

**2018 Annual Water Sustainability Fund Report for Project 5192**  
**Quantifying the Impact of Eastern Red Cedar Encroachment on Recharge in the**  
**Nebraska Sandhills**

**Dr. Aaron Mittelstet, Assistant Professor**  
**University of Nebraska-Lincoln**

This project is in the initial stages. Two PhD students have been identified to work on the project. They will arrive on campus in August, 2018. In May we will have our first project meeting to discuss project details. I have contacted Satellite Imaging Corporation so they can begin to identify available historical Rapid Eye Images of our study site. In the next year we plan on conducting the following:

- Obtain all images that will be used to identify encroachment of the Eastern Red Cedar
- Collect data for surface and groundwater models
- Develop framework and boundary conditions for models

A timeline for the complete project is in the following table.

April 2019 to March 2020	<ul style="list-style-type: none"><li>• Identify current and historical Eastern Red Cedar status in the study site</li><li>• Develop framework for Red Cedar prediction model</li><li>• Construct SWAT and MODFLOW models</li></ul>
April 2020 to March 2021	<ul style="list-style-type: none"><li>• Predict Red Cedar encroachment based on current and alternative management for the next 10-100 years</li><li>• Calibrate and conduct simulations with various levels of Red Cedar encroachment</li><li>• Present findings at national conference</li></ul>
April 2021 to December 2021	<ul style="list-style-type: none"><li>• Quantify impact of Red Cedar encroachment on water resources in the Loup and Platte River watersheds</li><li>• Provide report to DNR</li><li>• Present findings at national conference</li></ul>