



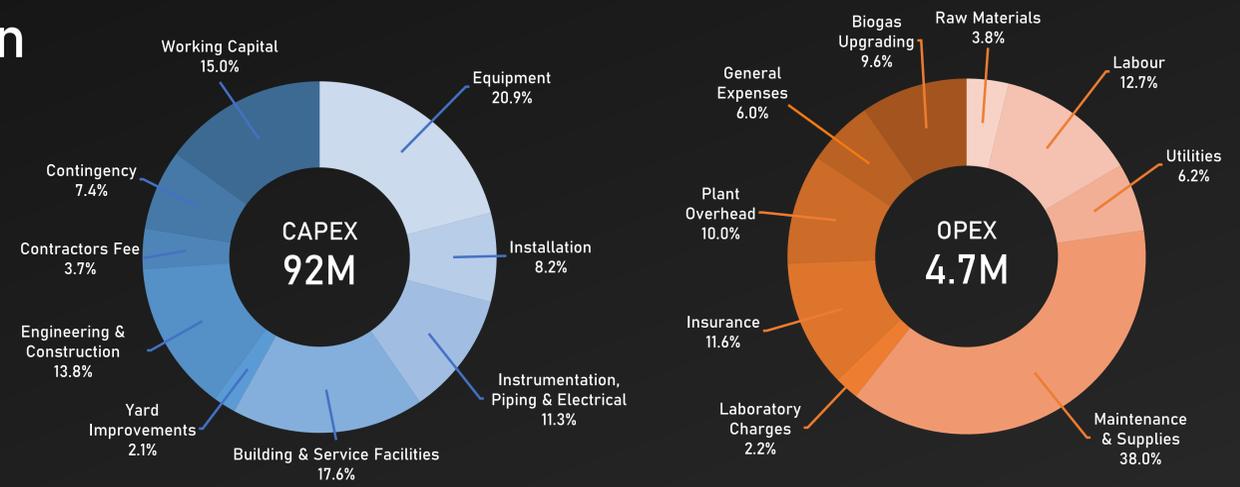
# Comox Valley Wastewater Treatment Facility Upgrades: Biological Nutrient Recovery and Biogas Production

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## Introduction

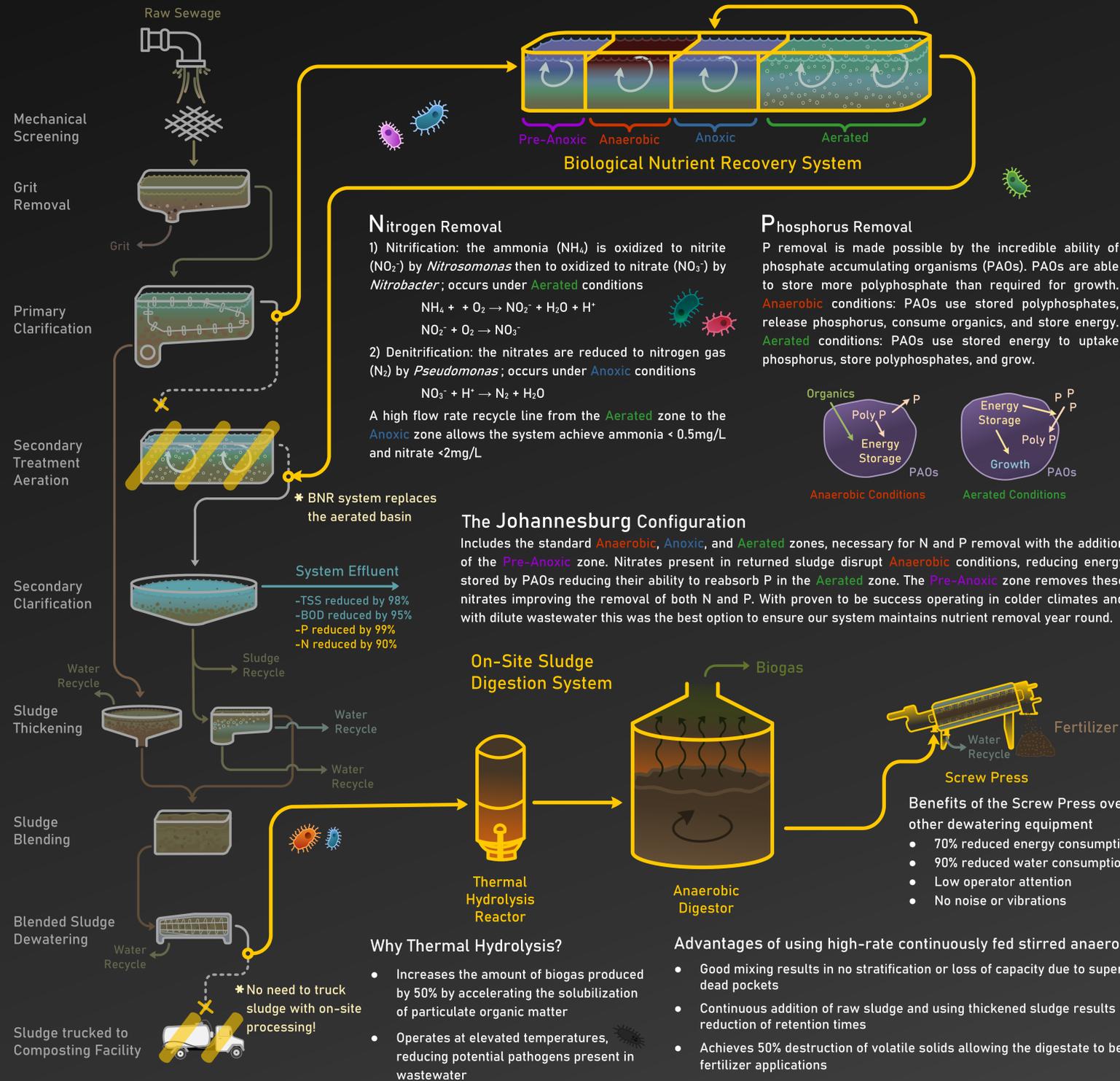
The Comox Valley is a growing community on northern Vancouver Island surrounded by breathtaking nature and a thriving ecosystem. The residents of the Comox Valley take pride in the surrounding environment and are passionate to maintain its integrity. The Comox Valley Water Pollution Control Centre (CVWPCC) treats the wastewater of a majority of the population which includes over 44,000 residents. The objective of this capstone project is to use the technology of biological and chemical engineering to provide a series of upgrades to assist the CVWPCC in maintaining the environment as the community continues to expand in the years to come. These upgrades go above and beyond what is expected from a wastewater treatment plant and include a Biological Nutrient Removal (BNR) system and a Sludge Digestion System. The BNR system employs both biological nitrogen (N) removal and enhanced biological phosphorus (P) removal to lower the nutrients of the system effluent with the ultimate goal of water reclamation. The sludge digestion system utilizes the nutrient rich sludge to create biogas used to power the plant and fertilizer sold to the local community to offset the energy and cost requirements of the plant.

## Economic Breakdown



## Existing Treatment Process

## Retrofitted System Upgrades



## Environmental Benefits

### Energy Production



72000GJ/year

Produced by biogas reducing demand of fossil fuels

### Reduced CO2 Emissions



-175 tonnes/day

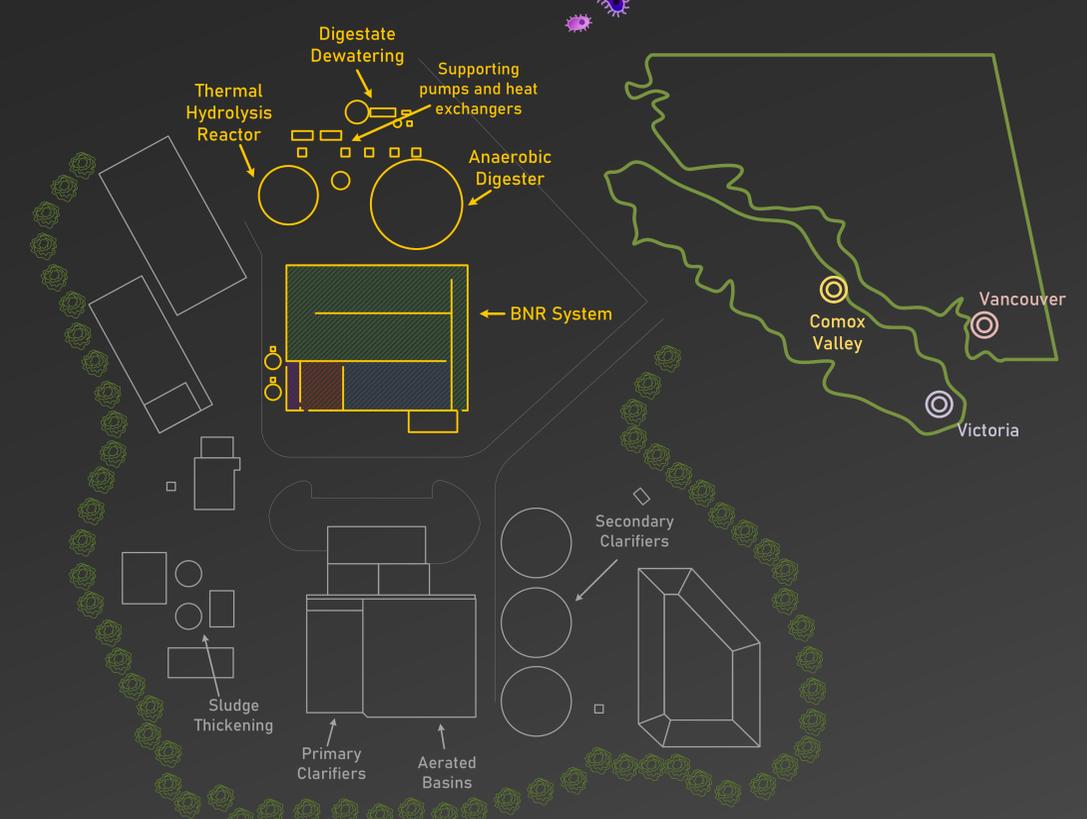
By displacing the production of artificial fertilizers

### Water Reclamation



Nutrient removal is a step towards additional applications for water reclamation, reducing the communities water consumption

## Plant Layout & Location



## Acknowledgments

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