**Memorandum**

**To:** Fellow Co-worker

**From:** Paul Hook

**Date:** September 24, 2013

**Re:** Fitting Data with Linear and Freundlich Isotherms

**OBJECTIVE**

The objective of my analysis was to determine which type of sorption isotherm best fit the data you collected: a Linear isotherm, or a Freundlich isotherm.

**METHODS**

To complete my analysis, your data set was used in conjunction with KaleidaGraph software to plot the collected data set and fit each sorption isotherm model to this data. Due to the obvious nonlinear trend of the data, goodness of fit of each isotherm was determined by visual inspection, as proper statistical assessment methods were unnecessary.

**RESULTS AND DISCUSSION**

After conducting graphical analysis, it was determined that a Freundlich isotherm best fit the collected data. The plotted data set and Freundlich curve fit are shown below in Figure 1.



0.4

k = 245

Figure 1. Chlordane adsorption concentrations by GAC (granulated activated carbon) with respect to dissolved chlordane concentrations as fit with a Freundlich sorption isotherm model. Circles represent individual data points and line represents Freundlich fitted curve.

Visual examination clearly shows that a Freundlich isotherm adequately fits the collected data set (Fig. 1). Furthermore, the non-linear nature of the plot prevents using a Linear isotherm to accurately fit the data (Fig. 1). In addition to determining the proper fit of the data, the KaleidaGraph software was employed to determine the Freundlich isotherm solid-water partition coefficient (k) and the Freundlich isotherm intensity parameter ( values (Fig. 1).