

The Department of Environmental Protection (DEP) has determined that the Eastern Snyder County Regional Authority (ESCRA) and participating municipal systems have a significant amount of inflow and infiltration. DEP voiced their concerns when the yearly Chapter 94 report was reviewed, and design capacity was exceeded during rain events. ESCRA has estimated it treated 50 MILLION gallons of I&I in 2019 alone!

What is Inflow & Infiltration (I&I)?

Inflow happens when groundwater and storm water is misdirected and enters into the sanitary sewer system through incorrect connections within the collection system. Homes and businesses contribute in a number of ways—roof drains, downspouts, sump pumps, driveway drains, foundation and floor drains, and stairwells plumbed into sanitary sewage systems instead of storm sewers or “daylight”. These connections are illegal. Fortunately, they are easily and cheaply fixable.

Infiltration is when groundwater enters the sanitary sewer system through faulty sewer laterals (home to street), pipes or manholes. These pipes might have cracks or leaks that let water in. This can happen because of age, installation and maintenance issues or even tree roots.

Inflow & Infiltration costs you money. I&I water is referred to as “clear water”, as opposed to sanitary sewage water. When clear water gets into the wastewater system, it gets treated. When it gets treated, it costs you money. It also takes up valuable capacity within the system. This is a problem for the wastewater treatment plant (WWTP) when it is working near maximum capacity. Accommodating I&I at the WWTP may result in oversized and overpriced treatment system expansion, cause inefficient treatment, add to treatment costs, or potentially lead to illicit discharges into the Susquehanna River because the treatment plant capacity has been reached. Should a sewage discharge happen, DEP may issue fines, issue a connection moratorium, mandate expensive plant expansion or all three. The Sewer Authority and municipalities will have to decide between investing dollars to reduce I&I or may need to limit new residential or economic development. Recently, ESCRA has completed videoing their sewer trunk lines. Rehabilitation work is scheduled for 2021 to resolve I&I issues. New development can strain the plant when already operating near capacity, leading to a need for an expensive plant expansion. The other option is limiting residential or economic development opportunities. This will stifle the area’s growth and loses opportunities to enhance tax revenue.

The December 2020 rain, snow melt and high water contributed to 10 times the average daily flow produced within the sanitary sewer system. This led to the sewer plant treating flow beyond its designed limits. Issues like these are highly frowned upon by DEP. They could require the plant to have expensive upgrades or an expansion.

Much of the excessive flow can be attributed to down spouts, basement floor drains and sump pumps plumbed into the sanitary sewer. These types of connections are prohibited by Code. Homeowners can inexpensively and quickly remedy these connections. Down spout elbows cost about \$4.00. Floor drain expansion plugs are about the same. Sump pump connections can be easily rerouted to “daylight” outside the home. These inexpensive alterations could prevent increased sewer costs in the future.

How to identify Inflow & Infiltration:

There are a number of strategies the Borough will undertake to find problem connections and leaks in order to reduce or stop I&I.

1. **Informing the public.** The purpose of this article is to encourage each property owner to take a look at their building. Are down spouts and roof drains plumbed to “daylight”? Are sump pumps plumbed to “daylight”? Are stair wells, floor drains, foundations and driveway drains connected to a sump pump and “daylight”? Do you need expansion plugs in basement floor drains to prevent wastewater entering during high rain event or sewage line blockage?
2. **The next step in identifying I&I is to locate where problems are occurring and isolate the areas that have the worst I&I.** First, we will analyze daily flow data from the last several years and compare against rainfall records. We may need to set up flow monitoring instruments in each section of the sewer system. By monitoring the flows, you can better identify which areas may have problems.
3. **Inspection of manholes can identify leaks from joints and provides the opportunity to view the drainage near a structure.** Manholes can be located within a wetland or ditch that gets submerged during rain events. These manholes can contribute significant inflow and infiltration through leaky covers.
4. **Smoke testing may be needed in residential areas.** A blower is set up over a neighborhood manhole, and non-toxic smoke is pumped through the sewer line. Smoke testing can be a very efficient and cost-

effective way to locate and identify the source of an inflow and infiltration problem. The smoke used is non-toxic and does not leave any residue. The smoke is pressurized and follows the path of any leaks in the system, revealing the location of the inflow and infiltration. Sources of I&I can be cracks in the sewer pipes themselves, roof drains, downspouts, sump pumps, floor drains, French drains, and faulty manholes.

5. **Closed circuit television inspection (CCTV)/pipe inspection.** We will view inside our system pipes using CCTV. A small camera travels down the length of a pipe and produces visuals where an operator can identify leaks and be viewed from the surface.
6. **Home inspections.** If the amount of I&I cannot be reduced, the Borough will need to have inspections completed by a third party.