



Hastings Highlights

March 2017

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What's Going on this Month.....

- 6 Monday - Library Board 4:30 PM
- 6 Monday - Planning Commission 7:00 PM
- 8 Wednesday - Cemetery 3:00 PM
- 13 Monday - Council Meeting 7:00 PM
- 15 Wednesday - JPC 5:30 PM @ Rutland
- 16 Thursday - DDA 8:00 AM
- 16 Thursday - Cable Access 7:00 PM
- 20 Monday - JPA 5:30 PM @ Rutland
- 21 Tuesday - ZBA 7:00 PM
- 22 Wednesday - Airport Meeting 4:30 PM
- 23 Thursday - LDFA 8:00 AM
- 27 Monday - Council 7:00 PM



Downtown Events

St. Patrick's Day Parade
March 17

Barry-Roubaix Killer Gravel Road Race
March 25

Thornapple Jazz Festival
April 27 -29

Upcoming 2017 March Events at Hastings Public Library

Toddlers through the Primary Grades

- Toddler Time for children 18 months to 3 years on Tuesdays at 10:30
- Pre-School Story Time for kids from 3 to 6 years on Fridays at 10:30

Teens (6th – 12th Grades)

- 3/11: Dungeons & Dragons – 10:00-2:00
- 3/17: Teen Video Game Tournament, Round 2 from 4:00-6:30

Kids Pre-K through 12th Grades

- 3/20: LEGO Club from 4:00-5:00 (*Adults must be accompanied by a child*)

Families

- 3/14: "We're Out of This World" Planetary Event (Registration required) 6:00-8:00

Adults

- 3/1: Novel Ideas Book Club discusses Graeme Simsion's "The Rosie Project" – 6:00
- Movie Memories and Milestones every **Thursday** at 4:30. March Madness abounds this month with Movie Buff Awards on 3/9
- 3/6: Library Board of Directors meets at 4:30
- 3/20: **Adult and Teen Coloring, Crafts and Sewing Night** – 6:00-8:00
- 3/28: Genealogy Club on Tuesday at 6:00

Everyone Chess Club every **Tuesday** evening at 6:00

VITA – once again volunteers will be helping with tax preparation. Call 269-945-0523 to make an appointment. The volunteers will be working at the Library on Saturdays, March 4 and 18; and Wednesdays March 1, 8, 15, 22 and 29. For more information about all of our activities Visit our web page at <http://www.hastingspubliclibrary.org> – or -- Find us on Facebook at Hastings Public Library-MI – or -- Call us at (269) 945-4263.



Find Us on Facebook
 Follow Us on Twitter @CityofHastings

Contact The City of Hastings at
269-945-2468 or info@hastingsmi.org



On the web at:
HastingsMI.org
DowntownHastings.com

City of Hastings Wastewater Treatment Process

What is wastewater?

Wastewater or sewage is the byproduct of many uses of water. There are the household uses such as showering, dishwashing, laundry and, of course, flushing the toilet. Additionally, industries and commercial enterprises use water for these and many other purposes, including processes, products, and cleaning or rinsing of parts. After the water has been used, it enters the wastewater stream and flows to the Wastewater Treatment Plant. When people visit a recovery facility for the first time, often it is not what they perceived it would be. These recovery facilities are complex facilities and produce a high quality product, or effluent.

Why treat wastewater?

We need to remove the wastewater pollutants to protect the environment and protect public health. When water is used by our society, the water becomes contaminated with pollutants. If left untreated, these pollutants would negatively affect our water environment. For example, organic matter can cause oxygen depletion in lakes, rivers, and streams. This biological decomposition of organics could result in fish kills and/or foul odors. Nutrients in wastewater, such as phosphorus, can cause premature aging of our lakes, called Eutrophication. Waterborne diseases are also eliminated through proper wastewater treatment. Additionally, there are many pollutants that could exhibit toxic effects on aquatic life and the public.

How do we collect the wastewater?

The sewer or collection system is designed so that it flows to a centralized treatment location. The collection system is comprised of smaller sewers with a diameter of about eight inches. As more homes and companies are connected along the system, the pipes become larger in diameter. Some sewer piping was actually installed in the late 1800's! Materials of construction and methods of construction have changed significantly over the years.

What is Inflow & Infiltration (I&I)?

Inflow is rain water that gets into a sewer from surface inlets, holes or leaks in manholes or manhole covers, sump pumps, or roof leaders. This is relatively clean water that should be discharged to a storm water system. In some cases, homeowners in low lying areas connect sump pumps (illegally) to the sewer because it is relatively easy and inexpensive compared to proper management.

Infiltration is groundwater that leaks into the sanitary sewer. All sewer pipes have leaking joints or cracks that allow the groundwater to enter the system to some extent. Infiltration is usually most severe in the spring when melting snow and rain saturate the ground.

What happens after the collection of the wastewater?

The wastewater flows through the collection system and eventually reaches the Wastewater Treatment Plant through gravity. Upon reaching the Treatment Facility, the flow first encounters preliminary treatment, then secondary treatment. The solids or "sludge" removed from the wastewater stream also need to be treated.

What is Preliminary Treatment?

Preliminary treatment processes are the first processes that the wastewater encounters. This typically involves flow measurement so that the operators can quantify how much wastewater is being treated. Flow monitoring is commonly followed by screenings removal. Screenings are materials and large foreign objects like sticks, rags, and other debris. These materials need to be removed because they can damage machinery or clog processes. Screenings can be removed by using bar screens and other devices designed for this purpose.

Generally, the next process in preliminary treatment is grit removal. Grit is comprised of inorganic material such as sand, gravel, eggshells, etc. It is desirable to remove grit to prevent wear and abrasion on pumps and other mechanical equipment. Grit can also plug lines and pipes. In the influent area, sampling equipment is often used to collect small portions of the wastewater for analysis. Sampling enables the operator to determine the pollutant loadings entering the plant (influent). Preliminary treatment also includes raw sewage pumps. Screening and grit removal are important to the proper operation of the raw sewage pumps, as these materials will cause clogging and create wear on the internal parts. These raw sewage pumps deliver the flow to the next phase: Primary Treatment. The City of Hastings plans to upgrade our Wastewater Treatment Plant to include grit removal capabilities in 2018. This will increase efficiency and reduce wear on the system and the need for equipment and machinery repairs.

What is Primary Treatment?

Primary treatment is a physical settling process that removes solids. Wastewater that enters the primary settling tank (or clarifier) is slowed down to enable the heavier solids to settle to the bottom. Lighter materials, such as grease, will float to the top of the tank. Settling tanks are designed with mechanisms to remove both the settled solids as well as the floating solids.

Primary treatment generates primary sludge. The sludge is removed and pumped through the solids treatment process which thickens the sludge to prepare it for ultimate disposal. Even after removing the pollutants that settle and float, the wastewater still has solids remaining. These solids are either dissolved or suspended. Dissolved solids are very small solids (e.g., dissolving sugar in water) that cannot be seen. Suspended solids can be likened to the same ends of a magnet: these solids repel each other. They are also small, but are visible to the human eye. We remove these dissolved and suspended solids through Secondary Treatment.

What is Secondary Treatment?

Secondary treatment is a biological treatment process used to stabilize the dissolved solids. Microorganisms (i.e., bacteria and protozoa) feed on the organic solids (food) in the wastewater and convert the organics into a cellular or biological mass that can later be removed. These biological processes are aerobic processes. Oxygen must be provided for these aerobic organisms to work properly and efficiently. An integral part of secondary treatment processes is another set of settling tanks or clarifiers. These secondary clarifiers (final clarifiers) remove the biological mass that has grown during biological treatment.

A very common secondary process which we use at the Hastings Wastewater Treatment Plant is known as "activated sludge". In activated sludge treatment, the wastewater is mixed with the aerobic organisms that are continuously returned from the secondary clarifiers. This is called return sludge or return activated sludge, and the oxygen is provided in the aeration tank by blowers and diffusers.

What is Advanced Treatment?

Our Treatment Facility is required to remove phosphorus and reduce ammonia to prevent the potential negative impacts on the receiving stream. Typically these advanced processes are accomplished concurrent with secondary treatment.

Where do all the solids go?

Solids that settle out in the primary and secondary clarifiers are referred to as sludge. Sludge that has been processed to reduce disease-causing organisms is referred to as "biosolids." Sludge is the byproduct of treating the liquid wastewater, and proper solids handling is of paramount importance. If sludge is not removed, problems will occur in other areas of the facility. Excess solids can also lead to permit violations and odor problems. After treatment, solids from the Wastewater Treatment Plant are "de-watered" and sent to the Waste Management Facility for proper disposal.

Where does the water go after treatment?

The treated wastewater is referred to as effluent. Before the effluent is discharged to the Thornapple River, it undergoes a process to reduce disease-causing organisms, called disinfection. Our Wastewater Treatment Plant uses an advanced UV system, which utilizes ultraviolet radiation to kill the microorganisms. Since chlorine is not used, no de-chlorination is needed. Testing the effluent before discharge provides assurance that the wastewater has been properly treated. A state-issued permit establishes the level of pollutants allowed that will be protective of the public health and the environment.

**The City of Hastings would like to extend an invitation to tour the Wastewater Treatment Plant to anyone who is interested.
Please contact City Hall at 269-945-2468 for more information.**