Typically, most operators run a 30-minute settling test and write down the settled volume of the sludge at the end of 30 minutes; however, this value does not supply settling characteristics of the sludge to the operator. How well is the sludge settling? Is the sludge age appropriate? Are there too many filamentous organisms present? Are there too many MLSS in the aeration basin? What helps answer these questions is to create a settling curve from the 30-minute settling test.

When running this test, you should record the settled sludge volume every 5 minutes for 30 minutes and then once more at 45 and 60 minutes. If operators record these volumes, they can then create the graph. These settling curves are instructive tools on how the sludge is settling and can help with troubleshooting problems.

This graph shows a good settling sludge, indicative of good floc forming bacteria and low numbers of filamentous organisms. The environmental conditions that exist within this plant should be maintained.

This graph shows a poor settling sludge. Poor settling can be caused by excessive filamentous organisms, slime bulking, or too many solids within the system (hindered settling). To differ between excessive filamentous organisms and hindered settling, a diluted 30-minute settling test can be performed. If the curve improves, there are too many solids and wasting should be increased. If the curve does not improve, filamentous organisms are likely to blame. They need to be microscopically identified and the environmental conditions that contribute to filament growth should be altered accordingly.
This graph shows sludge that “settles like a rock.” Sludge that is this fast settling is usually an old sludge age and appears grainy. Since old sludge age is the likely problem, wasting rates need to be increased in order to increase the F/M ratio and decrease the sludge age.

In order to benefit the most from the curves, it is best to run the 30-minute settling test with each MLSS analysis. Generate the graphs at least once a week. Please contact me (amy.schmidt@wisconsin.gov) or Jack Saltes (jack.saltes@wisconsin.gov) for the Excel spreadsheet for easy curve generation.