1. Preliminary Treatment: Grit Removal

Purpose: remove inorganic materials from the wastewater

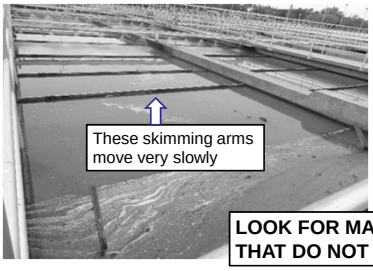
1. Wastewater enters the grit removal area
2. Aeration separates the grit. It settles out in the grit chamber area
3. Grit is removed by collectors to a dumpster for disposal.

LOOK FOR DISPOSABLE WIPES

Grit = sand, gravel, inorganic matter

2. Primary Treatment

Purpose: remove 90-95 % of settleable solids and 40-60 % of suspended solids



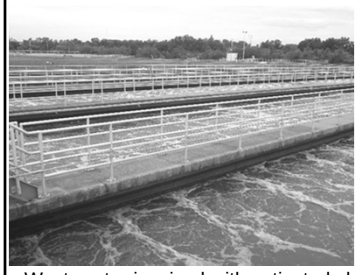
1. Wastewater enters PRIMARY SETTLING TANKS
2. Sludge settles to bottom. Scum floats to top.
3. Skimmers remove sludge from the bottom and scum from the top.

LOOK FOR MAN-MADE OBJECTS THAT DO NOT GO IN THE TOILET!

Sludge = organic solids Scum = fats, oils & grease

3. Secondary Treatment: Biological

Purpose: reduce organic matter and pathogens



1. Wastewater enters the aeration tanks.
2. Blowers pump air into tanks for aerobic bacteria.

Wastewater at this point is "chocolate milk" color – a byproduct of the biological process.

Wastewater is mixed with activated sludge.
Bacteria consume organic matter and pathogens.

4. Final Treatment: Clarification

Purpose: remove remaining solids

1. Wastewater enters clarifier.
2. Clumps of solids settle on bottom of tank and are removed. This is the source of new "bugs" for the secondary treatment
3. Skimmer removes floating solids.

COMPARE WATER TO WHAT YOU SAW AT THE BEGINNING

Clarify = to clear

5. Disinfection

Purpose: disinfect wastewater to meet EPA standards for pathogens

UV – ultra violet - light is used to disrupt the ability for bacteria to reproduce.

Bacteria do not live for long.

LOOK FOR LIGHTS

Effluent = discharged, cleaned wastewater.

6. Return to the Cumberland River

Purpose: aerate and return cleaned water to the river

Effluent – cleaned, disinfected water – is aerated at the outfall and returned to the river through a 60" diameter pipe.

Effluent is cleaner than the water in the river.

Solids have been removed from the water and it has been disinfected.

7. Solids Processing

Pumped to Biosolids Facility

8. Solids: Digestion, Drying

- Solids are digested by anaerobic bacteria.
- Methane gas is produced and captured in domes.
- Gas is used to power dryers and heaters.

9. Beneficial Reuse

- Biosolids pellets produced
- Sterile (heated to 200˚ F)
- Soil amendment

10. Community Impact

Before Biosolids

- Wet sludge = ODOR
- Landfills did not want to accept (odor!)
- 20 tractor truck loads per day leaving Nashville

After Biosolids

- Sterile, odorless
- No landfilling
- 4 truck loads/day