

For my honors thesis, I participated in the 29th annual WERC competition at New Mexico State University on April 7th-10th, 2019. My team placed second at the competition in our task which included 5 other teams from different universities. The objective of the task was to remove phosphorus from CAFO runoff and recover it into a usable fertilizer. My contributions to the task will be discussed in the following paragraphs, and the paper will be attached in the appendix.

I was the quality control coordinator for my team. My duties under this title included overseeing all white papers turned in and making sure that the effort and quality of the work was acceptable. From the first week, my team got together to discuss the task and different approaches we could take, I had to read and review papers on the problem at hand. The nutrient content of hog waste, the nutrient levels that plants uptake and need, the design of a hog farm, the structure of phosphorus in each step of the process, and current methods of phosphorus removal were just some of the topics. I researched the Super Soils technology being studied at North Carolina State University. I had to know the details of the process and the cost associated. I was also in charge of reading through the permits submitted to the farmers and the restrictions they must follow on their waste removal. I had to estimate the amount of rainfall the area would get, and understand the methods behind a 25 year, 24-hour storm. I met with faculty on campus to get expert opinions on the directions my team was heading in. I met with chemistry faculty, engineering faculty, and crop and soil scientist faculty. I had to take detailed notes at each meeting and submit them to the rest of the team members who could not attend.

My team not only collaborated with faculty, but we participated in quite a few field trips to gain some more outside expertise. I visited the Biosolids Management Site, the Wastewater Treatment Plant, and the University of Arkansas' Swine Research Facility, all here in Fayetteville.

I participated in all experimentation done in the lab, and the experimentation done in the field at the hog farm. I calculated the economics and collaborated with one other team member on writing the whole paper attached. I contributed my slides in our team presentation that I would present at the competition. I assisted two other team members in the building of our bench scale

apparatus. While at the competition, I presented in the oral presentation, the poster presentation, and the bench scale demonstration.

Participating in this competition has given me many valuable skills that I know have helped me grow as an engineer and as a person. Working on a project from the very beginning and getting to build a solution is very rewarding. I have improved my confidence in my presenting abilities and communication skills. I would definitely do it all over again.