

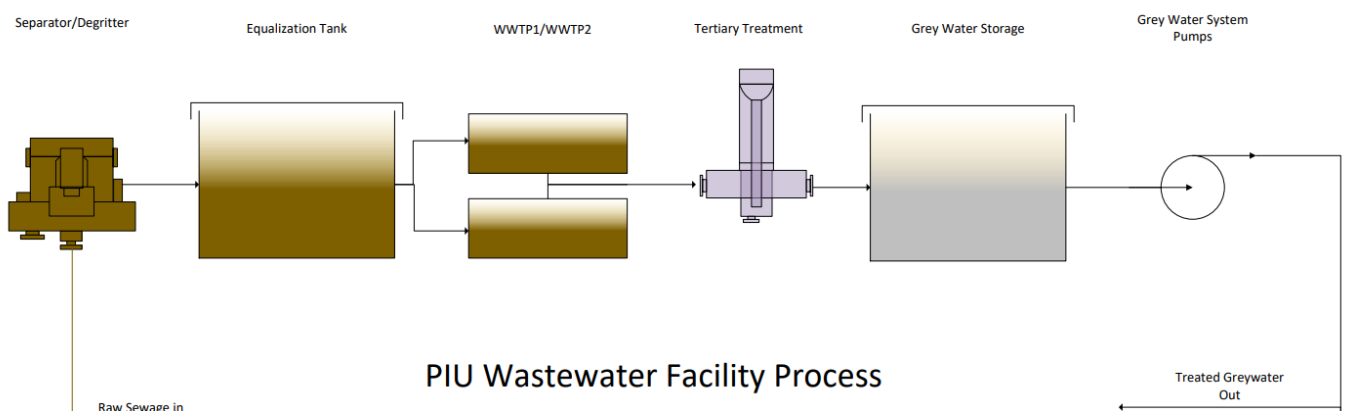
Basic Overview and Process for PIU Wastewater Treatment Facility

Overview

As the sole provider for water and wastewater services for Paradise Island, Paradise Island Utilities (PIU) operates and maintains its wastewater facility which includes a headworks to include an Equalization Tank, separator/degritter, 2 wastewater plants, a tertiary treatment system and a reuse/greywater storage and pumping system.

Total Treatment Process

1. Raw sewage enters the facility and travels through the separator/degritter removing grit, rags and other foreign objects.
2. Sewage enters the EQ tank awaiting transfer to one of our treatment plants. Aeration is added to the sewage during storage.
3. Sewage is transferred to one of our two Treatment Plants.
4. Effluent of Treatment Plants is sent to tertiary treatment for additional refining.
5. Treated effluent is stored and then distributed across the grey water system to be used for non-potable uses across Paradise Island such as flushing water or irrigation.



Aerial Photo of PIU Wastewater Facility



Wastewater Plant 2

Greywater Storage
and Pumping

Wastewater Facility
Tertiary Treatment
Filters

Wastewater Plant 1
Clarifiers

Wastewater Plant 1
Aeration Basin

Equalization Tank

Separator/Degritter

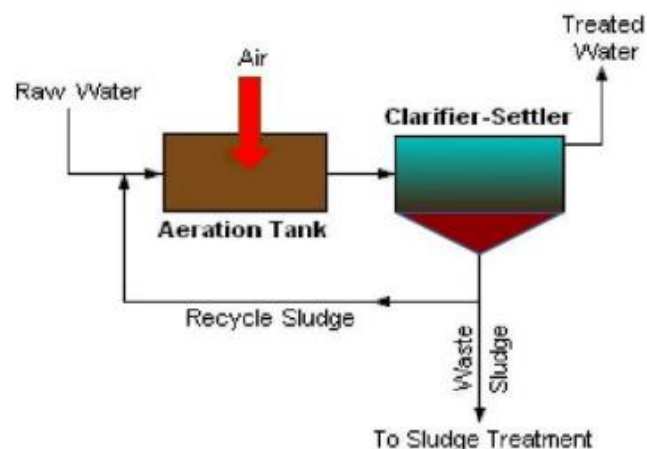
Basic Overview and Process for PIU Wastewater Treatment Plants

Overview

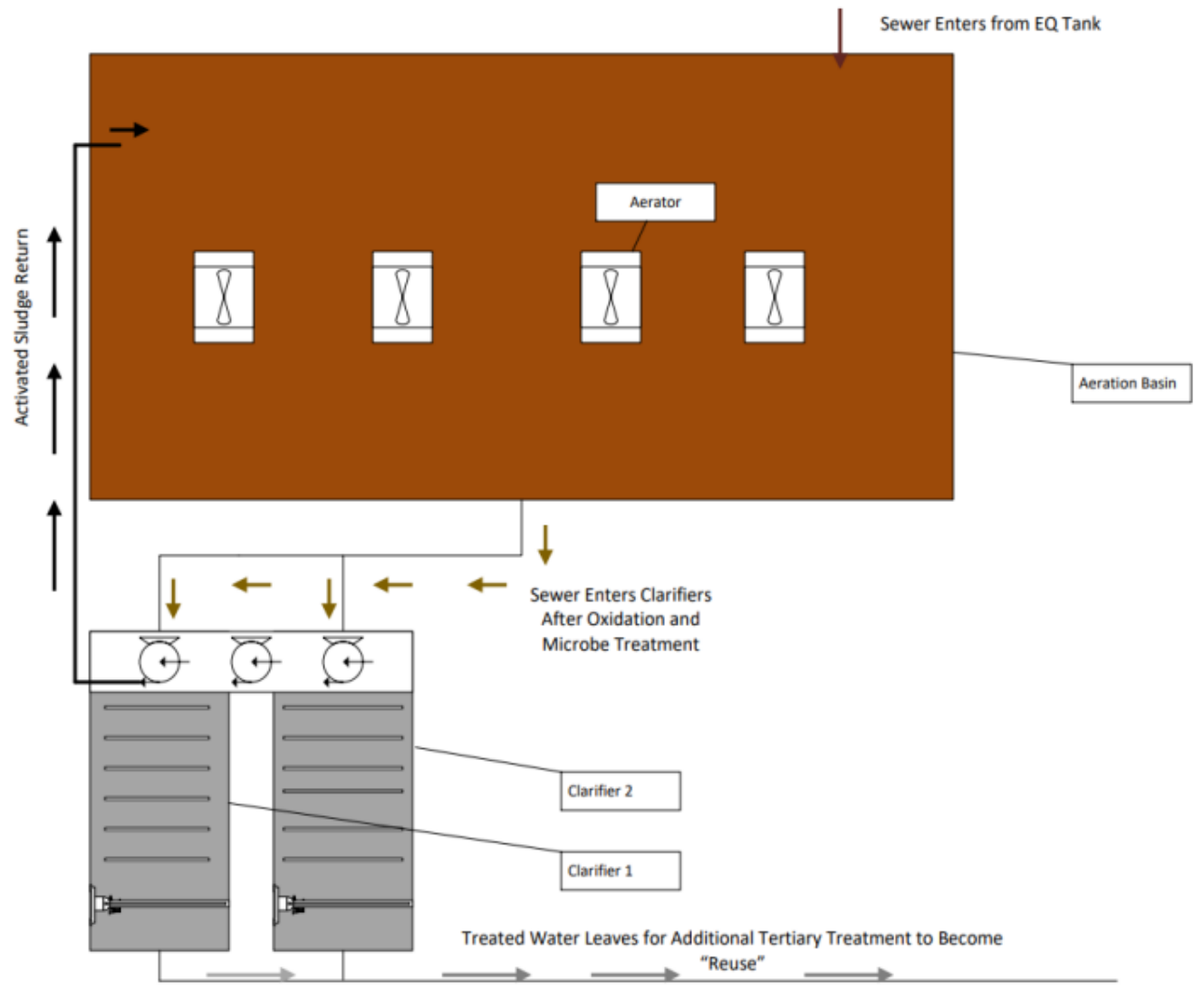
Both of the wastewater treatment plants operated by PIU utilize Return Activated Sludge (RAS) as their form of treatment. The activated sludge process is a type of biological wastewater treatment process for treating sewage using aeration and a biological floc composed of bacteria and protozoa. It is one of several biological wastewater treatment alternatives in Secondary Treatment, which deals with the removal of biodegradable organic matter and suspended solids. It uses oxygen and microorganisms to biologically oxidize organic pollutants, producing a waste sludge (or floc) containing the oxidized material.

Process

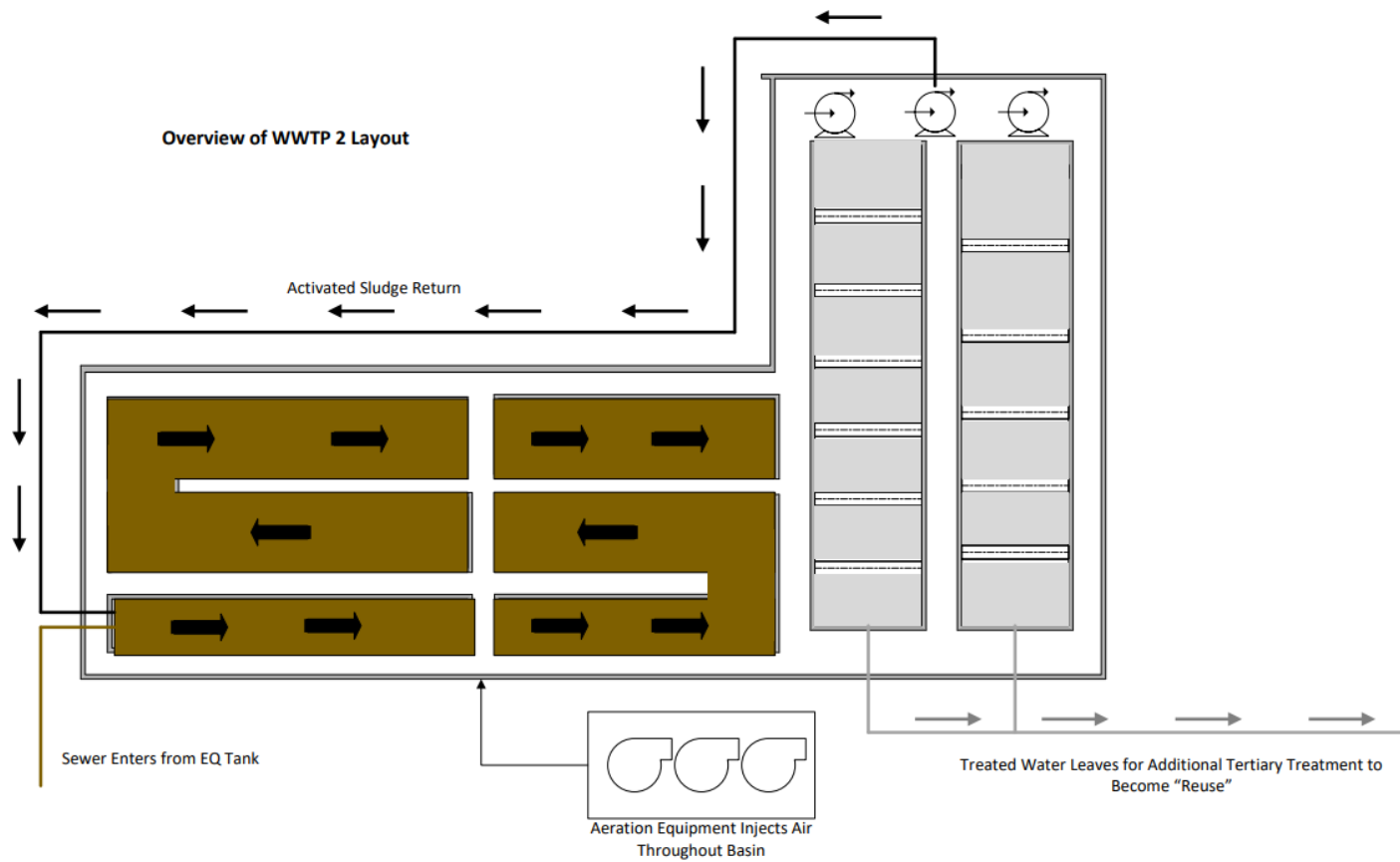
1. Raw sewage enters the aeration basin from the Equalization Tank
2. Sewage Begins Treatment in Aeration Basin
 - a. Oxidation from aerators
 - b. Initial microbial breakdown of organic matter by return activated sludge aka "bugs".
3. Water Enters Clarifiers
 - a. Biological flocs begin to settle, separating the biological sludge from the clear treated water. (think of glass with sand and water, water clears up at the top and sand settles down to the bottom)
 - b. Part of the waste sludge is recycled to the aeration tank and the remaining waste sludge is removed for further treatment and ultimate disposal.
4. Water leaves clarifiers and goes through our tertiary treatment system for additional treatment before being reused for non-potable water.



Overview of WWTP 1 Layout



Overview of WWTP 2 Layout



Third Part Testing Parameters (Bi-Weekly)

- Total Suspended Solids
- Biological Oxygen Demand
- Chemical Oxygen Demand
- Phosphate Analysis
- Ammonia Nitrogen Analysis
- Nitrate Analysis
- Dissolved Oxygen Demand