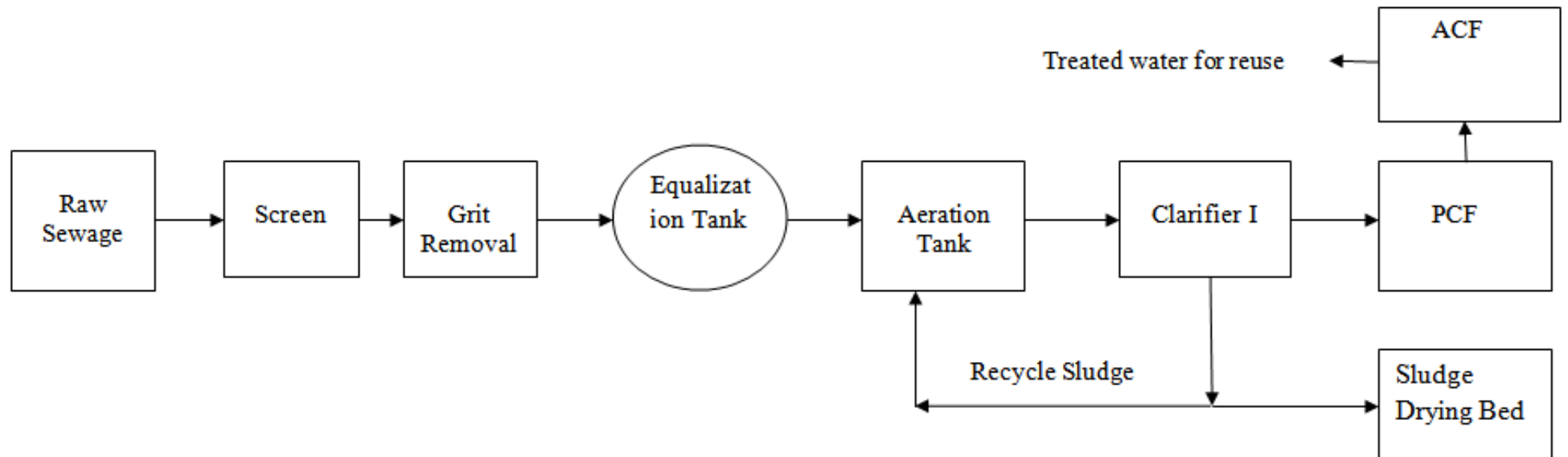


# Wastewater Plant in Coimbatore Institute of Technology



At first, wastewater generated from our institute is drained to the Wastewater Plant (WWTP) by gravity through the pipe lines from different part of our institute. In the preliminary treatment or pre-treatment, water flows through gravel chamber for settling out the grit from water. Afterwards, gravel is disposed of at the dump. Water further reaches the bar screens used to remove large objects from the wastewater. At first come the coarse screens and then the fine screens which remove smaller objects.

Then, wastewater is allowed to equalization (EQ) basins (1, 45,000 Liter) which provide consistent influent flow to downstream processes by retaining high flow fluctuations. The equalization of flow prevents short term, high

volumes of incoming flow, called surges, from forcing solids and organic material out of the treatment process. This is the point where primary pre-treatment ends and secondary wastewater treatment starts. After the primary treatment, level of wastewater pollution drops significantly.

In the next step, water is allowed to secondary treatment, also called biological stage, is based on natural processes. WWTPs use bacteria which consume the contaminants, in particular biodegradable organics, carbon and phosphorus. Dead bacteria and organic residues subsequently transform into sludge. During the biological stage, the excess sludge (i.e. excess bacteria) is pumped out and moved before the settling tanks. Here, the sludge settles and is transported to digestion tanks for further treatment.

The effluents obtained from secondary treatment may contain suspended solids in the size 0.1 to 100 $\mu$ m. The concentration of these solids is variable, and is usually 20-40 mg/l. The removal of suspended solids is carried out by granular medium (sand) filtration and micro screening. Here, the clarified water is send to the Pressure Sand Filter (PSF) consists of a multiple layer of sand with a variety in size and specific gravity. These Filters are designed to remove turbidity and suspended particles present in the feed water with minimum pressure drop. Then water is allowed to pass thorough Activated Carbon filter (ACF) where dissolved solids are removed.

Activated carbon is highly porous and provides large surface area for the adsorption of dissolved solids in the advanced treatment. The compounds that

can be removed by adsorption include organic materials (herbicides, pesticides, tannins, lignin's, colour and odour producing substances), inorganic materials (toxic trace metals) and several other pollutants.

The final step of wastewater treatment is the deep inspection of service water. Aim of this inspection is to analyse the contamination level and ensure that the treated water complies with the highest standards, defining its release or reuse for gardening purpose.