**Memorandum**

**To: Deborah Sills, Ph.D.**

**From: Lauren O’Sullivan**

**Date: September 24, 2013**

**Class: CENG 340, Environmental Engineering**

**Lab 3: Nonlinear Curve Fitting, Part 2**

**OBJECTIVE**

**The objective of this lab was to be able to detect chlordane dissolved in water. Chlordane is a highly toxic chemical that has been banned in the US or over 25 years. In order to understand how to solve this problem, first we must know the concentrations. The water in Ames, Iowa has been chosen as a sample for testing because it is known to be contaminated. Our firm has been hired to assess whether treating the water with granulated activated carbon (GAC) will reduce the MCL level.**

**METHODS**

**In order to measure the concentration of aqueous chlordane our firm has created a team to conduct a laboratory study. This study has provided parameters that will be used to design a treatment unit. My job was to take the data collected by a co-worker and fit the data to one of the two sorption isotherms.**

**RESULTS AND DISCUSSION**

**During this lab we were able to find the parameters for the sorption isotherm of chlordane on GAC. After the tests and trying to fit the data, I have compiled the data in figure 1 and determined that it best fits the** q=KC(1/n) model fit (Where q=mass of adsorbate absorbed per mass of absorbent at equilibrium, C=concentration of adsorbate in the aqueous phase at equilibrium, K=Freundlich isotherm soil-water partition coefficient and 1/n=Freundlich isotherm intensity parameters). This fit came after testing a few equations and previously practicing this technique with other data.



Figure 1. Solid concentration of adsorbate by aqueous concentration of adsorbate. . Circles represent data points and line represents a fitted model by the equation q=KC(1/n) .