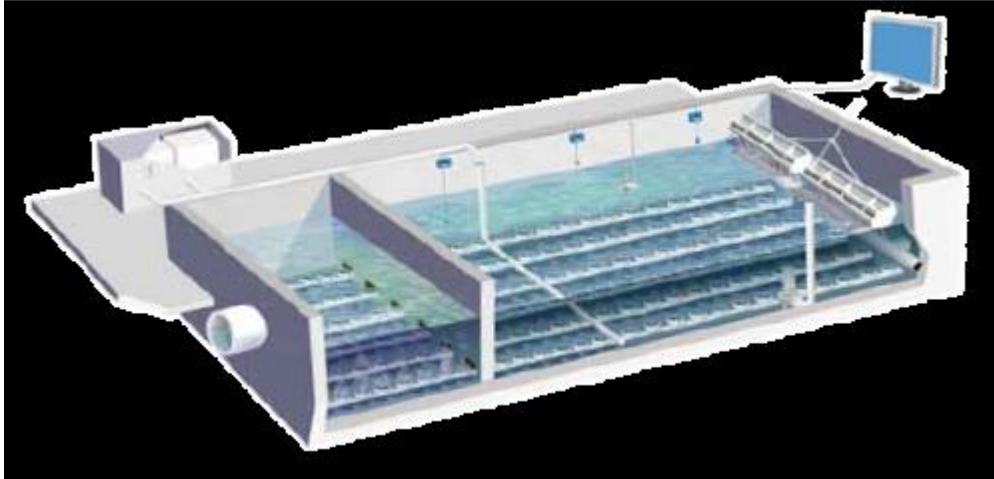


ICEAS - SBR Treatment Process Intermittent Cyclical Extended Aeration System – Sequence Batching Reactor Treatment Process



1. Screening:

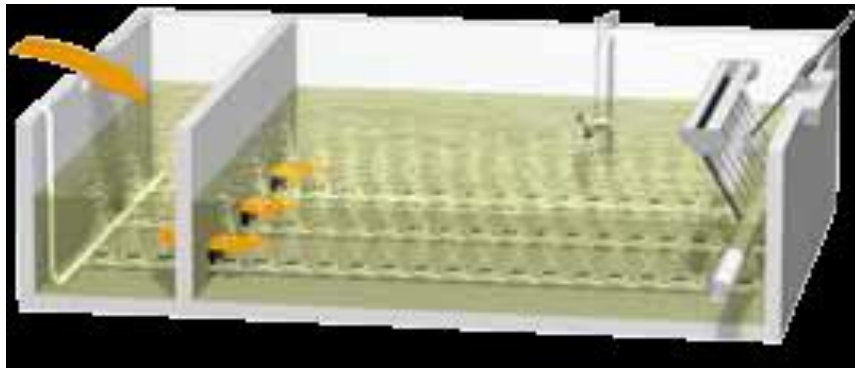
Wastewater entering the treatment plant includes various items that are not easily broken down by way of the biological treatment process or are materials that cannot be broken down and fall into the category of unauthorized items. Unless they are removed, they could cause problems later in the treatment process. Most of these materials are sent to a landfill.

2. Pumping:

The wastewater system relies on the low-pressure pumps and small diameter force mains pipes to convey sewage from your home to the treatment plant. The wastewater is then pumped up to the aeration tanks (item 3). From here on, gravity takes over to move the wastewater through the treatment process.

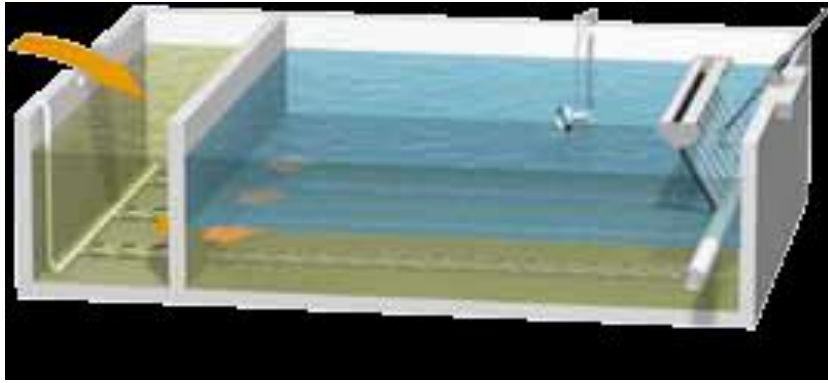
3. Aerating:

One of the first steps that a wastewater treatment facility performs after screening is to incorporate oxygen via blowers and diffusers to shake up the sewage and expose it to air. This causes some of the dissolved gases (such as hydrogen sulfide, which smells like rotten eggs) to be released from the water, as well as to ensure the microbiological activity has sufficient oxygen to survive and process the organic material. Biological oxidation and reduction occur through aeration, anoxic and anaerobic sequences within the reach phase to predictively achieve desired treatment.

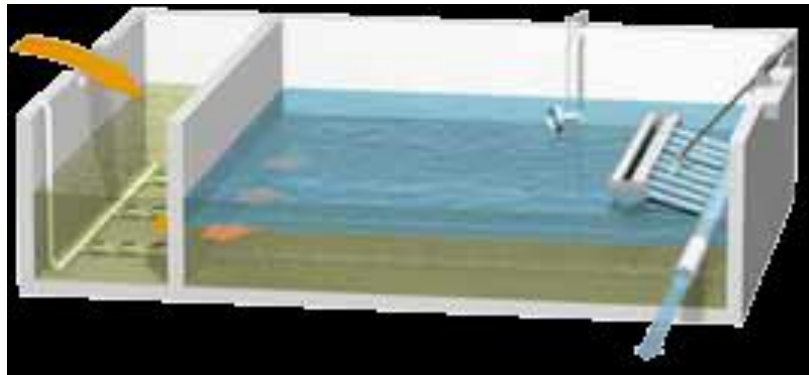


React Phase - Here screened wastewater flows continuously into the pre-react zone and enters the main react zone through submerged ports in the baffle wall.

The biological processing of wastewater occurs within two (2) long, parallel concrete tanks. The treatment process is equipped with a control panel that allows for the automatic rotation of aeration and no aeration (settling phase) followed by discharge (decant phase). As organic matter decays, it uses up oxygen. Aeration replenishes the oxygen. Bubbling oxygen through the water also keeps the organic material suspended while it forces 'grit' (sand and other small, dense particles) to settle out.



Settle Phase – Basin agitation from react phase (i.e. aeration and mixing) is stopped to allow the solids to settle to the bottom of the basin. Raw wastewater continues to flow into the pre-react zone while the main react zone settles. As solids settle, a clear layer of water develops on the top of the basin.



Decant Phase – The decanter descends gradually downward to draw off the clarified supernatant. Wastewater continues to flow into the pre-react zone as the treated and clarified effluent is decanted from the main react zone at a constant rate. Waste activated sludge is typically removed from the basin during this phase.

4. Wasting:

Wastewater is periodically pumped to the digester tank as a process called wasting. Here, the sludge referred to as Waste Activated Sludge (the organic portion of the sewage unable to be broken down any further) settles out of the wastewater and is pumped out of the biological treatment tanks.

5. Removing Sludge:

After the waste activated sludge has been pumped to the digester tank, aeration continues so as to enable the solids from turning septic and creating odor issues. A combination of aeration and no aeration occurs within the digester allowing solids to thicken and the clear water (supernatant) to be returned to the biological process. The sludge is then monitored and periodically hauled out to other facilities equipped to handle the further processing and disposal of sludge, via landfill, incineration or other beneficial use means.

6. Killing bacteria:

Finally, the wastewater flows into the Ultra Violet (UV) disinfection units. The UV process is an extremely quick physical process, in which the UV light mutates and/or degrades the structure or DNA of the bacteria. The DNA (or deoxyribonucleic acid) is the part of the bacteria cell that give an organism its instructions on how to function and reproduce. When the DNA is damaged, the organism becomes unable to function because its "instructions" are garbled or missing. An organism that has no instructions cannot function and reproduce, and cannot cause infection. It is rendered harmless and inactivates the living cell, causing death to the bacterial, viruses, yeasts and fungi.



UV disinfection is a reliable and environmentally-friendly method eliminating the need for chemicals. Moreover, the microorganisms cannot become resistant to UV radiation.

The treated water (called effluent) is then discharged to the receiving waterway, herein an Unnamed Tributary to Dundaff Creek.