

Evaluation of Emerging Wastewater Treatment Technologies



Pardi Sukapanpotharam and Eron Jacobson
Senior Wastewater Engineers





Aerobic Granular Sludge



Ceramic Membrane Filtration

Evaluating Innovations in Wastewater Treatment

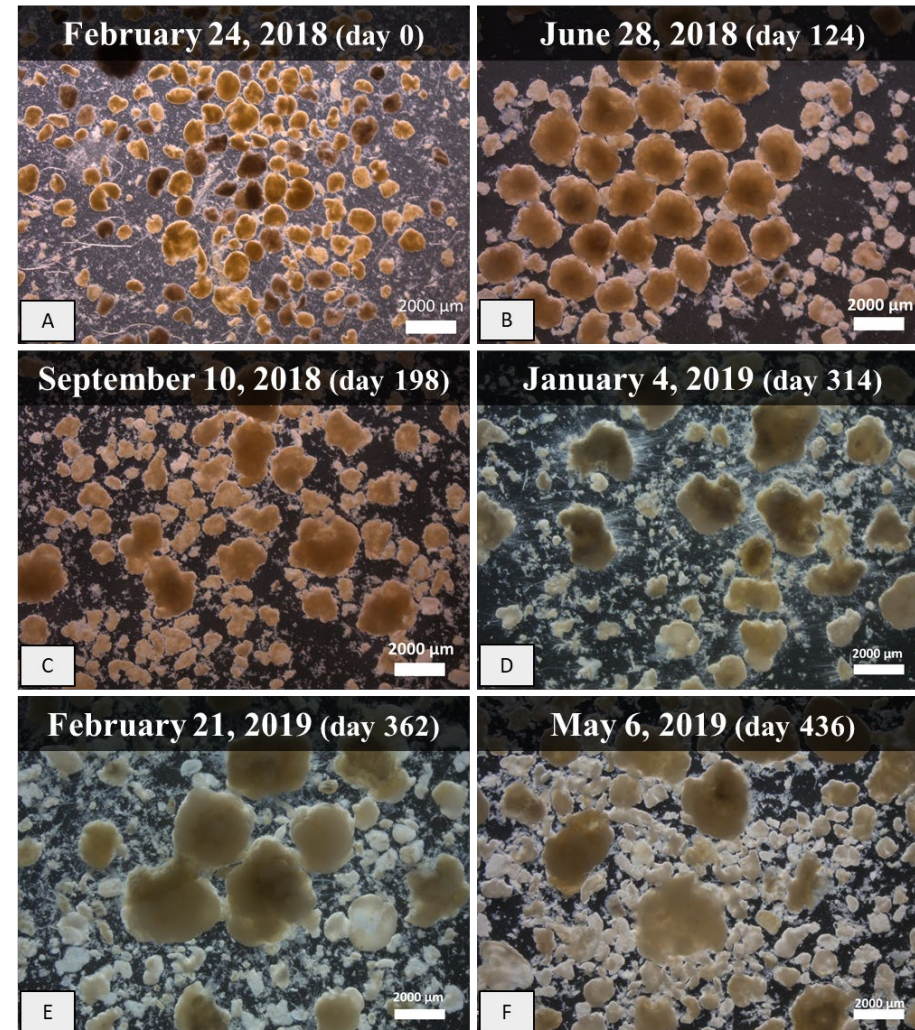
Nutrient Removal

AEROBIC GRANULAR SLUDGE

Harnessing valuable resources that would otherwise be lost.

AEROBIC GRANULAR SLUDGE

- Technology Overview
 - Granule Production
 - Bioaugmentation
- Potential Benefits
 - Enhanced nitrogen removal
 - Better solids separation
- Piloting Objectives
 - Control of Granulation
 - Process Performance
 - Configuration Proof of Concept



Source: Maxwell Armenta (KC UW Fellowship Graduate Research)

Performance

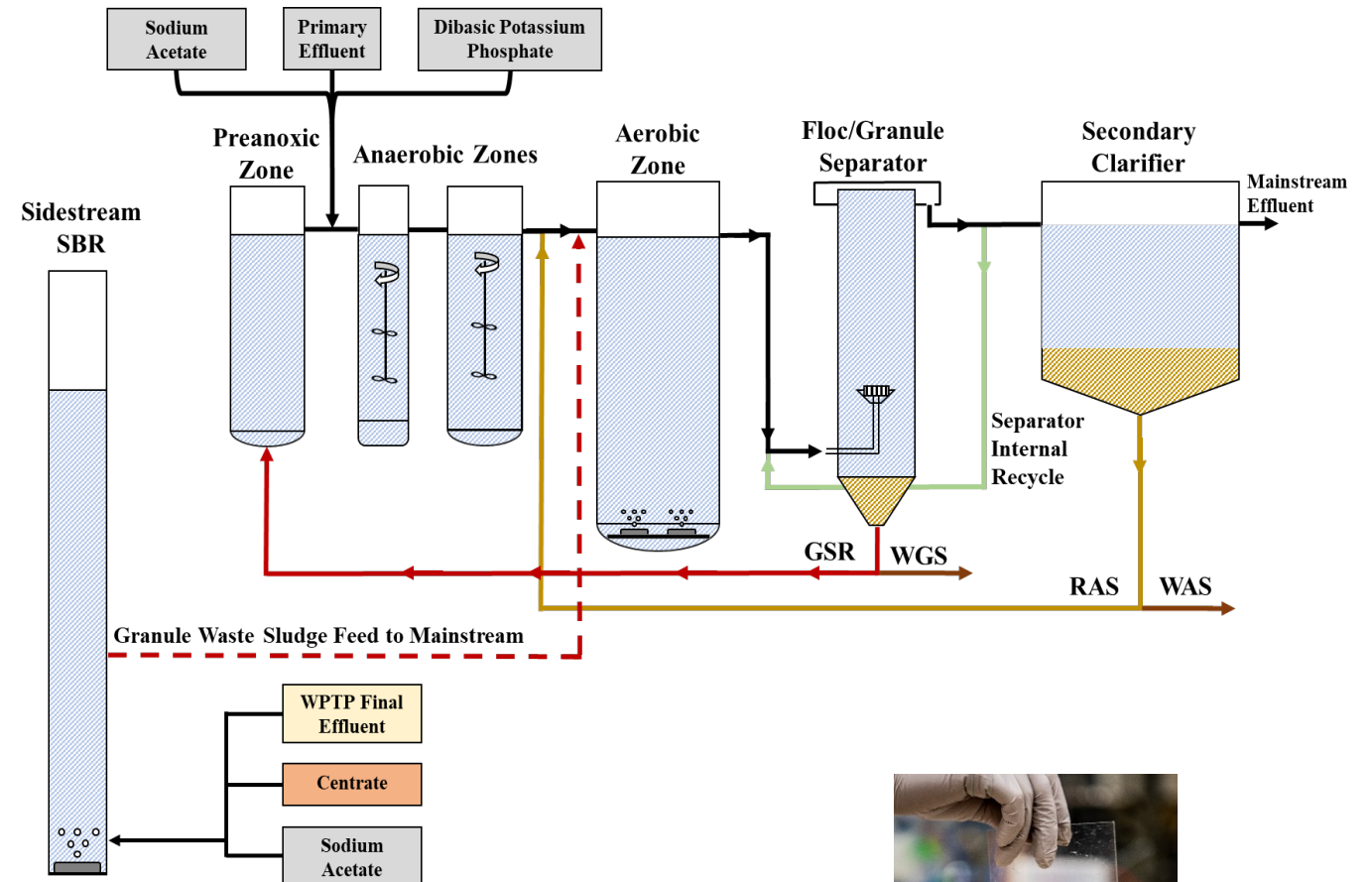
- Generated and maintained granules in sidestream reactor
- Confirmed nitrogen removal
- Granule separator performance not optimized

Current Status

- Emerging technology
- Evaluating design modifications
- Final Report to WRF to be completed in summer 2021

Potential Applications

- Alternative nutrient removal process
- Retrofitting existing plants



Source: Water Research Foundation Final Report



Wet Weather Treatment

CERAMIC MEMBRANE FILTRATION

Harnessing valuable resources that would otherwise be lost.

CERAMIC MEMBRANE FILTRATION

- Technology Overview
 - Coagulant conditioning
 - Ceramic membrane filtration
- Potential Benefits
 - High quality effluent
 - Small footprint
- Pilot Objectives
 - Process performance
 - Reliability with flow variation
 - Process control proof of concept



Performance

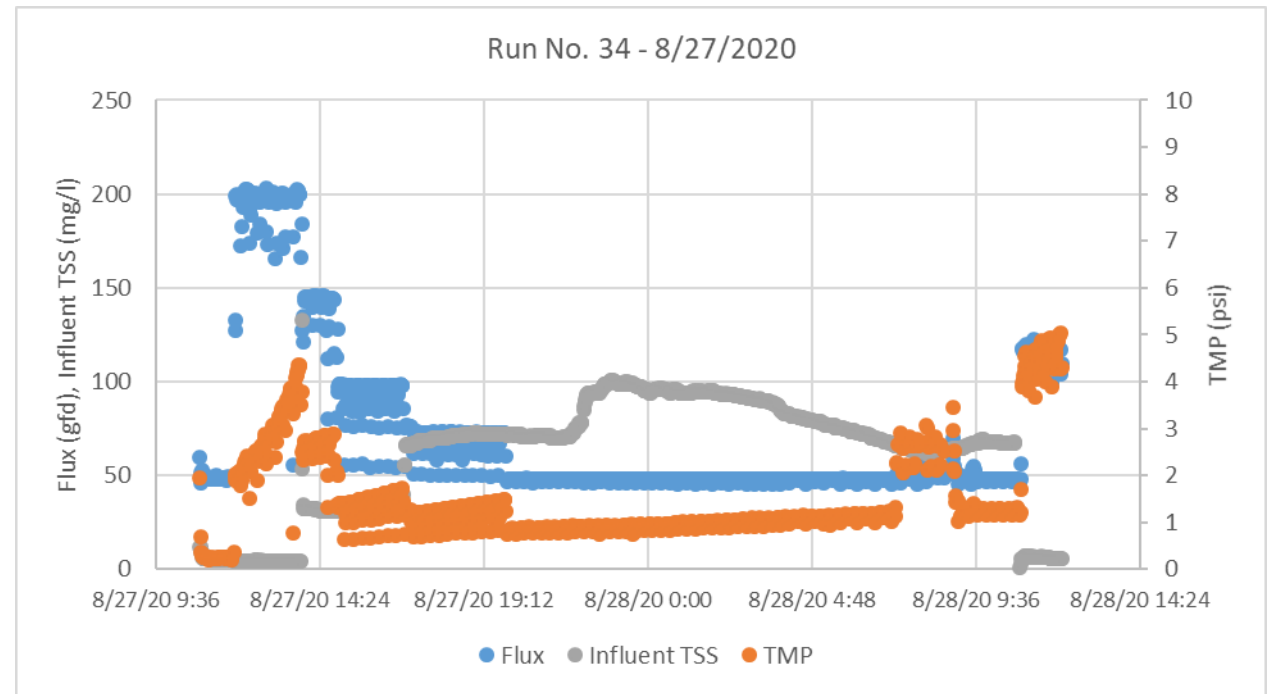
- Manufacturer capacities and effluent quality criteria verified
- Coagulant needs to be optimized

Current Status

- Testing completed in December 2020
- Final report expected May 2021
- Not yet evaluated against other technologies

Potential Applications

- Combined Sewer Overflow (CSO) treatment
- Tertiary treatment for water reuse



Questions?

Pardi Sukapanpotharam, Senior Wastewater Engineer

Pardi.Sukapanpotharam@kingcounty.gov

(206) 4779783

kingcounty.gov/Technology-Assessment

Eron Jacobson, Senior Wastewater Engineer

Eron.Jacobson@kingcounty.gov

(206) 4779213

kingcounty.gov/Technology-Assessment

