UTC Project Information		
Project Title	MPC-597 – Bacteria Removal from Stormwater Runoff Using Steel Byproduct Filters	
University	South Dakota State University	
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Agency ID or Contract Number	69A3551747108	
Start and End Dates	April 11, 2019 to July 31, 2024	
Brief Description of Research Project	Stormwater runoff generated from highways, urban areas, and agricultural settings may contain various pollutants that can deteriorate water quality of receiving water bodies and threaten public health. Escherichia Coli (E. coli) is used as an indicator of bacteriological quality of water. Many surface waters are impaired by E. coli transported from stormwater runoff. It is important to develop effective technologies to remove E. coli from stormwater to improve the surface water quality and protect public health. Media filtration is an emerging stormwater treatment technology that has shown great potential to remove multiple contaminants from non-	

	point source pollution. Recycled steel byproducts are a new group of industrial byproducts that can be used as filtration media for stormwater runoff treatment. The objectives of this project are to evaluate factors that can affect E. coli removal by steel byproduct filters through laboratory column experiments, and to determine the long-term performance of a field scale steel byproduct filter for E. coli removal from stormwater. The results of this project can lead to the development of a low-cost and locally available technology for E. coli removal in stormwater runoff.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Media filtration using recycled steel byproducts is a new technology developed to remove E. Coli from stormwater. However, the long- term performance of steel chips and slag and their optimum mixing ratio need to be determined to apply this technology in real world applications. The three-year field study during this project demonstrates that recycled steel byproducts are effective filter materials for long-term E. Coli removal. The material agglomeration problems caused by steel chips can be managed by controlling the ratio of steel chips in the filter. These results can be used in the design of full-scale steel byproduct filters and promote the application of this technology for stormwater treatment.
Impacts/Benefits of Implementation (actual, not anticipated)	Escherichia Coli in stormwater runoff presents a serious risk to aquatic ecosystem and public health. Conventional stormwater management practices are generally not effective at removing E. Coli. Cost-effective and highly efficient filtration technologies are critically needed to reduce the E. Coli contamination from stormwater runoff. This project demonstrates that steel chips and slag are effective filter media for long-term field applications. The media mixing ratios recommended from this project will facilitate the design of full-scale stormwater filters. The application of this filtration technology will reduce the E. Coli contamination from stormwater runoff, protect natural water resources and improve public health.
Web Links Reports Project Website 	MPC Final Report – <u>Bacteria Removal from Stormwater Runoff</u> <u>Using Steel Byproduct Filters</u>