Identification of Sediment Sources in the Tributaries of Marion County Park & Lake to Develop Future Erosion Management Plan

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Purpose

- Channel cross section, soil samples for particle size measurement, water samples for suspended sediment measurements collected
- Erosion hotspots and stream bends identified
- To identify sources of sedimentation to assess the sediment’s erosion potential and downstream impact on lake bed fill in the tributaries of Marion County Lake

Study Area & Sample Locations

- 4,000 acre watershed
- 300 acre park with 153 acre lake
- Two largest tributaries of Marion County Lake
- Sogn silty clay loam
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Materials and Methodology

- Soil samples from three locations
- Four water samples from two locations on March 29th, 2018 and April 10th, 2018
- Manuscript: 3000 to sample particle size
- KSU Soil Testing Lab ran water samples for Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Electrical Conductivity (EC), Total Nitrogen, and Total Phosphorous.

Results: Particle Size & Water Data

- No significant correlation between particle size as sites move closer to the lake or with depth of sample from soil surface
- Particle size results showed less clay particles than expected from Web Soil Survey data of average Dx50 results show that greatest composition of soil is sand sized particles (>50 microns)
- Samples may not have been given adequate time to settle in between decreasing, therefore some clay and silt particles were discarded.

Conclusions & Acknowledgements

- This project provided great field work experience
- Practice with different kinds of scientific implementation
- This project should be continued in future semesters to collect larger dataset
- Long-term focus on the bends of these tributaries to help monitor stream bank conditions

Acknowledgements

- This study was supported by the Kansas State University Research and Extension Fund
- We would like to thank Matt Meyerhoff, Lisa Suderman, and Isaac Hett for their correspondence during the project, Rick Roberts of KSU Research and Extension for providing funding to run our water samples, and Abby Langston for providing guidance as our advisor.