Project Overview:

Intern: David Hansen
Major: Chemical Engineering
School: University of Nebraska -Lincoln

Company Background

The Nebraska Department of Environmental Quality (NDEQ) is a governmental agency with a mission to protect the quality of Nebraska's environment including our air, land, and water resources. The NDEQ enforces regulations and provides technical assistance to help businesses comply with regulations.

Project Description

The NDEQ and the University of Nebraska –Lincoln (UNL) worked together to help reduce energy use at wastewater treatment plants in Nebraska as well as helped provide asset management plans for a sustained future. During the summer of 2016 the facilities in the communities of Ogallala and Arnold were assessed. Energy efficiency (E2) and pollution prevention (P2) recommendations were provided to the communities in detailed management reports. The NDEQ, UNL, and the Nebraska Energy Office (NEO) collaborated on a project to benchmark Nebraska wastewater treatment facilities. The goal of the benchmarking is to provide a method of comparison in order to identify and prioritize P2 and E2 opportunities and infrastructure upgrades. Data was collected from the mechanical facilities in Nebraska and compiled for this project. Narratives and assessments for wastewater treatment facilities for the communities of Kimball, Sidney, and Gothenburg Nebraska. This document presents the management reports and the benchmarking assessments. It provides detailed analysis and calculations as a basis for providing P2 and E2 recommendations. A discussion of impact of the recommendations is also included.

Pollution Prevention Benefits

Pollution prevention can be realized through direct reduction of energy use at the source. This reduction in energy use directly relates to a reduction in carbon emissions. Reducing the energy use at these facilities benefits them by reducing operating costs and improving their public image. A summary presenting the benefits associated with implementation of recommendations provided in this report are shown in Table 1.

Table 1: Summary of Recommendation Benefits by Site

Site	Annual Energy Savings	Annual Cost Savings	Annual Greenhouse Gas Reduction
Ogallala WWTF	350,000 kWh/yr	$25,000/yr	350 $MTCO_2e$
Arnold WWTF	30,000 kWh/yr	$3,000/yr	30 $MTCO_2e$
Total	**380,000 kWh/yr**	**$28,000/yr**	**380 $MTCO_2e$**