

SOUTHEAST WASTEWATER TREATMENT PLANT MIAMI, OKLAHOMA



The staff at the Southeast Wastewater Treatment Plant will be happy to arrange a tour for you and/or your group. Give us a call! Phone (918) 542-6685. Our address is 1002 H SE Miami, Ok 74354.

WHAT IS WASTEWATER TREATMENT?

It's cleaning used water and sewage so it can be returned safely to our environment.

HOW DO TREATMENT PLANTS PROTECT OUR WATER?

Wastewater treatment plants:

Reduce organic matter and pollutants--Naturally occurring helpful bacteria and other microorganisms consume organic matter in wastewater and are then separated from the water.

Remove solids--Removal of matter such as rags, plastics, sand, egg shells and smaller particles found in wastewater.

Restore oxygen--The treatment process ensures that the water we put back into the Neosho river has enough oxygen to support Aquatic life and is safe for recreational swimming.

WHERE DOES WASTEWATER COME FROM?

Homes--Human and household wastes from toilets, sinks, baths, dishwashers, garbage grinders, clothes washers and drains.

Industry, Schools, and Business--Chemicals and other wastes from factories, restaurant operations, school activities, hospitals, shopping centers, etc.

On the average, each person in the U.S. contributes 50-100 gallons of wastewater every day. If you include industrial and commercial water uses, the per person usage of water is as high as **150 gallons per day.**

SOUTHEAST WASTEWATER TREATMENT PLANT OPERATIONS:

The type of wastewater treatment used in Miami is called the “Sequencing **Batch Reactors**” **Activated Sludge Process**. This is a biological process in which naturally occurring living microorganisms (bacteria, protozoa, tiny plants and animals) are maintained at a very high population level. They quickly consume the dissolved and suspended organic material carried over from the primary treatment of the incoming wastewater as a source of food. This process promotes the formation of biological masses that clump together by adhesion.

Wastewater treatment basically takes place in three stages:

I. Primary treatment--This removes 40-60% of the solids.

Bar Screens let water pass, but not trash (such as rags, diapers, etc.). There are two bar screens located inside the Headworks Building. The trash is collected and properly disposed of. The screened wastewater is then pumped to the SBR's (Sequencing Batch Reactors) for biological treatment.

II. Secondary treatment--About 90% of all pollutants are removed in this treatment to complete the process for the liquid portion of the separated wastewater.

Four SBRs supply large amounts of air to the mixture of primary wastewater and helpful bacteria and other microorganisms that consume the harmful organic matter. The growth of the microorganisms depends on Aeration (vigorous mixing of air) with the concentrated microorganisms (activated sludge) and the wastewater. Adequate oxygen is supplied to support the biological process at a very active level. The ratio of food (organic matter) to organisms to oxygen is continually monitored and adjusted to meet daily variations in the wastewater. The effluent (treated water) is decanted to an Ultra Violet light system. The Southeast Wastewater Treatment Plant uses the UV system instead of chlorine for water disinfection. The effluent then passes through a set of steps (cascade) to bring up the oxygen levels. All effluent discharged into the Neosho River must meet National Pollutant Discharge Elimination System (NPDES) criteria which include DO (dissolved oxygen), BOD (biochemical oxygen demand), Fecal Coliform (disease causing bacteria), and many others. The final effluent is monitored daily. In-house laboratory staff performs sampling and analysis for process control and NPDES compliance.



The Southeast Wastewater Treatment Plant Cascade

III. Sludge (biosolids)--The process of removal and disposal of microorganisms.

After aeration, the clumps of biological mass (the microorganisms) are allowed to settle from the water using gravity. After settling, a portion of biological mass is

pumped to the aerobic digesters. The mass is then held in one of the two digester tanks. The tanks are used for necessary sludge thickening allowing the sludge to be increased to 2-4% solids. The solids are then pumped to the sludge press. During the pressing of the sludge, more water is removed from the solids allowing the percentage of solids to further increase to around 17%. The solids are now ready to be taken to a landfill or land applied.