

NEW APPROACH TO INFLOW AND INFILTRATION INVESTIGATIONS

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CITY OF NEW BRITAIN - KEY FACTS

- Area 13.3 Square Miles
- Population 73,000
- Length 180 Miles Sanitary Sewers
- Pipe Material 75% Clay
- Manholes 3,619
- Connections 15,845



COLLECTION SYSTEM - FLOW

- Average Flow (WW) 6.4 mgd
- Average Flow (WW and Stormwater) 13.5 mgd
- Peak Flow 35+ mgd

- Wastewater Treated by Mattabassett District
Regional WWTF - Upgrade from 20 to 36 MGD with
enhanced nitrogen removal

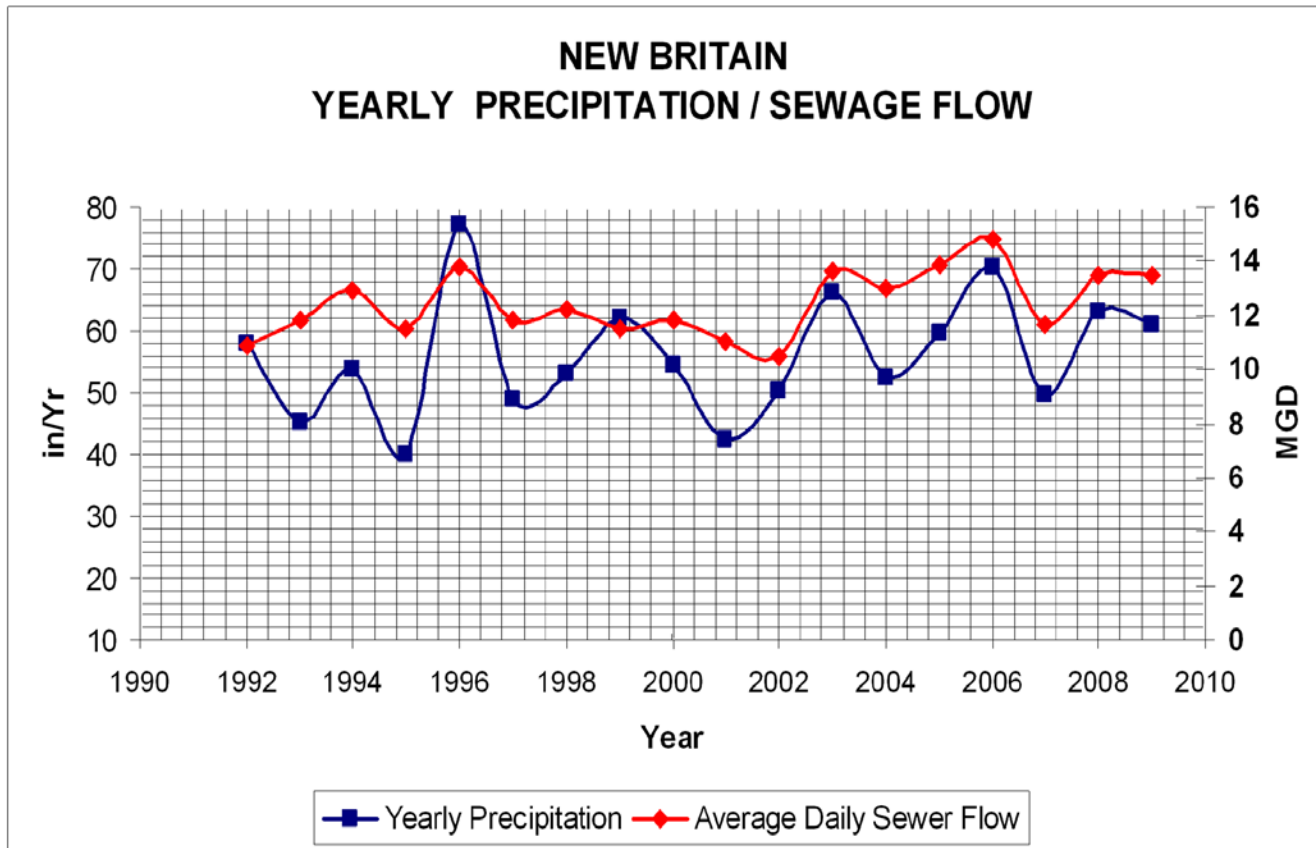


PREVIOUS I&I WORK

- I&I SSES completed 1996 to 1999
- 12 Rehabilitation Projects through 2009
 - CIPP, Test & Seal. MH's
- Reduction in over all flow up to 2004, then 1 to 2 MGD spike
- No drop off since then
- No clear reason for increase

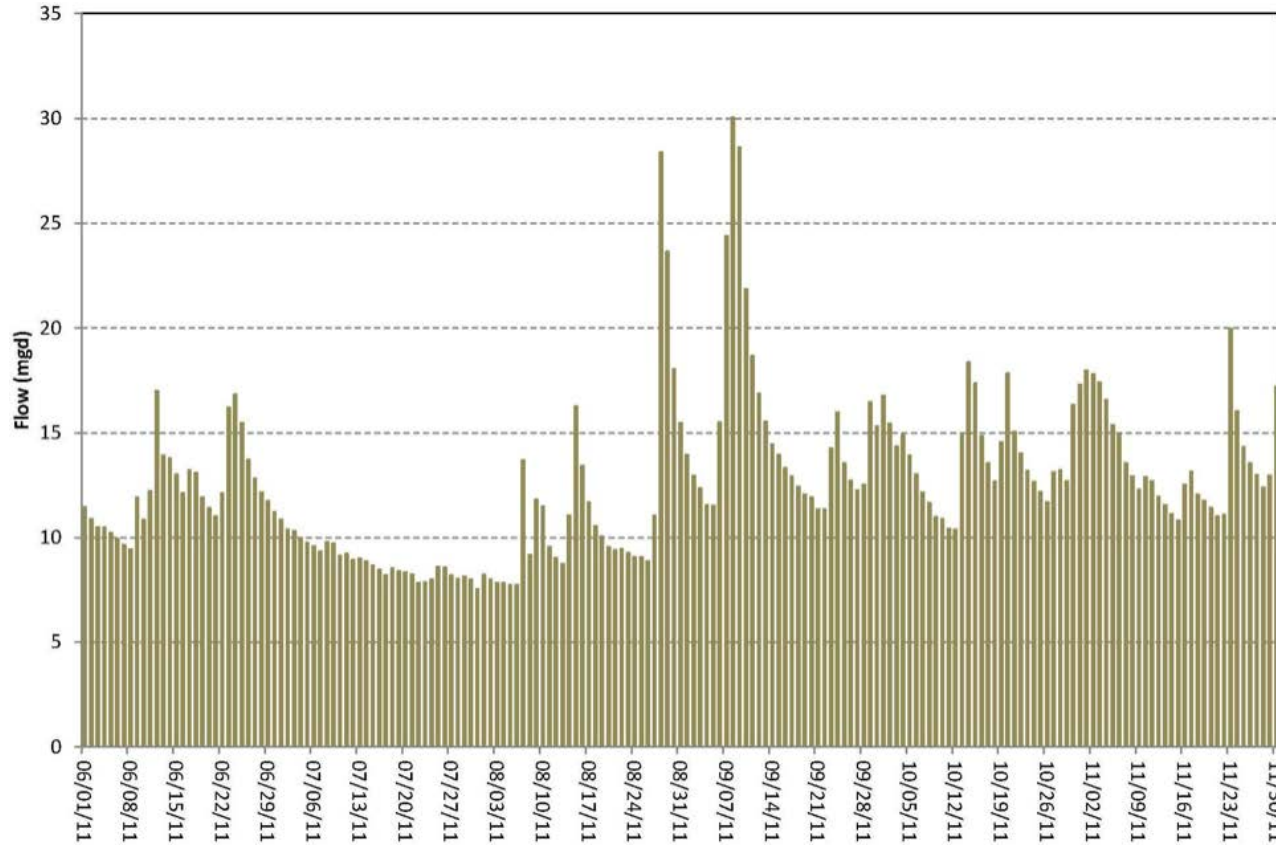


HISTORICAL FLOWS



- Daily Flow - New Britain Master Flow Meter 1990-2009

MORE RECENT FLOWS



- Daily Flow - New Britain Master Flow Meter

STUDY OPTIONS

- Study previously unstudied sub basins
- Complete restudy of the entire system
- Prioritize areas based on age and other factors
- A combined study approach



COMBINED APPROACH

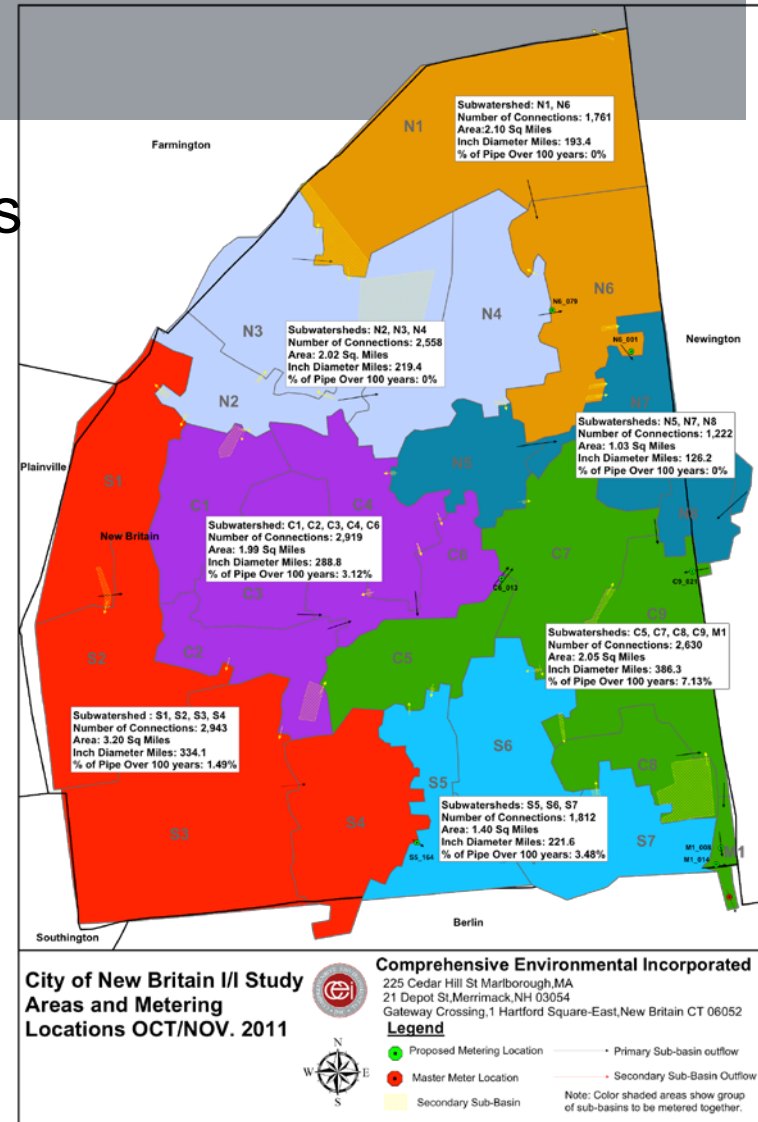
- Grouped 25 Sub-Basins into 7 Sub-Areas
- Metered the 7 Sub-Areas
- Goal to prioritize Sub-Areas with regards to highest I/I
- Purpose of this approach was to more cost effectively identify the Sub-Basins to receive more intensive investigations



I/I STUDY FLOW METERING PHASE 1

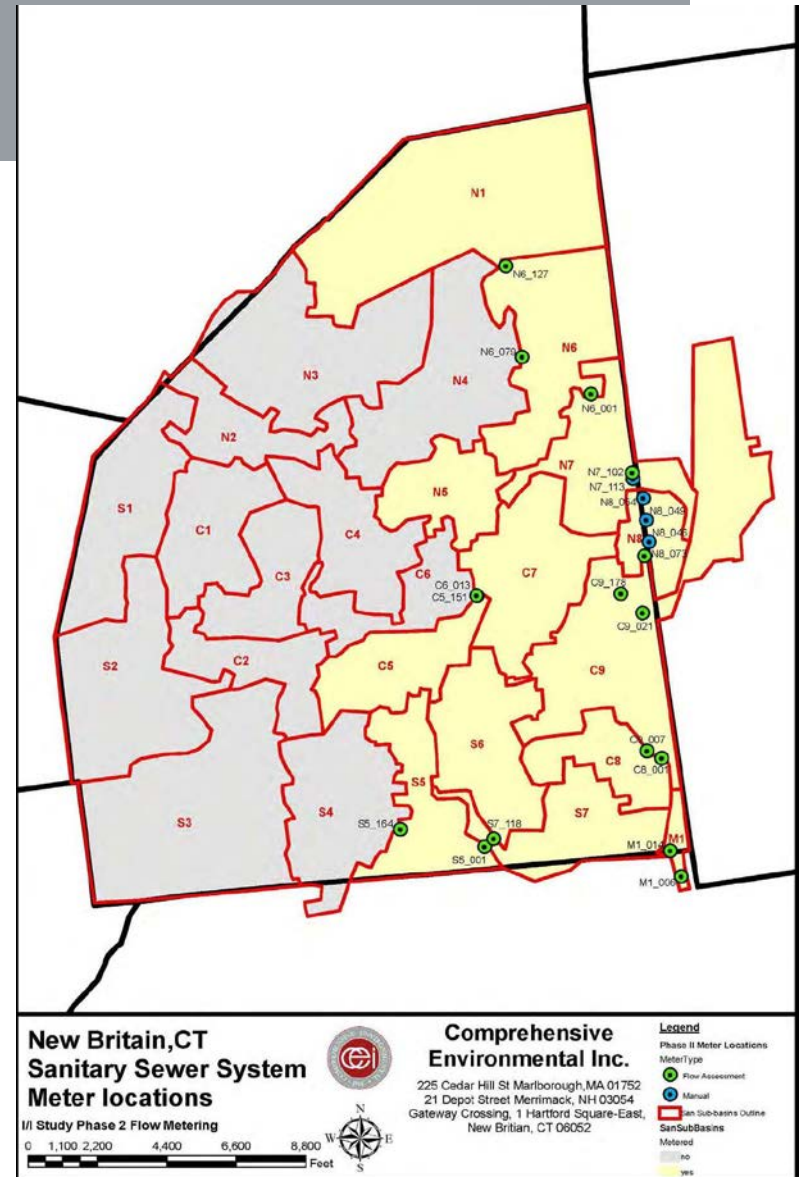
City Divided into 25 Sub-Basins

- Flow Monitoring (7 Major Basins)
- Groundwater Monitoring
- Water Usage
- Data Analysis

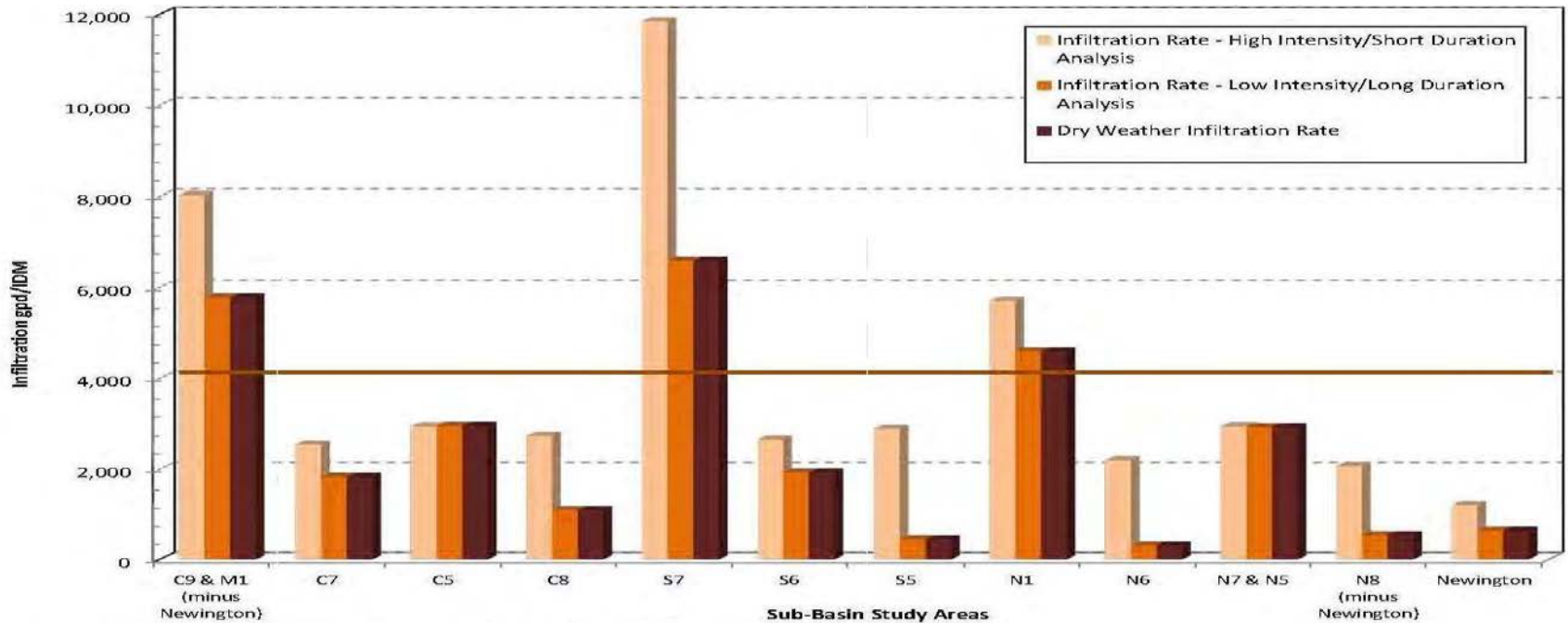


I/I STUDY FLOW METERING PHASE 2

- Flow Monitoring (8 Major Basins)
- Groundwater Monitoring
- Water Usage
- Data Analysis



PRIORITIZED AREAS



*Systems exceeding 4,000 gpd/IDM are priority areas for infiltration reduction.



III STUDY AREAS

Identified areas of highest excess flow, detailed Follow Up (SSES)

- Night Flow Measurement
- TV Inspections
- Manhole Inspections
- Smoke Testing
- Building Inspections
- Dye Testing

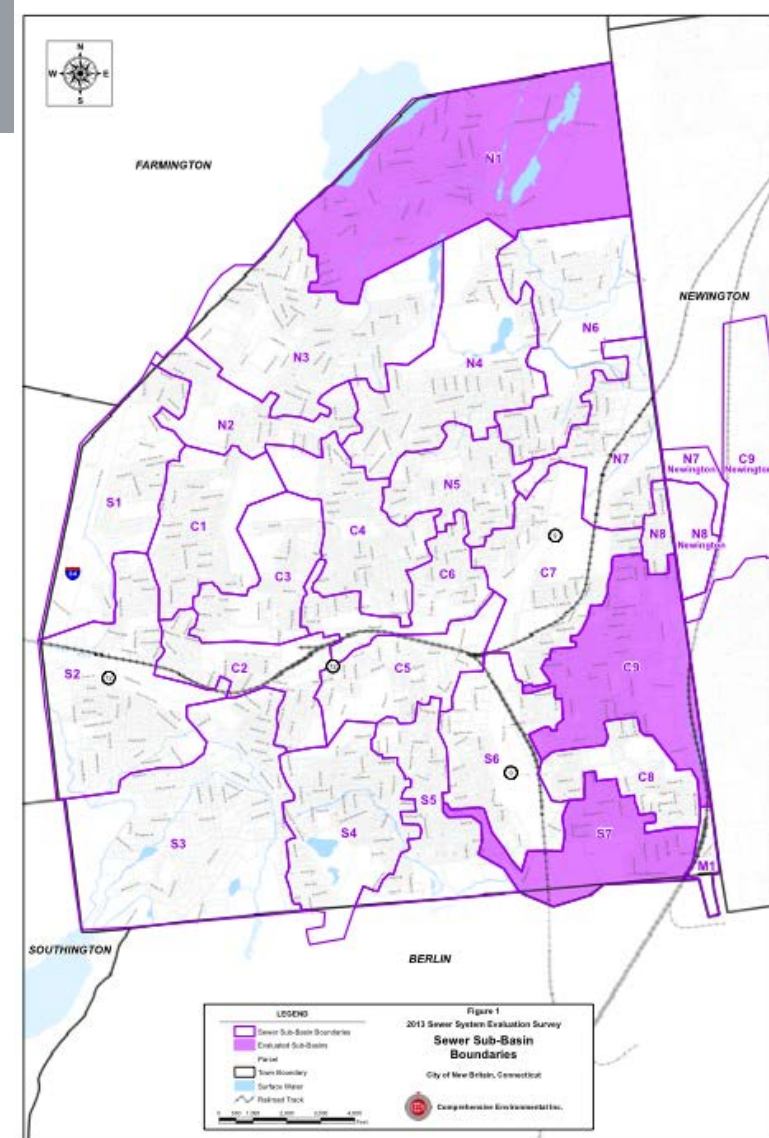
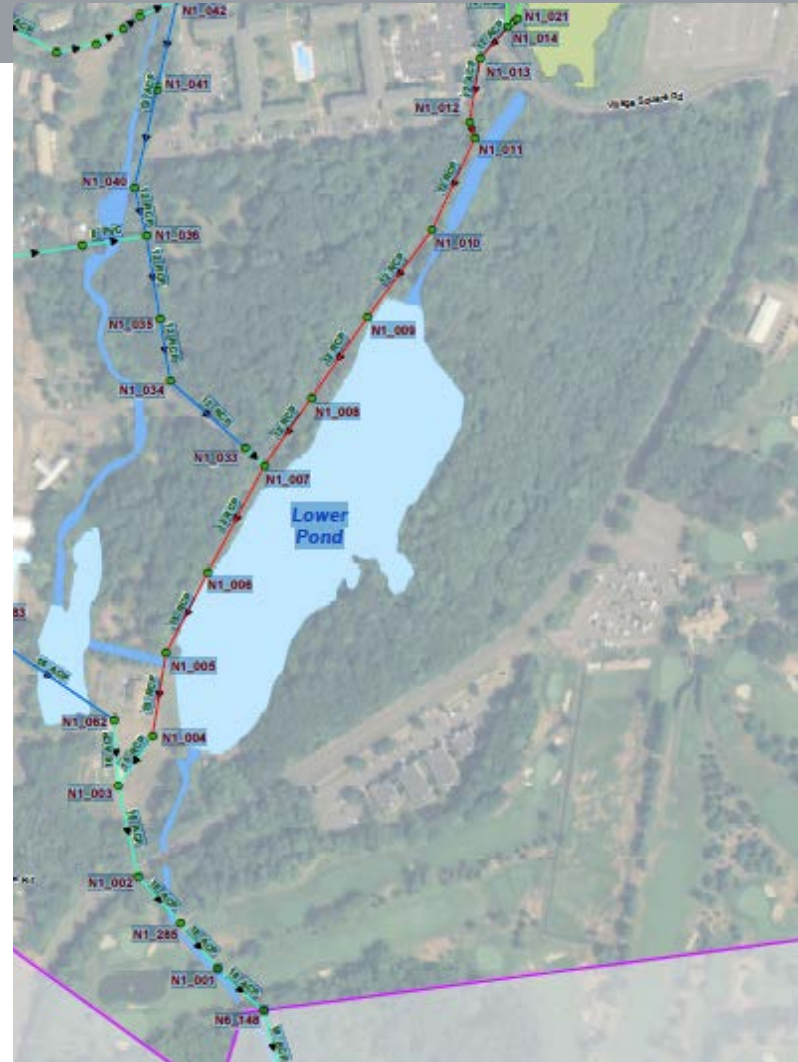


Figure 1
2013 Sewer System Evaluation Survey
Sewer Sub-Basin Boundaries
City of New Britain, Connecticut
Comprehensive Environmental, Inc.

I/I STUDY FINDINGS

Sub-Basin N1

- Flows >4,000 gpd/idm



I/I STUDY FINDINGS

Sub-Basin C9

- Flows >4000 gpd/idm
- Historic surcharge events
- Numerous clean water connections



I/I STUDY FINDINGS

- Most of SSES work completed within Sub-Basin C9
- Limited investigations completed in Sub-Basins S7 and N1
- Goals of SSES to identify potential system improvement projects to reduce I/I and implement cost-effectively



I/I STUDY FINDINGS

- Observed Infiltration Deficiencies of 400,000gpd
- Inflow Deficiencies at 800,000 gpd
- Developed 7 Rehabilitation Projects
- Prioritized projects based on payback period



PROJECT SAVINGS

- The combined approach of Flow Metering and SSES saved over \$300,000 in study costs
- The focused approach found the equivalent or more I&I than traditional approach.
- Provided a detailed snapshot of one whole sub basin
- Identified deficiencies from previous rehabilitation work



QUESTIONS

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