

I/I CONTROL PROGRAM

The Impact of Inflow and Infiltration

Excess water that flows into sewer pipes from groundwater and stormwater is called I/I. Groundwater (infiltration) seeps into sewer pipes through holes, cracks, joint failures, and faulty connections. Stormwater (inflow) rapidly flows into sewers via roof drain downspouts, foundation drains, storm drain cross-connections, and through holes in manhole covers.

Most Inflow and Infiltration (I/I) is caused by aging infrastructure that needs maintenance or replacement. The City's wastewater system has a documented I/I problem as the peak day factor ranges from 3.0 to 17.2 at the treatment plant. If the City can reduce the I/I entering the pipes, it will delay the need to construct larger pipes, pumps and treatment plant systems.

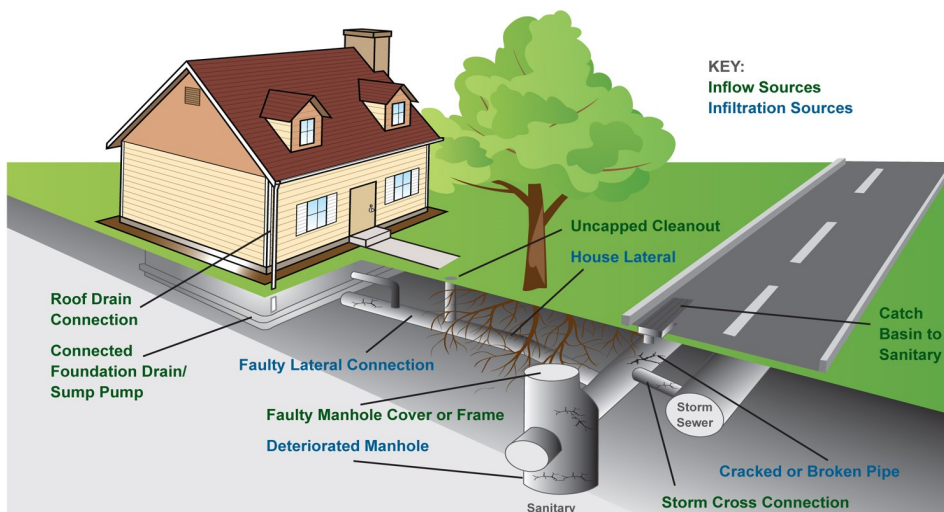
Why is I/I a Problem?

Extra water in the sewer system is a problem because:

- It takes up capacity in the sewer pipes and ends up at the wastewater treatment plant where it must be treated like sewage, resulting in higher treatment cost.
- New and larger conveyance facilities are needed to transport larger volumes of flow, resulting in expensive capital projects.
- I/I flows contribute to sewer system overflows into local homes and the waterways, negatively impacting public health and the environment.

Our community should be concerned about I/I because...

- * I/I decreases the efficiency and capacity of wastewater collection systems and treatment systems, which can impact the growth of the community.
- * I/I can hurry the need for the construction of relief sewer facilities.
- * I/I can cause flooding of sewers into streets and private properties
- * I/I can cause impacts to utility rates.



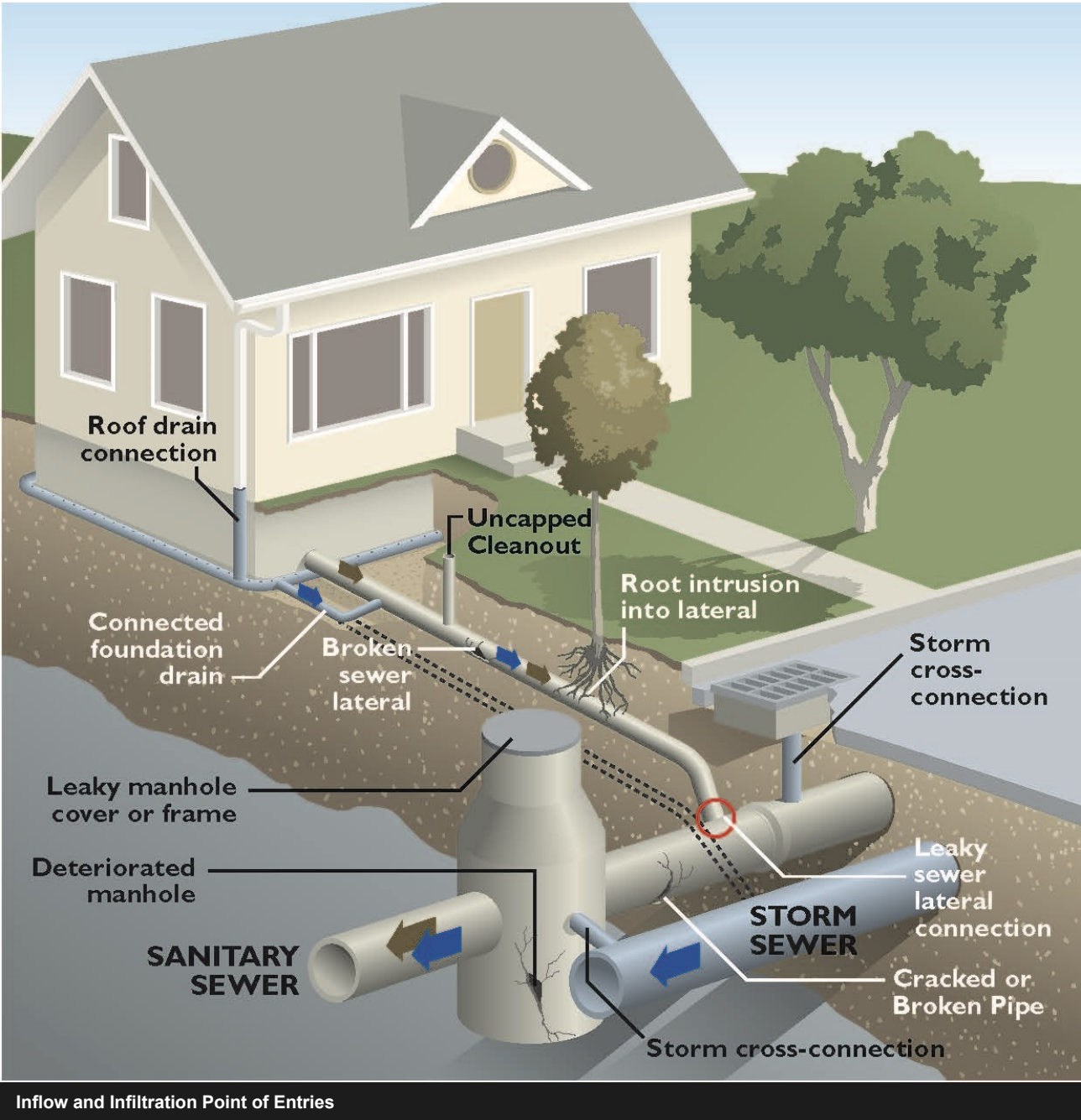
Key sources of Inflow and Infiltration

In This Issue

- Newberg's I/I Program
- Initial I/I Reduction Project
- Finding I/I
- Fixing I/I
- What Can You Do?

I/I Reduction Program

The I/I Reduction Program has been implemented to identify and remove I/I sources from the sewer system. These sources can overload the system and cause sewer backups into homes and businesses, as well as sewer overflows in nearby creeks. Currently the City is responsible for 80 miles of gravity pipelines, about 5 miles of wastewater force mains, 8 pump stations, and over 1,600 manholes and 620 cleanouts.



Inflow and Infiltration Point of Entries

Finding I/I

Flow monitoring and modeling can help identify areas of high flows during wet weather, indicating the presence of I/I. Additionally, sewer system evaluation surveys (SSES) can be used to examine the condition of private side sewers and help to identify likely sources of I/I. SSES methods include smoke testing, closed circuit television (CCTV) inspection, and occasionally dye testing.

Water intrusion



Dye Testing



System Surging



Smoke testing

Fixing I/I

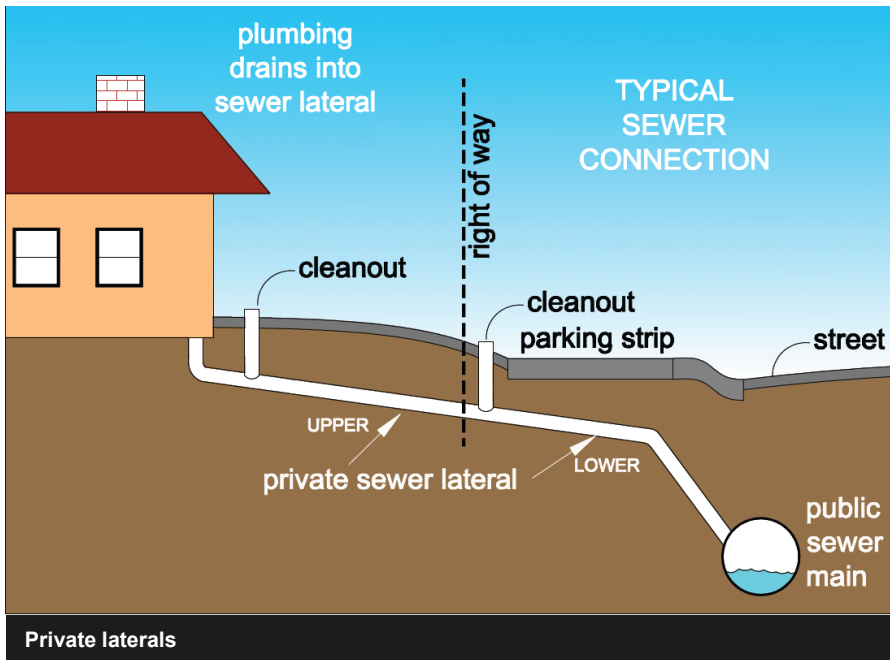
Once an I/I problem has been identified, there are many methods and technologies available to reduce I/I. One primary method focuses on fixing the broken pipes, manholes, and joint connections. Another focuses on reducing the amount of I/I that enters the sewer system from storm events by disconnecting roof drain downspouts and other building or yard drains that may be directly connected to the sewer.

Trenchless Technologies

Trenchless technology pipe repair methods may include pipe bursting, or cured-in-place liner. Pipe bursting is a technique that pulls a hardened steel breaker head through the old pipe, breaking it up, and replacing it with a new pipe all in one process. *See page 5 for more information.*

Stormwater Disconnections

Stormwater connections such as roof drain downspouts, yard drains, and sump pumps may be disconnected from the sewer system and redirected to a separate stormwater system.



How will I get notified if there are problems in my service line?

A letter will be sent to the property owner from the City's Engineering Department —If the need was determined as a part of a capital project or an overall inflow and infiltration effort.

- The property owner has 90 days to repair the lateral.
- If the property owner finishes the repair within 30 days, the City can provide an incentive in the form of a credit on the Municipal Services Statement, the credit amount will be no more than \$100.00.

Private Lateral Program

The City has embarked on a program to address areas of I/I within the City. The project include: Investigation, lining public main lines, replacing public main lines and replacing laterals within the public right-of-way. The private sewer lateral is the section of pipe that connects the sewage system of a house or building to the City's publicly owned system in streets or easements. Per the Newberg Municipal Code (NMC) 13.10.070(o) the property owner is responsible to maintain and repair if necessary this lateral. In the City of Newberg, the owner's responsibility begins at the right-of-way line (for newer locations this will be at a cleanout). If the private laterals are also addressed another 40% reduction in I/I could be realized.

How or When Laterals are inspected

- ⇒ As a part of a City capital project, the private laterals will be inspected to determine their water tightness.
- ⇒ If there are complaints received about illicit discharges or flooding, the private laterals will be inspected as a part of the investigation.
- ⇒ As a part of an overall inflow and infiltration planning effort, private laterals may be inspected.

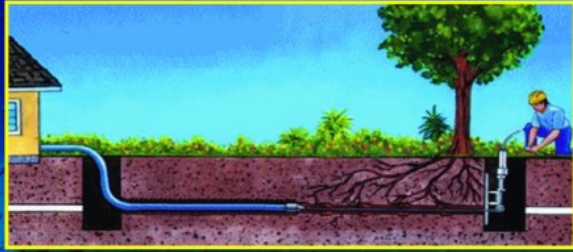
Guidelines on failure

Laterals are inspected most likely via videotaping of the line. They are inspected for offset joints, gaps and breaks in the pipe, excessive infiltration, blockages and older pipe that has a diminished structural integrity. NMC 13.10.070(p) (3) defines excessive infiltration as 300 gallons per day. This is equivalent to flushing a toilet 200 times a day or the amount of water that 3 people use all day long.



Root intrusion in service line

TRENCHLESS & LINER SEWER REPAIR



1.

WHAT IS A TRENCHLESS SEWER LINE REPAIR?
THIS TYPE OF SEWER LINE REPAIR REFERS TO THE ELIMINATION OF HAVING TO EXCAVATE A TRENCH. THE OLD PIPE IS REPLACED BY PULLING THE NEW SEWER PIPE THROUGH THE OLD LINE FROM TWO AXIS POINTS AND DONE QUICKLY AND EFFICIENTLY.

2.

WHO SHOULD USE THIS SYSTEM?
- HOMEOWNERS
- BUSINESSES
- INDUSTRIES

3.

HOW DOES IT WORK?
- NEW PIPES PULLED THROUGH OLD PIPE
- OLD PIPE USED AS GUIDE
- OLD PIPE BURSTS AS NEW PIPE MOVES THROUGH

4.

WHAT ARE THE BENEFITS OF A TRENCHLESS SEWER LINE?
- SAVES MONEY
- QUICK AND EASY INSTALLATION
- SAVE YOUR LANDSCAPING AND DRIVEWAYS
- AN ENVIRONMENTALLY FRIENDLY ALTERNATIVE TO THE TRADITIONAL REPAIR METHOD

Trenchless pipe is one example of how to repair a service line

Contractor Program

The City will advertise a Request for Qualifications for contractors. The City would evaluate contractors and set up a qualified list of contractors. The list would then be provided to property owners upon request.

For more information about this program call the City of Newberg Engineering Department at 503-537-1273 or by email engineeringdepartment@newbergoregon.gov.

City Funding/Financing

The City can fund a portion of the costs to repair the private lateral through a loan program. The City will finance up to 75% of the cost of the repair. The term of the loan would be a sliding scale and the interest rate will be tied to a common lending indicator.

The funds would be from the Wastewater Fund Reserves and would start with a budgeted amount of \$50,000.00 available every year.

To qualify for a loan, the property owner would have to prove a hardship for them to complete the work in the time frame required. The hardship criteria would include:

- Low income: Less than 80% of the median income (in 2016 that is \$54,856).
- Extremely long (over 40') lateral.
- More than one lateral to the property that needs repair.

Work happening in your area.

The City of Newberg's Engineering Division would like to notify you of an I/I project in your neighborhood. Starting in a few weeks, Michels Corporation will be using a trenchless liner technique to repair the wastewater mainline under the streets. For more information about this technique see page 5 of this booklet. This project is expected to take approximately 4 weeks and will be completed by the end of June 2017.

There is a possibility your service maybe interrupted. We will let you know in advance.

If you have any questions or concerns, please contact

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"Serious about Service"

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| & |
PROJECT



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PLACE
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