

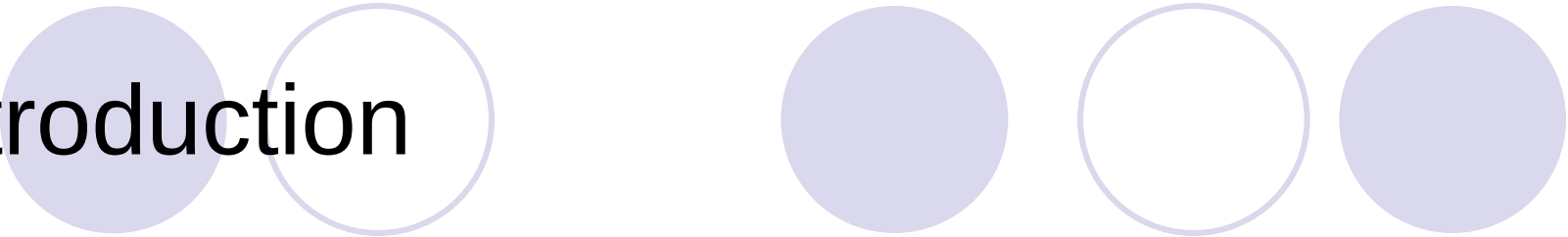


Research on Tube Settlers and Flocculation

By:

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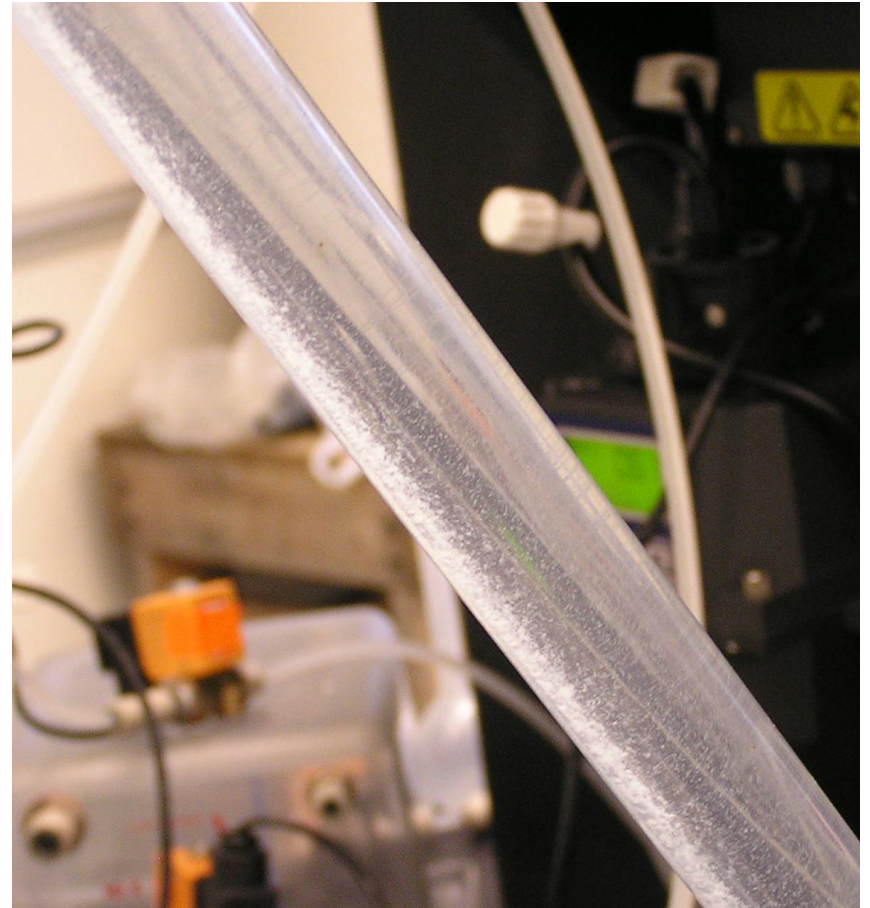


Introduction

- Coagulation/Flocculation
 - Mixing speeds
- Sedimentation and Tube Settlers
 - Critical velocity
 - Travel Distance

Objectives

- Aid in design of CEE 492 conical flocculation and sedimentation tank
- Create small scale flocculator
- Tube Settlers
 - Optimal tube diameter
 - Produce low turbidity water



Methods



- Two Separate Designs

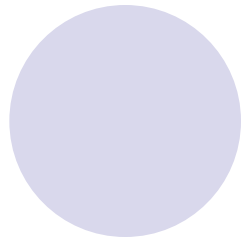
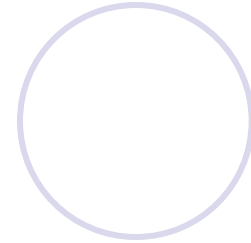
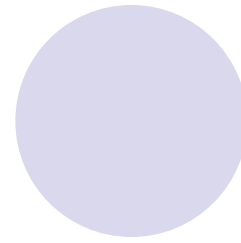
- System Design One

- Separate Flocculation and Sedimentation Tanks
 - Baffles to divide tank

- System Design Two

- Single Reactor System

Design of System 1



- Flocculation Tank

- Volume = 970 mL

- Tank Residence Time = 30 min

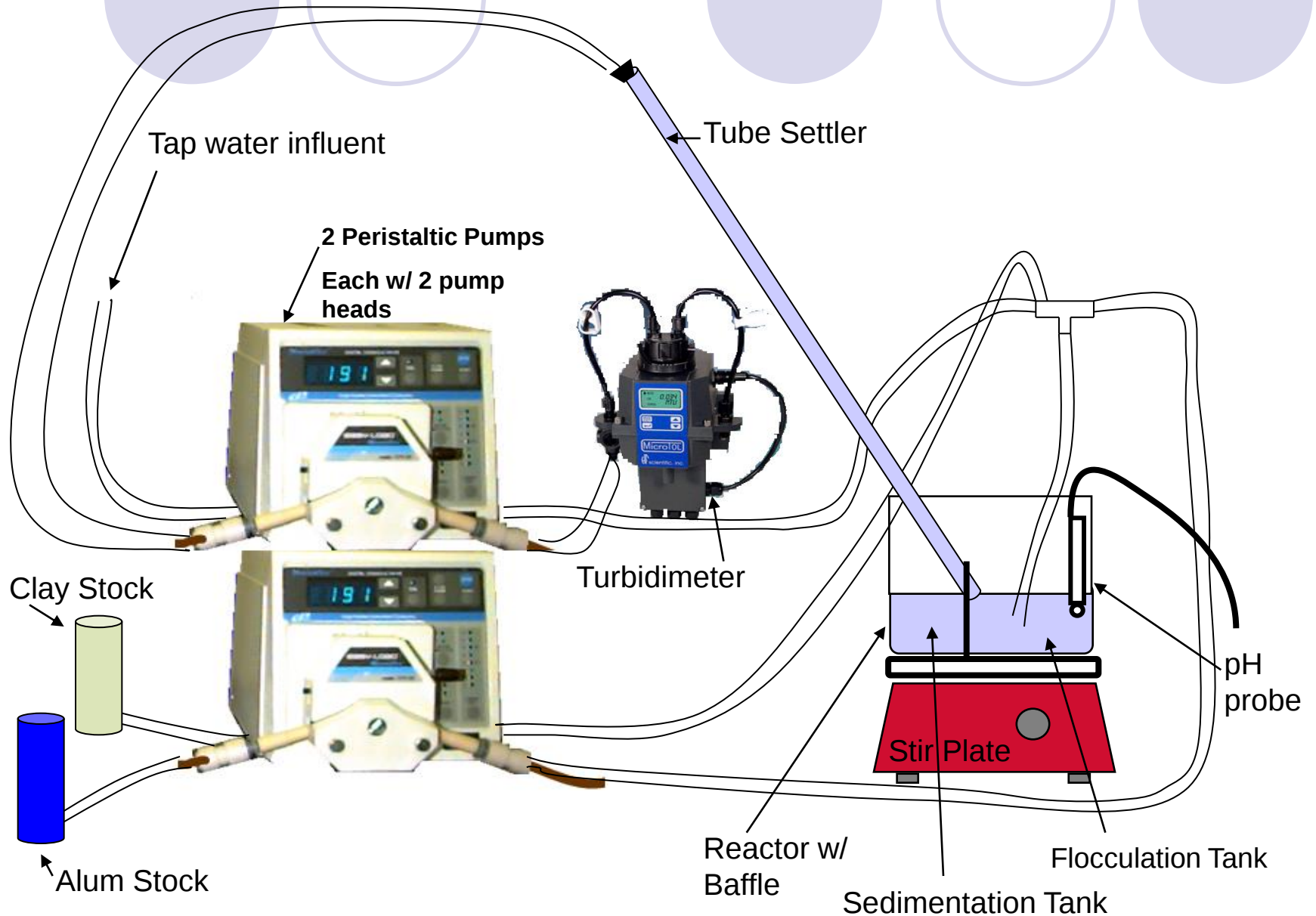
- Tube Settler

- Tube Diameter = 2.5 cm

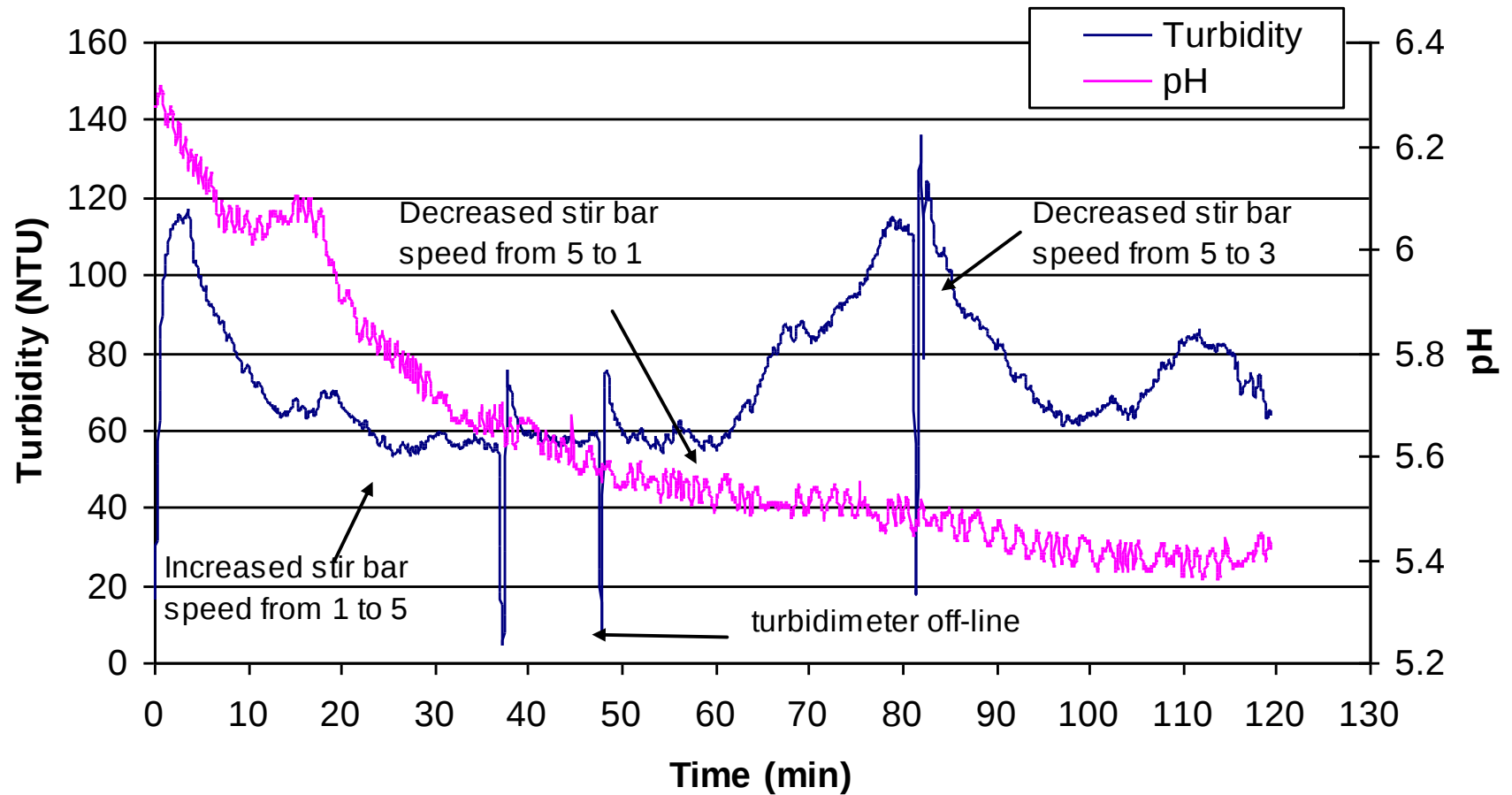
- Tube Length = 1 m

- Tube Residence Time = 12 min

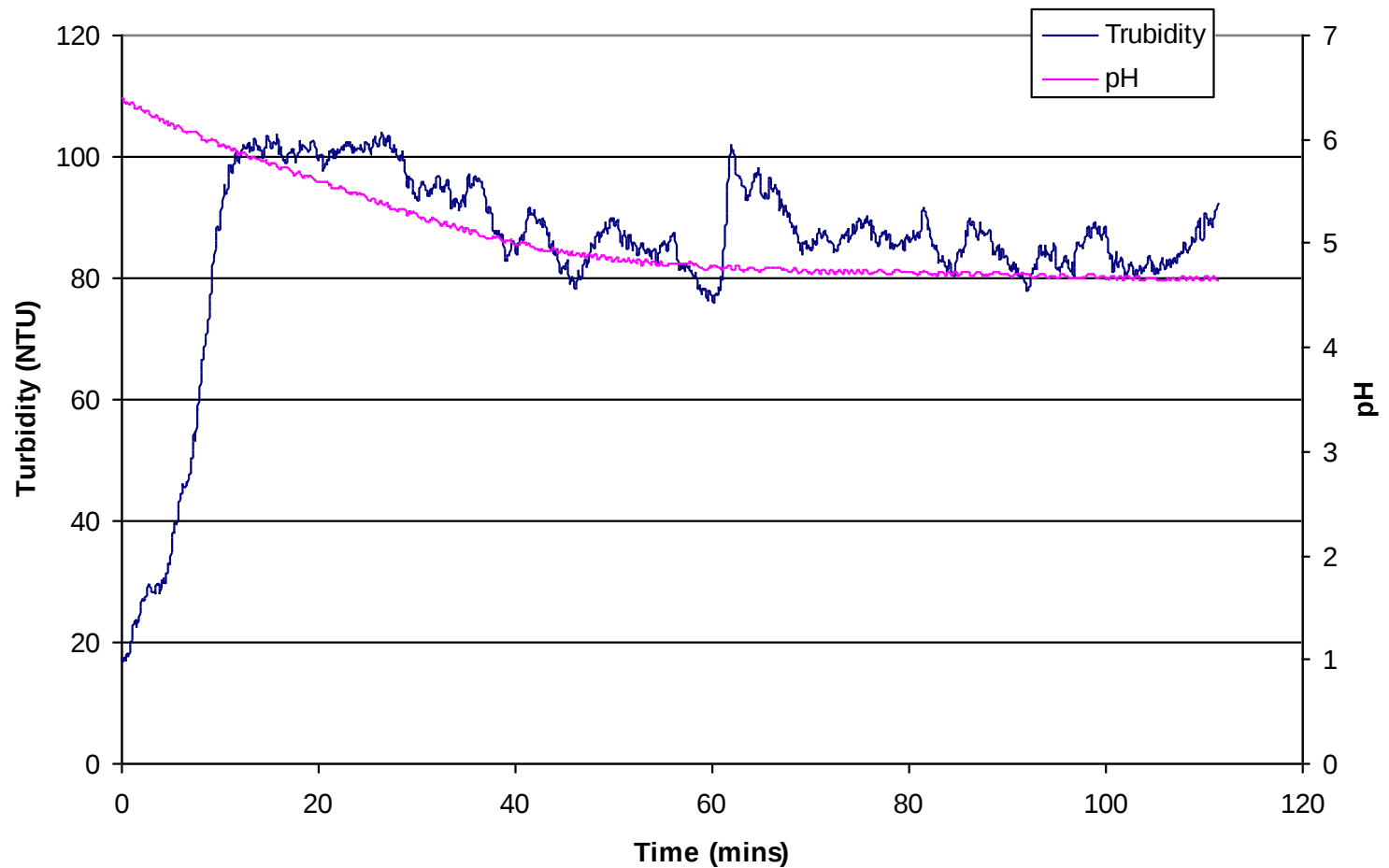
System 1 Design



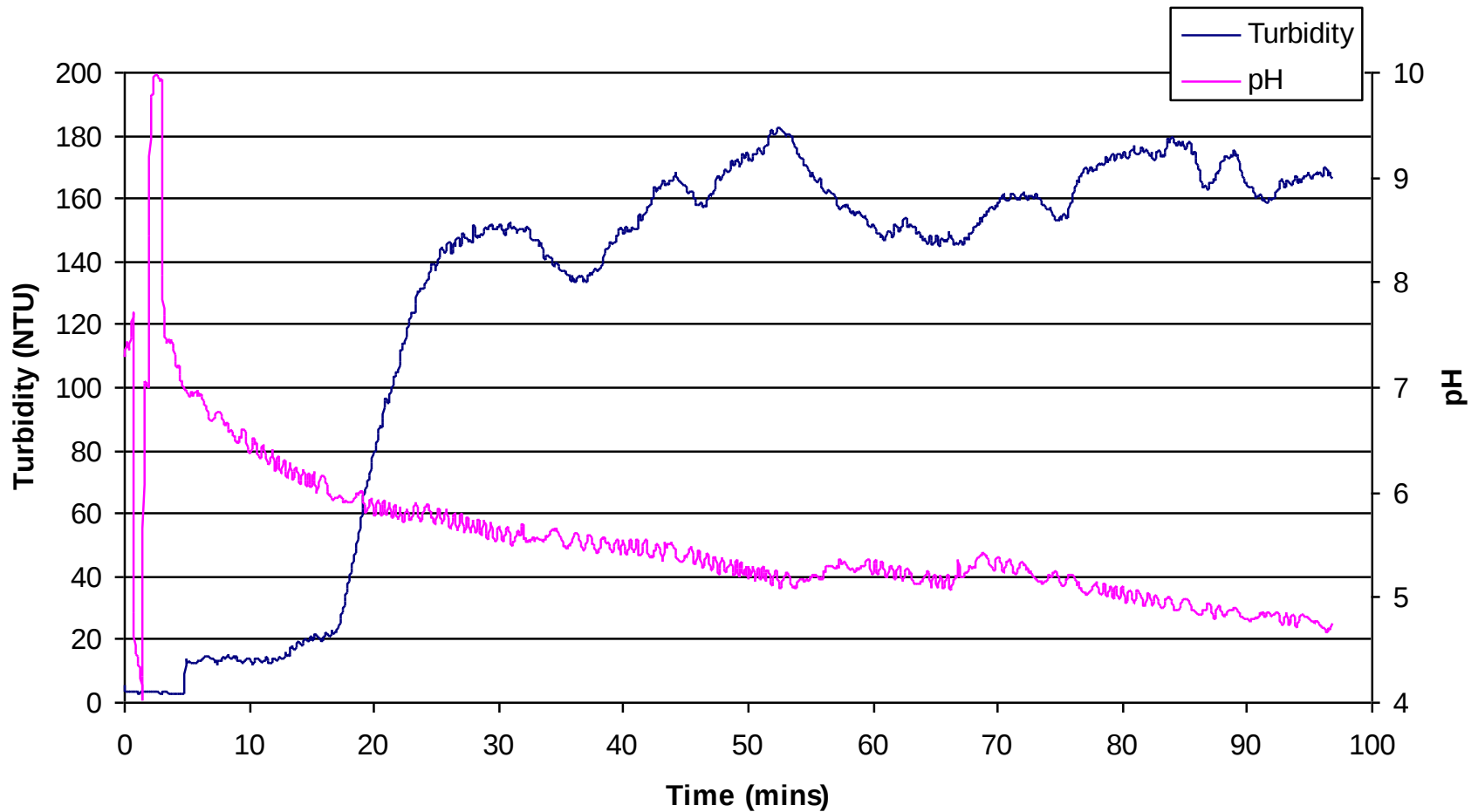
System 1 - Trial 1



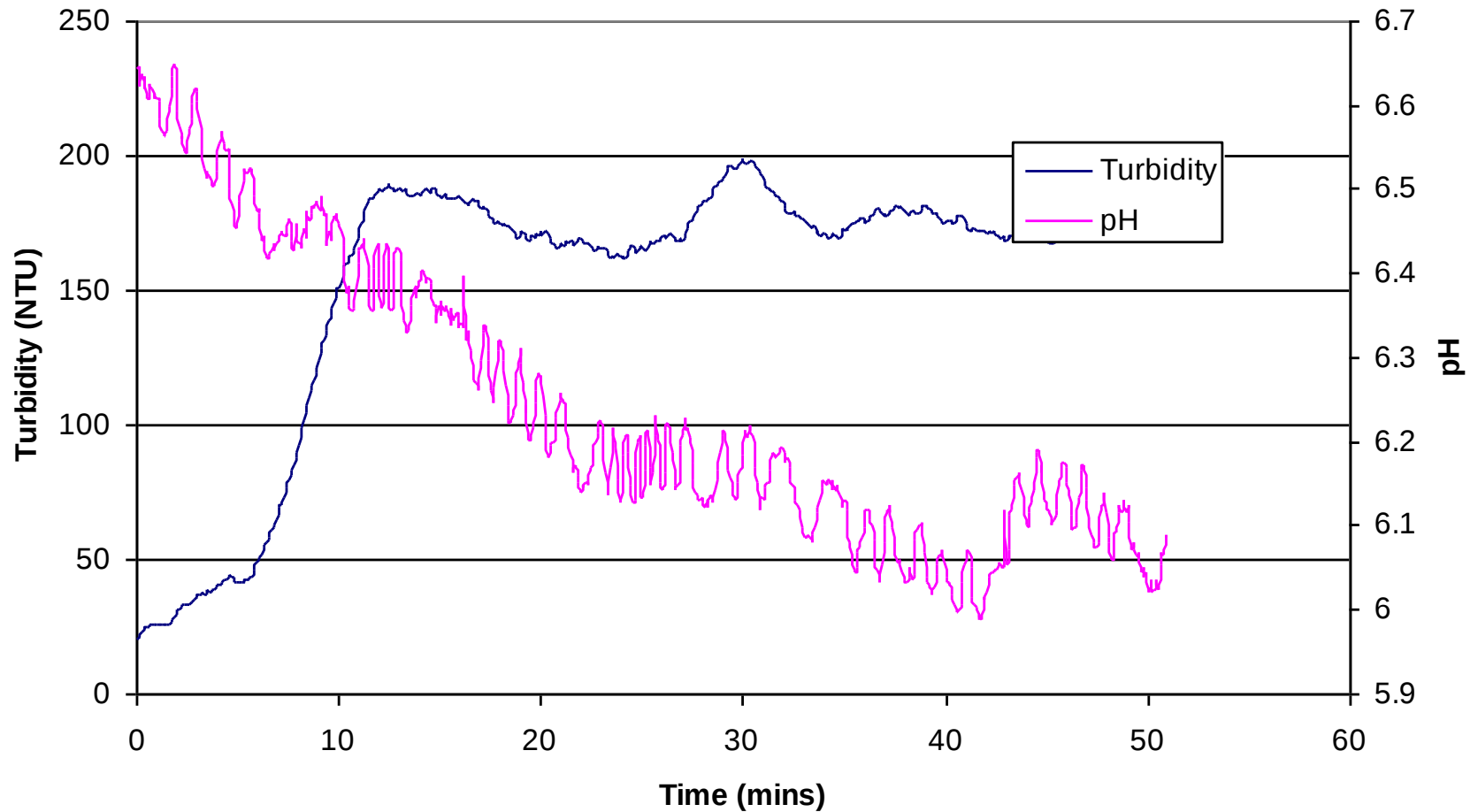
System 1 – Trial 2



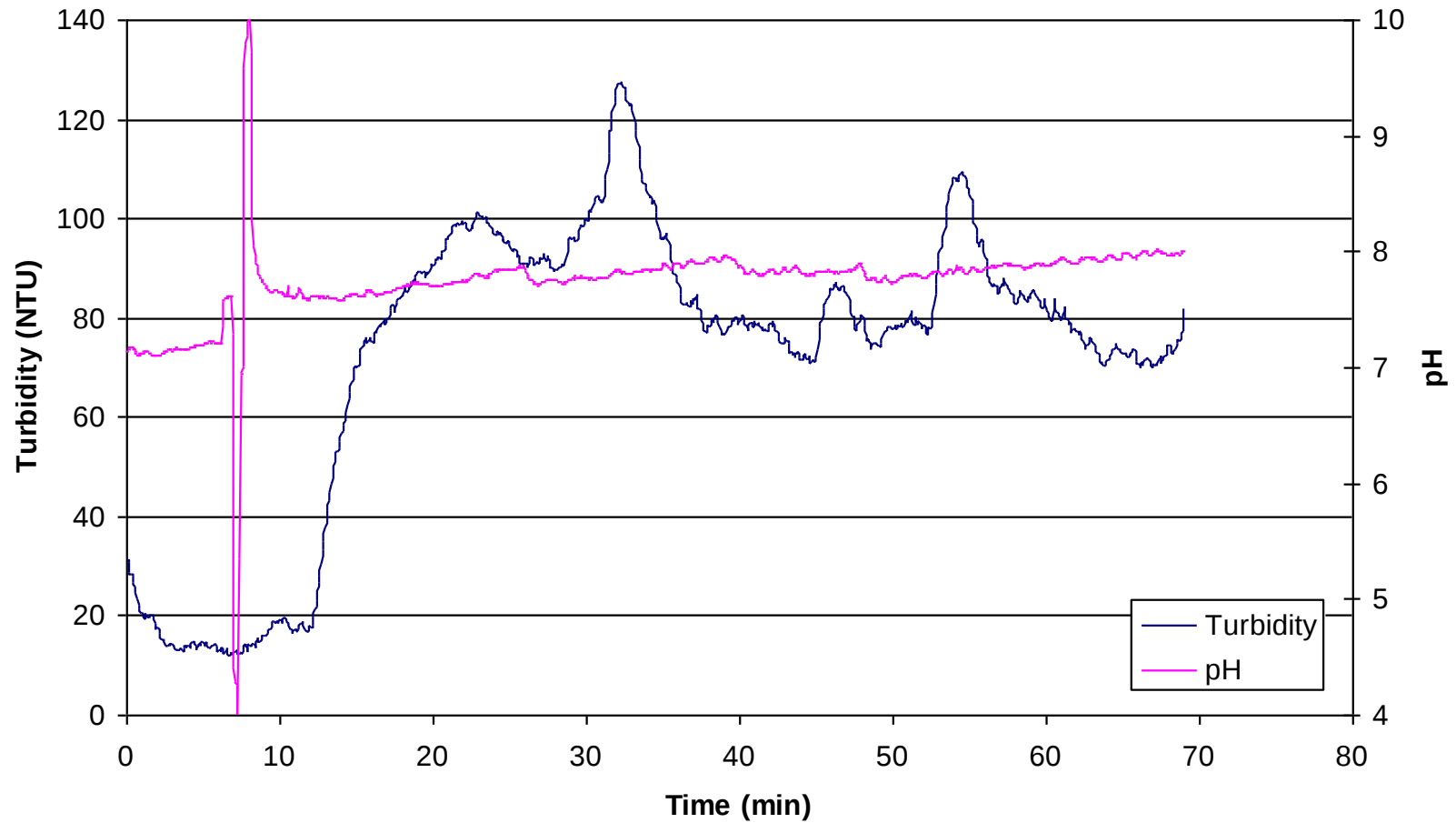
System 1- Trial 3



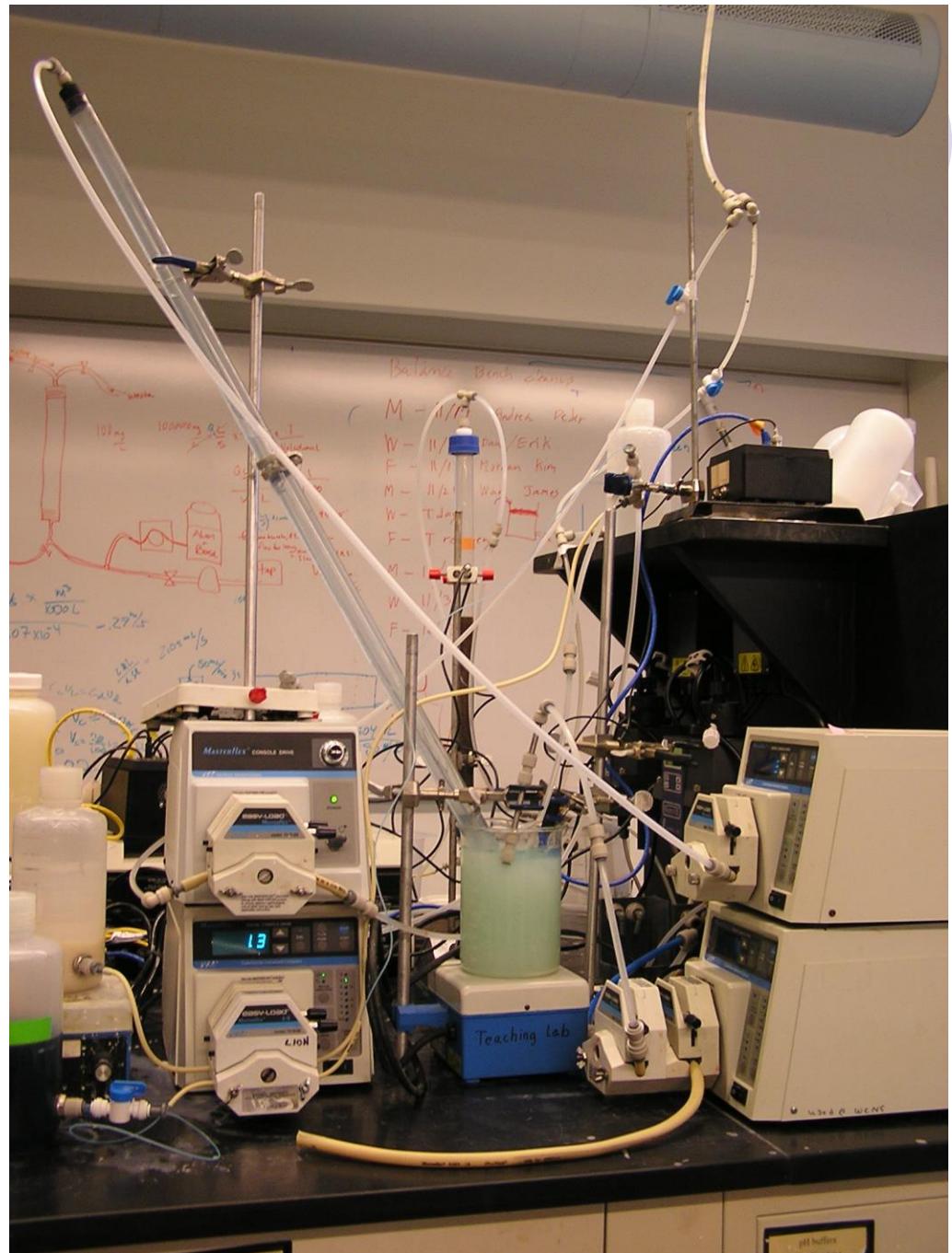
System 1 – Trial 4



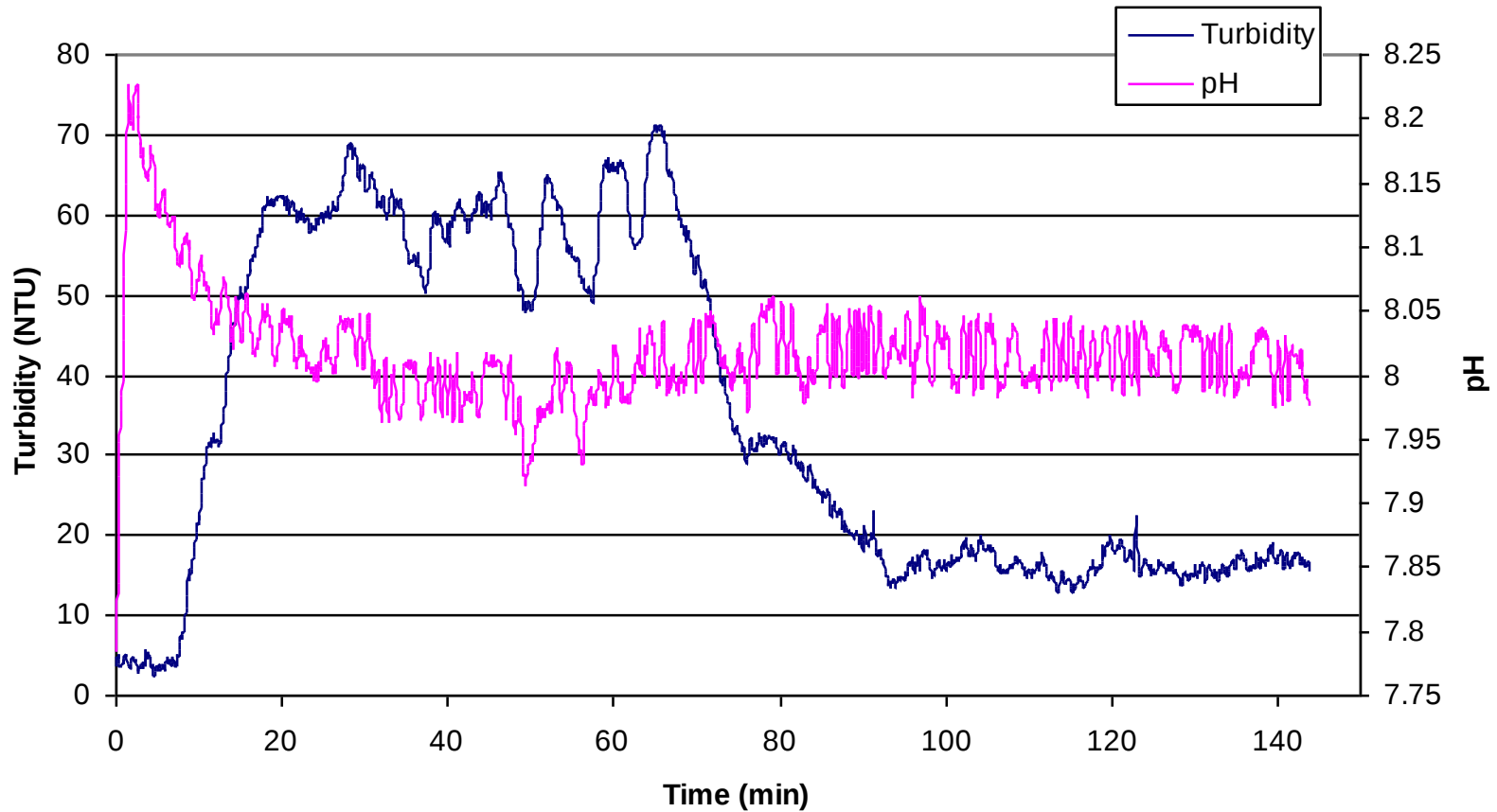
System 1 – Trial 5



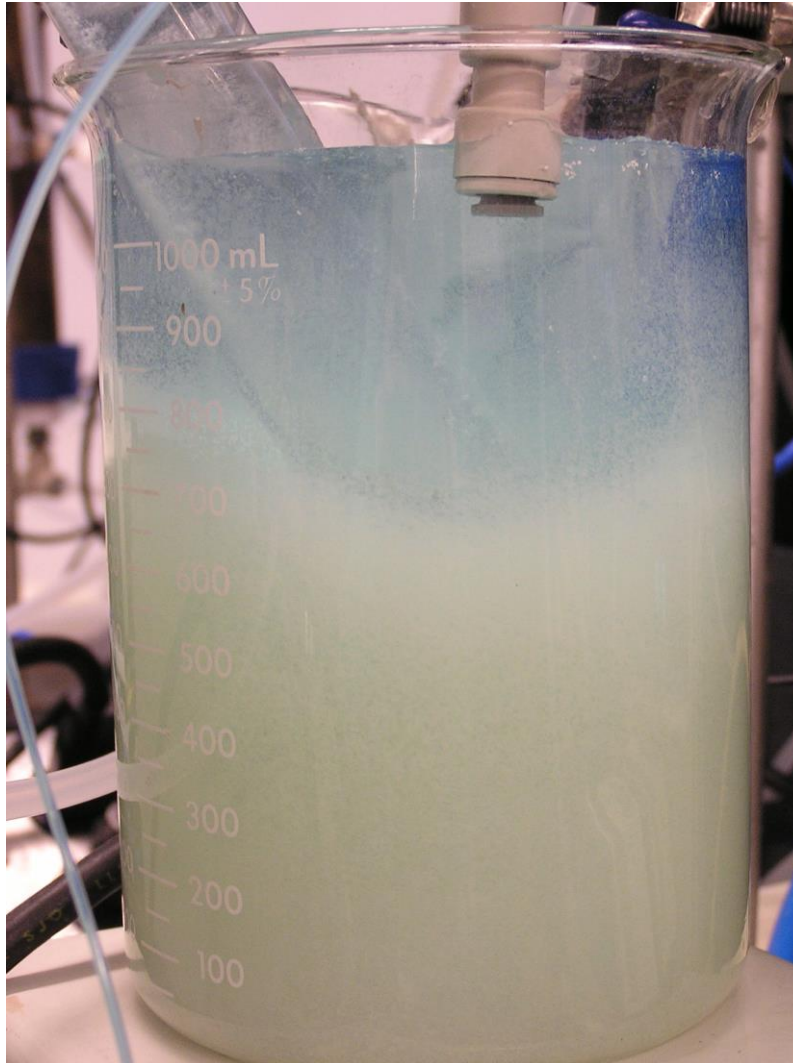
System 2 - Design



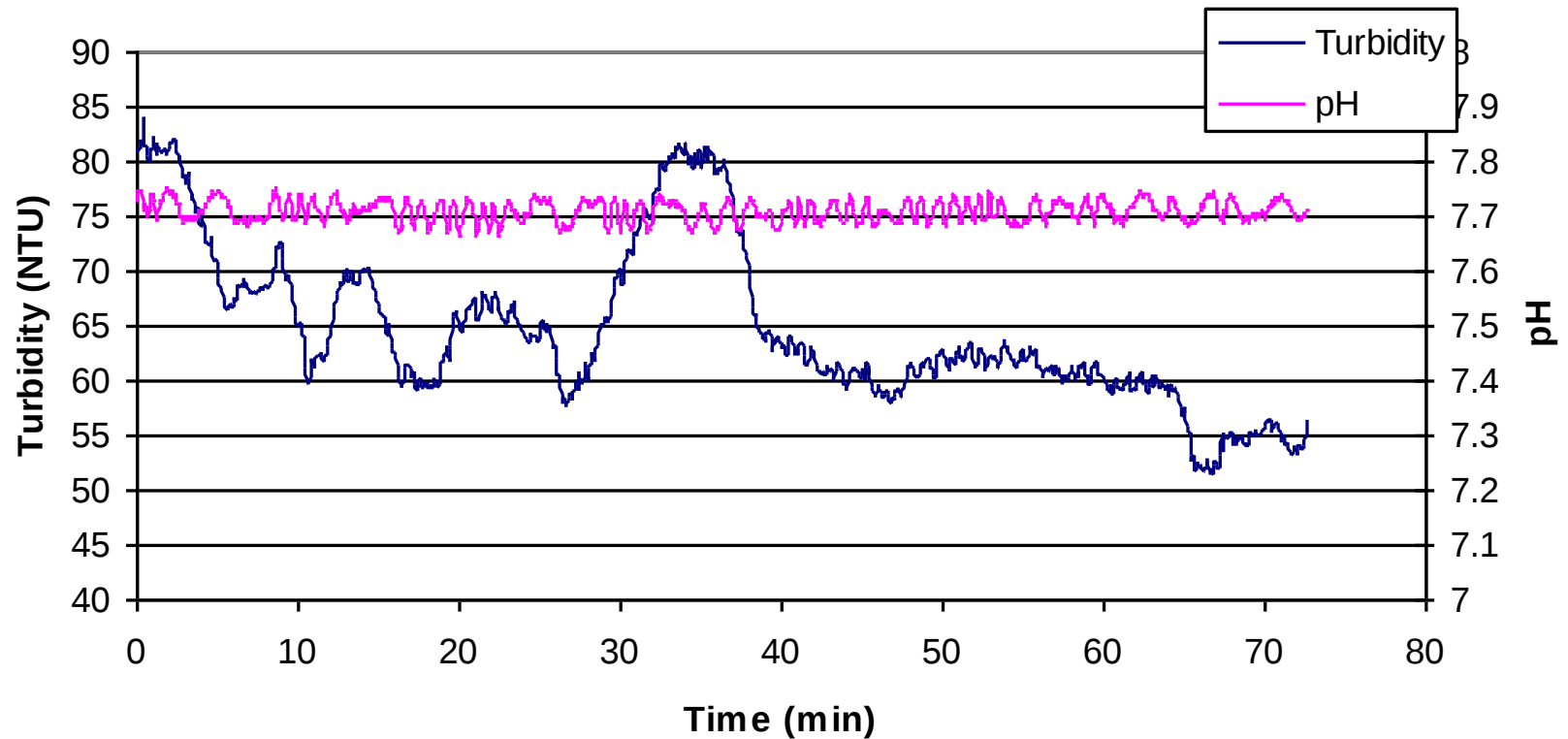
System 2- Trial 6



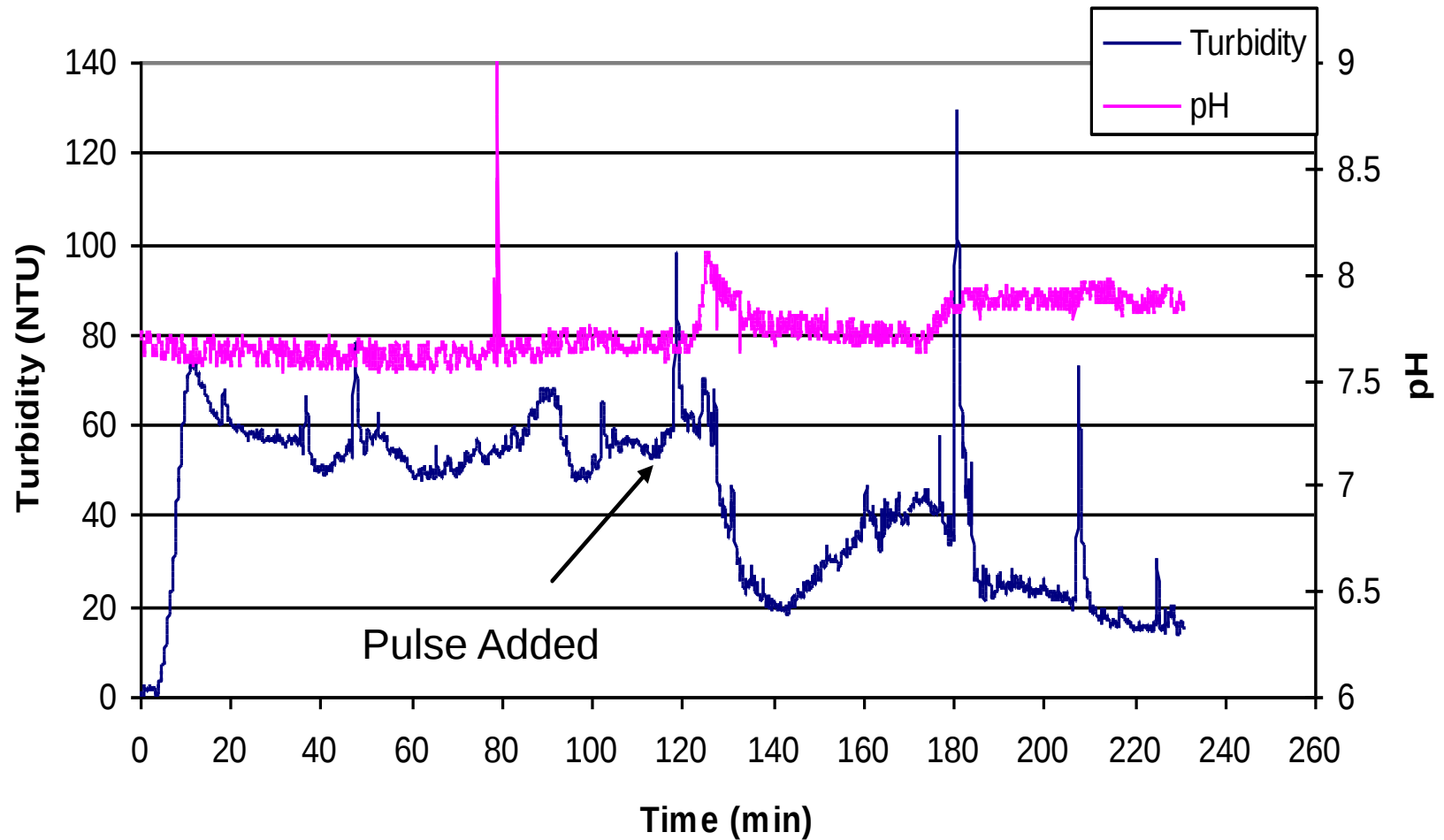
Trial 6 – Floc Blanket



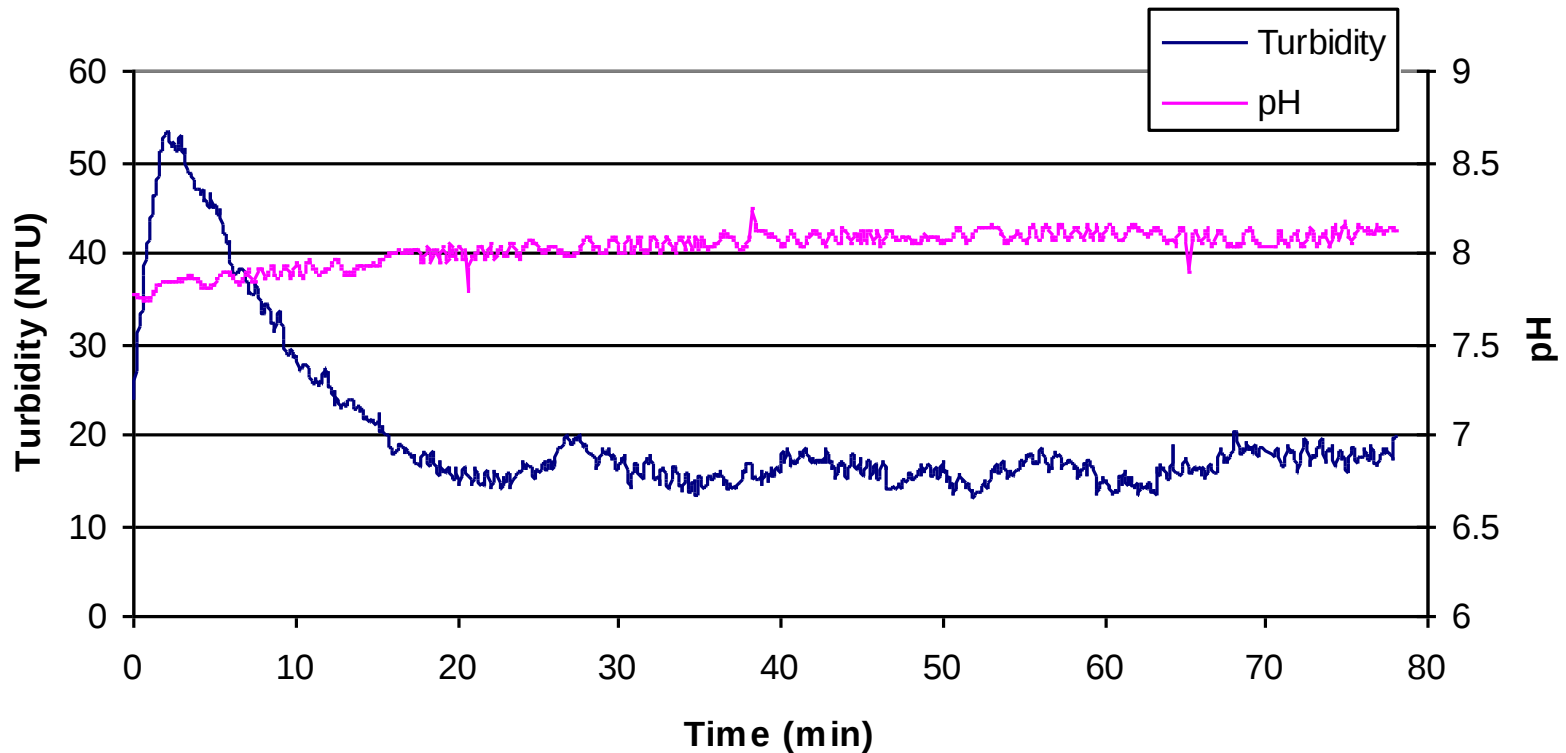
System 2 – Trial 7



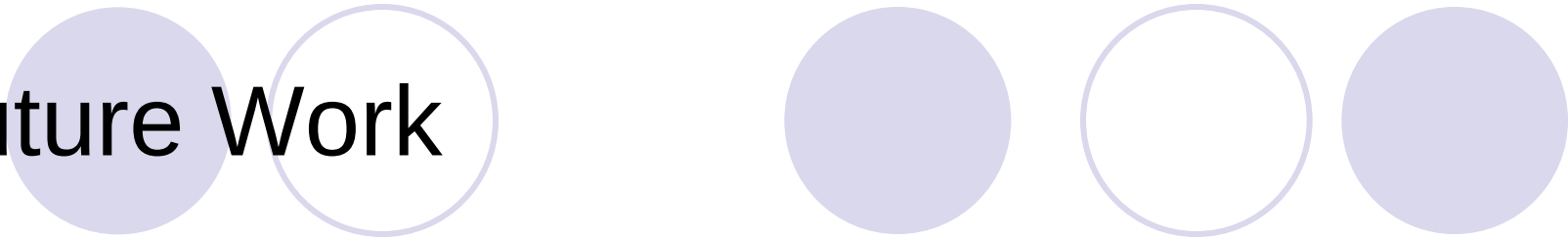
System 2 – Trial 8



System 2 – Trial 9



Future Work

The slide features decorative circles at the top. On the left, a solid light purple circle and an outlined light purple circle overlap, with the text 'Future Work' positioned over them. To the right, there are three more circles: a solid light purple circle, an outlined light purple circle, and another solid light purple circle.

- Influent Turbidities

- Threshold at which floc blanket forms

- Tube Settler Diameters