

Dashboard / ... / Summer 2008 Demo Plant Activities

Summer 2008 Demo Plant Sedimentation Tank Research

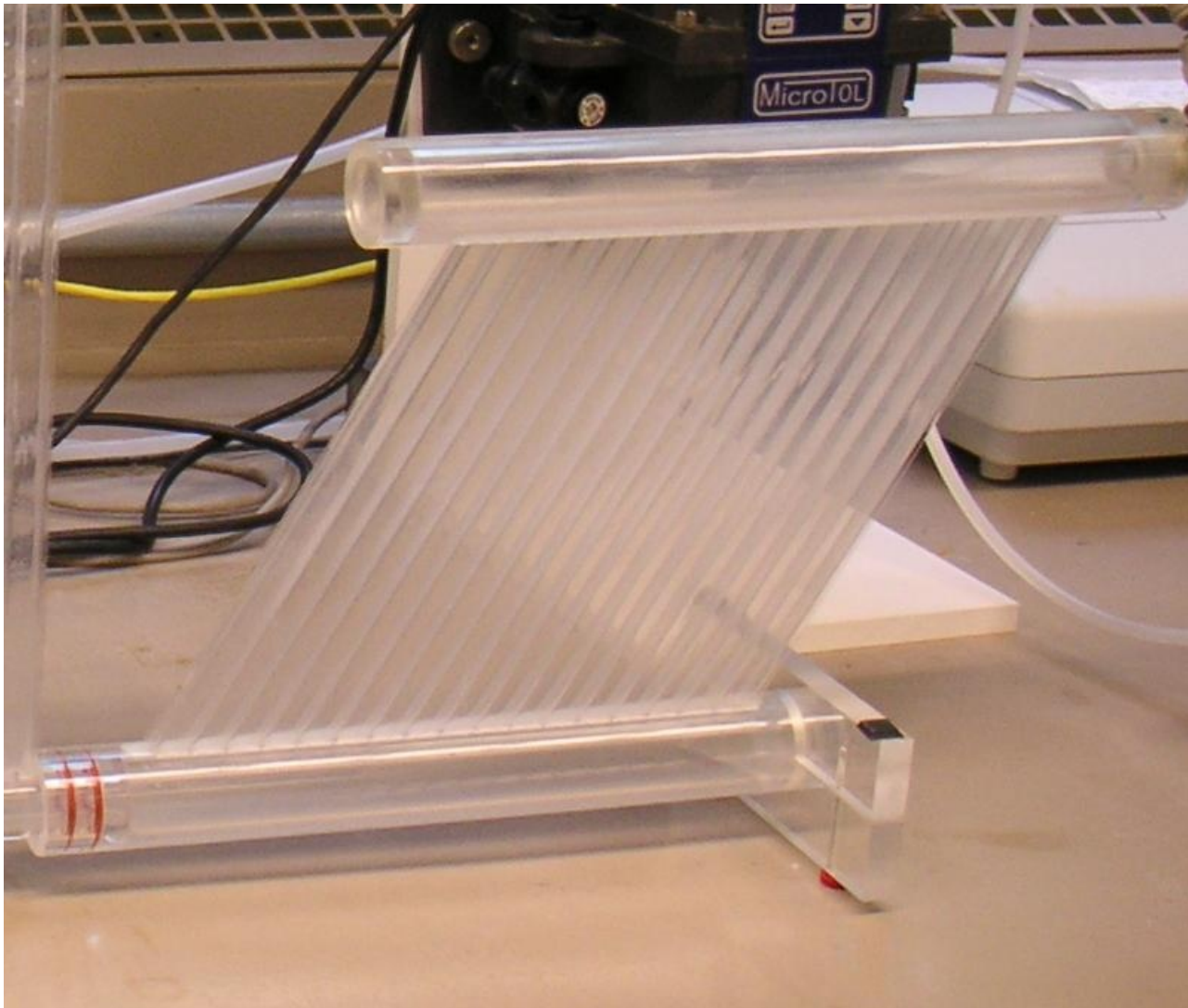
Created by Christina Marie Campagna, last modified by Vanish Grover on Aug 03, 2008

Sedimentation Tank Experiments

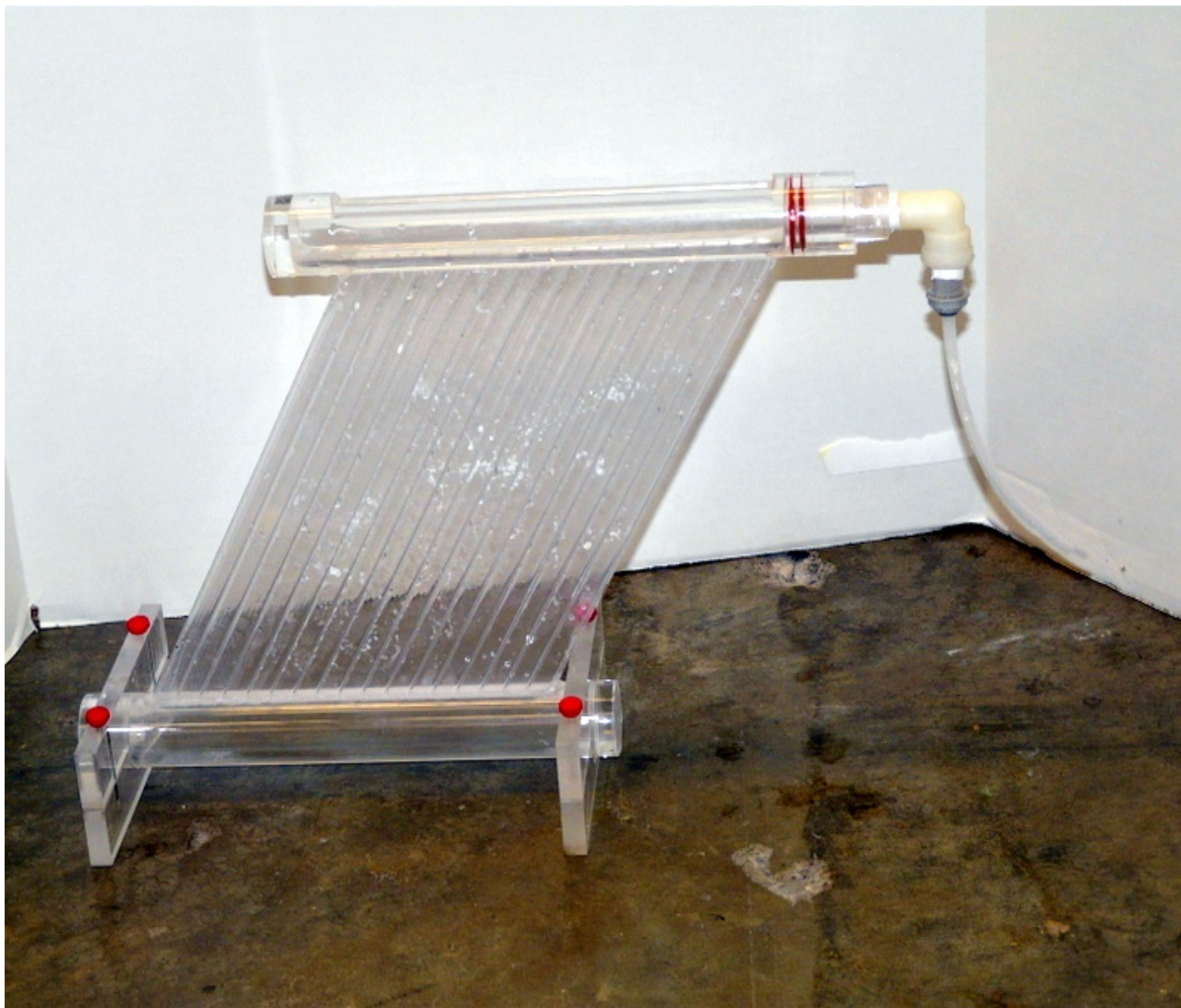
Introduction

There are three variations of sedimentation tanks that the demo plant team can use. The purpose of these experiments were to find which sedimentation tank produced the lowest effluent turbidity when run at a number of flow rates. The preferred tank will be used in the production of additional demo plants. The tanks are displayed below.

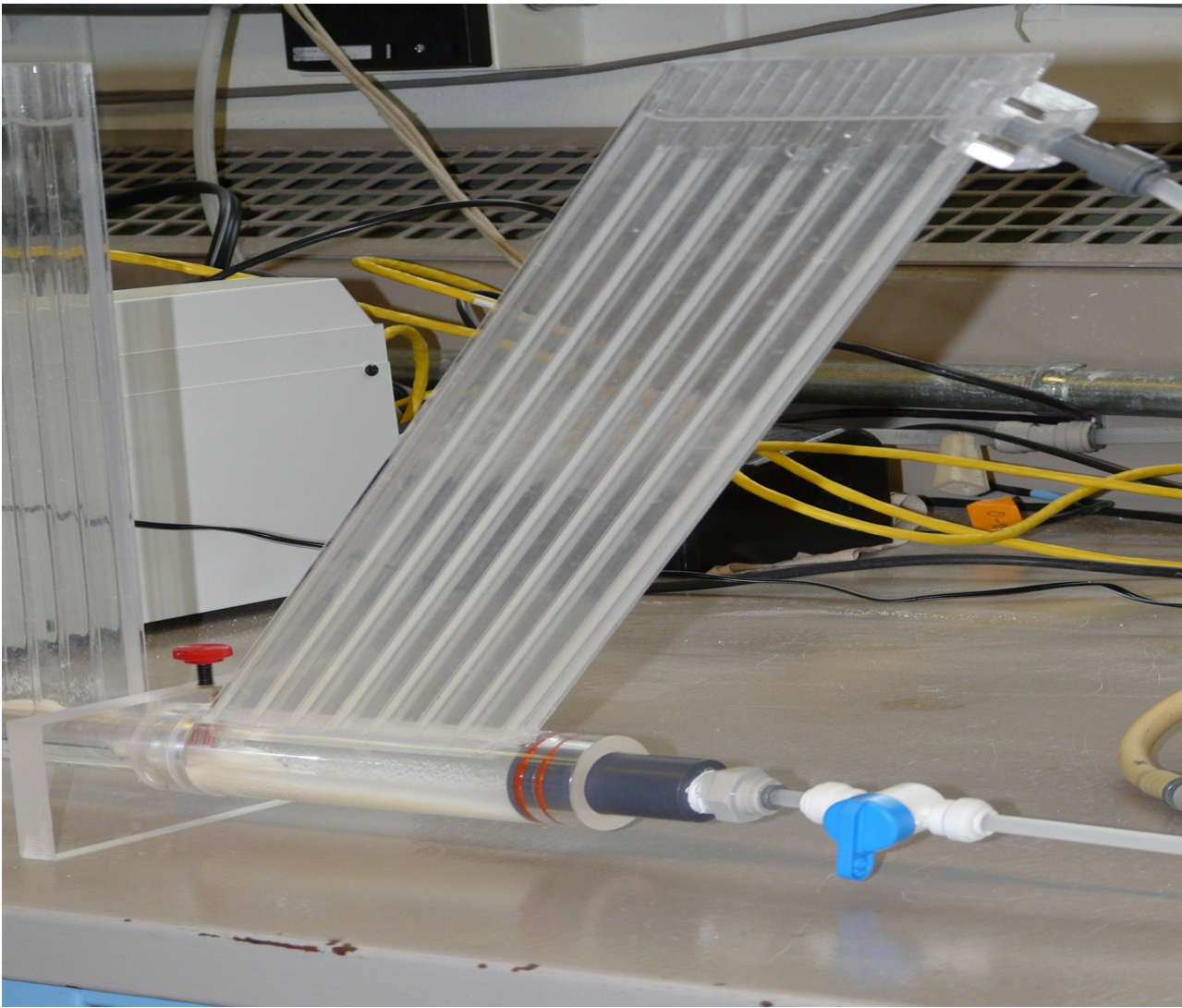
Closed Top Tank:



Open Top Tank:



Parallel Lamella Tank:

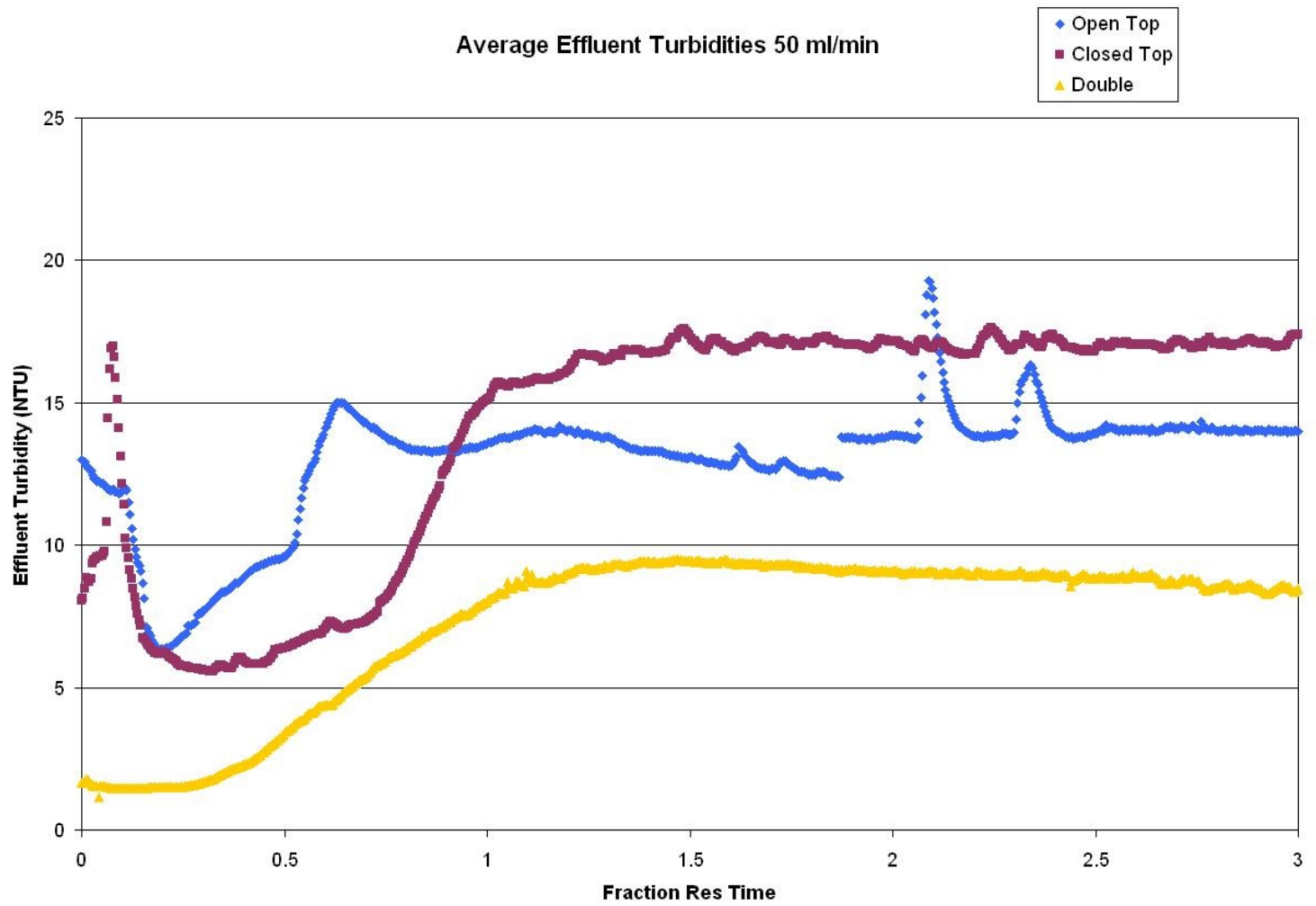


Procedure

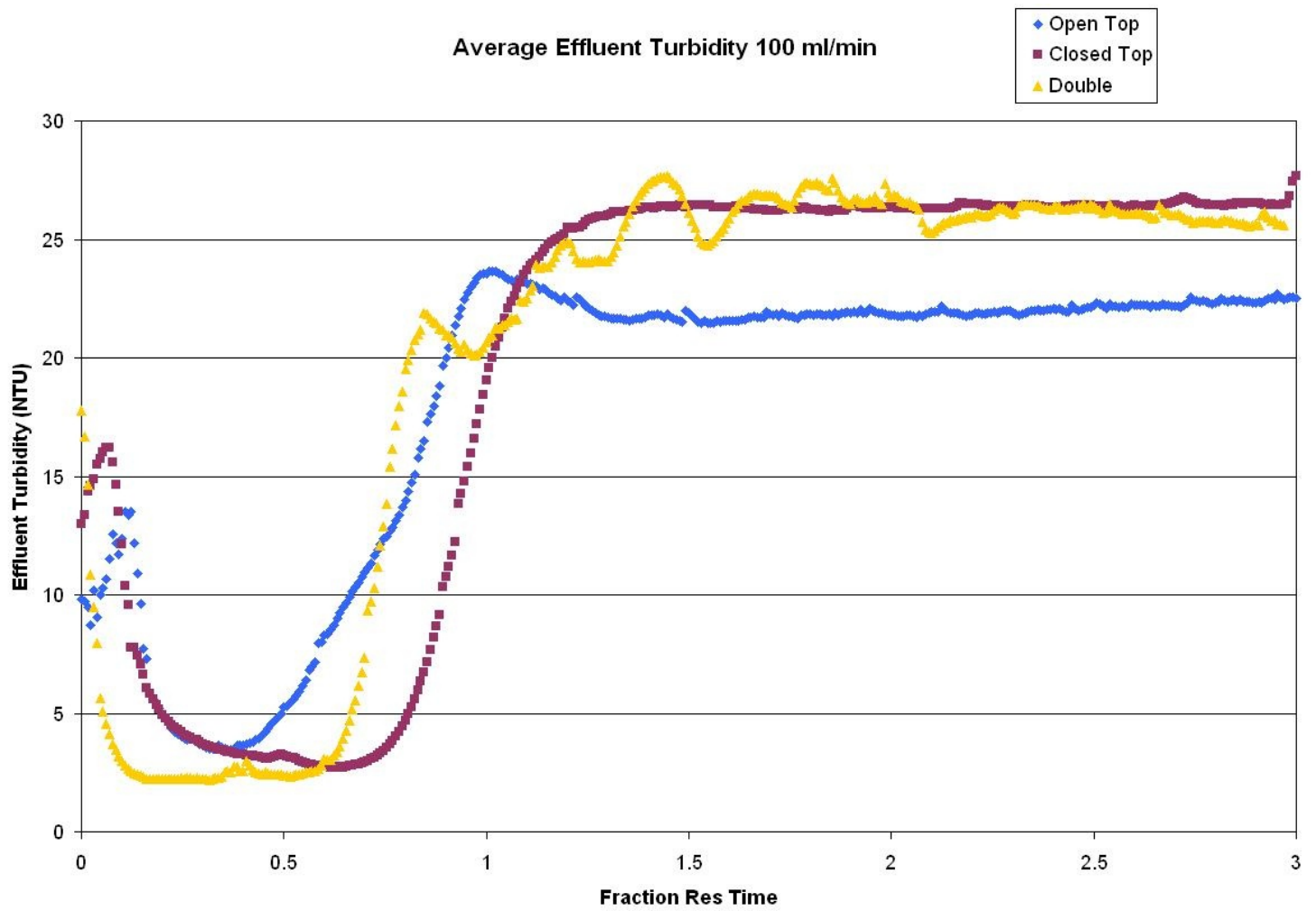
The experimental set up consists of the stock clay solution at .5 g/mL and a stock alum solution at 1 g/mL. Two peristaltic pumps controlled by the process controller control the flow of both solutions into the flocculator (the same flocculator is used in each of the three setups). The solution with the flocs then flow into the sedimentation tank and the effluent is moved to a turbidimeter by a third peristaltic pump. The Demo Plant was run with the above tank at flow rates of 50, 100, 150 mL/min.

Results

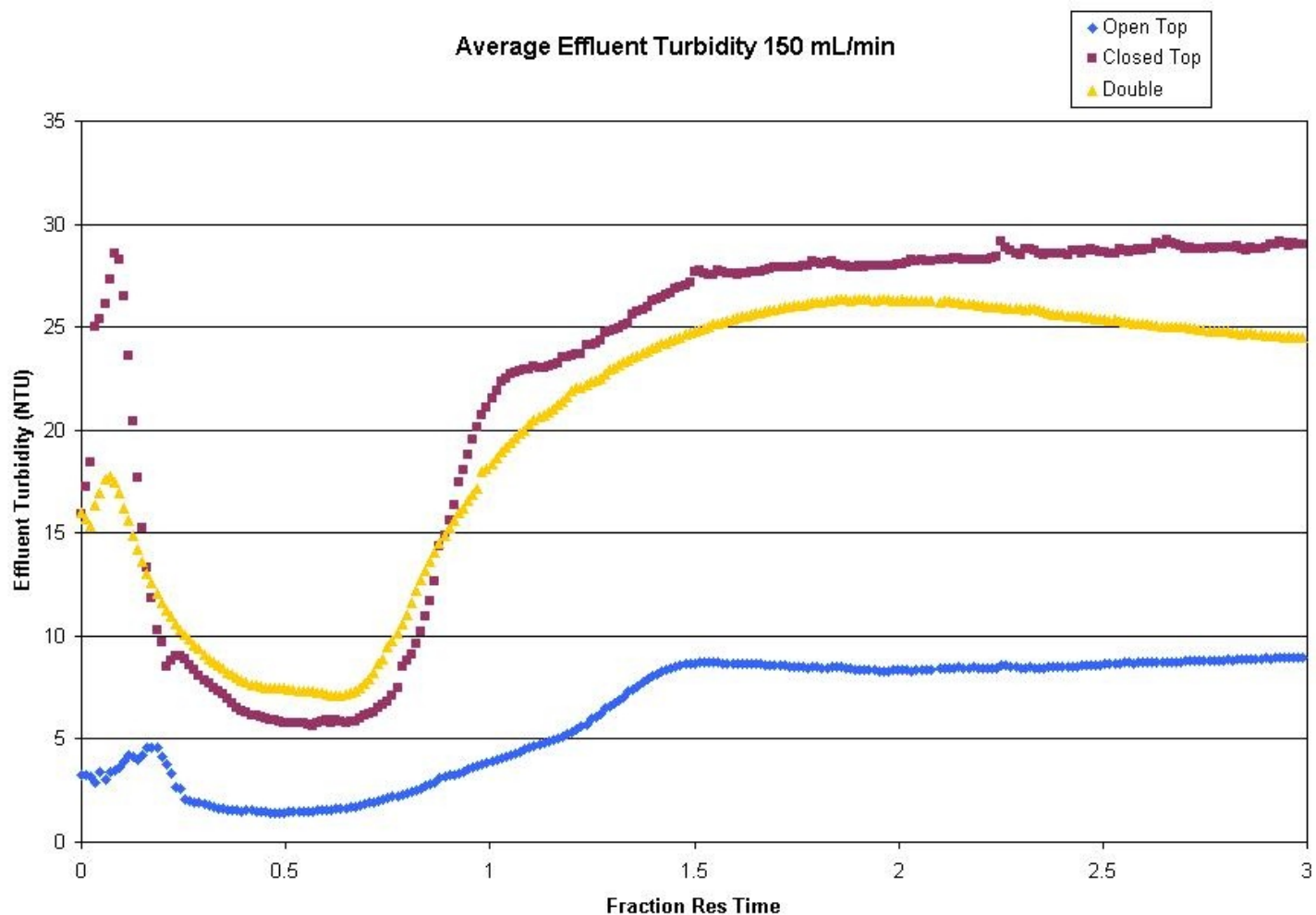
Graph of Comparison at 50mL/min:



Graph of Comparison at 100mL/min:



Graph of Comparison at 150mL/min:



Conclusion

From this data, it was observed that at 100mL/min and 150mL/min the Open Top design produced the lowest turbidity. At 50mL/min, the Parallel Lamella design resulted in the lowest turbidity. Because the ideal flow rate that the plant would be running at is 100 mL/min, the open top design was chosen for further use.

No labels

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