Challenges Sedimentation Spring 2011

Challenges Sedimentation Spring 2011

The new inlet manifold design with the perpendicular nozzles will likely eliminate the large circulation current in the bottom of the sedimentation tanks that cause flocs to rise at the one end of the sed tank. Now we have a new challenge of also creating a sedimentation tank geometry that prevents any flocs from settling out so that a floc blanket forms quickly and reliably. Matt Hurst will be providing guidance for this geometry in the coming weeks. The geometry changes will likely require additional modifications to the inlet manifold as well as to the very bottom of the tank. It may be possible to build a small scale model of a sedimentation tank with a floc suspension feed to test the effects of the tank bottom geometry.

The bottom of the sedimentation tank will need to be designed so that any flocs that settle out on the sloping surfaces of the tank are resuspended by the jets of water coming from the inlet manifold. Making a design that works is going to require creative play with geometry and fluids.

Figure 1. Inlet manifold pipe with perpendicular nozzles being lowered into the sedimentation tank at Agalteca, Honduras on January 16, 2011.

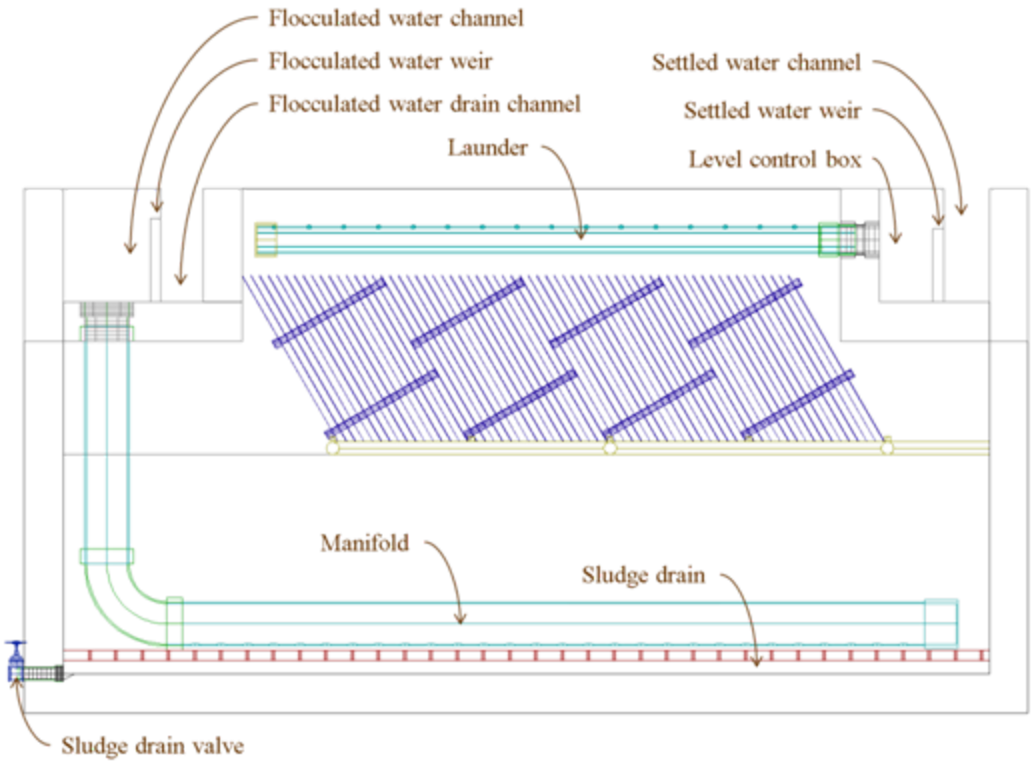

Figure 2. Cross sectional view of an AguaClara sedimentation tank that does not yet have the new inlet manifold design.