

College of Agriculture and Life Sciences
 North Carolina State University
 Department of Biological and Agricultural Engineering
 2012
 January 22, 2013
 Dwane L. Jones
 Extension Associate
 75% CES

A. FACULTY ACTIVITY REPORT

I. TEACHING AND MENTORING OF UNDERGRADUATE AND GRADUATE STUDENTS

A. Teaching Effectiveness (3 lectures)

1. Bio. & Ag. Engineering- 1 lecture BAE 575 (Dr. Bill Hunt)
2. Intro to LID Best Management Practices- 1 lecture (Webinar for NCSU Dept. of Parks and Recreation)
3. Urban Form and Design- 1 Lecture (East Carolina University)
4. BAE 590 (Section 604- Sustainable Low Impact Development (SLID), Distance Education)

This course addresses LID in the contexts of designing, planning, constructing, and maintaining a project site. It mostly emphasizes project *design*. It is targeted toward graduate and post-graduate individuals interested in environmentally friendly, cost-effective land development. The SLID course examines LID holistically as a vital component of a larger, systematic approach to development. Nine (9) DE students registered for this course in Spring, 2012 and provided positive feedback as to course content and relevance.

B. Instructional Development

BAE 590 (Section 604- Sustainable Low Impact Development (SLID), Distance Education)

This course addresses LID in the contexts of designing, planning, constructing, and maintaining a project site. It mostly emphasizes project *design*. It is targeted toward graduate and post-graduate individuals interested in environmentally friendly, cost-effective land development. The SLID course examines LID holistically as a vital component of a larger, systematic approach to development. Nine (9) DE students registered for this course in Spring, 2012 and provided positive feedback as to course content and relevance.

C. Mentoring Activities

D. Masters and Ph.D. Thesis Advising

II. SCHOLARSHIP IN THE REALMS OF FACULTY RESPONSIBILITY

Heather Rhymes, M.A. in Landscape Architecture, College of Design, North Carolina State University (committee member)

A. List of Accomplishments

Publications (peer-reviewed or refereed publications)

Jones, D. (2012). *The behavioral impacts of urban street modifications: A case of study of east blvd. in charlotte, nc.* (Doctoral dissertation). <http://www.lib.ncsu.edu/resolver/1840.16/8072>

Presentations with Published Abstracts

none

B. Externally and Internally Sponsored Grants (grant funded totals ___)

Jones, D. **Cooperative Extension Mini-Grant.** 01/01/2013. \$5,000. *Funded.* Low Impact Development Training grant funded by Extension Administration to conduct workshops and certify 50 people.

Jones, D. 01/08/2013. **Faculty Research and Professional Development Fund (FRPD).** \$5,000. *Funded.* The purpose of this proposal was to fund an undergraduate or graduate student worker to aid in a study aimed at analyzing user behavior at urban crosswalks.

Hallas, S. & Jones, D. 01/07/2013. \$3,000. *Under review.* **The Conservation Fund's Resourceful Communities Program.** Through a partnership with River City Community Development Corporation, NCSU will engage 30 at-risk students in learning about and applying LID techniques, resulting in an LID certificate. The certificate will enhance employment opportunities for students while improving water quality and reducing flooding in a low wealth community in Elizabeth City.

Institute for Transportation Research and Education (ITRE). **University Transportation Centers Grant.** March, 2013. \$3,000,000. *Under review.* Support for major research project aimed at fostering livable communities through place-based policies and investments that increase transportation choices and access to transportation services. I led the section on street retrofits and human behavior.

Jones, D. The Institute for Transportation Research and Education. **Builders of Hope Proposal.** March 2013. \$900,000. *Not funded.* The objective of this grant proposal was to fund a study to investigate the economic, educational, health, transportation, environmental, and quality of life benefits that are derived from investing in green, energy efficient sustainable community redevelopment.

C. Other Organized Scholarly Efforts between Departments within and across Colleges or Institutions

Associate (Cooperating) Faculty Status, Lenoir-Rhyne University Reese Institute for Conservation of Natural Resources: Our program has continued a close relationship with Dr. John Brzroad and his team in the study of Low Impact Development and Conservation Design.

Associate (Cooperating) Faculty Status, Haywood Community College (HCC) Department of Natural Resources: Our program collaborates with HCC to offer Low Impact Development workshops to its students.

D. Professional Development Activities

Distance Education Seminar at DELTA. January 4, 2012.

Introduction to Teaching Seminar. January 12, 2012.

Fundamentals in Teaching: Responding to Student Writing Seminar. January 30, 2012.

Proven Strategies for Teaching at a Distance Seminar. February 8, 2012.

Land and Sea Conference. Portland, OR. May 20-24, 2012.

Webinar: *Creating Healthier Communities Through Policy Change*. June 26, 2012.

Evidence-Based Teaching Conference at Elon College. Greensboro, NC. August 16, 2012.

Staff Meeting with the NC Division of Water Quality. Raleigh, NC. August 23, 2012.

Staff meeting with NCDOT re: Complete Streets Research Collaboration. Raleigh, NC. September 14, 2012.

NC Bicycle Summit. McKimmon Center, Raleigh, NC. October 12, 2012.

Stream Restoration Conference. Hosted by NCSU. Wilmington, NC. October 15-18, 2012.

Webinar: *Context Sensitive Solutions and Public Health*. October 30, 2012.

Staff meeting with NCDOT re: Complete Streets Research Collaboration. November 5, 2012.

Health Impact Assessment Training. Chapel Hill, NC. November 26-27, 2012.

Growing in Place Symposium. The Natural Learning Initiative at the College of Design hosts an annual symposium geared towards design for children, families, and nature in the City. This year's theme is "Intergenerational Urban Design for Children and Families." Raleigh, NC. February 21, 2013.

Urban Design Conference. The mid-sized city has become an increasingly attractive location choice. As a region, the South is leading the nation's growth, creating both challenges and opportunities. On this 10th anniversary, the Urban Design Conference specifically addressed the unique issues facing our mid-sized cities. Case studies and best practices examined how urban design and planning strategies can lead our cities to become more sustainable, healthy and economically vibrant. Raleigh, NC. February 22, 2013.

Triangle Bicycle and Pedestrian Workshop. Attendees learned about local and regional bicycle and pedestrian initiatives in the Triangle-area. Attendees also participated in a NCDOT Bicycle & Master Plan review and heard John Pucher present his research on "Promoting Cycling and Walking for Sustainable and Healthy Cities: Lessons Learned from North America and Europe". March 22, 2013.

III. EXTENSION ENGAGEMENT WITH CONSTITUENCIES OUTSIDE THE UNIVERSITY

Non-refereed publications

none

Manuscripts in Review

Jones, D., Moore, R., and McCreedy, M. (In review). "Increasing Active Transportation through Complete Streets: A Case Study of East Blvd. located in Charlotte, NC" for the journal Environment and Behavior.

Presentations, Workshops, and Short-Courses

Jones, D. Innovations in *Complete Streets Research*. *Keynote Lecture at the City of Raleigh Urban Design Center Lunch Forum*. January 25, 2012. (55 persons in attendance).

Jones, D. *The Behavioral Impacts of Urban Street Modifications: A Case Study of East Blvd. in Charlotte, NC*. *Growing in Place Symposium*. Raleigh, NC. March 16, 2012. (98 persons in attendance).

Jones, D. *Urban Planning and Beyond: A Keynote Lecture for Current and Future Planners*. East Carolina University Student Planning Association Network (SPAN) Annual Banquet. Greenville, NC. March 31, 2012. (25 persons in attendance).

Jones, D. *Introduction to LID and LEED Workshop*. Raleigh, NC. April 10-11, 2012. (27 persons in attendance).

Jones, D. *Integrating LID, LEED, and Policy Workshop*. Raleigh, NC. April 12, 2012. (27 persons in attendance).

Jones, D. *Low Impact Development Certification Program*. Portland, OR. Land and Sea Grant Conference. May 21-23, 2012. (57 persons in attendance).

Jones, D. *Introduction to LID & LEED*. Asheville, NC. In partnership with Asheville-Buncombe Tech. June 13-14, 2012. (20 persons in attendance).

Jones, D. *Integrating LID, LEED, and Policy*. Asheville, NC. In partnership with Asheville-Buncombe Tech. June 15, 2012. (20 persons in attendance).

Jones, D. *Introduction to LID & LEED*. Edenton, NC. August 7-8, 2012. (20 persons in attendance).

Jones, D. *Integrating LID, LEED, and Policy*. Edenton, NC. August 9, 2012. (20 persons in attendance).

Jones, D. *Introduction to LID*. Pivers Island, NC. In Partnership with NOAA and the Division of Coastal Management. November 2, 2012. (25 persons in attendance).

Jones, D. *Introduction to Urban Form and Urban Design*. Guest Lecturer at East Carolina University, Greenville, NC. November 12, 2012. (15 students and 1 faculty member in attendance).

NCDOT Pilot Training for Complete Streets (invited participant and program reviewer). November 14-15, 2012.

Jones, D. *Introduction to LID & LEED*. Raleigh, NC. December 4-5, 2012. (13 in attendance).

Jones, D. *Integrating LID, LEED, and Policy workshop*. Raleigh, NC. December 6, 2012. (13 in attendance).

Jones, D. *Low Impact Development Scholarship Training for Local Government Staff and Extension Professionals*. Asheville, NC. March 6-7, 2013. (17 in attendance). This workshop was especially designed to develop partnerships between local government staff and NC Cooperative Extension for the primary purpose of identifying ways to efficiently and effectively implement LID at the local level.

Program Impacts

NC LID Certification Program: In collaboration with the NC Division of Water Quality, I lead the NC LID Certification Program. The mission of this program is to protect water quality by how we plan, design, construct, and manage our communities. It is the second program in the nation of its kind. The certification program requires successful completion of (1) an Introduction to LID and LEED course, (2) a Policy Course, (3) an LID residential design, and (4) a comprehensive exam. Recipients of the certification are required to maintain 21 continuing education hours every two years through Extension. The NC LID Certification is a successful model for the Division of Water Quality and Extension. Officials from EPA have also inquired about the program and desire to use it as a model for other states. To date, 105 individuals have been certified (up from 84 in 2011). Certified individuals consist of engineers, planners, landscape architects, architects, realtors, and others. As a condition for

certification, recipients are expected to translate knowledge gained in the course into built form, which will make our communities more livable and environmentally friendly. Each class:

- Consists of presentations from NCSU Campus and Professional Faculty, private practice, and non-profit entities, hand-on demonstrations, and class discussions.
- Is developed in collaboration with the NC Division of Water Quality and disseminates research-based curriculum, incorporates the latest learning technologies, and continuous evaluation. After-class technical support is also included.
- Is evaluated for participant satisfaction, knowledge gained, intent to use, and the degree to which new knowledge gained will be applied in practice.

Two-Year Program Evaluation: Beginning in 2012, an online questionnaire was developed for certified individuals who had obtained certification and sought recertification after a two-year period had transpired. Participants were asked questions that examined the degree to which knowledge gained in certification workshops was utilized in practice and how the program impacted them professionally. Examples abound; however, one community in particular (Town of Holly Springs, NC) represents and summarizes feedback from other participating communities. Several respondents from the Town of Holly Springs stated that in response to participating in the program:

- The Town of Holly Spring's Unified Development Ordinance was amended to reflect principles and practices discussed in the LID class.
- Several LID work sessions had been conducted with Town Staff to educate them on how to efficiently and effectively implement LID.
- The Town adopted a shared parking regulation in the downtown district, which minimizes impervious surface coverage and runoff into receiving waters.
- The Town adopted a mixed-use ordinance, which minimizes impervious surface coverage, maximizes open space, and enhances opportunities for active transportation.
- The Town now allows waivers to eliminate curb and gutter from design requirements. This minimizes direct distribution of untreated stormwater into receiving waters.

General LID Support Program: Our program continues to provide design and policy assistance to local governments and nonprofit organizations, including, but not limited to: City of Raleigh, NCDOT, City of Jacksonville, NC, City of Charlotte. Dwane handled hundreds of phone calls, emails, and first-class mail requests for support and assistance.

IV. TECHNOLOGICAL AND MANAGERIAL INNOVATION

none

V. SERVICE TO THE DEPARTMENT, UNIVERSITY AND PROFESSIONAL SOCIETIES

Active member of BAE Social Committee

Team leader of NC LID (Low Impact Development) Group

Co-Chair of Rainwater Harvesting Technical Committee for American Society of Civil Engineers (ASCE) and the Environmental and Water Resources Institute (EWRI)

Advisory Board Member for East Carolina University Department of Geography, Urban and Regional Planning

B. PLAN OF WORK

I. INSTRUCTION

Our program will continue to offer workshops, seminars, and short courses in Low Impact Development. We are increasing our workshop offerings to include street design, urban design, and other specialized trainings.

I will also continue teaching a distance education course entitled, "Sustainable Low Impact Development" BAE 590-604. This course increased from 2 to 3 credits in 2013. Nine students are enrolled in Spring, 2012. My goal is to increase enrollment to 12 students and offer an on-campus, face-to-face option.

II. RESEARCH

Current and Continuing Research

- Low Impact Development

Continue to investigate state and local government policies for barriers to low impact development. Through this research, municipal and state governments revise their policies and ordinances to incorporate low impact development standards.

Continue to investigate impediments and barriers to the effective implementation of low impact development in North Carolina. Such barriers include: costs, land-use, soils, corporate and institutional. The goal is to provide viable, practical solutions to each of these impediments to municipal governments, designers, and developers.

- Complete Streets

Continue collaboration with NCDOT and several local governments to develop street design evaluation criteria for stormwater, traffic flow, interconnectivity, pedestrian-walkability, bicycling, and landscaping. Several pilot projects are underway that will be used as demonstration and research sites.

Investigate the effects of road diet on emergency services and number and severity of collisions. Collect baseline and post-construction data on a least two streets in North Carolina. Publish findings as fact sheets and other peer-reviewed formats.

Investigate human dimensions of stormwater, including perception of stormwater practices and green streets. Publish findings as fact sheets and other peer-reviewed formats.

Investigate attitudes and/or implications for multi-modality and stormwater management. Publish findings as fact sheets and other peer-reviewed formats.

Investigate environmental, social, and economic impacts of investing in sustainable and affordable housing by developing partnerships with non-profits such as Builders of Hope, Habitat for Humanity and other entities. Publish findings as fact sheets and other peer-reviewed formats.

Future Research Needs

Further Development of the LID Group and a Research Site: We need additional operating funds to further develop the NC LID Group. These monies would include a dedicated land area to construct and research stormwater practices and funds to partner with an economist to develop some cost models for LID.

An Optimum Street Typology: Grant funds are needed to help develop an optimum street typology. Funds would be used to design, plan, construct, and maintain a demonstration to real-world test the final design.

Behavioral Impacts of Urban Street Redevelopment: Research micro-scale characteristics of urban streets that increase physical activity, social interaction, and livability. Use these characteristics to develop a street typology that positively increases these types of behaviors.

III. EXTENSION

Outreach Efforts

Design Assistance to Designers and Local Governments: Each year the NC LID Group offers numerous forms of assistance to design professionals and local governments on the topic of low impact development, conservation design, stormwater, and urban design.

Design Assistance to Individual Firms: Each year the NC LID Group works with various design firms to provide educational seminars and materials for small groups. The projects are then used to promote LID and the University and develop applied research.

Certification Program offered to Community Colleges: We currently offer our NC LID Certification to Haywood Community College in Waynesville, NC. We hope to offer this program to other community colleges as part of their environmental curriculum.

Train the Trainer: Offer specific instruction in LID and Urban Design to Civil Engineers and Land Surveyors who are instructors at the community college level. Our LID program is used as a model to help spawn similar instruction at the community college level.

Extension Administration- N/A

IV. OTHER CONTRIBUTIONS

Committee Assignments

Active member of BAE Social Committee

Memberships, offices held, other roles in professional and honorary societies

Member of the American Planning Association (APA)

Member of Congress of the New Urbanism

Recently appointed to East Carolina University Planning Department's Advisory Board (February, 2011)

Active member of the NC Chapter of the APA Conference Planning Committee

Co-Chair of ASCE/EWRI Rainwater Harvesting National LID Committee

Active member of Triangle Stewardship Awards Committee

Founding member of the NC LID Group

Active member of NC NEMO (Nonpoint Education for Municipal Officials)

Judge: Triangle Stewardship Awards, LID Specialist

Active member of Urban Design and Preservation Education Committee for the American Planning Association

Certified Professional in Erosion and Sediment Control

International Programs- N/A

Consulting Activities

Support for Institute for Transportation Research and Education's Community Preference Project

Cross Disciplinary Activities

I will continue to work with other departments and Universities, including, but not limited to, the College of Design at NCSU, Lenoir-Rhyne University, Haywood Community College, University of Utah, and perhaps the Department of Sociology of NCSU to develop research and educational publications pertaining to Low Impact Development, Urban Design, Environmental Planning, and Engineering.