

Residuals Management

August 21, 2011

Abstract

The AguaClara facilities produce residuals from the entrance tank and sedimentation tank, high turbidity waste water from back washing the filter, and chemical waste from preparing chlorine solutions. These waste streams have been ignored by AguaClara because they are innocuous. Depending on national regulations it will be necessary to have a residuals management strategy. We need to provide an environmentally sound strategy for dealing with all facility residuals.

students 0.5 to 1

skills 4540

1 Introduction

The appropriate emphasis on minimizing pollution means that we need to provide clear guidance for managing residuals from AguaClara facilities. Given that we only use aluminum based coagulants the residuals that are produced by AguaClara facilities could be used to irrigate crops and the water could be allowed to percolate into soil.

2 Tasks

1. Check Ten State Standards, USEPA, and World Health Organization for guidelines and methods for water treatment plant residuals management
2. Evaluate ultimate disposal options for the solid residuals and the water. Given that the residuals are eroded soil particles, the best use is likely land application to improve soil.
 - (a) lagoons - could be used to further concentrate the solids. The water could be used for irrigation or returned to a nearby stream. The accumulated soil could be used for nearby gardens or fields. If no irrigation is needed or possible, then the water could be diverted to a nearby stream.

- (b) irrigation - ridge/furrow irrigation could be used to allow the solids to add to the soil in a nearby garden.
- 3. Estimate the total volume of liquid sludge that will be produced by a plant. Create equations to predict this volume based on raw water turbidity.
- 4. Add the residuals management calculations to Mathcad, a description of our guidelines to the design specifications document, and if there are additions to the design, then create the necessary drawing scripts. It is also possible that we will simply specify design guidelines for the lagoons.
- 5. Write a section on residuals management options for the design specifications document that is delivered by the AguaClara Design Tool.