



# Jefferson County West Virginia

Public Information

## 1.0 General

The last three (3) years of “un-adjusted” WWTP effluent flow meter data clearly suggested that excessive infiltration and inflow (I&I) conditions existed in the collection systems during periods of heavy precipitation and/or high groundwater table conditions. Inflow defines non-sewage related water entering the sanitary sewer system through direct connections, such as cross-connections with storm drains, low lying manholes subjected to flooding conditions or basement sump pumps tied to the sewer system. Inflow generally occurs during or immediately following a precipitation event. Infiltration is defined as groundwater entering the sewer system through cracked sections of pipe, open pipe joints, defective manholes, or leaking lateral connections. Unlike inflow, infiltration generally correlates with groundwater levels rather than precipitation, therefore there is often a lag between a precipitation event and its impact on sewage flows.

During the last three (3) years, the WWTP flow meter indicated that the “un-adjusted” flow rates to the Charles Town wastewater treatment plant routinely exceeded the 1.2 million gallon per day (MGD) permitted and design capacity of the facility. As a result, Charles Town appeared faced with either expanding their wastewater treatment facility to handle the excessive flows, or reducing the I&I loading in the contributing collection systems. The City of Charles Town contracted with Chester Engineers to conduct a Sewer System Evaluation Survey (SSES) to identify both the location and extent of I&I sources, and recommend a course of remedial action. The I&I evaluation was divided into seven tasks to comprehensively and systematically evaluate the entire sewer system. These tasks included: mapping the sewer collection systems of Charles Town, Ranson, and Jefferson County Public Service District; completing a theoretical I&I analysis using existing flow and rainfall data; conducting a survey to identify potential sump pump connections to the sewer collection systems; performing late night flow monitoring activities during wet weather periods; conducting manhole inspections; performing internal television inspections of select sewer segments; and, smoke testing the entire collection system.