



Faribault County: home to the nation's largest bioreactor

October 2016 Snapshots



The largest bioreactor in the nation is up and running here in Minnesota, just north of Blue Earth in Faribault County. This project, known as County Ditch 62 (CD62), did more than just implement conservation practices, it provided hands-on learning and is supporting research that will be used for years to come.

A bioreactor is an elaborate nitrate filtration system designed to improve water quality. There are now three installed alongside Highway 169 in Faribault County. These buried systems are filled with woodchips which work to filter and remove nitrates from drainage water before that water re-enters the country drainage pipe and then dumps into the Blue Earth River. The CD62 project also includes a water quality unit and five alternative surface inlets as a part of a 'treatment train' approach to water quality improvement.



Bioreactor construction

This project came to be after a landowner at the outlet of CD62 wanted to do something to treat the water from the public drainage system. The Faribault County SWCD, Drainage Department and Drainage Authority collaborated on the project with the Faribault SWCD administering grant money (\$217, 570 in total) and helping with water quality monitoring while the Drainage Department helped with project design, engineering coordination, and public hearings.

The site was prioritized because the tile system has a direct outlet into the Blue Earth River and it's a highly visible location for demonstration projects. It created an opportunity to not only solve a drainage system issue but demonstrate and educate the public about this water management practice as well. To enhance the education and research value, the construction area next to the bioreactor is being used as a cover crop demonstration site. The demonstration site highlighted the benefits of cover crops including increased water infiltration and storage, increased organic matter, reduced erosion, and reduced compaction on site as a result of construction.



Participants tour the bioreactor during Field Day

The CD62 project culminated in August with the Faribault County Multipurpose Drainage and Soil Health Field Day. The field day's focus was on practices that achieve both private and public benefits through innovative solutions focused on protecting water quality and water resources along with the importance of soil health. There are 114 drainage systems in Faribault County and 923 miles of public ditch and tile. This bioreactor project treats one 658 acre drainage system.

The project's benefits extend beyond implementation because monitoring and

research is being conducted by the USDA Agricultural Research Service. This research will help provide future design considerations for bioreactors, continued monitoring of the site to determine scale and cost effectiveness for a larger watershed, and data collection involving multiple producers.

CD62 is the largest bioreactor in the nation, the first application of a water quality unit in an agricultural setting in the state, and the largest watershed treated by bioreactors. This project educates landowners, producers, and elected officials about the benefits of this kind of system while also providing a solid foundation for research that will be applied to other watersheds in the future.