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KAPPE

LECTURE

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2019

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scientists.

The 2019 Kappe Lecturer

Nancy G. Love, Ph.D., P.E., BCEE



Borchardt and Glysson Collegiate Professor,
Department of Civil and Environmental Engineering,
University of Michigan

Adjunct Professor, Addis Ababa University Institute of
Biotechnology, Ethiopia

Education

- BS, Civil Engineering, University of Illinois, 1984
- MS, Civil Engineering, University of Illinois, 1986
- PhD, Environmental Systems Engineering, Clemson University, 1994

Professional Associations

- Board Certified Environmental Engineer, American Academy of Environmental Engineers & Scientists (AAEES)
- Fellow, Association of Environmental Engineering and Science Professors (AEESP)
- Fellow, Water Environment Federation (WEF)
- Fellow, International Water Association (IWA)

Dr. Nancy G. Love is the Borchardt and Glysson Collegiate Professor of Civil and Environmental Engineering at the University Michigan, and an adjunct Professor at the Institute of Biotechnology at Addis Ababa University. She has B.S. and M.S. degrees in Civil Engineering with an emphasis on Environmental Engineering from the University of Illinois, Urbana-Champaign, and a Ph.D. degree in Environmental System Engineering from Clemson University.

She has advised over 70 graduate students and post-doctoral research associates. In collaboration with her students, Dr. Love works at the interface of water, infrastructure, and both public and environmental health in both domestic and global settings. They focus on assessing and advancing public and environmental health using chemical, biological and analytical approaches applied to water systems using both physical experiments and computational models. Specifically, they:

evaluate the fate of chemicals, pathogens and contaminants of emerging concern in water with relevance to public health and the environment; use technologies to sense and remove these constituents; and advance technologies that recover useful resources from water.

Dr. Love has co-authored: over 100 peer reviewed papers, chapters and reports; over 250 conference presentations; and the 2011 textbook *Biological Wastewater Treatment, 3rd Edition* by Grady, Daigger, Love and Filipe.

Dr. Love has held leadership positions in multiple organizations, including with the Water Environment Federation (WEF), the International Water Association (IWA), and the Association of Environmental Engineering and Science Professors (AEESP). She is a Fellow of all three of these organizations as well. She is a licensed professional engineer (P.E.) in the state of Michigan and a Board Certified Environmental Engineer (BCEE).

Abstracts of Lectures Offered

Rethinking America's Urban Water Infrastructure: Resource Efficiency, Access, and Public Health

Water infrastructure renewal is receiving significant attention today as many of our systems are meeting (or exceeding) design life. Cities in countries with well developed economies like the U.S. enjoy economic prosperity in part due to the development of heavily centralized water systems that create high levels of water quality and public health, on average. While centralized water infrastructure has served us well, I argue that we should not be constrained to applying 20th century thinking as we plan for the future. The current revolution in information technologies (IT: software, hardware and devices) has the potential to transform urban water infrastructure by creating more resilient and flexible hybrid systems comprised of an interacting collection of centralized and decentralized physical & IT systems.

I contend that the development of IT-enabled “smart” hybrid water system solutions has the potential to: improve the efficiency with which we use resources (e.g., water, power, nutrients); enhance equitable access to water services; change consumer and provider behavior around water; and ensure that we sustain a high level of public health, even as more people live in close proximity to each other. In this talk and through the use of case studies from across different regions around the globe, I will explore these scenarios and the changing ways in which people live.

As an example, one case study will include the development of “smart” distributed nutrient recovery systems that have been deployed and are being tested at the University of Michigan.

Environmental Engineering and Science Academic Scholarship in Service to Society: Our Role and Responsibility

Academic scholarship in environmental engineering and science is most often associated with research around environmental science and technology - research that often involves physical or computational experiments - and sometimes occurs in nature or with full-scale engineered systems. Our discipline also has a growing contribution around the scholarship of learning and teaching, which has driven pedagogical advancements to the betterment of students and the organizations that hire them. A third wave of scholarship in the environmental engineering and science discipline that is seeing rapid growth relates to community-engaged research, learning and outreach.

An increasing number of colleges are advocating that faculty and students do more work in service to society; in this way, universities are helping to motivate the third wave. Community-engaged work takes various forms, from research in partnership with communities, service-learning oriented courses,

and professional outreach through institutions (e.g., civic organizations, professional associations). Many faculty and students undertake this third kind of scholarship with good intentions; however, they have typically received little to no training for it, and few to no processes, standards or certification methods are in place that explicitly focus on ensuring our work in communities is done in a manner that is respectful, mutually beneficial and does harm to none. During this talk, I will review the history and status of standards, ethics codes and other methods that are designed to protect the public while allowing for valid modes of public scholarship in service to society, with an emphasis on environmental engineering and science academia.

I will use case studies to highlight exemplary projects that met the community and academic goals in a mutually beneficial way. I will close with recommendations that highlight needs as our discipline more fully embraces scholarship in service to society.



**“A man’s debt
to his profession
is to help
those that follow.”**

STANLEY E. KAPPE, P.E., DEE, a successful environmental engineer, believed he owed a debt to the profession that rewarded him so well. During his life, he gave of himself to his university and to his profession through countless hours of volunteer activity. And through this Lecture Series, he continues to share his good fortune with tomorrow's environmental engineers and scientists.

He graduated from Pennsylvania State University in 1930 with a bachelor's degree in sanitary engineering. He served with the Pennsylvania State Health Department and the U.S. Army Corps of Engineers before joining the Chicago Pump Company as its Eastern Regional Manager in 1935. In 1945, he founded Kappe Associates, Inc., a water supply and wastewater equipment company headquartered in Rockville, Maryland, and continued as its Chief Executive Officer until his death in 1986.

His peers recognized his contributions to the profession by numerous awards, including the AWWA Fuller Award, the WEF Arthur Sidney Bedell Award, the WPCAP Ted Moses and Ted Haseltine Awards, and the AAEEES Gordon Maskew Fair Award. In 1985, Pennsylvania State University named him Outstanding Engineer Alumnus.

Stanley E. Kappe was an activist member and leader in several national and Chesapeake region professional societies. He served as the Executive Director of the American Academy of Environmental Engineers (now the American Academy of Environmental Engineers and Scientists) from 1971 to 1981.



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