

The clean liquid on top flows to 3 submersible pumps. The pumps lift the flow to mono-media filters. Here the water is filtered through a layer of silica media. This helps the final “cleaning” of the wastewater. Chlorine is added from April 1 to October 31 to help kill the remaining “bad bacteria,” that can cause illness. These are called “pathogenic.” Sulfur dioxide is then added to take away the chlorine.

The primary and secondary sludge is pumped to the two “primary digesters.” Here the sludge is mixed and heated to allow a different kind of bacteria to grow that “eats” the sludge and help to stabilize it. The bacteria breaks down the sludge particles and some of the by-products are water, methane, hydrogen sulfide and other products. These two digesters are mixed to keep the bacteria in contact with new incoming sludge. This heated sludge is then pumped to one of the four “secondary” digesters where it can just rest with no heating or mixing. In the secondary digesters the solids again settle to the bottom and the liquid goes to the top. The liquid (supernatant) is sent back “to the plant” via pipes to be reprocessed.

The solids are dewatered by four filter belt presses.



Filter belt presses dewater the sludge by filtration on the top belt and squeezing or compacting in the middle.

The end product is a “cake”

the consistency of a dryer mud pie, then hauled to the landfill.



The “cleaned wastewater” then flows back into the White River where it resumes its journey.

List ways to conserve water

around your home, school, or where ever you go:

- 1.
- 2.
- 3.

List questions you have about the wastewater treatment process:

- 1.
- 2.
- 3.



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MUNCIE WATER POLLUTION CONTROL FACILITY



The water we drink today has been here since the dinosaurs roamed the earth. We always have had about the same amount of water on the earth. Water is evaporated into the clouds by the sun and returned to earth when it rains. The water then filters through soil which helps to naturally purify it.



Just think 70% of the earth is water, yet only 3% is fresh water and of that 3%, 2% is locked up in ice caps and glaciers. That leaves about 0.0001% for rivers and 0.0007% for lakes, the rest is ground water, moisture and vapor. But with so much water being used Nature is having a problem keeping the water cleaned. So man has to help clean up the water.

Each household uses about 176 gallons of water per day. If you think about just the people in your house, that is a lot of water. With the amount of people on earth increasing, we need to think about "Water Conservation."

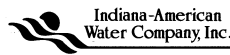
This means you need to think about the amount of water you use and waste everyday. When you take long showers or let the kitchen faucet run to let the water get cold. Small things like this can make a big difference if enough people think about it. Today many people need to "re-use" water. This means cleaning the wastewater for the next person to use.



The water you drink if you live in Muncie comes from the White River. White River starts as a bubbling stream out of the

ground about 40 to 50 miles north of Muncie. It flows past the reservoir and is pumped from the river to the Water Treatment Plant.

In Muncie the Water Treatment Plant is called Indiana – American Water Company. It is



located on Burlington Drive.

The water is cleaned using settling tanks, sand filters, and add chlorine to kill bacteria that can harm humans. The water is then pumped to homes, stores, schools and industries to use.



When the water goes down the drain it becomes "wastewater." The wastewater flows through a series of pipes to a main "sewer." Most of the wastewater can flow by gravity, but if it can no longer flow by gravity a "lift station" is built. This is a place where pumps lift the water to a place where it can again flow by gravity.



If you live in Delaware County and have a septic system, the wastewater will be pumped out by a Septic Service and driven to the Muncie Water Pollution Control Facility.

In Muncie all wastewater ends up at the Muncie Water Pollution Control Facility at an average of 16.5 million gallons per day. (One gallon of water weighs 8.34 pounds). White River has an average flow of 1.2 million gallons per day.

The industries in Muncie must clean their used water before it can be released to the sewers. They have small treatment plants where chemicals and settling tanks are used to take out metals and other



harmful items. They are inspected regularly by the Muncie Bureau of Water Quality (located at the Muncie Water Pollution Control Facility).

Once the wastewater reaches the treatment facility, two fine screens remove large objects that could plug or harm pumps and equipment. Then it flows to the raw sewage pumps. These pumps lift the flow to a higher point so it can then flow by gravity. Sand, grit and other heavy material settle into 2 Head Cells using vortex energy to separate the heavy inorganics. The grit is dewatered and hauled to the landfill.

From the Head Cells, the wastewater flows to two primary settling tanks. The solids settle to the bottom and the scum is skimmed from the surface. The solids that settle is called "sludge." The sludge is then pumped to the digesters for further treatment.

The liquid flow goes to six "aeration tanks." Three large blowers provide air to the tanks, causing the water to bubble and mix. The air is needed for the "good bacteria" to grow and "eat" the remaining solids in the wastewater that didn't settle in the primaries. These bacteria are microscopic sized bugs.

Following aeration, the "solids," now made up of "bacteria and sludge" (webbed together to form a "floc") are settled in four circular and two rectangular settling tanks. Some of the solids from the bottom is sent back to the aeration tanks, some is sent to the sludge thickener process before being sent to the digesters for further treatment.

