Understanding the Mechanisms of Dewatering

Thursday, April 21, 2016

12:30pm in Shepard Hall, Room 207

Note that the time and location are different from usual.

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Abstract
Solids handling is a critical component of wastewater treatment both economically and in terms of resource recovery. For example, solids management can comprise 50% of overall treatment costs; however, it provides the opportunity to recover valuable resources such as energy, nutrients, and carbon rich soil amendments. A large proportion of the costs are associated with final dewatering and the hauling of solids to their final destination. The dewatering process often relies on expensive conditioning chemicals, mainly cationic polymers, to flocculate the solids and create particles that will dewater well on subsequent mechanical dewatering processes such as centrifuges or belt filter presses. The cake solids achieved during dewatering is an important performance metric, and by itself is a large driver of economics. In the case of DC Water, a reduction in the cake solids by one percentage point, say going from 30% to 29%, can increase costs by about $250,000 per year. Despite its importance, the mechanisms of conditioning and dewatering are not well understood, nor the factors that affect the critical performance parameters of polymer demand, cake solids and capture efficiency. This presentation will examine recent research to better understand the mechanisms of conditioning and dewatering that were used to develop an underlying hypothesis to explain observations from recent utilities related to biological phosphorus removal.

Biography
Matt Higgins is a currently Professor and Claire W. Carlson Chair in Environmental Engineering at Bucknell University. For the last 20 years, Matt has focused much of his research on biosolids issues including digestion, co-digestion, advanced digestion, conditioning and dewatering, mechanisms for production and control of odors in biosolids, and the reactivation and regrowth of indicators and pathogens in biosolids. He has collaborated significantly with both industry and municipalities, and his work focuses on understanding fundamental issues to solve real-world problems and support the industry’s move toward more sustainable practices and a circular economy. His collaborative work with DC Water, AECOM, Brown and Caldwell and ARA Consult was recently awarded the Environmental Engineering Excellence Award from the American Academy of Environmental Engineers and the Excellence in Innovation Award from the Water Environment Research Foundation.

Light refreshments will be served.