Environmental Engineering Graduate Student Seeking to Improve Water Quality in the Rio Grande Valley

Wisdom Oghenerurie's research, which will be expanded in his graduate thesis, is focused on the potential for proposed constructed wetlands that would be used to...
improve the quality of surface water routed through engineered drainage channels in the Arroyo Colorado.

“As one of the fastest growing regions in the country, southern Texas is not excluded from the challenge presented by non-point source pollution,” Oghenerurie said. “Unlike ‘point-source’ pollution, which can easily be regulated and treated, non-point source pollution is diffused and borders on both surface and groundwater. Hence, constructed wetland systems are one of the most suitable treatment approaches because they incorporate physical, chemical and biological treatment mechanisms as it mimics what is found in nature.”

For much of his summer, Oghenerurie worked with sophisticated software systems, including geographic information systems, that have helped him develop visual models of wetland layers that depict various principles of hydrological interactions.

“This could aid the development of innovative management practices that integrate spatial information with engineering principles for effective watershed protection in South Texas and beyond.”

A key component to the GSRE is the pairing of students with mentors. Dr. Ronald T. Green, a scientist in the Geosciences and Engineering Division of the SwRI, served as Oghenerurie’s mentor along with Dr. Femi Osidile.

“Wisdom has been very productive in using time at SwRI to develop new, relevant capabilities in using sophisticated analytical software to advance the pursuit of the project he has chosen as the topic of his master’s thesis,” Green said. “Wisdom has been very receptive to advice, guidance and assistance being provided by SwRI staff. His time spent at SwRI this summer will be very beneficial to his studies at A&M-Kingsville in particular and his career in general.”

Dr. Kim Jones, chair of the Department of Environmental Engineering, said the GSRE provides a unique opportunity for students to grow in their field.

“Wisdom has received outstanding training and mentoring from the highly qualified scientists at SwRI on topics surrounding surface and groundwater quality,” said Dr. Kim Jones, chair of the Department of Environmental Engineering. “These skills are going to be invaluable for him as he develops his research goals and achievements focused on constructed wetlands implementation for water quality improvement in the Arroyo Colorado Watershed of South Texas.”

For Oghenerurie, he is returning to A&M-Kingsville this fall to continue his academic journey with a renewed sense of purpose.

“As an environmental engineering graduate student, I was exposed to different research processes in a real-life environment. I learned how to manipulate geospatial data for engineered wetland design using GIS tools. This has not only made me savvy to my immediate environment, but has also equipped me with know-how to assess the world at-large,” he said.

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