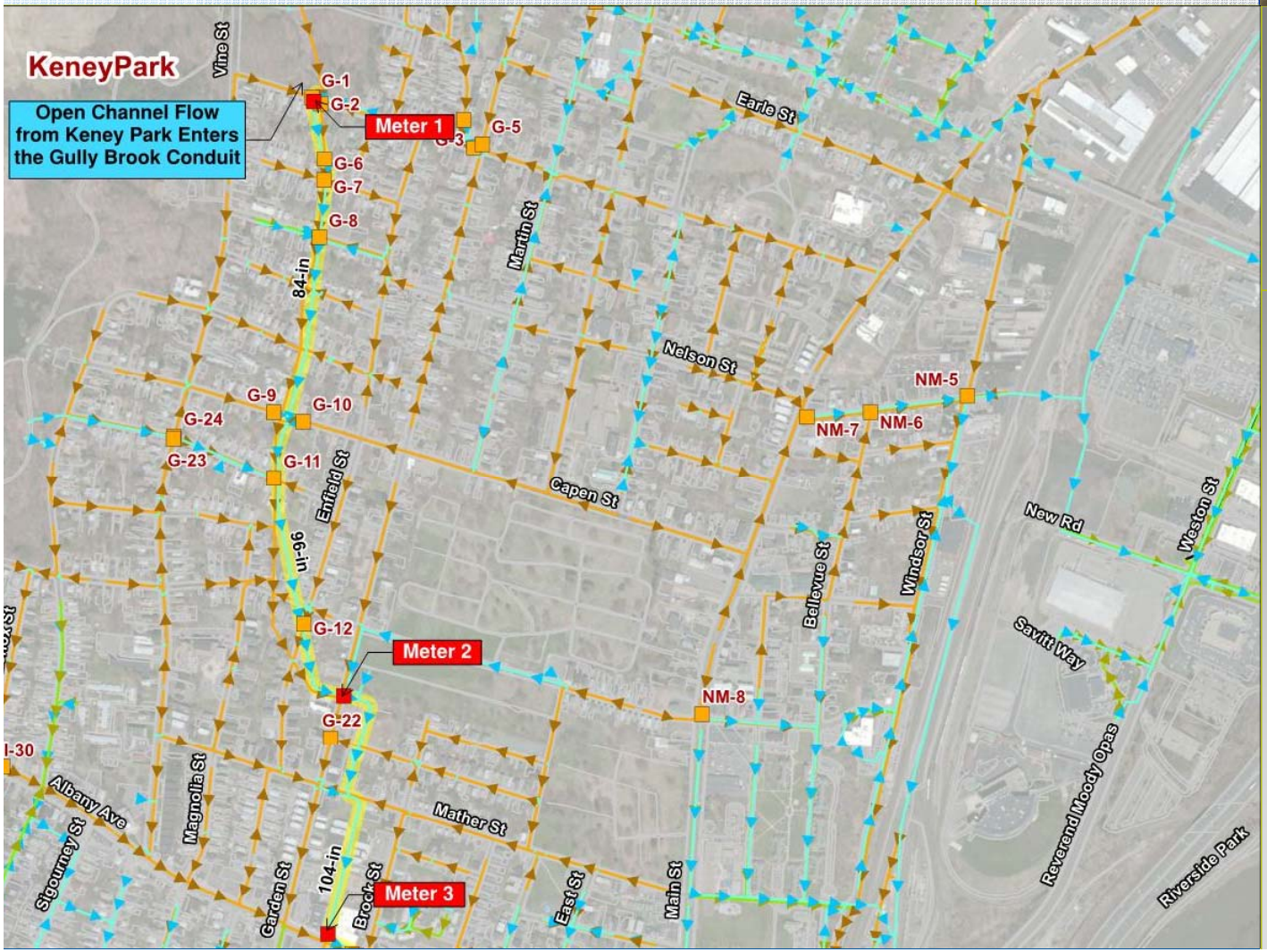
Gully Brook Conduit Sewer Connection Detection and Inspection Program

The Metropolitan District Commission – Hartford, CT



Cynthia A. Baumann, P.E.

CT Association of Floodplain Managers - Annual Conference
October 25, 2016

CDM Smith

MDC

Presentation Outline

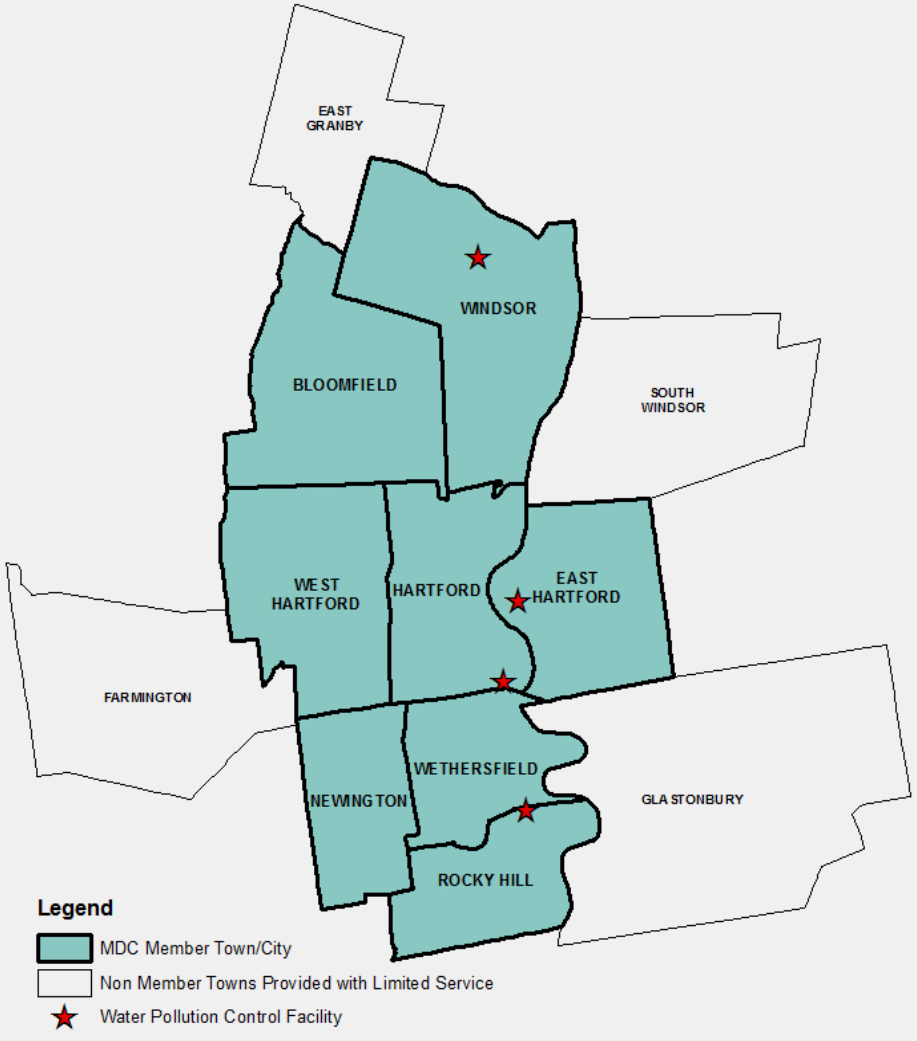
- Background
- Approach
  - Illegal Sanitary Connection Investigation
- Recommendations
- Results

Background

The Metropolitan District Commission (MDC) is a nonprofit municipal corporation chartered in 1929

Our mission is to provide our customers with safe, pure drinking water, environmentally protective wastewater collection and treatment and other services that benefit the member towns

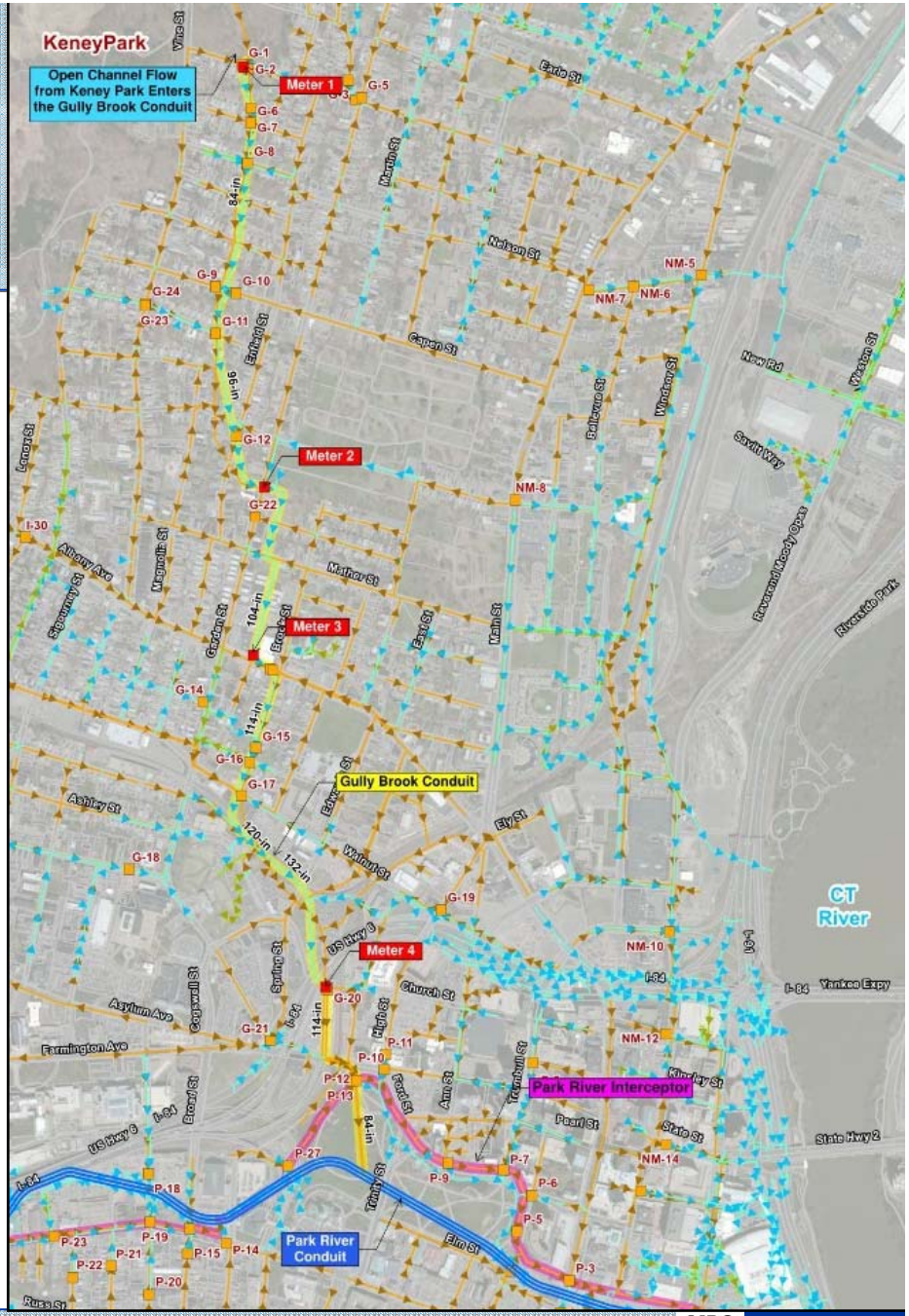
We provide water, sewer and household hazardous waste collection to its member towns and treated water to portions of non-member towns



Background (cont.)

Gully Brook Conduit

- Conveys Gully Brook approximately three miles underground
- Ranges in height from 72-inch to 132-inch diameter
- Received sanitary and storm water flows from approximately 1,330 acre drainage area

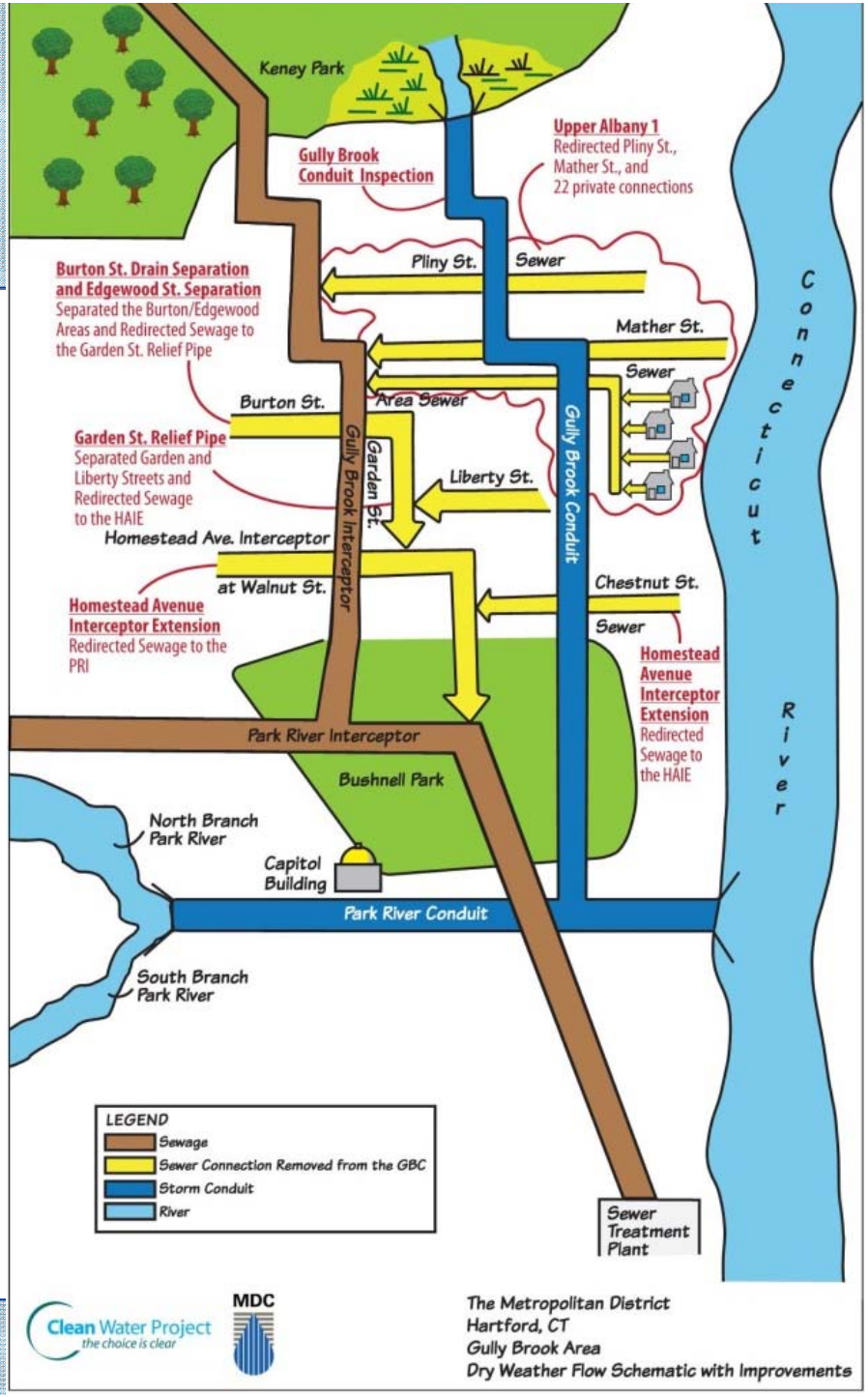


Background (cont.)

Separation Projects

- Edgewood Street Separation – July 2011
- Homestead Avenue Separation – December 2011
- Garden Street Relief Sewer and Liberty Street Sewer – August 2012
- Burton Street Sewer Separation – December 2012
- Upper Albany Street Separation – October 2015

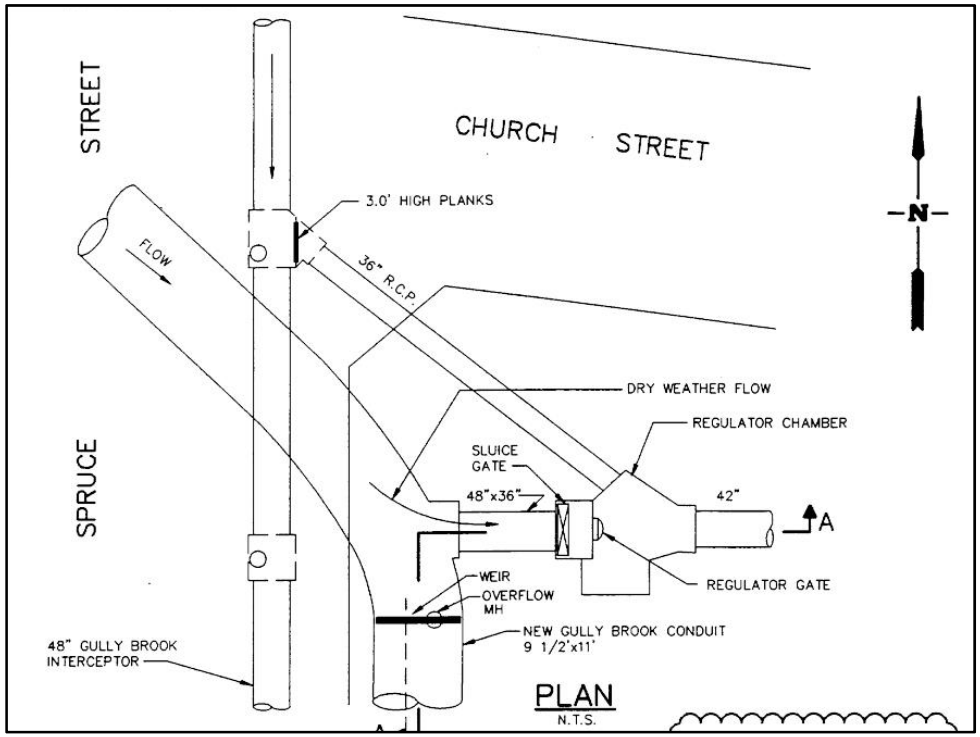
- $93M and over 10 years to complete



Background (Cont.)

G-20 CSO Regulator

- Directs dry weather flow to the combined system
- Wet weather overflow discharges to Connecticut River



Background (Cont.)

Goal

- Identify unknown sewer connections
- Remove all sewer connections from tributary drains and connect to adjacent sewers
- Remove Gully Brook from the combined system

Approach

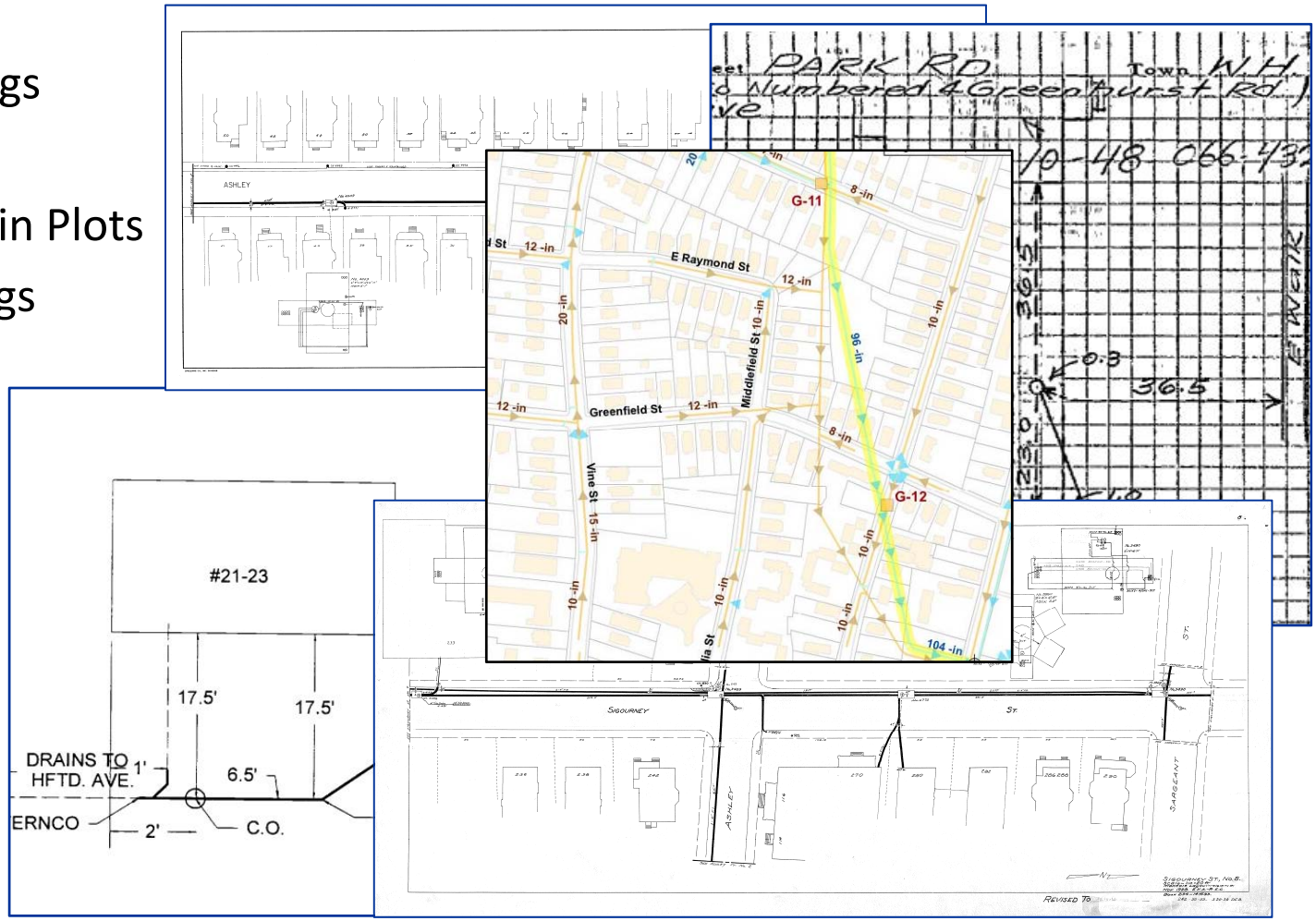
<u>Illicit Sanitary Connection Investigation</u>

- Gather Data
- Flow Meter Program
- Visual Inspection
- CCTV Inspection Program
- Dye Testing Program
- Recommendations
- Results

Illegal Sanitary Connection Investigation

Gather Data

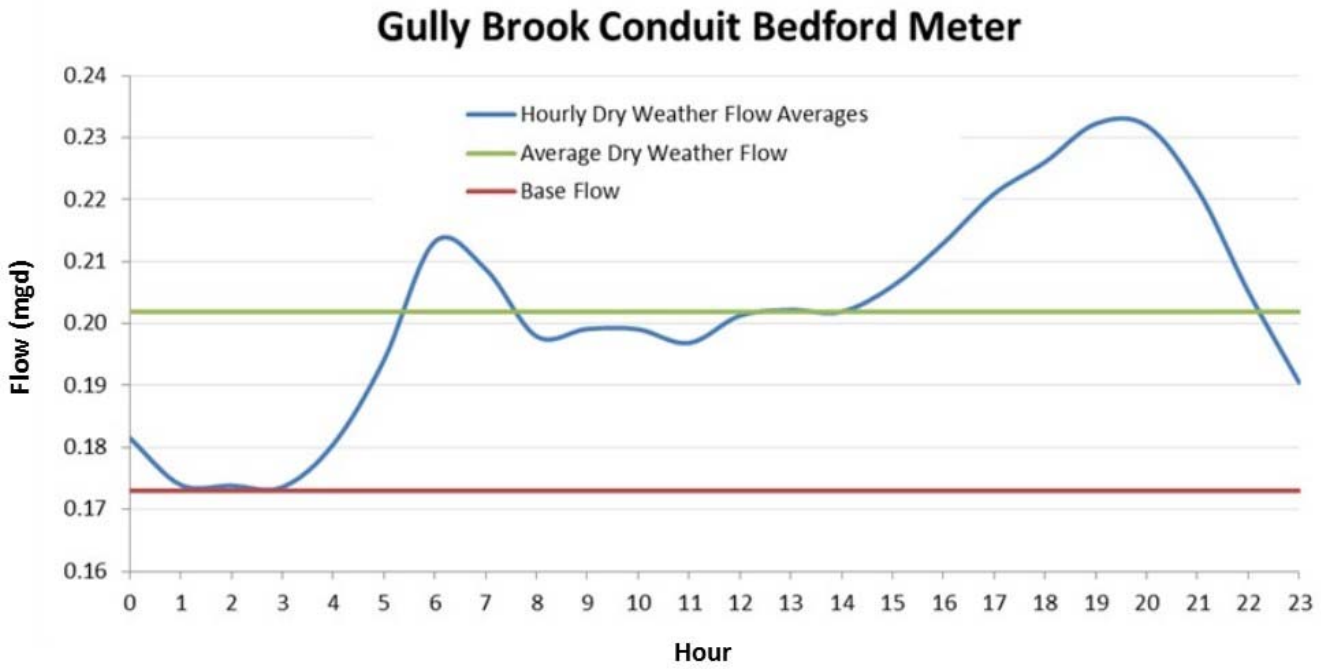
- Record Drawings
- GIS Data
- Sewer and Drain Plots
- Design Drawings
- As-builts
- Tie Cards



Illegal Sanitary Connection Investigation (Cont.)

Flow Meters

- Four meters installed (upstream, downstream and two intermediate points)
- 55,000 gpd of total sewage identified



Illegal Sanitary Connection Investigation (Cont.)

Dry Weather, Visual Inspection

- Six person crew including three person inspection team (CDM Smith and Flow Assessment Services)
- Inspections preceded by >48-hrs of dry weather
- Identify, photograph and characterize all pipe connections

Illegal Sanitary Connection Investigation (Cont.)

Dry Weather, Visual Inspection

- Sample dry weather flow
- Sandbag and re-inspect dry connections
- Connections with visible sanitary flow not sampled

Illegal Sanitary Connection Investigation (Cont.)

Dry Weather, Visual Inspection

- 262 total connections
- 111 connections sandbagged
- 32 sampled by field test kits
- 14 connections identified for further investigation

Summary of Identified Connections

Reach	Capped	Drain Connection	Active Connection	Initial Flow Sample	Sandbag	Sandbag Sample	Total Sample	Sample Sent to Lab
-	3	0	1	1	5	3	4	4
A	3	0	1	0	4	1	1	1
B	8	0	0	0	4	1	1	1
C	7	0	0	2	3	0	2	1
D	14	0	0	0	3	0	0	0
E	22	1	1	3	16	2	5	4
F	41	0	3	4	39	4	8	2
G	22	0	1	2	27	0	2	2
H	2	0	1	2	4	0	2	1
I	1	0	0	5	6	2	7	6
Total	123	1	8	19	111	13	32	22
Total Connections = 262								

Illegal Sanitary Connection Investigation (Cont.)

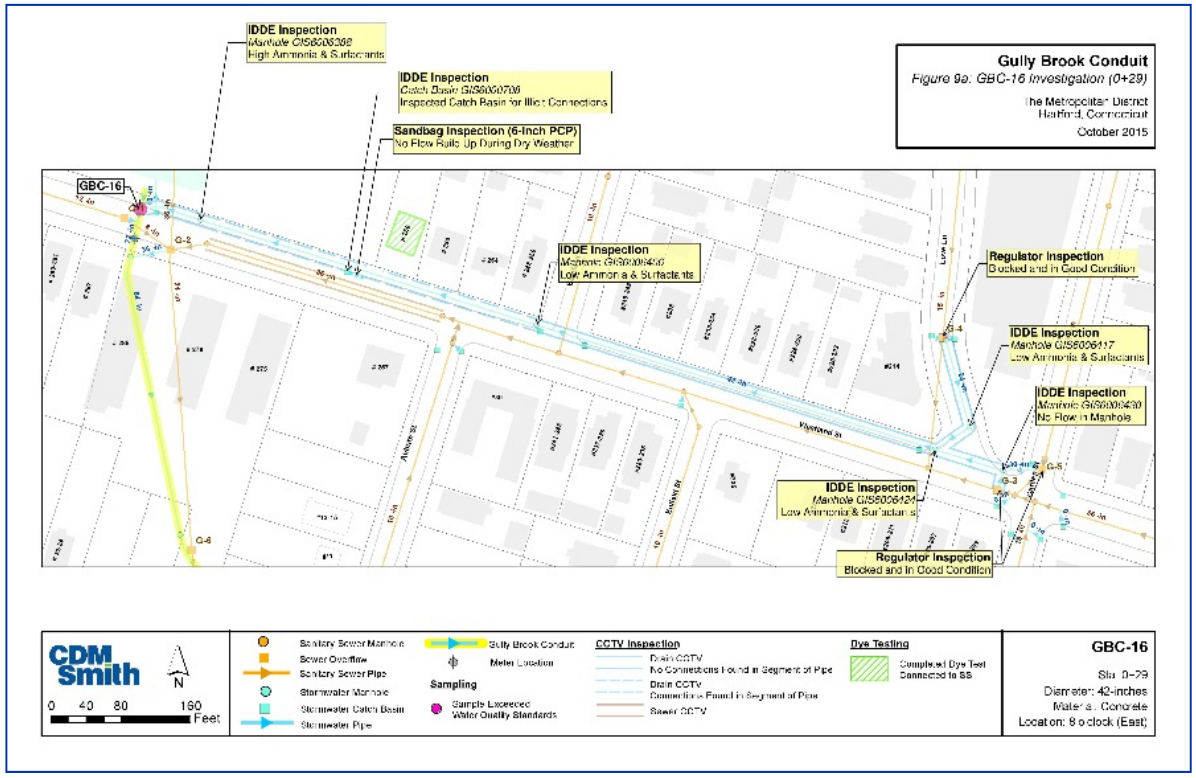
<u>Regulator Inspection, Illicit Discharge Detection and Elimination (IDDE) and CCTV</u>

- No sewer flow in drain pipes
- Two sewer service connections discharging to overflow side of CSO Regulator G-10

Illegal Sanitary Connection Investigation (Cont.)

Regulator Inspections, IDDE and CCTV

- IDDE inspection completed on sideline pipes and structures
- Field test kits for surfactants and ammonia



Illegal Sanitary Connection Investigation (Cont.)

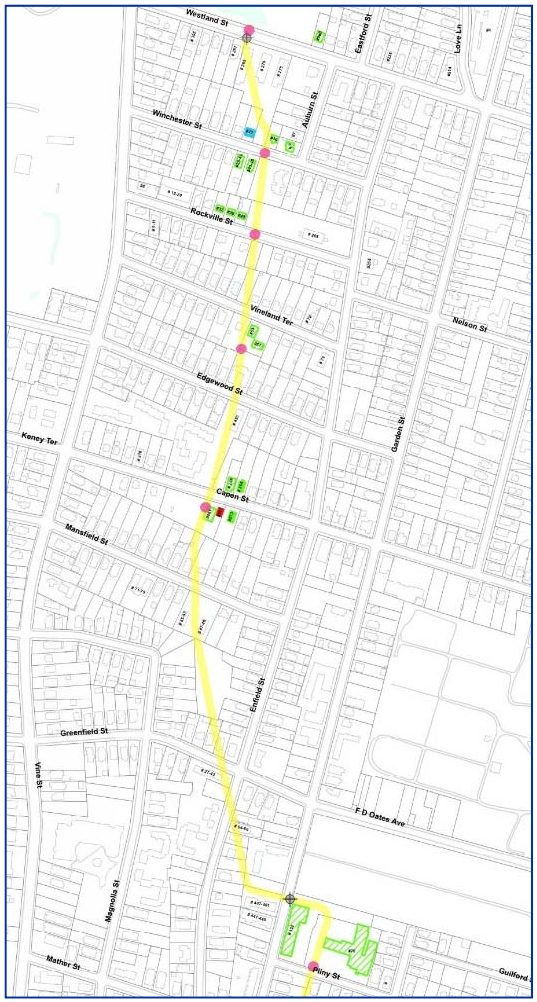
<u>Regulator Inspections, IDDE and CCTV</u>

- CCTV inspection of 8,210 LF drain pipe and 2,825 LF of sewer pipe

Illegal Sanitary Connection Investigation (Cont.)

Dye Testing Program

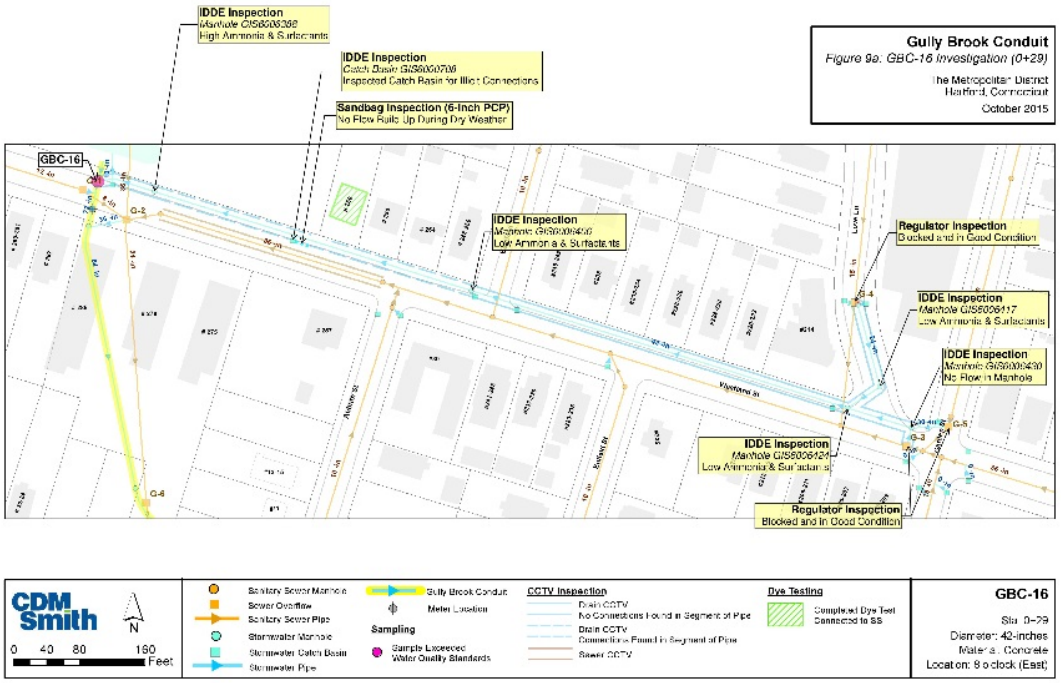
- 116 buildings targeted
- 108 buildings dye tested
- Five illicit building sewer connections to drain pipe identified

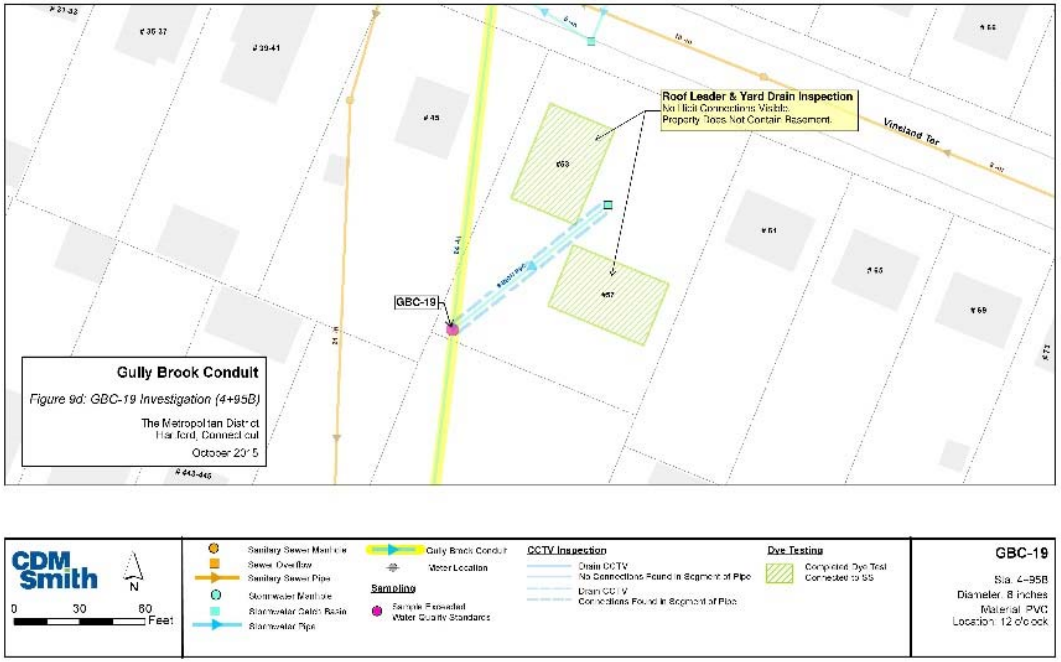


Recommendations

No further action:

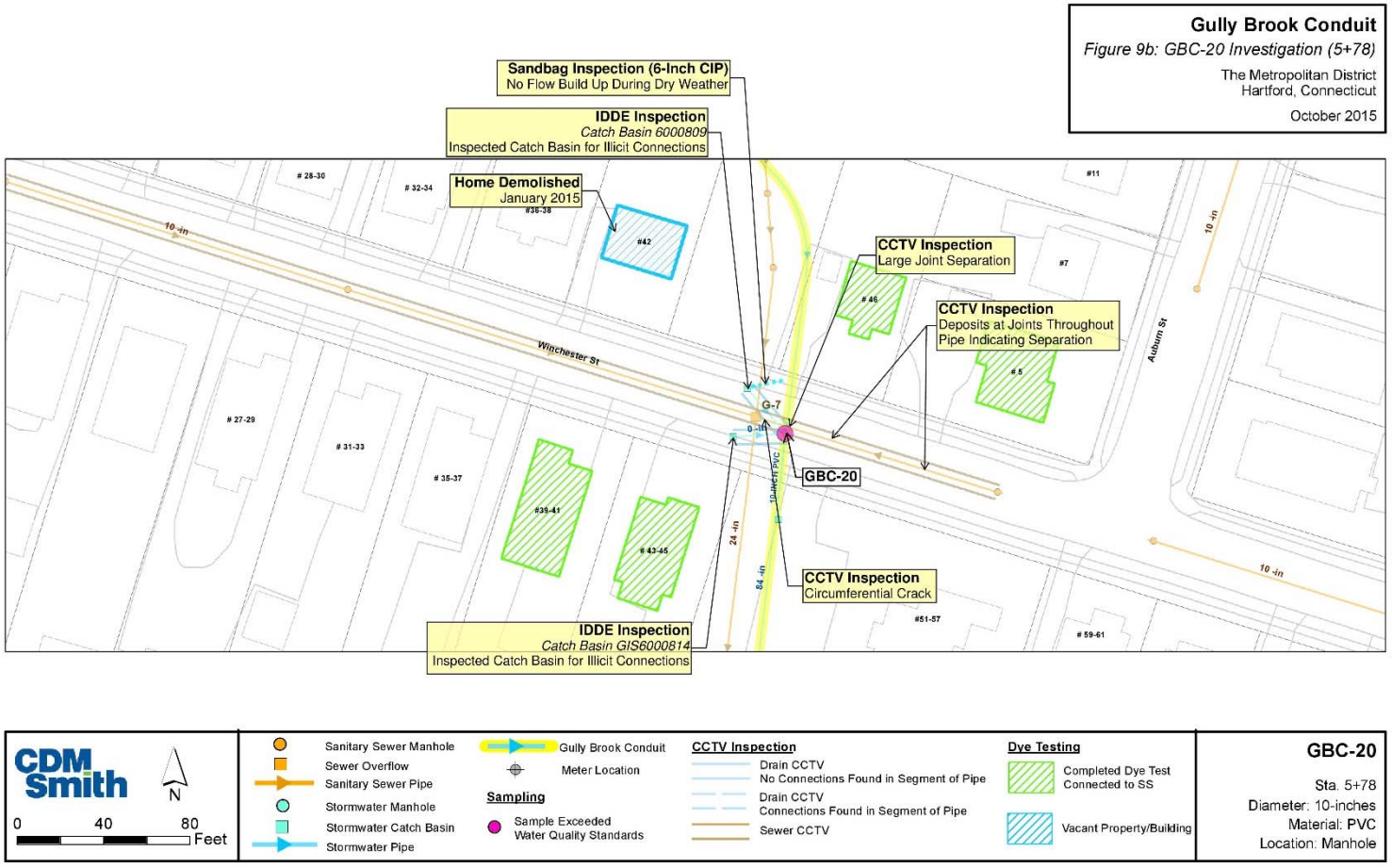
- GBC-16
- GBC-19
- GBC-25
- GBC-13
- Liberty Street Connection





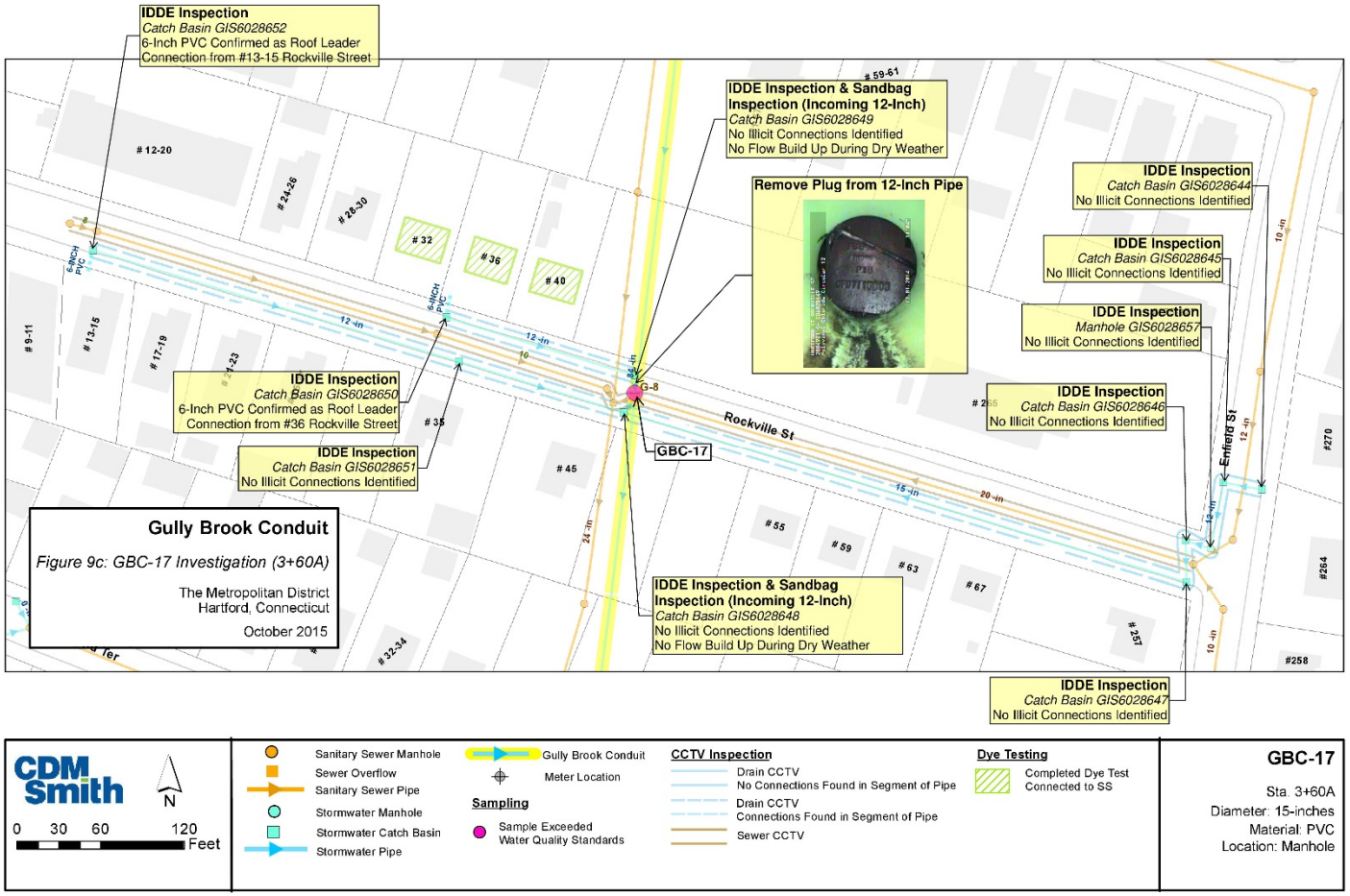
Recommendations (Cont.)

GBC-20 - Cured-in-place-pipe (CIPP) line adjacent sewer to prevent exfiltration



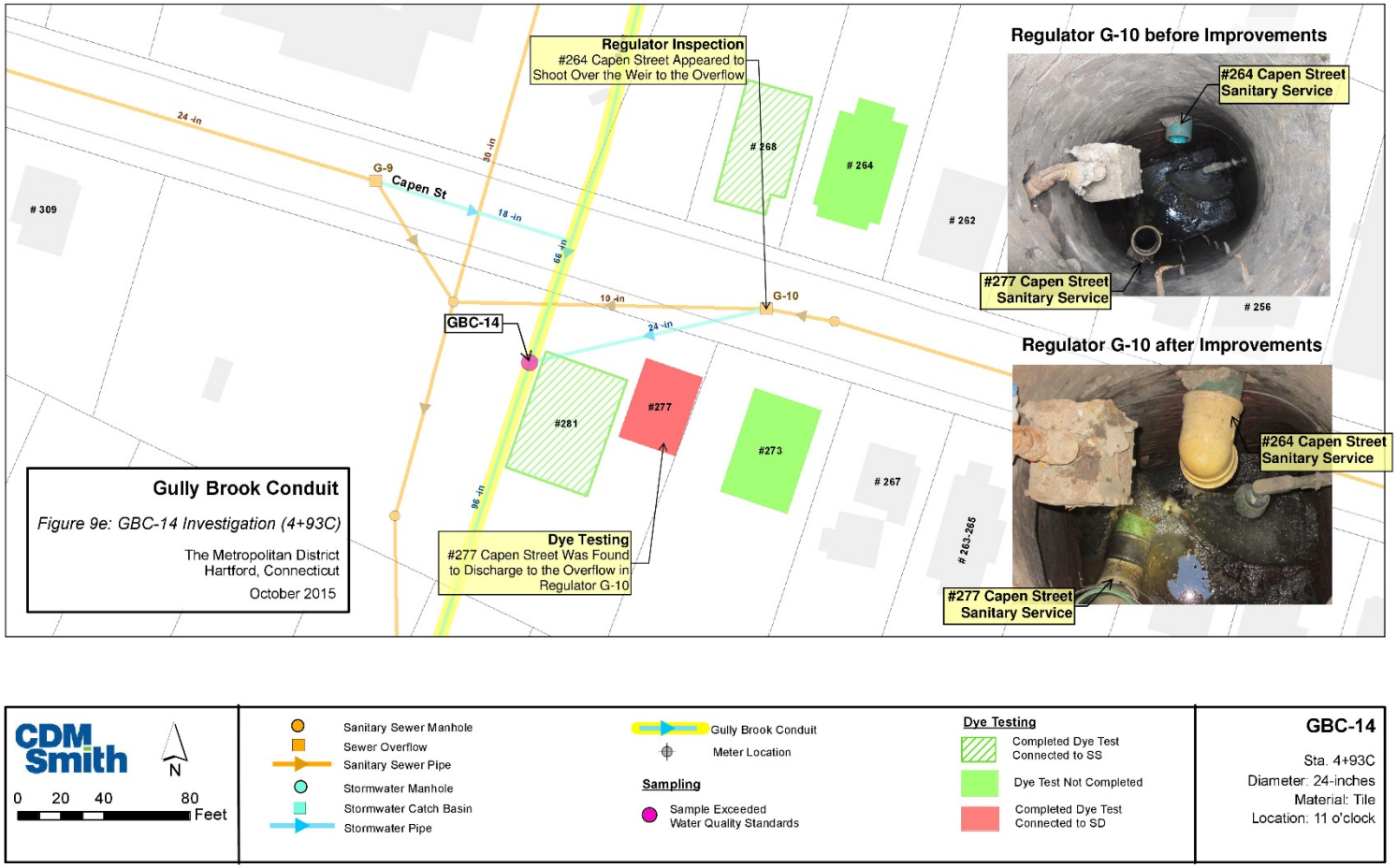
Recommendations (Cont.)

GBC-17 – Drain improvements



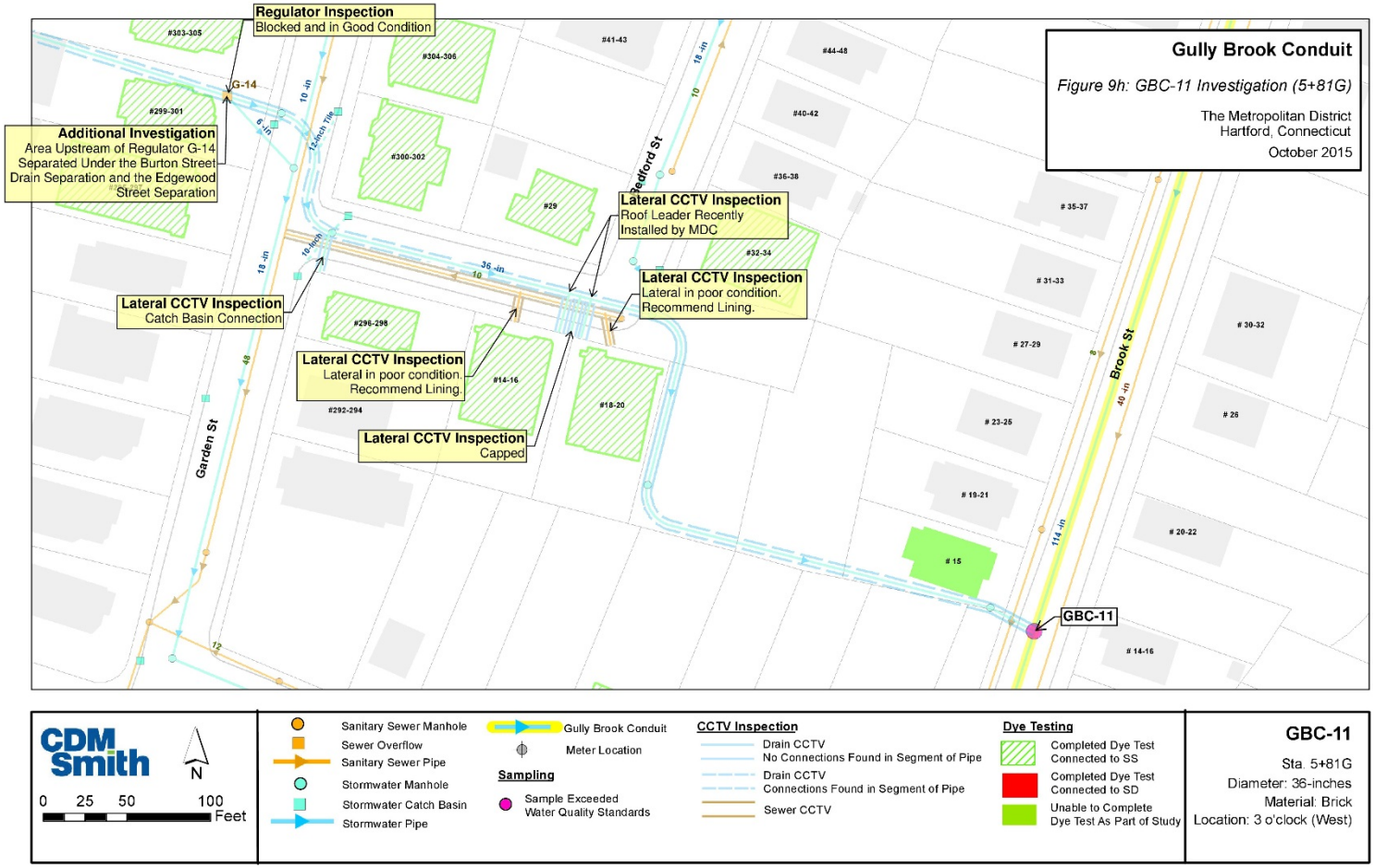
Recommendations (Cont.)

GBC-14 - Adjust two sewer services in Regulator G-10 to discharge on sewer side



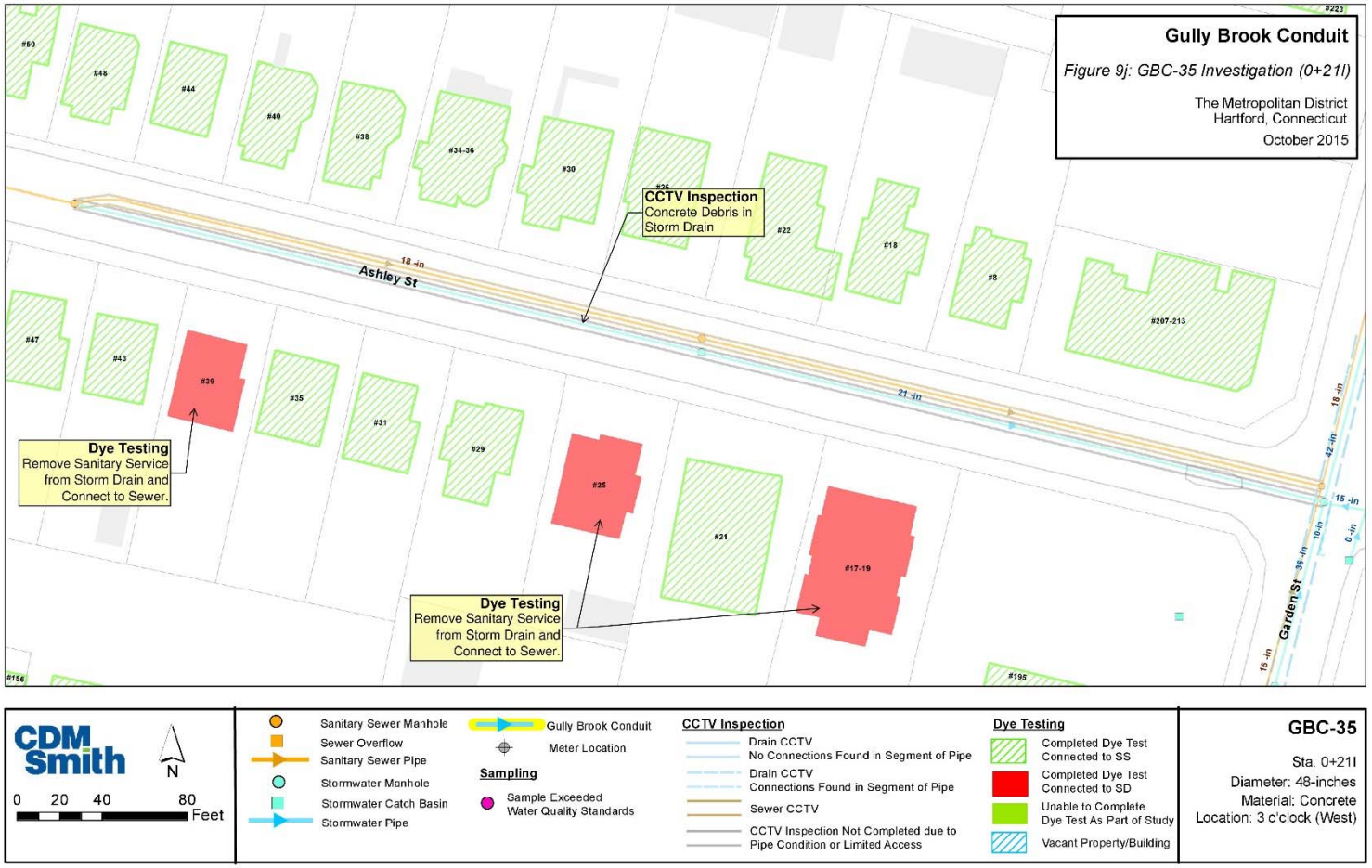
Recommendations (Cont.)

GBC-11 - CIPP two sewer services to prevent exfiltration



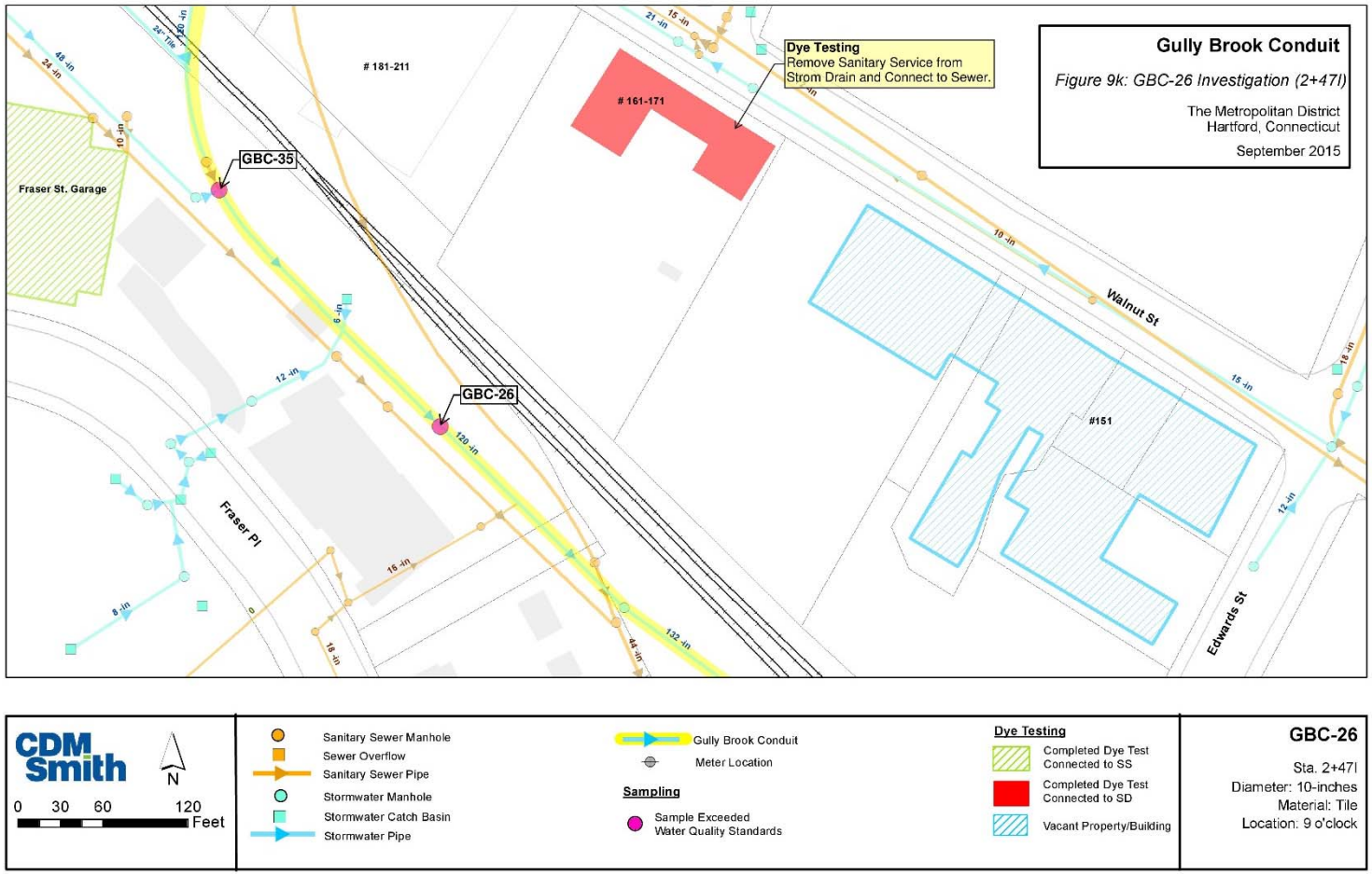
Recommendations (Cont.)

GBC-35 - Drain improvements and disconnect three sewer services from drain



Recommendations (Cont.)

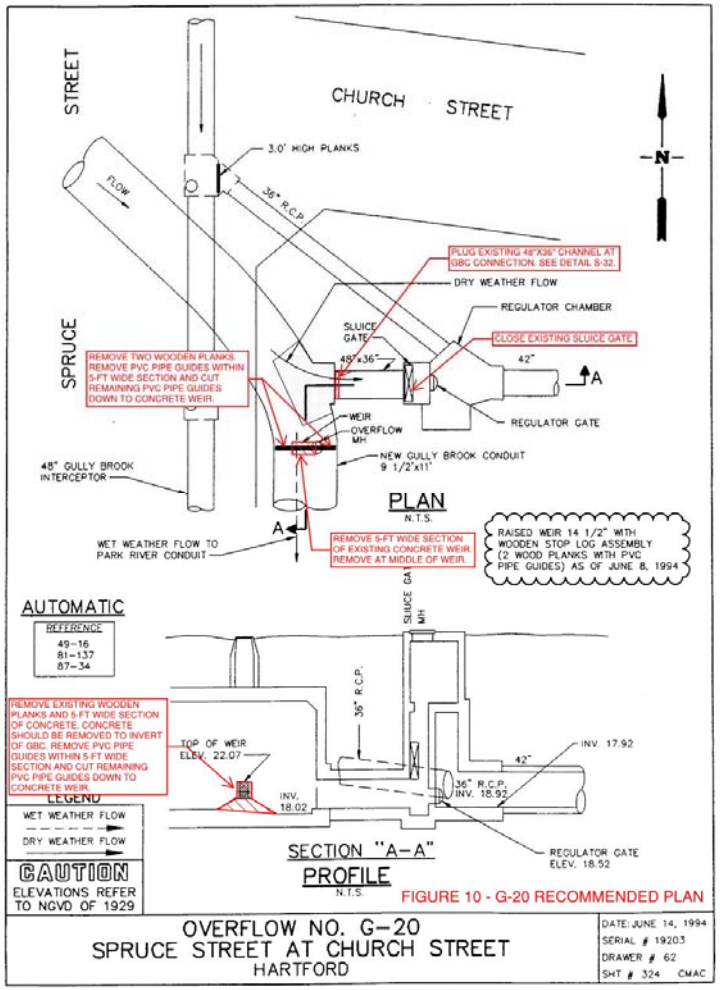
GBC-26 - Disconnect one sewer service from drain



Recommendations (Cont.)

CSO Regulator G-20

- Close existing sluice gate
- Plug connection point
- Remove portion of weir



Results

- All recommendations were completed.
- Adjustments to the CSO Regulator G-20 were completed by MDC.

Questions