

## Sanitary Sewer Customers: Know Your Responsibilities

According to Cupertino Sanitary District's Operations Code Section 6207, it is illegal for sanitary sewer customers to discharge storm water, surface water, ground water, roof runoff, subsurface drainage, (including interior and exterior foundation drains uncontained commercial or industrial cooling water, or unpolluted industrial process waters to any sanitary sewer.

For additional I/I related information, please visit:



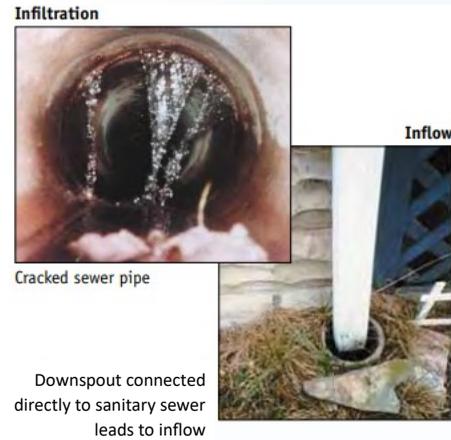
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## Inflow & Infiltration Reduction Program

*Cupertino Sanitary District is proud to lead this effort.*



## What is Sewer Infiltration and Inflow (I/I)?

Sewer systems are designed to convey sanitary flows to the water pollution control plant for treatment so the treated water can be discharged into San Francisco Bay. Stormwater drainage systems are designed to convey stormwater (runoff from rainfall) to the creeks that flow into San Francisco Bay. Inflow and Infiltration (I/I) is defined as the stormwater and groundwater that enter a sewer system and significantly limit the ability of the sewer system to convey sewer flows.

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. Sewer system pipes can be surcharged when they are forced to transport more flow than they are designed for and may result in an overflow of the sewer during extreme rainfall events.

## Why is Sewer I/I a Problem?

Cupertino Sanitary District estimates that I/I makes up 45-50 percent of peak flows in the sewer system during wet weather flow – and that much of this I/I originates on private property. If I/I is ignored, it will cost our community millions of dollars to remove and will restrict any new development projects in the District. CuSD has an ongoing program to identify and reduce the quantity of I&I in the District's sewer system.

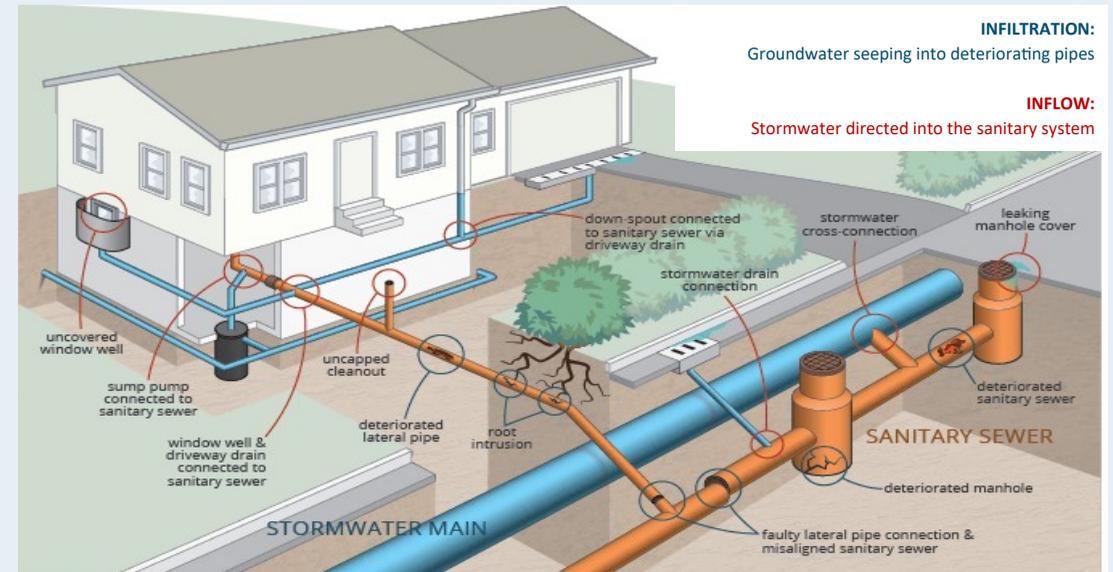


Image Source: Illinois American Water—Wastewater Service (<https://bit.ly/38R0xyi>)

## CuSD Inflow Infiltration Reduction Program

The purpose of the program is to reduce the amount of peak wet weather flow entering the District's sanitary sewer system. Reduction of I/I in the system has the potential to lower the risk of sanitary sewer overflows and decrease the costs of conveying and treating wastewater. The District is implementing I/I reduction feasibility studies and analysis in peak flow project areas to measure the cost-effectiveness of I/I reduction. The program is on a scale large enough to potentially offset the need for larger conveyance or storage facilities. The program is implemented in four phases: Phase 1: Find I/I sources; Phase 2: Fix Sources of I/I; Phase 3: Measure Wet Weather Flows; Phase 4: Model Wet Weather Flows.

### Find Sources of I/I

The District uses Sewer System Evaluation Surveys (SSES) to examine the condition of sewers located on the private/public property lines to identify the likely sources of I/I. SSES methods include smoke testing and closed circuit television (CCTV) inspection.

CCTV cameras are robotically sent down sanitary sewer lines and along each side sewer to record a video of sewer conditions. CCTV inspections can identify breaks, root intrusion, leaking water and deteriorating conditions.

#### CCTV Inspection



Smoke Testing involves pumping smoke through sewers from manholes in streets and observing where the smoke exits. The exiting smoke can indicate a broken pipe, or where the roof or foundation drains might be illegally connected to the sewer system.



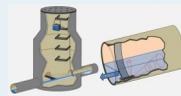
#### Smoke Testing

### Fix Sources of I/I

Once the sources of I/I have been identified, then the defects that are allowing I/I to enter the sewer system will be repaired. The primary focus of this repair will be in fixing broken pipes, manholes, and joint connections. Another focus would be 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 and capping the cleanouts.

### Measure Sewer Flows During Rainfall Events

#### Flow Monitoring



Flow is measured with metering equipment to determine the rainfall that enters the sewer system. Flow Monitoring can help to identify areas of high flows during a rainfall event, indicating the presence of inflow, infiltration, or both.

### Model Peak Flows

Metered flows are used as input to a hydraulic model of the Cupertino sewer system. The model will be used to determine how I/I flows impact the capacity and peak flow in the system and to assess whether there is sufficient capacity available to accommodate new development in the community.

## As a Homeowner, what can you do to reduce I/I?

As a property owner, you can reduce inflow and infiltration from your property in the following ways:

1. Inspect your roof gutters and downspouts to see if they are connected to the sewer system. If so, have them disconnected and re-direct the roof runoff to a concrete splash-plate or gravel bed at the base of your house.
2. Avoid planting trees and shrubs over sewer pipes. The roots can damage the structure of the sewer pipe and allow I/I to enter the sewer system.
3. Make sure that there are caps on your yard drain cleanouts. Many older homes have a sewer cleanout cap that homeowners removed to drain surface water. Lawn mowers have tendency to break the plastic caps. Replacement caps are available at your local hardware store.
4. Ensure the basement drains and sump pumps are not connected to the sanitary sewer. Basement drains and sump pumps should be connected to the stormwater drainage system instead.
5. Make sure there are no missing caps in your household plumbing system that can generate odors. Replacement caps are available at your local hardware store.
6. Replace any leaky, broken sections of the sewer pipe (sewer lateral) that are located on your property.
7. Have a plumber inspect your sewer lateral for root intrusion and cracks.
8. Make repairs to sewer lateral.

*Here's what homeowners can do to reduce I/I:*

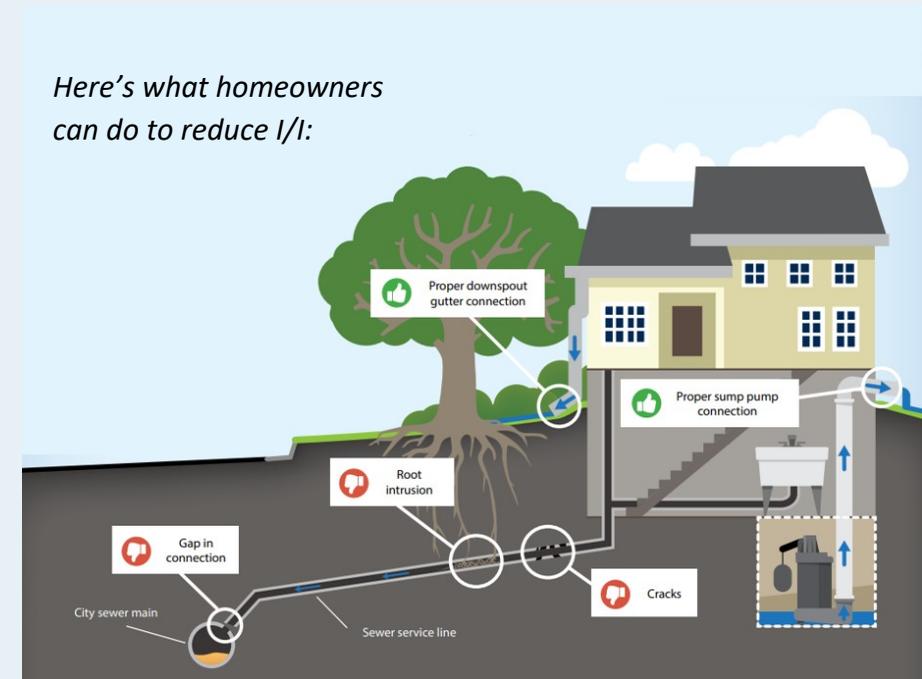


Image Source: Metropolitan Council, St. Paul, MN —Wastewater Service (<https://bit.ly/3kYj80S>)