Illinois State University 2008 Sustainability Progress Report



“The public policy of the State and the duty of each person is to provide and maintain a healthful environment for the benefit of this and future generations.”

Illinois Constitution, Article XI



**ILLINOIS STATE
UNIVERSITY**

Illinois' first public university

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“Sustainability at Illinois State University is an evolving process which enhances quality of life and meets economic, social, and environmental needs of the present without compromising resources for future generations. At Illinois State, this is accomplished through teaching, research, service, and administrative efforts that benefit our various communities.”



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PRESIDENT'S MESSAGE

A commitment to sustainability is a vital part of Illinois State University's mission to serve the citizens of Illinois, the nation and the world. We take our commitment very seriously and make sustainability part of our decision-making process in all aspects of campus life, from classroom studies to energy usage to facilities and grounds operations.

I thank Enid Cardinal, our campus sustainability coordinator, and the faculty, staff and students that comprise the University's Green Team for their commitment and guidance in this important endeavor. I am also pleased to see that an ever-increasing number of people across the campus community are showing a personal commitment to issues such as resource and energy conservation, environmental protection and socially responsible business practices.

Sustainability efforts are certainly nothing new at Illinois State. A recycling program in our residence halls began nearly two decades ago and expanded campus-wide in the early 1990s. During the past decade, the campus has added more than one million square feet of new building space. Despite that growth, our energy consumption has remained fairly steady, thanks to campus-wide energy conservation and efficiency measures. Large scale organic waste composting, reduced pesticide usage on campus, the purchase of flex-fuel vehicles, the use of biodiesel, and the use of "green" cleaning products are several other examples of our ongoing work.

Illinois State has made great strides toward sustainability; however, there is no rest when it comes to "greening" a large campus. True sustainability cannot be achieved without careful and ongoing planning, research-based education and the cooperation of all stakeholders. Faculty research and a growing number of classes focusing on the environment, energy and sustainability -- including courses in our new Renewable Energy major -- are educating our students to be the responsible leaders of tomorrow.

Illinois State has also joined campuses across the state and the world in promoting better environmental, business and human rights practices. In 2006, I signed the Illinois Sustainable University Compact, an action-based pledge to improve how the University interacts with the environment and works to promote ecology and reduce pollution. We have already achieved or surpassed several of the environmental goals we pledged to reach by 2010, under this commitment.



17th President of Illinois State University, Al Bowman

I am also proud of the fact that in 2007 our College of Business was one of the first business schools in the U.S. to be a signatory to the United Nations-sponsored Principles for Responsible Management Education (PRME), a framework for schools to advance socially responsible corporate behavior.

I recently signed my name to the American College and University Presidents Climate Commitment, a pledge to reduce carbon emissions by 80 percent by 2050, with an ultimate goal of carbon neutrality. Under the Presidents Commitment, Illinois State joins more than 500 other sustainability leaders in higher education working to serve the needs of generations to come. I'm proud of the steps Illinois State has taken toward sustainability and I look forward to reporting even greater progress in years to come.

President Al Bowman



A NOTE FROM SUSTAINABILITY COORDINATOR

Welcome to Illinois State University's first- ever Sustainability Progress Report. As is recognized in the University's definition of Sustainability, it "is an evolving process". Therefore, the goal of this report is to provide readers with an introduction to Illinois State's efforts thus far; and to serve as a baseline for the campus to track progress toward the goal of sustainability. The material contained in this report covers the 2007 – 2008 academic year.

My position, Sustainability Coordinator, was created in August 2007, but the University's efforts began long before that. What started as a small, student driven recycling project in 1989 has grown into a university-wide movement. Thanks to the leadership of the University's Green Team, resource conservation has been made a priority. Departments and faculty across campus have incorporated sustainability into their classes and their research. Students have sought to raise awareness amongst their peers. Most importantly, the University as a whole has voiced its commitment in documents such as *Educating Illinois*, the University's strategic plan.

Much of my first year was spent researching and learning about the campus and community. It was exciting to learn of all the efforts that had already been undertaken and the level of commitment shown by the University's administration. This report is an opportunity to share some of those discoveries and show their interrelatedness.

Over the course of the last year, many new initiatives have gotten underway. Dining and transportation are two areas that have made significant progress. The results of those and other efforts will be seen in future reports. Progress on our participation in the American College and University President's Climate Commitment will also be included in future reports.

Sustainability is often described as the "triple bottom line" or economy, environment and society. The environmental aspect of sustainability is largely the focus of this report, as economic and social data are available in the University's annual financial audits and the *Educating Illinois* Dashboard respectively.

I invite you to learn more about sustainability at Illinois State University, we have much to be proud of. Thank you for your continued efforts.

Together we can make a difference.

Enid L. Cardinal
Sustainability Coordinator

*"Illinois State University
will promote a healthy,
safe, and environmentally
sustainable campus."*

-Educating Illinois 2008 – 2014

TIMELINE OF SUSTAINABILITY

1989 - In response to the 1988 Illinois Solid Waste Management Act, Illinois State's Office of Residential life, now University Housing, began a recycling program in the residence halls.

1993 - A pilot recycling program was launched for academic and administrative facilities. This program initially established recycling of two commodities (paper and aluminum) in 13 buildings, but later expanded to eight commodities in 48 buildings.

April 2000 - President Victor Boschini appointed the Environmental Task Force (ETF) to assess the extent of the campus' environmental impact and to make recommendations to the President and the Executive Committee of the Academic Senate for minimizing that impact.

August 2001 - The Environmental Task Force releases its recommendations.

September 2001 - The Green Team is officially established by presidential directive, requiring representation from all four vice presidential areas.

November 2002 - The Green Team website is launched

April 2006 - Illinois State is awarded the Green Government Award by the Illinois Green Governing Coordinating Council for its efforts in energy efficiency and overall general achievements.

April 2006 - Illinois State signs the Illinois Sustainable University Compact

November 2006 - The first annual Healthy You Healthy Earth wellness and environmental fair is held at Illinois State.

August 2007 - Illinois State hosts the Illinois Sustainable University Symposium

August 2007 - Illinois State hires its first ever Sustainability Coordinator

October 2007 - Illinois State becomes a member of the Association for the Advancement of Sustainability in Higher Education (AASHE)

December 2007 - Illinois State's College of Business is one of the first business schools in the country to sign the "Principle for Responsible Management Education", part of the United Nations Global Compact.

GREEN TEAM



The Green Team is the university's sustainability advisory committee. It is tasked with continuous evaluation of ISU's environmental stewardship efforts, providing guidance to the president on sustainability related issues and serving as a conduit to increase campus sustainability efforts.

The Mission of the Green Team at Illinois State University is:

- To support the tenets of environmental sustainability.
- To support the environmental values of Illinois State University as articulated in Educating Illinois.
- To educate the campus community of environmental issues.
- To make recommendations for improving the environmental impact of Illinois State University.

There are five appointed members, one from each Vice Presidential area and the President's office. The intent is to ensure that information is disseminated to all areas of campus. Additionally, there is representation from students, faculty, Campus Dining Services, University Housing, Wellness, Environmental Health and Safety, Office of Energy Management, University Recycling, and Facilities. Any and all campus constituents are encouraged to attend and participate in the Green Team's monthly meetings.

Environmental Stewardship Award

The Green Team created the Environmental Stewardship Award in 2006. It is an annual award designed to recognize campus groups and departments that are helping to further the Green Team's mission.

The 2007 recipient was the Illinois State University Wind Team. Formed in 2002, it is comprised of Randy Winter, Department of Agriculture; David Loomis, Department of Economics; and David Kennell, Department of Technology.

The group secured grant funding from the U.S. Department of Energy and the Illinois Clean Energy Community Foundation to support a variety of initiatives that promote environmental stewardship, education and outreach at Illinois State University, within the community and across the state. The Wind Team is responsible for the creation of a new undergraduate major in Renewable Energy and the establishment of the Center for Renewable Energy at Illinois State University.

In addition, they created and provide leadership to the Illinois Wind Working Group, an organization with more than 70 members that explores wind development opportunities in the state of Illinois. The 2008 recipient will be announced on Founders Day, February 19, 2009.





“Illinois State University will position students to excel in a globally competitive, culturally diverse, technological, and changing environment.” (*Educating Illinois 2008-2014*)



There are several academic programs and departments on campus that have a clear connection to sustainability. Any number of the classes offered in the departments of Biology, Geography and Geology, or within the Environmental Health Science major would fall into this category. Rather than discuss each individual course in those areas, this report highlights a few of the classes in academic departments that are not often immediately associated with sustainability.

ENG396 - The Writing Seminar

For several semesters, Dr. Joe Amato has used The Writing Seminar as a forum to discuss issues of sustainability and climate change. Students are challenged to think critically about these issues and are responsible for the direction and topic of class discussions. Required readings for the class include: *Living Downstream: A Scientist's Personal Investigation of Cancer and the Environment* by Sandra Steingraber, *Heat: How to Stop the Planet from Burning* by George Monbiot and *Toxic Sludge is Good For You: Lies, Damn Lies and the Public Relations Industry* by John Stauber and Sheldon Rampton. Using these readings, students develop critical questions that guide class discussion, encourage the flow of ideas, and ultimately inspire writing.

ENG 495 - Studies in Ecocriticism

During the Spring 2008 semester Dr. Kirstin Zona taught a first-ever course in Ecocriticism. Ecocriticism, in its effort to engage the philosophical, scientific, religious, material, historical, imaginative, political and aesthetic links, is easily the fastest-growing field of inquiry within the arts and sciences today. It is a truly interdisciplinary study of both literary and non-literary texts. Harold Fromm stated that "The 'problem of the environment,' which many people persist in viewing as a peripheral arabesque drawn around the 'important' concerns of human life, must ultimately be seen as a central philosophic and ontological question about the self-definition of contemporary man."

This graduate level course used Fromm's assertion as a starting point to explore various conceptions of "environment" and "self".

MQM 385 Organizational Strategy

As a capstone course for all students in the College of Business, multiple sections of Organizational Strategy are taught. In his section, Dr. Dale Fitzgibbons uses corporate social responsibility (CSR) and sustainability as lens to examine how corporations can be more effective, efficient, and profitable. It uses a firm-level perspective to help students understand how organizations must be strategically managed if they are to perform well in the 21st Century.

The course is designed for students to think about corporations in a broader context in order to strategically manage them more effectively. In addition, his section focuses on a stakeholder model that argues corporations have multiple goals, only one of which is to "maximize profit." It also recognizes that shareholders are only one important corporate constituent. This perspective is aligned with the University's commitment as a signatory to the United Nations-sponsored Principles for Responsible Management Education (PRME).

TEC 329 – Sustainable Buildings and Urban Development

During the 2008 summer session, Professor Borinara Park offered an online course in green building. Principles and practices of sustainable buildings and urban development were examined from a multidisciplinary perspective of owners, designers and builders. Students were introduced to the concepts of sustainability in the build environment, including green building and energy efficiency. Green building systems, international initiatives, and industry sustainability standards were examined.

COM 274 – Environmental Communication

Dr. Jeff Courtright developed this course in Spring 2007 for students in public relations, journalism, and mass media, and welcomes students from other majors in the course. The class offers theoretical and practical exploration of environmental issues. Topics include corporate advocacy, grass-roots activism, environmental nonprofit organizations, and governmental regulations and influence. Students in the course are involved in planning and/or executing environmental campaign initiatives on campus in cooperation with the University Green Team! Groups in the spring 2008 class worked on awareness campaigns about recycling, energy efficiency, Healthy You Healthy Earth, transportation, dining and purchasing. One of the projects, “Reggie Ride,” a borrow-a-bike program for campus, was implemented in the fall of 2008. The course is part of the School of Communication’s award-winning efforts in civic engagement.

SOA 330 – Society and Environment

Dr. Joan Brehm, developed the course in 2005 to introduce students to the rapidly growing sub-discipline of environmental and natural resource sociology. The course has three primary objectives: First, it provides a critical examination of the frameworks that have informed human’s relationship with nature and how these have changed with time within the field of sociology. This includes how we socially construct nature and how the natural world influences us. Second, it examines the role of social/political/economic organization in the evolution and definition of environmental problems. Third, it examines how questions of inequality, race, class, ethnicity, gender, globalization, power and community are interrelated with the physical environment.

During the spring 2008 semester, students undertook a significant research project that examined problems of sustainability at Illinois State University.

They were instructed to pick any issue or topic that was of interest or concern to them and research the specifics of why it was a problem for sustainability at the University. They were then asked to present at least two viable solutions or alternatives to the current situation that would help to improve the overall sustainability of the campus community. Students researched a variety of topics, including the excessive use of ‘to-go’ containers in campus dining, the lack of alternative transportation options on campus and the infrastructure to support them, and overall student apathy towards issues of sustainability. Their research culminated in a written report as well as a verbal presentation to the class.



“Graphic Communications” is an annual publication researched, written and produced by seniors in the Graphic Communications program in the Department of Technology. “Topics in Green Media and Sustainability” was title of the Spring 2008 edition.

Principles for Responsible Management Education

Illinois State University's College of Business is among the first business schools in the United States to be signatories to the United Nations-sponsored Principles for Responsible Management Education (PRME), a framework for academic institutions to advance socially responsible corporate behavior. PRME is part of the United Nations Global Compact, an international initiative for businesses that are committed to aligning their operations and strategies with universally accepted principles in the areas of human rights, labor, the environment and anti-corruption. The Global Compact is the world's largest corporate citizenship initiative and is committed to fostering social responsibility in business and world markets.

The six Principles for Responsible Management Education are purpose, values, method, research, partnership and dialog. The Principles outline a commitment by academic institutions to educating students to be future leaders in a sustainable global economy, incorporating social responsibility into academic activities, researching the role of corporations in a sustainable future, partnering with corporations to help them meet social and environmental goals, and promoting an open, public dialog on critical issues of global social responsibility and sustainability.

CIVIC ENGAGEMENT

"Illinois State University prepares students to be informed and engaged citizens who will promote and further the collective goals of society. The University promotes active learning experiences through which students will gain an awareness and understanding of civic engagement as a lifelong responsibility. Furthermore, the University encourages faculty and staff to serve as engaged civic leaders and role models promoting the quality of life for all citizens through collaborative and individual action." - Educating Illinois -2008-2014

American Democracy Project

Civic engagement, identified as core value in

Educating Illinois 2008-2014, is promoted in a variety of ways at Illinois State University. At the center of many of the University's efforts is The American Democracy Project. The Project is designed to serve as a catalyst for programmatic changes that will ensure all Illinois State undergraduates are fully prepared to assume a responsible role as contributors to civic society. It is a cooperative effort by students, faculty, staff, and administration. The goal of the Project is to promote civic engagement, in many different forms, now and in the future. The Project embraces all organized activity designed to promote constructive civic engagement on the part of undergraduates while they are on campus, and after they graduate.

New to the Project in 2008 was the creation of Sustainability and Community Engaged Classrooms Committees as well as an annual Washington D.C. summer study trip. The trip is designed to enhance THE students' substantive knowledge of: different dimensions and opportunities for civic engagement, the various practices and influences of leadership, and the actual workings of the federal government in D.C.

Political Engagement Project (PEP)

Illinois State University was selected as one of eight institutions to participate in the national American Democracy Project initiative, the Political Engagement Project (PEP). This project, directed by the Carnegie Foundation for the Advancement of Teaching, addresses the serious problem of political disengagement in young people and advocates a dramatic increase in college and university efforts to strengthen student interest in politics. The primary mission of the Political Engagement Project is to enhance ISU students' awareness and understanding of political engagement and impact their level of political involvement and leadership. The PEP project rests on the assumption that institutions of higher education must educate students for political engagement in order to develop the kind of informed political participation that is essential for a meaningful democracy.



Bioenergy Master's Degree Sequence in the Department of Biological Sciences

The Department of Biological Sciences has recently established the Bioenergy Sciences MS Sequence, a program designed to educate students about the adverse effects of burning fossil fuels and about efforts being made to develop bioenergy crops, microbes, and technologies to generate biofuels that can replace fossil fuels on a sustainable and noninvasive basis. This program provides research opportunities in Bioenergy Sciences-related areas including biotechnology, molecular genetics, biochemistry, microbiology, conservation biology, and ecology, culminating in thesis-based Master's degrees.

Graduates of this MS sequence will be competitive for jobs in industry, government, non-profits, or for transition into PhD certificate programs. Because of the abundant farmland and farm-based industries in Illinois, as well as the vulnerability of Illinois' water systems and conservation lands to environmental change, a Bioenergy Sciences MS Sequence at Illinois State University is geographically well positioned to meet the growing demands for a trained workforce in bioenergy-related disciplines. The Bioenergy Sciences MS Sequence is an integral part of the Energy Sciences and Education Program of Excellence (Energy Science PoE) established by the College of Arts and Sciences

The Energy Science Program of Excellence

The United States and the world face major challenges in developing sustainable and dependable energy supplies that can meet rising energy demands, do not contribute to climate change, and can supplant the nation's dependence on foreign oil. To help educate ISU students about energy related challenges and to provide research training opportunities, the College of Arts and Sciences has established the Energy Sciences and Education Program of Excellence (Energy Science PoE).

The Energy Science PoE is an interdisciplinary campus-wide program for both graduate and undergraduate students, involving participants from the Departments of Biological Sciences, Chemistry, Geography/Geology, Physics, Health Sciences, and Agriculture. The Energy Science PoE provides students with research and education opportunities in preparation for the growing number of Energy Science-related jobs in Illinois and beyond. The Energy Science PoE is designed to foster interdisciplinary interactions and collaboration, which will be key to solving the complex problems associated with developing and implementing the use of sustainable energy sources as well as fully understanding the affects that the use of fossil fuels and other energy sources have on the earth's climates and ecosystems.



Renewable Energy Major

In the fall 2007 semester, ISU received Board of Higher Education approval to launch its newest major – Renewable Energy. It is a broad-based program addressing the social, economic, and technical issues that graduates will encounter in the emerging field of renewable energy. The interdisciplinary major has two tracks: technology or economics/public policy and combines classes in technology, economics, physics, psychology, geology, agriculture, policy and environmental health. Housed in the College of Applied Science and Technology, it is well designed to prepare its graduates for the green energy future that is ahead. Enrollment in the major began in the fall 2008 semester.

Center for Renewable Energy

The Board of Trustees approved the establishment of a Center for Renewable Energy at ISU in November 2007. Initial funding for the Center came from a Department of Energy Grant that members of the “ISU Wind Team” secured. More information about the ISU Wind Team can be found in the Environmental Stewardship Award section of this report as they were the recipients for 2007.

The Center will work to meet the growing need for education, outreach and research in the area of renewable energy. It has three major functional areas: supporting the renewable energy major at ISU; serving the Illinois renewable energy community by providing information to the public; and encouraging applied research on renewable energy at ISU and through collaborations with other universities. The Center also coordinates the Illinois Wind Working Group.

Illinois Wind Working Group

The Illinois Wind Working Group (IL WWG) is affiliated with the Department of Energy’s Wind Powering America initiative. The goal of which is to use regionally-based collaboration to increase the nation’s domestic energy supply by promoting the use of Wind Energy Technology.

The IL WWG is an organization whose purposes are to communicate wind opportunities honestly and objectively, to interact with various stakeholders at the local, state, regional and national levels, and to promote economic development of wind energy in the state of Illinois. This is accomplished through its annual Advancing Wind Power in Illinois Conference. Additionally, ILWWG hosts smaller, topic specific conferences and provides experts in the wind energy field to speak at various events around the state.





There is an impressive array of research occurring at Illinois State University. The selection of projects highlighted in this section illustrate the diverse interests of our faculty and the variety of sustainability-related research options available to our students.

Fragmented Habitats

The research that Dr. Diane Byers and her students are conducting focuses on the potential for plants to adapt to environmental changes. Less than one percent of the historic prairie ecosystem remains in Illinois today. The remaining parcels of prairie are very isolated and often very small in area. Fragmented landscapes may negatively affect mutualistic interactions among species, for example plants and their pollinators. Their current research focuses on *Lobelia spicata*, a gynodioecious (plants having female or hermaphroditic flowers) species that today grow in highly fragmented prairies.

Breeding systems such as gynodioecy, having evolved for promotion of outcrossing in a more continuous landscape, may be less advantageous in the current fragmented landscape. Their research has found significant variation in the frequency of female plants vs. hermaphroditic plants in different prairie fragments. They are currently assessing seed production to determine if the variation in sex ratio has negative impacts on the species' reproductive success. Over the summer Dr. Byers and her group quantified the

visitation rate of pollinators to the unrewarding female vs. rewarding hermaphroditic plants. Pollinators were found to prefer the hermaphroditic plants. They also observed periodic declines in the abundance of pollinators during the summer in the isolated prairies. Their results will help assess the viability of the native prairie plants in the small prairies.

Community-scale Renewable Energy and Energy Efficiency

Dr. Guang Jin and Dr. Thomas Bierma have worked with undergraduate Environmental Health students on a number of energy-related research projects. Their research focuses on technology applications that generate renewable energy from waste and improve energy efficiency. Of particular interest are technologies that can allow communities to generate renewable energy from local waste sources.

Biodiesel Fuel from Degraded Grease

Waste vegetable oil that is low in water and free fatty acid (FFA) content can be readily converted into biodiesel fuel. However, waste greases (vegetable and animal fats) that have a high water or FFA content cannot be economically converted to biodiesel fuel using current technology. Such greases are commonly produced in food preparation ("trap" grease) and can cause operational problems once they enter sewer systems. This research explored the use of a "whole-cell" biocatalyst (a fungus with high lipase activity) to catalyze the conversion of waste grease.



Butterfly on Lobelia

Results showed that the biocatalyst was able to produce biodiesel with a yield of about 75 percent for virgin canola oil, 80% for waste vegetable oil and 55 percent for trap grease with a 72 hour transesterification reaction using no excess methanol. Elevating the reaction temperature to 35°C significantly diminished the yield. An additional dose of methanol with another 24 hours of reaction time or a second 72 hour reaction resulted in biodiesel yield approaching 90 percent and only 3 percent residual glycerides (mono-, di- and tri-glycerides). These results suggest that whole-cell biocatalysts are able to transesterify waste oils or greases that are high in FFA and contain water. Trap grease and similar degraded or complex greases may be good candidates for further whole-cell biocatalyst research.

Rainwater Harvesting for Energy Efficiency

Rainwater has the ability to improve the efficiency of a variety of industrial operations that require water low in dissolved minerals. Steam boilers, in particular, could reduce energy, chemical and water costs through the use of rainwater. This research investigated the quality of rainwater harvested from a campus rooftop and compared the results to water quality required for a variety of industrial operations.

The critical water quality parameters of dissolved minerals (conductivity), hardness, and pH are all consistent with a variety of industrial applications. Dissolved solids are about one-tenth the concentration found in local tap water. Settleable solids, suspended solids and bacteria results suggest that filtration would be required.

Many rainfall events flushed most contaminants from the roof in the first 35 gallons of runoff, but this was not always the case. The pattern of water quality over time suggests a somewhat complex system involving the pattern of rainfall, the time since the last significant rainfall, and perhaps the roofing material and structure.

Community Watersheds

Dr. Joan Brehm is currently engaged in this three-year research project with colleagues at Southern Illinois University's School of Forestry. The project is an interdisciplinary investigation of water quality and community capacity for planning and conservation in eight subwatershed communities of the Lower Kaskaskia River Watershed in southern Illinois. The overall goal is to evaluate and communicate watershed and community health risks through active stakeholder involvement. Innovative outreach programs tailored to each subwatershed will be developed that communicate these risks, identify impairment sources, and establish community capacity-building strategies. Key research questions include:

- What is the capacity of urban and rural communities in the subwatersheds to engage in watershed planning and adopt comprehensive conservation strategies?
- How do land use and conservation practices affect water quality?
- Which outreach messages and techniques are most effective in communicating risks, inspiring conservation, and empowering stakeholders?

Recommendations for integrating effective watershed conservation, community capacity building, and outreach strategies will be provided for each subwatershed community in a management plan. The study will enable policy makers to equitably prioritize and target watersheds for conservation programs and identify key steps in mobilizing community support.

A watershed is a common geographical area in which all water drains to the same outlet, such as a river or stream.

Water Quality

Dr. Eric Peterson and his students are researching multiple aspects of water quality. One area of research that his group examines is the transport and fate of nitrate in surface water, focusing on the natural ability of a stream to remove nitrate from the system. My research group is looking at the control of a stream's sinuosity on its ability to remove nitrate. The hypothesis is that in streams with greater sinuosity values there will be more removal of nitrate. The hypothesis stems from earlier work showing that stream water will leave the surface and flow in the subsurface below meanders. The area beneath the meanders is highly reducing and, nitrate is readily removed. Streams with higher sinuosity values have more meanders, and thus, more opportunity for surface waters to flow beneath the meanders.

A second concern originates from agricultural practices associated with confined animal operations. Dr. Peterson and his group are focusing on the impacts of these farms in karst areas. Karst areas are more susceptible to contamination because they lack natural filtering mechanisms that are present in other geologic areas. Surface water and ground water continually interact in a karst system. Thus, if the surface water becomes impacted by a contaminant, the ground water will also be contaminated. They are looking at understanding the rate at which the systems become contaminated and whether there are controls that can reduce the contamination risk.

In addition to agricultural impacts on water, the group is examining the transport and fate of hormones in the water. They have looked at the presence of hormones in both surface water and ground water. Based upon the levels of hormone concentrations we have measured in the waters, long-term exposure may result in reproductive abnormalities in aquatic species. More recent work has examined how wetlands reduce the quantity of hormones in surface water. While surface wetlands did not appear to significantly reduce the hormone

concentrations, wetlands that induced subsurface flow did show a significant reduction.

Geologic Mapping

In collaboration with geologists at the Illinois State Geological Survey, Dr. David Malone and his students create state-of-the-art, three-dimensional (3D) maps that characterize a particular region's geology to depths of several hundred feet. The maps allow developers and planners to identify resources and hazards that exist at and below the surface, such as freshwater aquifers susceptible to contamination sites, soils that magnify earthquake risks, and terrain subject to erosion, flooding, or subsidence. These high-resolution maps are targeted where they are most needed, in urban/suburban areas and regions with known environmental and homeland security risks. Detailed geological maps can save local, state, and federal governments, as well as the private sector, hundreds of millions of dollars annually.

Climate and Human Health

Dr. Heather Conley is an applied climatologist with interests broadly defined as climate-society interactions. She is currently working on two projects involving the relationship between climate and human health. The first examines the relationship between climate variability and the emergence of Hantavirus Pulmonary Syndrome in the western United States. A second project focuses on how mosquito abatement managers incorporate weather into decision-making about mosquito abatement in Idaho. The impetus for this research was a 2006 West Nile outbreak. Over the summer Dr. Coney was in Idaho, to ride along in mosquito abatement trucks and study local knowledge of weather and landscape. The goal was to determine to what extent GIS-enabled technologies replace tacit knowledge about weather and the landscape in the fight against mosquito born illnesses.

Mining in Alaska and Appalachia

Dr. Johanna Haas, an Assistant Professor in Geography, conducts research in South Central Alaska, which she will examine in comparison to her previous work on mountaintop removal mining in Appalachia as part of the project “Comparative change in complex socio-environmental systems: Coal mining in Alaska and Appalachia”. This summer, she was able to take two students along with her as research assistants – Dawn Heckmann and Phil Ferguson. Dr. Haas and her students spoke with people in the south-central area of Alaska about the potential opening of new coal mines. One of the goals of this research is to find areas where consensus building is taking place among communities, mining interests and environmental interests.



Johanna Haas, Dawn Heckmann, and Phil Ferguson in front of Exit Glacier, Kenai Fjords National Park, Alaska.

Climate Change and Variability

The work that Dr. Dagmar Budikova, Director of the Institute for Geospatial Analysis and Mapping, is conducting in climatology has chiefly contributed to our knowledge of climate variability and change across North America. This has led to information that has improved our understanding of seasonal and decadal fluctuations of our climate. This agenda is tied to the large issue of anthropogenically-induced climate change at the global scale. Recently, she began exploring the connection between the changing environment in the Arctic and the impact of such modifications on remote climates around the world including the United States, Canada, Europe, and Asia.

THE INSTITUTE FOR GEOSPATIAL ANALYSIS & MAPPING (GEOMAP)

The Institute is housed in the Department of Geography-Geology at Illinois State University. Its mission is three-fold, aiming to support research, education and training, and community outreach activities that facilitate sustainable environmental and socioeconomic development through the application of state-of-the-art spatial sciences and technologies.

GEOMAP activities offer unique learning experience and professional development opportunities to students that often lead to summer internships and full-time employment opportunities.

Currently, the Institute is involved in a variety of research and mapping projects. Among them is a study to develop a GIS inventory and map of local producers, farmers markets, and other community outlets. Starting with central Illinois, their food miles and road networks between farm and market will also be included. Local producers are defined in three categories: certified organic, using organic practices, or using conventional practices but selling locally.

By analyzing the current food network, the aim is to better understand the impact of food miles on the local economy, how many geographically separated markets producers serve, where gaps in local markets may occur, and how the existing network may affect the availability of locally grown food, especially vegetables and fruits, to the Illinois consumer.

EVENTS AND SPEAKERS

Focus the Nation

ISU was one of 1,300 institutions across the country to participate in Focus the Nation – a nationwide teach-in about climate change solutions in America. From January 28th through January 31st 2008, ISU hosted a series of evening events, including a free screening of the documentary *The Eleventh Hour* and a presentation by the Mayor of Normal. Focus the Nation was sponsored by the American Democracy Project and the Green Team. Evening events were open to the public and voter registration was available. During the week, a number of faculty members across the campus tailored their lectures to talk about how climate change relates to their course topic(s).



Sustainable University Symposium

On August 14, 2007, ISU hosted the second annual Sustainable University Symposium. The event was presented by the Illinois Green Government Coordinating Council (IGGCC). Roughly 200 people participated from colleges and universities around the state. Morning plenary sessions focused on Green Building and construction projects at various institutions in the state, while the afternoon was spent in working groups to discuss how to implement the IGGCC's Sustainable University Compact. Lt. Governor Pat Quinn delivered the opening address.



Prevention Does a Body Good

The first initiative of its kind in Central Illinois, Prevention Does a Body Good was a week-long campaign that brought together members of the health care, environmental, wellness, and higher education communities. The goals of the campaign, which is intended to become an annual event, are to: Raise awareness on environmental impacts on health.

Encourage a precautionary approach to personal lifestyle and community policy. Celebrate actions that create a healthy environment for all.

Some of the events included: Yoga for Parent and Child, organic gardening, green home remodeling, organic wine and local cheese tasting, Tai Chi, and green cleaning. The collaborative Educational Campaign was sponsored by: Illinois Wesleyan University, Ecology Action Center, Illinois State University, BroMenn Healthcare, OSF St. Joseph Medical Center, Community Cancer Center, McLean County Health Department, Heartland Community College, Phoenix Massage and Wellness, Main Street Yoga Studio, Contemporary Obstetrics and Gynecology, and A. Renee.



healthy you healthy earth **wellness and environmental fair**

ILLINOIS STATE UNIVERSITY

Healthy You Healthy Earth

On November 13, 2007 ISU hosted its second annual Wellness and Environmental Fair. Sponsored by The Faculty Staff Wellness Program, Campus Dining Services, University Recycling, The Green Team, Student Health Promotion Office, and the University Health Education Coordinating Council (UHECC), the goal of Healthy You Healthy Earth is highlight the seven dimensions of wellness, to share information, provide resources, and educate those in attendance about healthy lifestyles and environmental stewardship. Health Screenings, food samples, and environmental displays were among the features that our 400 attendees enjoyed.

Visiting Speakers

Ralph Nader

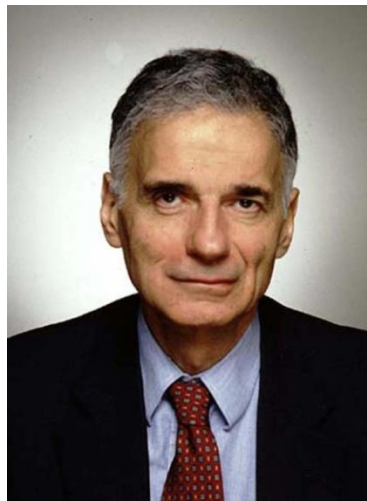
Previous Presidential candidate and self-described “public citizen” Ralph Nader delivered the keynote address for Illinois State University’s 2008 Civic Engagement Celebration. The focus of his speech was the importance of civic engagement by college students. Nader, named “One of the 100 Most Influential Americans of the 20th Century” by *Time* magazine, helped to create the Occupational Safety and Health Administration, the Environmental Protection Agency and the Consumer Product Safety Commission.

Daniel Esty

Dan Esty, Professor of Environmental Law and Policy at Yale University and coauthor of *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*, was on campus to discuss his research in May 2008. His visit to ISU was made possible by State Farm.

Dr. Michael J. Walsh

Dr. Michael Walsh, Executive Vice President of the Chicago Climate Exchange and ISU alumnus, was the keynote speaker for ISU’s Earth Day festivities. Walsh spoke about the growing global role of carbon markets and carbon trading in addressing climate change. He discussed voluntary and mandatory markets and what function they may serve in the next presidential administration



2008 Civic Engagement Speaker
Ralph Nader

STUDENT INVOLVEMENT



Sustainability Fee

In the fall of 2007, the issue of sustainability was raised during the annual University Housing Services Room and Board Fee Review by the Association of Residence Halls (ARH). This led to conversations about the possibility of a sustainability fee being added to the Room and Board that students pay. The students within each of the residence halls voted on and passed a sustainability fee. All on-campus students who live in a residence hall are now assessed a one dollar fee, which has allowed for the establishment of a sustainability fund within ARH.

As a result, a Student Sustainability Coordinator position was added to the executive board of ARH. The Student Sustainability Coordinator has formed a committee with representation from each residence hall to oversee the approximately \$16,000 a year sustainability fund. This is just one aspect of the shift toward sustainability that University Housing Services is making with the support of the Association of Residence Halls.

PASS-IT-ON

Every semester break University Housing, in conjunction with the School of Social Work and ROTC, hold PASS-IT-ON. A partnership with Here 4 You, a program of the Bloomington Housing Authority, PASS-IT-ON aims to collect clothing and canned food from students as they clean out their rooms for the semester/year and share them with less fortunate members of our community. Collection bins are placed in the lobby of every residence hall. ROTC members then transport the items to Here 4 You, where the items are distributed to children, families and seniors in need. 288 trash bags of food and clothing were collected during the May 2008 PASS-IT-ON.

Student Groups

GreenFluence

A group of students who are conscious of environmental, social, and economical impacts of the constructed facilities such as homes, buildings, and related infrastructures. The group's activities include: regular monthly meetings with field trips and industry expert guest speakers, participation in the national green building student competition (*they were the only group representing the mid-western region last time they participated!*), and LEED A.P. study workshops.

The group has students from diverse background and majors, and it promotes wide spread use of green building practices throughout the campus, community, and the region. Several of its members are working toward becoming, or are already, LEED accredited professionals (LEED A.P.).



Student Environmental Health Association (SEHA) is an official chapter of the National Environmental Health Association and the Illinois Environmental Health Association. SEHA takes an active role in providing students opportunity for involvement with club-sponsored events as well as professional meetings throughout Illinois. Since 1992, SEHA has sponsored ISU's Earth Day festivities.



Student Environmental Action Coalition (SEAC) is a registered student organization "that works to protect the environment and our future." They strive to educate campus and the local community about the environmental problems created by modern society. The group hosts speakers, film screenings and local clean up events. Last year they also hosted a "Do it in the Dark Party" to raise awareness about our energy dependence and climate change.



Team Mercury

The Illinois State University Mercury Solar Car Race Team (Team Mercury) is dedicated to promoting an eco-friendly environment by educating the Illinois State University students and its surrounding community. They work to encourage the development of alternative energy sources and technology.

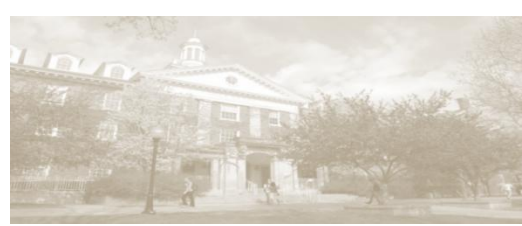
The program provides a rare opportunity for students to develop their talents in every discipline from accounting and art, to science and technology, and use their skills to promote a greener future.

In addition to competing in the North American Solar Challenge, the team makes public appearances at local schools, businesses, and energy conferences, to educate and inform the community about alternative energy sources and technology that can contribute to a greener tomorrow.



Above: Team Mercury displays solar car at an area school. Below: Dr. Daniel Holland speaks about Team Mercury to students on the Quad.

DINING PROGRAM



The 2007-2008 academic year was an exciting time for Campus Dining Services. The newly remodeled Linkins Dining Center reopened in time for the start of the fall semester. Old equipment was replaced with energy and water efficient models, including a new ENERGY STAR dishwasher. The look and layout of the dining area was also updated to provide for a more enjoyable and relaxing dining experience.

Research and planning were the central focus of Campus Dining Services' sustainability efforts. A Sustainable Dining subcommittee of the Green Team was established in the fall. The committee focused its attention on two areas: waste reduction and local foods. The group identified challenges and opportunities associated with sustainability related initiatives and began the planning process of a first-ever Local Food Dinner to be held during fall 2008.

Carry out dining has historically been very popular with ISU students. As a result, to-go containers were a staple in campus dining operations up through the spring semester of 2008. The student dining experience was heavily reliant on carry out (to-go containers and bottled beverages) rather than dining in. Even those that dined in often used plastic disposable containers rather than washable ware. Just for the month of November 2007 alone, dining center patrons used 67,650 to-go containers.

In addition to the financial costs associated with this practice, there are significant environmental costs as well. To-go containers take up space in landfills; and each container may take more than five hundred years to break down.

Recognizing this problem, Campus Dining Services spent the 2007-2008 academic year, working with students, to revise a meal plan that would encourage dine-in options and reduce the use of to-go containers and bottled beverages. In spring 2008, Campus Dining Services held a series of informational presentations to notify all areas of the campus community about the change and solicit feedback.

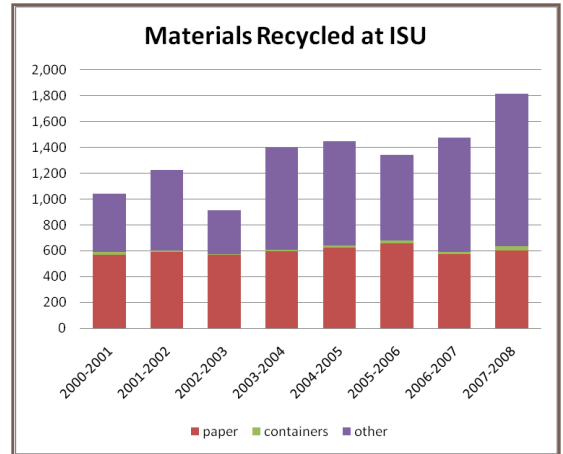
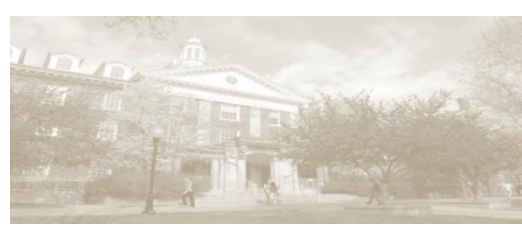
The new meal plan was in place for the fall 2008 semester. The new meal plan and the other sustainability efforts that were in the planning process during the 2007-2008 academic year, will be detailed in the 2009 Sustainability Progress Report.

Sustainable Seafood

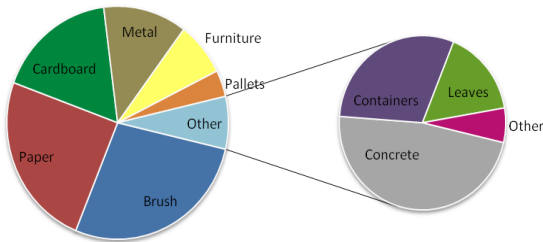
Campus Dining Services anticipates an increase in requests for seafood in the coming years. This is a global trend that is reflected in the decline of many fish populations around the world. Recognizing the need to balance environmental responsibility with their customers' expectations, ISU Campus Dining Services has set a goal of purchasing seafood from sustainable fisheries. ISU's chefs use Blue Ocean Institute's "Guide to Ocean Friendly Seafood" as a reference when ordering seafood.

RECYCLING

In 1989, the Office of Residential Life, now University Housing, launched Illinois State University's first recycling program. Because this program was limited to the residence halls, in 1993 facilities management started a second program to capture commodities throughout the rest of campus. These two programs worked in concert together through the end of 2007. In 2008, as part of the consolidation of facilities operations, the two existing recycling programs were folded into one. We believe this will allow for increased efficiency of operations and an increase in commodities collected campus wide.



Breakdown of Recycled Materials for the 2008 Fiscal Year



Since 2004, ISU has been conducting annual waste audits. Bags of garbage are collected from several of the largest academic and administrative buildings on campus and from outdoor receptacles on the Quad. As part of their class work, students from the Environmental Health major open and sort the bags. They separate out the plastic, glass, cans and paper found in collected trash bags to determine what percentage by weight of the trash could have been recycled. The data is used to identify buildings with lower recycling rates. University recycling can then go through those buildings to make sure there are sufficient recycling opportunities available. This information is also helpful in shaping the marketing and education efforts of University Recycling.

Recycling Plastic Garden Pots

In April 2008, a pilot initiative was launched to recycle plastic garden pots in partnership with McLean County Master Gardeners, Ecology Action Center, Town of Normal, McLean County, the University of Illinois McLean County Extension Office, and Illinois State University.

Three local garden centers: *C Wendell Niepagen Greenhouses*, *AB Hatchery & Garden Center*, and *Green View Nursery*, served as drop off locations throughout the season. ISU hosted five Saturday morning drop off and sorting events. Over the course of the gardening season approximately 1500 lbs of plastic pots were collected. The initiative was so successful that other counties are hoping to participate next year.



In February 2008, ISU's long-time Recycling Coordinator, Dee Beverly, retired. We are grateful for all her hard work and dedication to improving recycling at ISU over the years.

GREEN CLEANING



In August 2007 the State of Illinois passed the Green Cleaning Schools Act. It is the second state in the country to mandate that primary and secondary schools use environmentally sensitive cleaning products and processes. ISU's laboratory schools, Thomas Metcalf and University High School, fall under this legislation.

The act required the establishment of state-wide green cleaning guidelines. ISU staff member, Peter Beaulieu participated in the government working group sessions to create those guidelines. During that time, Beaulieu also worked with our suppliers and consultants to implement a program in both schools that, according to a third party survey, surpasses state requirements. Our building services staff tested multiple products to ensure that the schools' occupants would be guaranteed the same level of cleaning quality they had come to expect.



The success of the cleaning programs at Thomas Metcalf and University High School has encouraged Building Services to expand green cleaning efforts to other campus buildings. The progress of those efforts will be reported in future progress reports.

What is "Green Cleaning?"

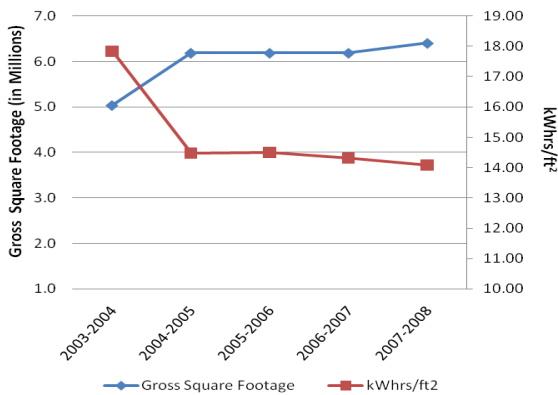
Green Cleaning can best be defined as cleaning in such a way that protects human health without harming the environment. It is a systematic approach to cleaning that not only discourages the use of products that contain harsh chemicals and toxins, but also seeks to use products that are produced, used and can be disposed of in an environmentally sensitive manor. This includes product packaging and also encourages more efficient processes to reduce the amount of cleaning products used.

ENERGY AND WATER



Since 2003 the campus has grown by approximately 1.4 million square feet to a total of 6.4 million square feet. Despite this growth, the university's energy consumption has remained fairly steady, resulting in a decrease in energy usage per square foot. This trend can be attributed to the Office of Energy Management's aggressive efforts to conserve energy in existing buildings and improve energy efficiency in new construction and renovation projects

Electricity Usage and Campus Size



Lighting

The university began a comprehensive lighting retrofit program in 2004. University High School and Metcalf were the first buildings on campus to transition from fluorescent T-12 ballasts to the more energy efficient T-8 systems. Since then more than 16,000 light fixtures have been replaced. Additionally, motion sensors have been installed in numerous locations in new and renovated buildings.

Chiller Plants

Two new chiller plants were substantially completed in May 2008, in time for the cooling season. The southeast Chiller Plant currently ties in with the Science Laboratory Building Chiller and serves Stevenson Hall and Watterson Towers. The previous systems in these two buildings were original to the buildings, which were constructed in 1968.

Centralizing chilled water operations enables the equipment to be run within its optimal range, yielding improved efficiency and energy savings.

The northwest Chiller Plant serves Horton Field House, Linkins Dining Center, West Campus residence halls, and most of Redbird Arena. In the future, the plant will also provide cooling for Nelson-Smith, Turner Hall and the performance area of Redbird Arena.



Steam

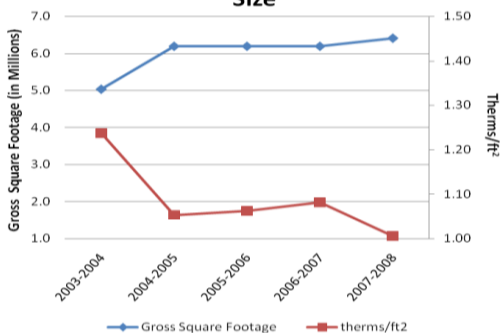
The campus power plant generates steam from natural gas, which is used to heat and cool campus buildings. There can be significant heat loss in the transport of steam from the point of generation to the end destination. To combat this heat loss, major efforts have been made to insulate pipes and equipment.

Aside from passive transmission, heat is also lost through steam traps. Steam traps are designed to capture condensed water and return it to the boiler. As systems age and the traps fail, they allow water and steam to escape – wasting water and energy. Therefore work is underway to replace faulty traps.

Several projects were implemented in 2008 to reduce gas consumed by the steam system. Boiler stack economizers were installed on two boilers to recover heat that is normally exhausted from the stack. The economizers use this exhaust heat to increase the temperature of the water being fed to the boilers. Oxygen trim systems were installed on three of the four university boilers. These systems control the air/fuel mix to optimize combustion and minimize heat loss. A major focus was put on recovering the water created when steam condenses after being used to provide heat on campus.

While most of this water was already sent back to the heating plant, locations were found where some water was being lost to sanitary sewer drains. Changes were made to capture this water saving the university both energy and water. Changes were also made to recover heat lost when boiler water is periodically drained to remove contaminants. This water is now sent through a heat exchanger to recover the heat that would normally be sent to the sanitary sewer.

Natural Gas Usage and Campus Size

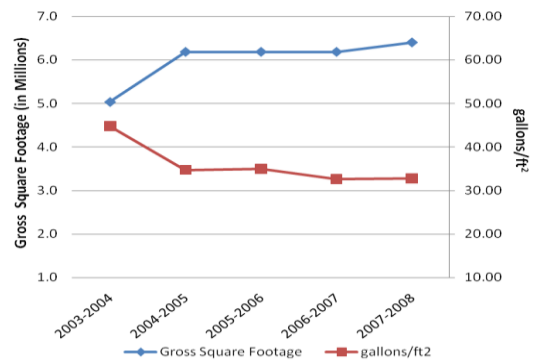


Water

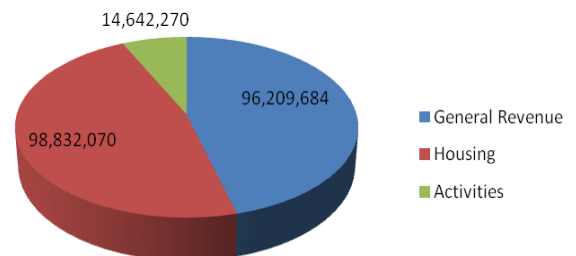
Water is central to the University’s heating and cooling operations. As such, many of the conservation initiatives discussed in the previous energy section of this report also relate to water conservation. Therefore it is not surprising that the graph of Water Usage compared to Gross Square Footage shows a similar pattern as those for energy and natural gas.

In 2008, the University consumed nearly 210 million gallons of water. As is evidenced by the graph showing Campus Water Consumption for 2007-2008, the residence halls are among the largest consumers of water. This suggests there may be significant potential to conserve water through education and awareness efforts within the residence halls.

Water Usage and Campus Size



CAMPUS WATER CONSUMPTION 2007-2008 (gallons)



STORM WATER MANAGEMENT

Stormwater results from rainfall events or snowmelt. When the soil is saturated or water is running off impervious surfaces, the water flows directly into storm drains or water bodies. Along the way, stormwater runoff picks up any number of pollutants such as sediment, fertilizers, and oil, depositing it into the water system without treatment.

ISU's Grounds Management has undertaken several projects to combat this problem. Some, like the use of integrated pest management to reduce the amount of chemicals used, are simply good management practices. Others require significant planning and investment.



The porous nature of permeable concrete during a training session at the Hancock Field parking lot

Permeable Pavement

Illinois State University was the first public university in the State of Illinois to install pervious concrete to address water quality runoff. Pervious Concrete allows water to flow through the concrete and seep into the ground water. ISU installed its first permeable lot by Hancock field and used it as a training session for area contractors, the Illinois Ready Mix Concrete Association, and the Indiana Ready Mix Concrete Association. A second lot was installed in 2006 on the corner of Willow and School Streets.



Bioswale

This past fall, ISU installed two bioswales. Located on Gregory Street, the first swale is 9,920 square feet and will filter and slow runoff coming from the new recreation fields and parking lot. It feeds into a detention basin that will help reduce runoff by storing excess water in heavy rainfall events and protect against flooding

The second, a 1,000 square foot bioswale, was installed between the parking lot behind Redbird Baseball field and the campus extension of Constitution Trail. Pheasant Creek runs right along this area. Therefore, this swale serves as the creek's first line of defense against containments and runoff. A sign has also been put up to educate passersby about the bioswale and its function.

A bio-swale acts like a sponge, absorbing rain water and slowly filtering and releasing it further into the ground. This promotes ground water recharge through infiltration and in turn minimizes stormwater runoff into streams and rivers. It is an environmentally sensitive approach to pollution control that adds natural beauty to the community and provides a haven for many mammals and birds.



COMPOSTING



The Town of Normal takes its leaf debris from its residential yard waste collection to the University farm. There it is composted with animal waste from the farm's livestock operations. Annually, the farm produces approximately 10,000 cubic yards or roughly 75,000 Tons of compost.

RESOURCES

American College and University Presidents Climate Commitment (ACUPCC), www.presidentsclimatecommitment.org
Association for the Advancement of Sustainability in Higher Education (AASHE), www.aashe.org
Blue Ocean Institute, www.blueocean.org
Campus Dining Services, www.dining.ilstu.edu/index.shtml
Chicago Climate Exchange, www.chicagoclimatex.com
Educating Illinois 2008 – 2014, www.educatingillinois.ilstu.edu
ENERGY STAR, www.energystar.gov
Faculty and Staff Wellness Program, www.wellness.ilstu.edu
Focus the Nation, www.focusthenation.org
Global Compact, www.unglobalcompact.org
Graphic Communications, www.tec.ilstu.edu/downloads/GC_Green_Media_Journal.pdf
Green Cleaning Schools Act, www.standingupforillinois.org/green/school_cleaning.php
Illinois Green Governments Coordinating Council, www.standingupforillinois.org/green/GGCC.php
Illinois State University Green Team, www.greenteam.ilstu.edu
Illinois Wind Working Group, www.wind.ilstu.edu
Institute for Geospatial Analysis and Mapping (GEOMAP), www.geomap.ilstu.edu
Office of Energy Management, www.facilities.ilstu.edu/campus/energy/index.shtml
Plastic garden pot recycling, www.ecologyactioncenter.org/waste-solutions/garden-pots.shtml
Principles for Responsible Management Education (PRME), www.unprme.org
Program of Excellence in Energy Science, www.energyscience.ilstu.edu
Renewable Energy Major, www.tec.ilstu.edu/renewable_energy
Student Environmental Health Association, www.healthsciences.ilstu.edu/environmental_health/current/seha.shtml
Student Health Promotion Office, www.shs.ilstu.edu/hpo
Sustainable University Symposium, www.standingupforillinois.org/green/susuni2008.php
Team Mercury, www.phy.ilstu.edu/~mercury
University Health Education Coordinating Council (UHECC), www.wellness.ilstu.edu/uhecc

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