PROJECT NAME: **Waste Water Treatment System Design**

PROJECT DESCRIPTION:

EIS designed a waste water treatment system for a medium sized manufacturer to remove heavy metals from its waste water. Treatment system ideas were researched and the best conservative plan was created. The system was designed to be robust, and generate relatively small quantities of hazardous waste. EIS created written standard operating procedures for the system.

The client generates silver nitrate waste water which has an approximate concentration after sedimentation of approximately 1 mg/l of silver and copper. The sludge that has not been concentrated contains approximately 450 mg/l of silver. The client has had difficulty in meeting the discharge limits of 1.0 mg/l of copper and 0.34 mg/l of silver.

The system was based on time tested methods of waste water treatment for waste streams containing concentrations of heavy metals of less than 1,000 mg/l. The system was sized for a maximum flow rate of 1.0 gallon per minute, an expected flow rate of 0.16 gallons per minute. The system capacity is 460 gallons per day assuming a 24 hour day. The chemical principle includes precipitation of divalent and trivalent metals.

The system's physical principles are based on gravity precipitation / clarification, microfiltration, and ion exchange adsorption. The system incorporates two ion exchange beds, a cation and an anion to capture positively and negatively charged ions.