

Wastewater Treatment Process

The City of Manhattan's Wastewater Treatment Plant (WWTP) is an activated sludge and biological nutrient removal plant with a design capacity of 11 million gallons per day. The plant is staffed by state certified operators 24 hours a day, 365 days a year. The City has 250 miles of sanitary sewer lines and 27 lift stations strategically located throughout the community that pump wastewater from homes and businesses to the WWTP so it can be properly treated and put back into the environment.

A healthy mix of microorganisms and food is recycled back to the selector basins to assist in nutrient removal.

1 When wastewater arrives at the plant, large objects such as debris, rags and toys are collected by bar screens and removed. Sand, silt and gravel are removed next.

2 Wastewater moves to selector basins, which are divided into two zones – the first “selects” bacteria that remove nitrogen and the second favors bacteria that remove phosphorus.

3 Oxygen is added in the aeration basins to stimulate growth of bacteria and microorganisms while removing nutrients.

4 In the final clarifiers, organic matter settles to the bottom and is pumped to basins called digesters. Liquid effluent is sent to the ultraviolet disinfection system.

5 Aerobic digestion reduces volume, removes odor and kills pathogens. This treated sludge is called “biosolids.” Biosolids are recycled as fertilizer at the City's Biosolids Farm.

6 The UV disinfection system kills the pathogens in the liquid effluent before it is released into the Kansas River.