Wastewater Treatment Process
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1. Industry
   • Contributes about 20 million gallons of wastewater per day
   • Waste stream is stronger than residential

2. Anaerobic Reactors
   • Processes 2 million gallons per day of select industrial wastewater
   • Organic matter is removed from the waste stream by microorganisms

3. Methane Gas
   • Microorganisms produce methane gas as a byproduct
   • Gas helps fuel the incinerator and excess is flared

4. Residential & Commercial
   • Cedar Rapids, Hiawatha, Marion, Palo, Robins and Linn County residents and
     businesses contribute about 25 million gallons of wastewater per day
   • Wastewater comes from showers, clothes and dish washers, sinks, toilets, and
     other commercial operations

5. Bar Screen
   • Removes large items to protect downstream processes

6. Main Lift
   • Pumps wastewater from the collection system to the treatment process

7. Primary Settling
   • Waste solids settle to the bottom and are removed

8. Secondary Treatment – Biological
   • Wastewater trickles over plastic media where organic matter is removed from the
     waste stream by microorganisms

9. Advanced Treatment – Biological
   • Additional organic matter is removed from the waste stream by microorganisms

10. Settling Basin
    • Excess microorganisms settle to the bottom and are removed

11. Advanced Treatment – Ammonia Removal
    • Ammonia is removed from a portion of the waste stream by microorganisms
12. Settling Basin
   • Excess microorganisms settle to the bottom and are removed

13. Chlorine Disinfection
   • Potentially harmful bacteria is killed by adding chlorine

14. Dechlorination
   • Excess chlorine is removed from the treated effluent to minimize the impact on aquatic life

15. River Diffuser
   • Treated effluent is added to the river through multiple outlets to minimize the impact on aquatic life


17. Belt Filter Press – Dewatering
   • About 65 percent of the water is removed from waste solids resulting in a thick, dirt-like substance

18. Biological Solids - Thickening


20. Cell Wall Destruction with Temperature and Pressure (LPO)
   • Cell walls are destroyed, releasing the liquid stored inside the microorganisms that make up the biological solids

21. Centrifuge Dewatering
   • About 60 percent of water is removed from the biological solids by high speed rotation

22. Solids Blending
   • Waste solids are mixed with biological solids to produce a nutrient rich, dirt-like substance, called biosolids

23. Solids Disposal
   • 120 tons or more of biosolids produced each day
   • Disposed of onsite through incineration, or offsite through landfilling or land application