

# Another Look at Private Property – Sharing Information Across the Country

December 12, 2007 🌧 1:00-3:00pm EDT



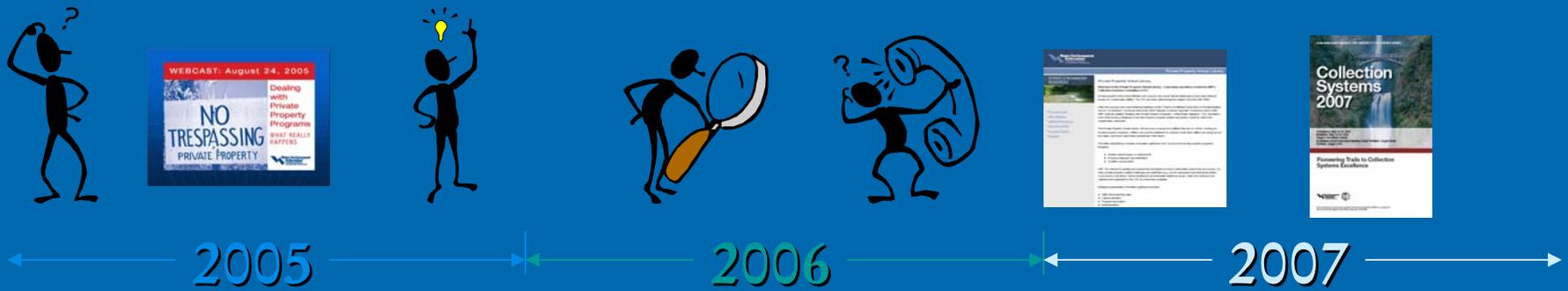
# Acknowledgements

- WEF Collection System Committee
  - Laurie Chase, PE, Fuller Mossbarger Scott and May Engineers
  - Jaime Davidson, PE, Parsons
  - Jane McLamarrah, PE, MWH
- Renee Kayal and Susan Merther, WEF
- Participating Utilities
  
- Private Property Virtual Library (PPVL) Development Team
  - Laurie Chase, Chair
  - Jaime Davidson, Vice Chair
  - Bill Carter
  - Bruce Cohen
  - Carol Hufnagel
  - Jane McLamarrah
  - Mike Anderson
  - Mike Greene

# Another Look at Private Property...

- The purpose of this webcast is:
  - to introduce the private property virtual library,
  - to present case studies of utilities, and
  - to promote the exchange of useful information
- Private Property Program Perspectives:
  - Initially evaluating program options
  - Implementing programs
  - Lessons learned from sustained program

# WEF Private Property Virtual Library



Online now at

[www.wef.org/PrivateProperty](http://www.wef.org/PrivateProperty)

# Webcast Speakers



Charles Martin, PE – Director,  
Lexington-Fayette Urban  
County Government (LFUCG)  
Division of Water and Air  
Quality (KY)

Thomas Whetham, PE – Deputy  
Commissioner, Erie County  
Department of Environment and  
Planning (NY)



Doug Humphrey, PE – District Manager, Stege  
Sanitary District (CA)

# Private Property Program Development

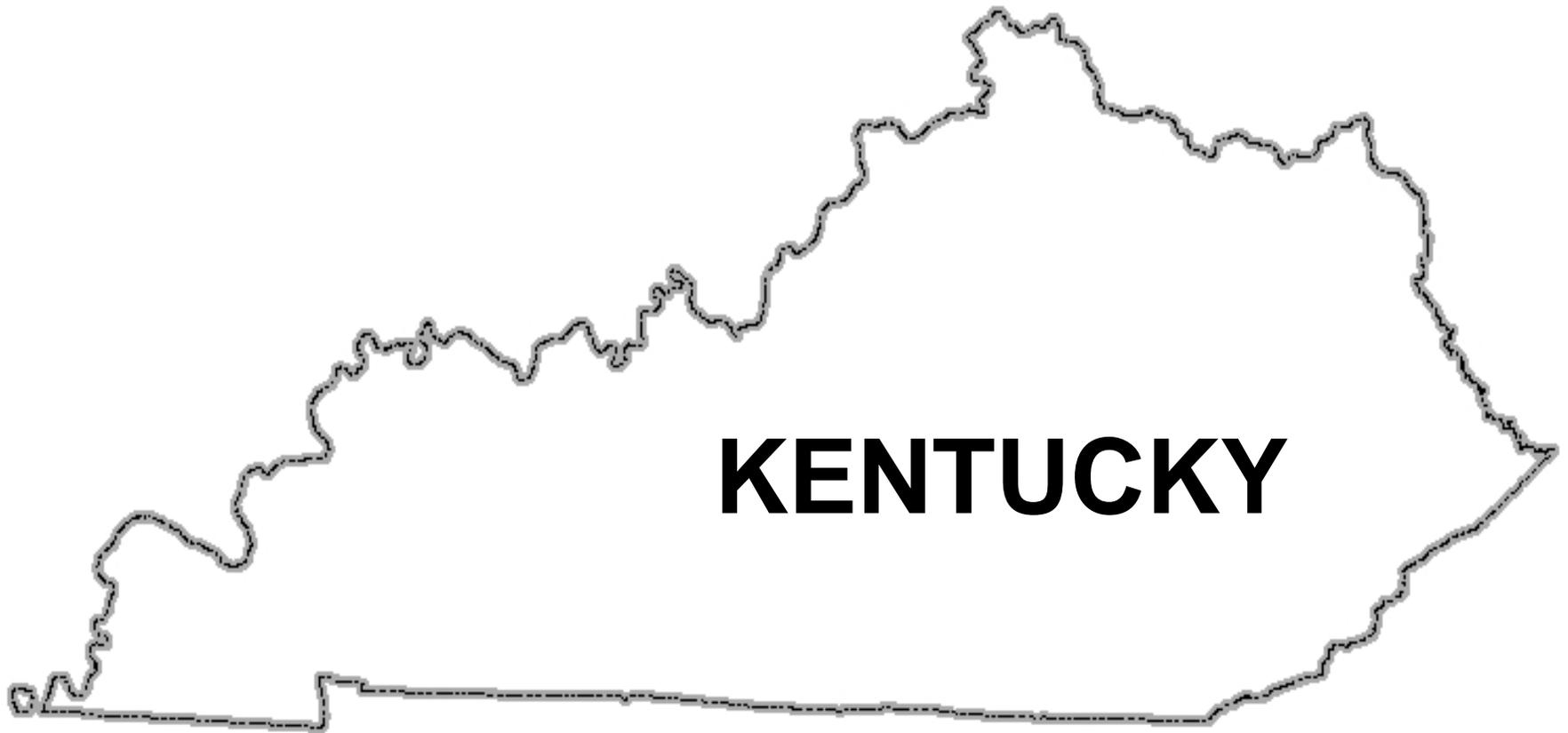


Lexington-Fayette Urban County Government  
(LFUCG)

Charles H. Martin, P.E.

Director – Division of Water & Air Quality





**KENTUCKY**

**FAYETTE COUNTY**



**URBAN  
SERVICE  
BOUNDARY**

**FAYETTE COUNTY**



# Background

## LFUCG Sanitary Sewer System

- Combined City / County Government
- Urban Service Boundary Defines Service Area
- System Size - 1,100 miles of pipe
- System Size – 90,000 customers
- Average day flow approx. 36 MGD; peaks in excess of 110 MGD

# The “Issue”



# Background

## LFUCG Sanitary Sewer System Service Lateral Ownership

- Public – from main to edge of right of way or easement.
  - Private – from edge of right of way or easement to structure.
  - Historically – no clean-out installed at public / private interface.
- 

# Current Private Property Programs “Positives”

- Sump pump redirects from sanitary sewer.
- 983 completed between (1997 and 2007)
- Average cost - \$1950 / redirect



# Current Private Property Programs “Positives”

- Installation of clean-outs at public /private interfaces on service laterals.



# Current Private Property Programs “Negatives”



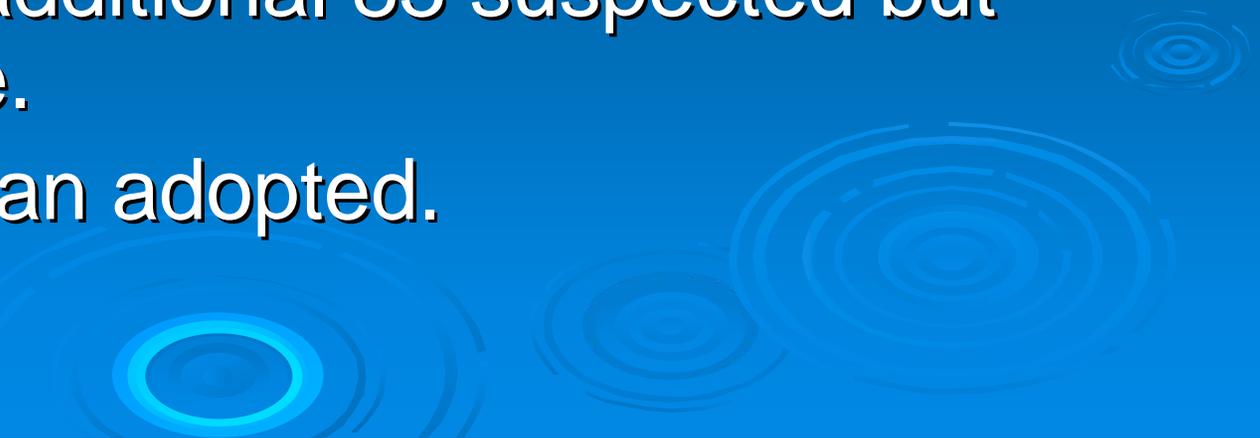
- Sump pump redirects are voluntary and funded exclusively by user fee.
- No enforcement capability for other private property generated problems (laterals, grease, other I/I sources).
- Ordinances prohibit “clear water” discharges – lack of political will to enforce.

# Past Efforts

- Mandatory sump pump inspection of residential structures concept presented to LFUCG Sanitary Sewer Oversight Committee (SSOC) in 2002.
  - Proposed requiring disconnection of improper sump pump connections to occur at time of property transfer.
  - Proposal opposed by realtors for fear that inspections / mandatory redirects would negatively impact sales.
- 

# Past Efforts

(cont.)

- Engineering evaluations of over 500 homes in Chevy Chase neighborhood.
  - Evaluations looking for all improper connections (sump pumps, foundation drains, area drains, etc.)
  - 72 improper connections to sanitary sewer confirmed, additional 83 suspected but inconclusive.
  - No action plan adopted.
- 

# Sump Pump Connected to Sanitary Sewer



# Area Drains Connected to the Sanitary Sewer



# Past Efforts

(cont.)

Grease interceptor ordinance challenges.



# Renewed Efforts

- LFUCG currently negotiating a federal Consent Decree (CD) for un-permitted discharges (SSOs).
- Outcomes of CD - Capacity evaluations / remedial action plan.
- Private property program is critical to success of any remedial action plan.

# What Are LFUCG's Options?



# Do nothing about private property I/I sources?

- Probable outcome – remedial measures plan that over-sizes conveyance system and treatment plants.
  - Probable outcome – high costs for collecting, conveying and treating “clear water”.
- 

# Provide financial assistance to private property owners for remediation of I/I sources?



- Current rates do not support.
- General opposition to higher rates.
- Localized opposition of some property owners – users fees benefiting private property.

# Force Private Property Owners to Pay for Corrective Actions of Their Property?



- Political challenge.
- Legal challenges (access for inspection, method for enforcement of corrective action).
- Absentee property owners.
- Fixed income property owners.
- Equity issues.

# Developing a Plan

- Quantify the issue for decision makers.
- Develop cost comparisons for alternatives.
- Gain support from citizen groups.
- Initiate pilot programs that generate “real numbers” and participant feedback.

# PROGRESS IN “GAINING SUPPORT”

## Sanitary Sewer Oversight Committee

- Sub-committee formed in 2007.
- LFUCG Councilperson leadership.
- Stakeholders – public & private sector.
- Developed “Conceptual Action Items” for implementation



# CONCEPTUAL ACTION ITEMS

	Concept	Description	Action Taken
1	Point of Sale	Inspect properties during the sales process to identify and correct private property inflow and infiltration sources and defective sewer laterals. Also, install a cleanout at the right-of-way to provide access for internal inspection and cleaning.	Forward to Sanitary Sewer Oversight Committee (SSOC)
2	Cleanout Cap Replacement	Create a policy to allow sewer maintenance workers to replace missing or broken cleanout caps. Prevents inflow and provides access for cleanout and inline inspections.	Forward to SSOC.

# CONCEPTUAL ACTION ITEMS

	Concept	Description	Action Taken
7	Lateral Inspection and Repair/Replacement Program	Establish a program to allow LFUCG to maintain and repair laterals. Allows access for repair, inspection and maintenance. Allows for cleanout installation and cap replacement.	<p>Need to visit another community to see how it is being done elsewhere. There are several ways this type program can be run. Some charge everything to the homeowner, some do the work and place a lien on the property, some charge a separate fee and pay for the work out of that money. Also, there will be legislation needed on the State level. Ed Gardner continues to search for similar legislation. First you would need enabling legislation allowing governments to work on private property, then you would need separate legislation setting up how to pay for it.</p> <p>Further investigation – Wait until we know more about the system's needs.</p>
7A	Property Owner Line Fee	Fee that provides funds for LFUCG to maintain and repair laterals, probably to within a few feet of the structure. Allows access for repair, inspection and maintenance. Allows for cleanout installation and cap replacement.	See above.

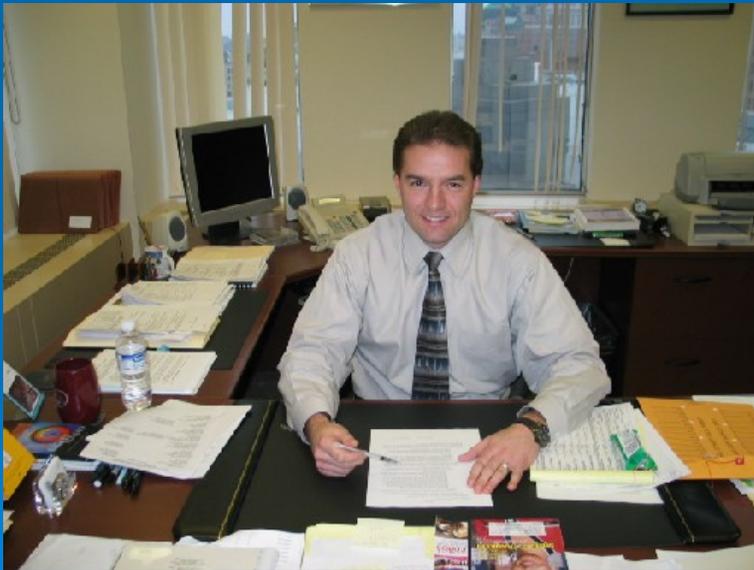
# DESIRED OUTCOMES

- Concepts that can be implemented.
  - Flow reductions / concept costs for cost / benefit analysis.
  - ZERO SSOs!
- 



QUESTIONS?

# Infiltration and Inflow (I&I) Reduction Program



Erie County Department of  
Environment and Planning, New  
York

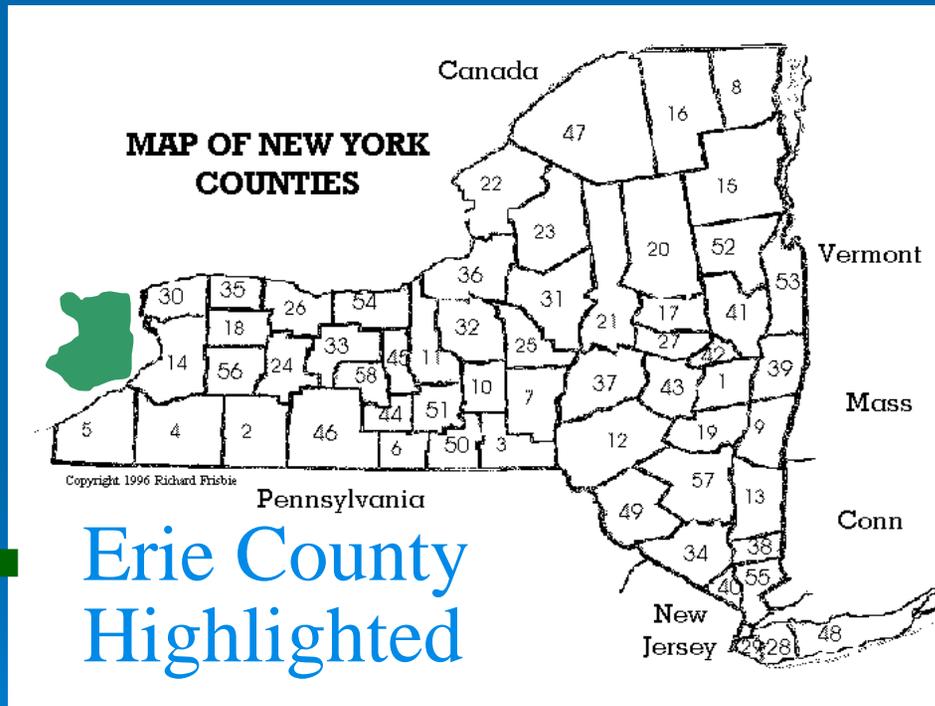
Thomas Whetham, P.E.  
Deputy Commissioner



# Agenda

- Background
  - Erie County, NY
  - Division of Water Quality Management (DSM)
- I&I Program Overview
- Cooperative Efforts with the NYSDEC and Local Developers
- Results for Future Development
- Continuing I&I Efforts
- Questions and Comments

# Background



## ➤ Western New York State (WNY)

- Erie and Niagara Counties
  - Buffalo and Niagara Falls



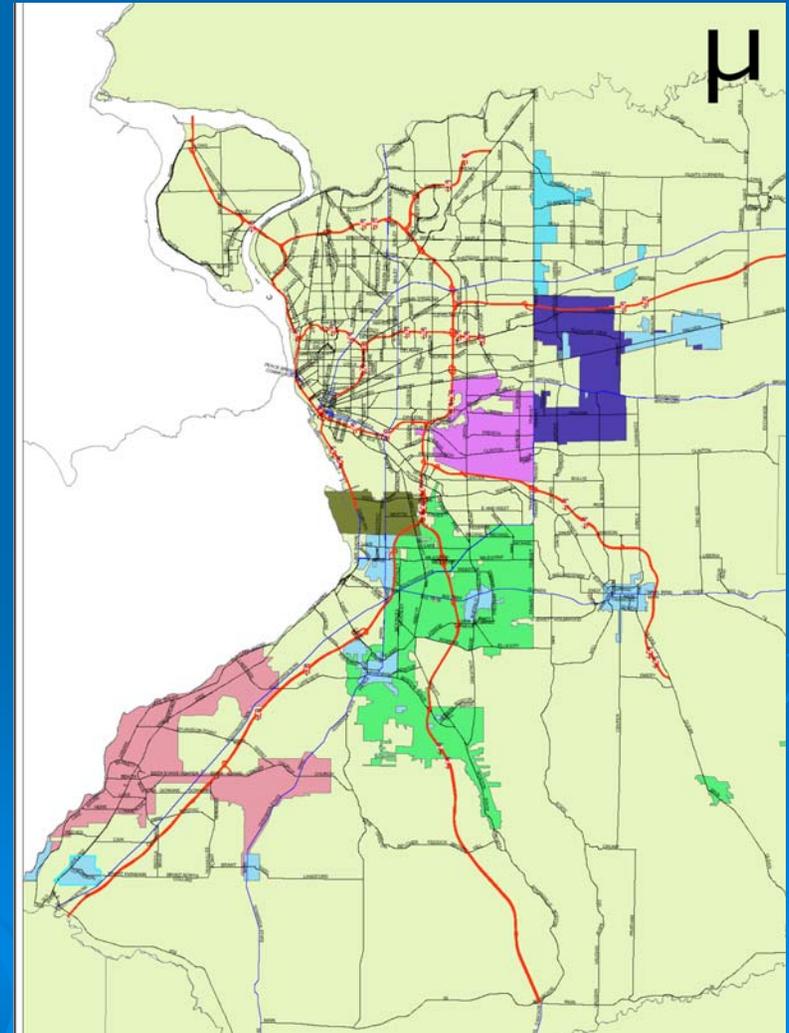
# Mission Statement

- The mission of the Erie County Division of Water Quality Management is to provide cost effective, customer oriented, safe, reliable and sustainable wastewater service that protects public health and enhances our natural environment.



# Infrastructure to Deliver Service and Achieve Mission

- Approx. 1,000 miles of sewer
- 20,500+ manholes
- 100 pumping stations
- 5 overflow retention facilities
- 462 low pressure grinder units



# Challenges to Achieving the Mission

- Age of infrastructure
  - Economic condition of service areas
  - Aging workforce
  - Tightening permit conditions
  - Excessive wet weather flows
- 

# Today's Focus?

## ➤ Excessive wet weather flows

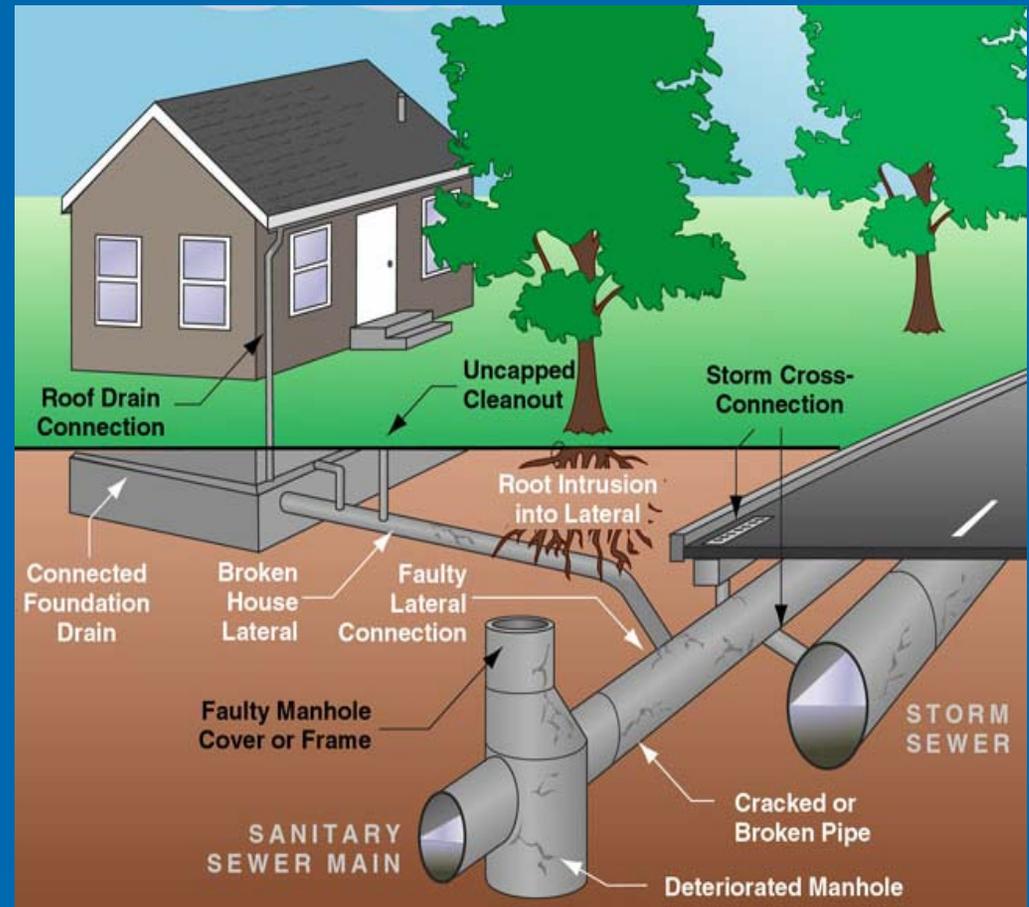
- Inflow and infiltration
  - Aging systems (mains and private laterals) admit rain and groundwater into sewer
  - Illegal connections into private laterals admit inflow

## ➤ Private laterals!!

- Defined as the connection from the private structure to the public main, up to and including, the actual connection to the main

# What is I&I?

Infiltration and Inflow (I&I) are sources of ground water and surface water that enter the sanitary sewer system through holes, breaks, joint failures, connection failures, illegally connected sump pumps, downspouts, and footing drains, and from cross-connections with storm sewers. High groundwater levels (infiltration) and storm events (inflow) can contribute to excessive sewer flows.



# Why do we care about I&I?

- I&I increases flow conveyed through the sewer system and the cost to provide service
- Increases sewer charges that businesses and residents pay for sewer service
- In NY State, the elements of the previously proposed CMOM Rule are being included in draft SPDES permits

# Source of Excessive Flows

- Failing Infrastructure
  - Public Component (15- 50%)
  - **Private Component (50 - 85%)**



# Public Component



Drainage Ditch Over Sewer – Smoke  
Indicates Leaks

# Private Component



Lawn Area on Private Property – Smoke  
Indicates Leaky House Lateral

# County Response

- Pursuing Elimination of Excessive Flows from Private Sources
- Increased System Evaluation Studies
  - Internal Effort – Dedicated Team
  - Some Use of Consultants
- Public System Improvements
  - Collection System Repair & Replacement
  - WWTP Capacity Improvements
  - Storage Facility Improvements (ORFs)

# I & I Removal - Private

- Public Education
- Private house inspections (sewer ordinance)
- Proposed law to repair or replace laterals
- Private/Public partnership to replace/repair laterals



# Public Education

- Created public education program
- Web site
- Door hangers
- Newsletters
  - Feature articles
  - Ongoing projects



Find it!

Erie County

# Division of Sewerage Management

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Search DSM

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## Environmental Programs

### Infiltration and Inflow (I&I) Program

What is I&I? Infiltration and Inflow is clean storm and/or groundwater that enters the sanitary sewer system through holes, breaks, joint failures, connection failures, illegally connected sump pumps, down spouts, and footing drains, and from cross-connections with storm sewers. Most inflow comes from storm water and most infiltration comes from groundwater. High groundwater levels and storm events can



# Door Hangers

- Hanger
  - Example: Home Grinder Pump Maintenance

**ERIE COUNTY  
GRINDER PUMP  
MAINTENANCE**



WORK PERFORMED AT YOUR  
ADDRESS \_\_\_\_\_  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_

PREVENTIVE MAINTENANCE  
 RESPOND TO GRINDER ALARM  
 RESPOND TO CALL  
 ALL WORK IS COMPLETE  
 WORK IS SCHEDULED  
WILL RETURN \_\_\_\_\_  
DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 PLEASE MINIMIZE H2O USAGE  
UNTIL REPAIRS COMPLETED

WORK ORDER \_\_\_\_\_  
QUESTIONS – PLEASE CALL  
TECHNICIAN \_\_\_\_\_

ERIE COUNTY AWT  
3690 LAKESHORE RD  
716-823-8188

# Sewer Ordinance

- Adopted by the Erie County Legislature
  - Local Law
- Article IV Sewage Discharge Regulations
  - Section 401 – Prohibited Discharges
  - ...the following substances and wastewaters are specifically prohibited from discharge to the sewer system
    - Surface runoff, groundwater, roof runoff, subsurface drainage, or cooling water

# Identification of Ordinance Violations

## ➤ House Inspection Program

- Systematic program to inspect connections into the public sewer system (10% of system per year)
- Notice to homeowner to setup an appointment
- Inspection, followed by identification of violations
- Notice to homeowner to correct violations

# Enforcement of Ordinance Violations

- Enforcement provisions in ordinance
  - Fines for failing to comply with request for inspection and for failure to correct violations
  - Up to \$500 per violation per day, \$10,000 maximum
  - Lengthy and cumbersome hearing process
    - Hearing officer with formal hearing proceeding
  - Fines included on County tax bill
  - Fines, if unpaid, become a lien on the property title

# Suggested State/Local Law

- Private Lateral and Plumbing Inspections at Time of Property Transfer
- Correction of Private Laterals and Footing Drains as a Requirement of Property Transfer



# Advantages of Law

- Addresses Long Standing Environmental / Health Problem Now
  - Failing Private Component of Infrastructure
  - Inability/Unwillingness of Municipalities to Correct
- Reduces SSOs & Beach Closings
- Supports Env. Groups and Regulatory Goals
- Erie County Takes Leadership Role in Addressing Problem

# Advantages of Law

- Reduces Cost Impact of SSO Elimination
  - Phased Remediation
  - Corrects Problem at Most Affordable Time for Owner
- Establishes Recurring Process
- Reduces WW Treatment and Conveyance Costs
- Positively Impacts Sewer Taxes & Charges
- Increases Capacity for Economic Development

# Consequences of Law

- 50% of House Laterals Need Repair Now, but...
  - Cost to Repair / Replace (\$2,000 - \$5,000) at the Time of Property Transfer
  - Lateral Repair as % of Sale Price (2 - 5%)
  - Monthly Cost Impact of Lateral Replacement \$10 to \$30 Over the 30-Year Life of the Lateral Repair/Replacement

Note: Average Home Sale Price (\$85,000) - See Next Slide

# Impact of Local Law on Home Sales

Regional Housing Statistics / Impact of Local Law

	<b>Occupied Housing Unit</b>	<b>Median Housing Unit Value</b>	<b>Sales for 2001</b>	<b>% of Homes Sold per Year</b>	<b>Average Sale Price</b>	<b>Lateral Repair As % of Sale Price</b>
Amherst	46,803	\$120,000	1,611	3.44%	\$124,300	2.41%
Buffalo	145,574	\$59,300	1,196	0.82%	\$60,400	4.97%
Cheektowaga	41,901	\$81,800	732	1.75%	\$73,700	4.07%
Tonawanda	34,634	\$85,100	751	2.17%	\$78,900	3.80%
West Seneca	18,954	\$95,200	394	2.08%	\$95,900	3.13%

Source: Buffalo Niagara Association of Realtors, US Census

# Where Else Has this Been Done?

- Erie County
  - Septic System Inspection/Replacement at Time of Property Transfer
- Tonawanda
  - Sump Pump Installation Req't at Time of Property Transfer
- Akron & Depew
  - Inspection (Illegal Connections) Prior to Transfer of Title
- Sarasota, Florida & Olmsted, Ohio
  - House Lateral Replacement Program

# Private Laterals Paradigm

- In NY State, public entity cannot spend public monies for private benefit.....
  - Sewer Laterals
- But, laterals are the most significant source of wet weather flows in sewer system
- NYSDEC policy on development in capacity constrained area
  - No development upstream of an SSO until SSO is eliminated, unless 4 times the amount of flow to be contributed by the development is removed
- Developers want to build in areas where sewer system is constrained during wet weather

# Private Lateral Repair Program

- Developers can make repairs to private property with private property owner consent
- Public sewer service provider can provide a list of repairs
- NYSDEC has accepted table that includes the value of wet weather flows removed per type of repair made to the system

## Erie County Sewer District's General Infiltration and Inflow (I&I) Source Flow Contributor

Problem Type	Severity	I&I Contribution (gpm)
<b>Manholes</b>		
Surface Water/Low-lying Manholes		4
Frame <sup>(1)</sup> , cone, barrel leaks	Slight	0.5
	Moderate	1
	Severe	2
Joint leaks	Slight	1
	Moderate	3
	Severe	5
Exposed frame and cone in ditch (Exterior)	Slight	5
	Moderate	10
	Severe	15
Cracks in the concrete or paved surface area surrounding a manhole with leaks in frame and cone		10

1. The term frame in this report includes the manhole frame adjustment rings or bricks beneath the frame.

## Erie County Sewer District's General Infiltration and Inflow (I&I) Source Flow Contributor

Problem Type	Severity	I&I Contribution (gpm)
--------------	----------	---------------------------

Pipe Segments <sup>(2)</sup>		
Joint infiltration or Cracked pipe		1
Pipe broken		2
Leaking lateral at the connection to the main		1
Sliplining/100 feet <sup>(4)</sup>	8" pipe	1.1
	10" pipe	1.25
	12" pipe	1.5
	15" pipe	1.88
	18" pipe	2.25

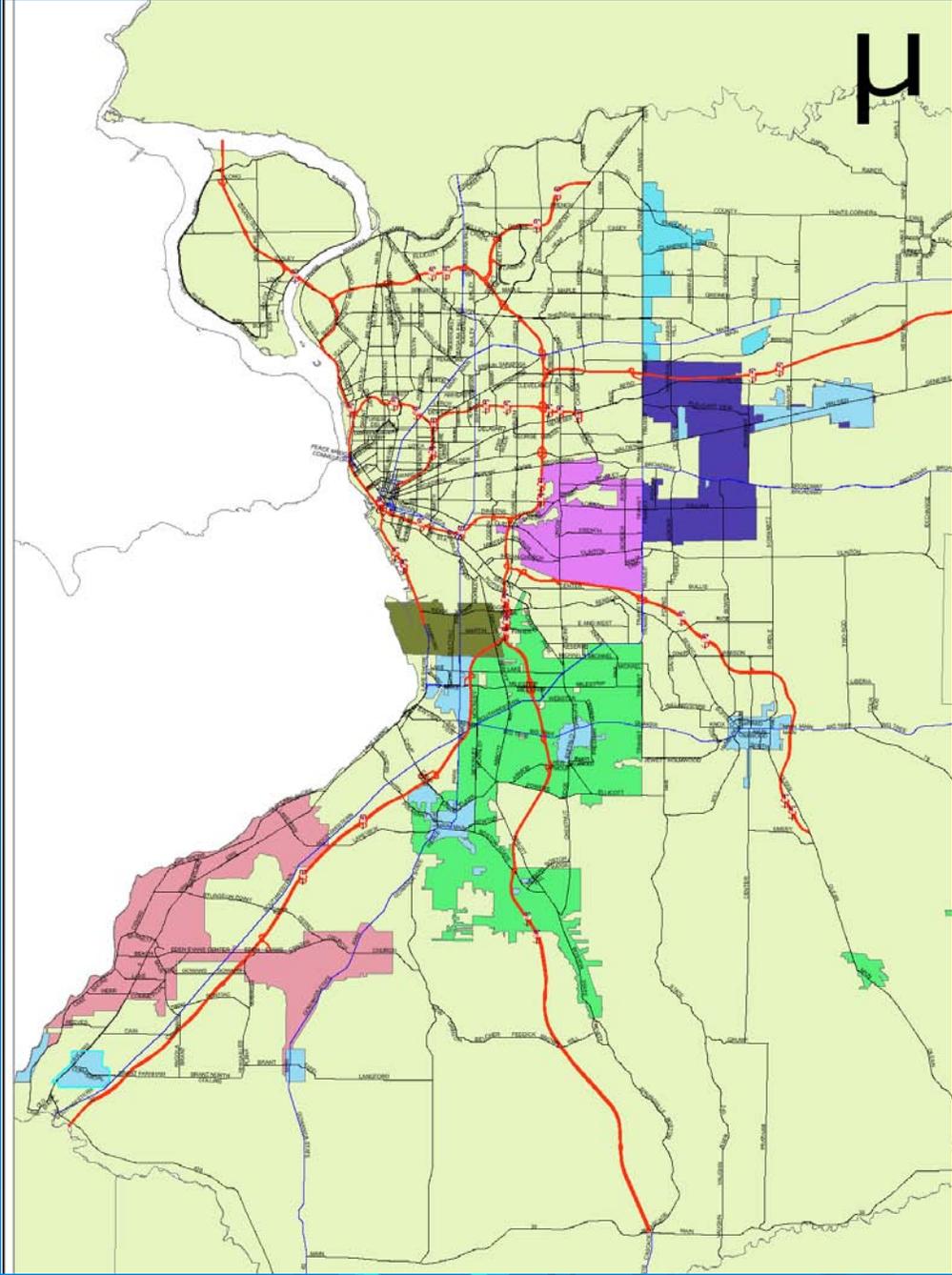
2. During the Parsons I&I study in ECSD 1 conducted in 2001, CCTV inspection was conducted in dry weather, under frozen ground conditions. Field observations were not always available, therefore, these general values were assigned to various defects.

## Erie County Sewer District's General Infiltration and Inflow (I&I) Source Flow Contribution

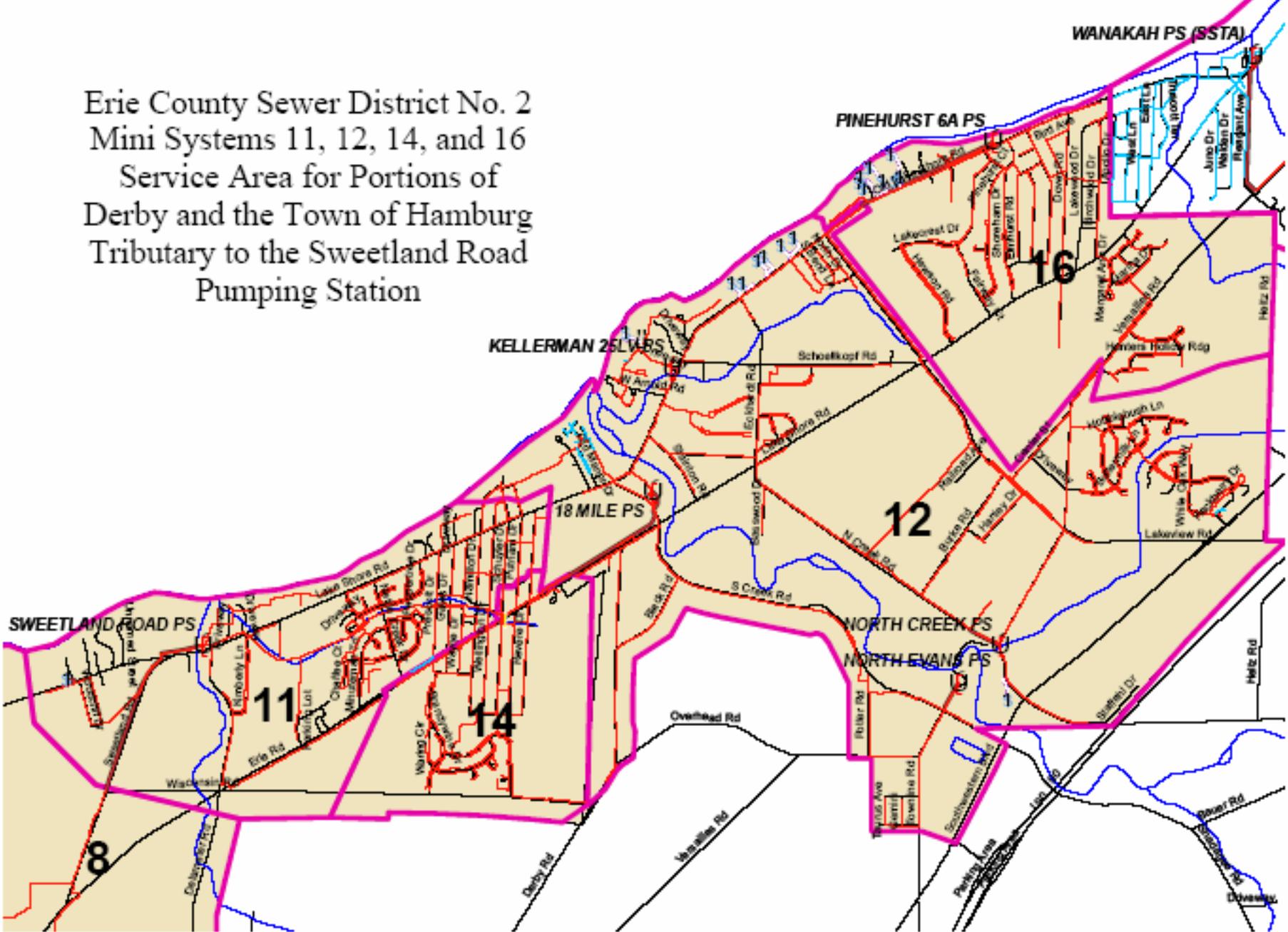
Problem Type	Severity	I&I Contribution (gpm)
<b>Private Sources</b>		
Low-lying lawn vent		0.1 to 80 <sup>(3)</sup>
Downspout		5
Sump pump <sup>(4)</sup>		1
Defective residential lateral	Case-specific, no general classification	range 15 to 70 value used 42 <sup>(5)</sup>

3. Individual low-lying lawn vents vary in contribution according to surface characteristics.
4. NYSDEC approved values, per 2005 correspondence under the ECSD 2 SPDES I&I Plan.
5. Value used 42 gpm. However, lower or higher values may be used based on actual condition.





Erie County Sewer District No. 2  
Mini Systems 11, 12, 14, and 16  
Service Area for Portions of  
Derby and the Town of Hamburg  
Tributary to the Sweetland Road  
Pumping Station



# I&I Plan for the areas tributary to Sweetland PS – July 2001 to present

- Identify those known problem areas where sewage flow backs up in the system
- Field tasks completed
  - Manhole Inspections/Repairs
  - Internal Televising Inspections
  - Smoke Testing
  - Dye Testing for Cross Connections
  - House Inspections
  - Replacement/Rehab Sewerlines



# Development in an Area Tributary to SSO

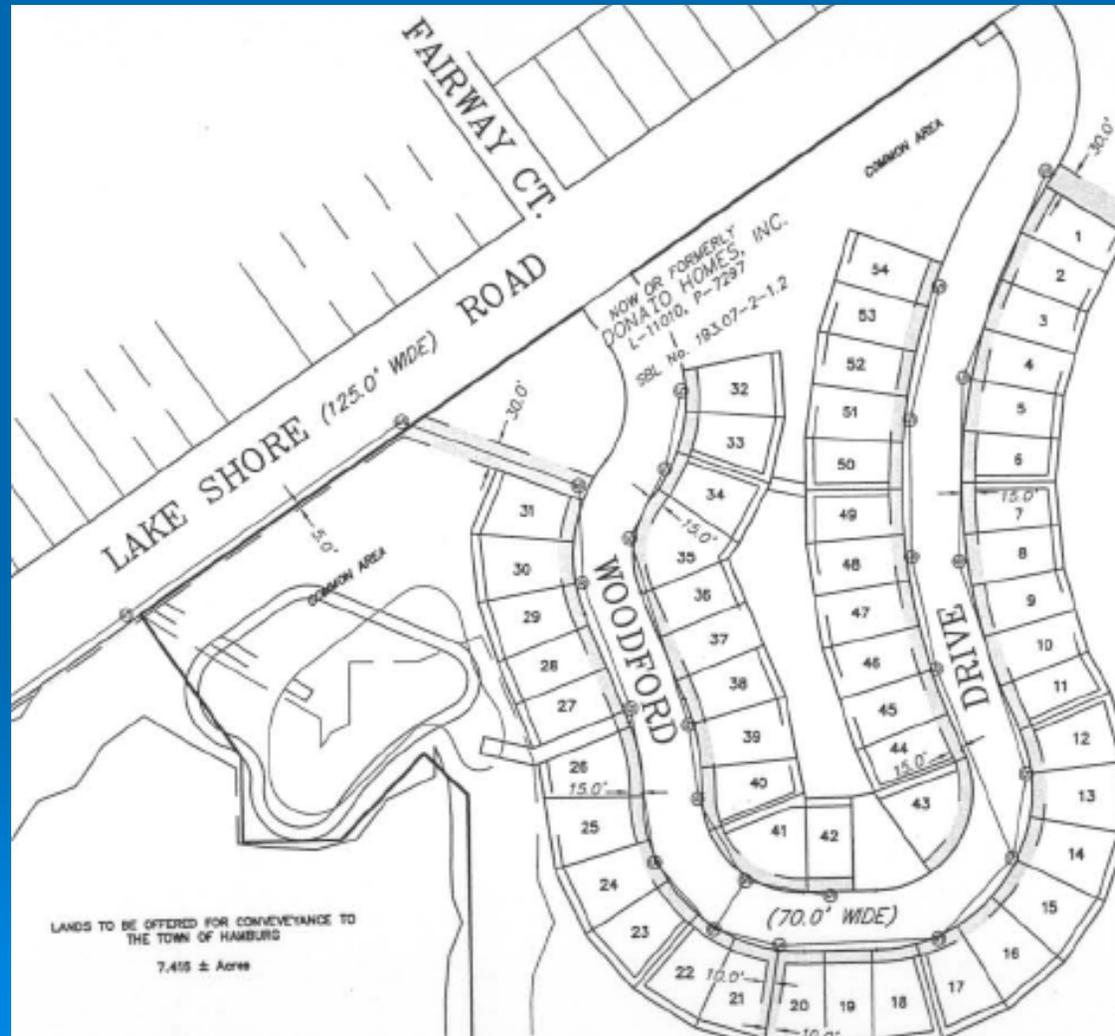
Based on the NYSDEC approved I&I source flow contribution (gallons per minute) for specific repair work

Erie County Sewer District's General Infiltration and Inflow (I&I) Source Flow Contribution		
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Surface Water/Low-lying Manholes		4
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Exposed frame and cone in ditch (Exterior)	Slight	5
	Moderate	10
	Severe	15
Cracks in the concrete or paved surface area surrounding a manhole with leaks in frame and cone		10
<b>Pipe Segments<sup>(2)</sup></b>		
Joint infiltration or Cracked pipe		1
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 3. Individual low-lying lawn vents vary in contribution according to surface characteristics.  
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 5. Value used 42 gpm. However, lower or higher values may be used based on actual condition.

# The Process...

## Developers Submit Their Plans



Developers submit their plans for coordinated review and approval by Water Quality Mngmt and the Erie County Health Department on behalf of the NYSDEC

# Developer's Rehab List

Elle County Sewer District No. 2  
 100 Rehabilitation Work Order System (M0) 01, 02, 04, and 08  
 Eddy & Levin Homes for Treatment Station, Hamburg (Jobs 1-20 and 20-60)

#	M0	Address	Description of Rehab Work to be Completed	Details on Location of MH	Attach-ments	Estimated MH Removal (gpm)
1	11	1228-1230 Timotheus on Independence Drive, Derby	Open Cut/Spot Repair 8" vitrified Clay Pipe	Between MH 1834 and 1833 (1837), -8' upstream from MH 1833, -8.5' deep	Map 1	10
2	11	1248-1270 Timotheus on Independence Drive, Derby	Open Cut/Spot Repair 8" vitrified Clay Pipe and Replace existing (existing)	Between MH 1843 and 1840 (2007), spot repair -88' downstream from MH 1841, replace existing top -112' downstream from MH 1841 - 7' deep	Map 1	20
3	11	1300 Independence Drive, Derby	Open Cut/Spot Repair 8" vitrified Clay Pipe	Between MH 1832 and 1831 (1837), -8' upstream from MH 1831, -7' deep	Map 1	10
4	14	3000 - 3220 Kanyawala Drive, Beale	Open Cut/Spot Repair 8" Asbestos Cement Pipe	Between MH 2248 to MH 2267 (1447), -27.5' and -38.0' downstream of MH 2248, -8' Deep	Map 2	20
5	16	5648 - 5678 Elmford Road, Hamburg	Open Cut/Spot Repair 8" Asbestos Cement Pipe	Between MH 3471 and MH 3470 (2257), -132.5' and -127.7' downstream of MH 3470, -8' Deep	Map 3	20
6	12	Builds - 1821 Old Manor, Derby	Install inlet protector.	Private MH 1812, located in lawn	Map 4*	4
7	12	Builds - 1823 Old Manor, Derby	Frame to grade, apply a 1/2" continuous lining to frame and install inlet protector	Private MH 1811, located in lawn	Map 4*	8
8	12	Builds - 1827 Old Manor, Derby	Install inlet protector.	Private MH 1810, located in driveway	Map 4*	4
9	12	Builds - 1828 Old Manor, Derby	Install inlet protector.	Private MH 1811A, located in driveway	Map 4*	4
10	12	Builds - 1818 Old Manor, Derby	Install inlet protector.	Private MH 1816A, located in driveway	Map 4*	4
11	12	Builds - 1408 One/Mile, Derby	Apply a 1/2" continuous lining to frame	Private MH 1817, located in street	Map 4*	2
12	12	Builds - Old Manor & Kingston, Derby	Frame ring just set on top of frame - raise & Apply a 1/2" continuous lining to frame & install inlet protector between 2nd & 3rd ring down	Private MH 1818, located in lawn	Map 4*	2
13	12	Builds - End of Old Manor, Derby	Apply a 1/2" continuous lining to frame and install inlet protector.	Private MH 1819, located in post yard	Map 4*	8
14	12	Builds - 1114 Kingston, Derby	Apply a 1/2" continuous lining to frame	Private MH 1821, located in street	Map 4*	2
15	12	Builds - 1108 Kingston, Derby	Apply a 1/2" continuous lining to frame	Private MH 1822, located in street	Map 4*	2
16	12	Builds - 1112 Blandidge, Derby	Apply a 1/2" continuous lining to frame	Private MH 1823, located in lawn	Map 4*	2
17	12	Builds - 1701 Blandidge, Derby	Apply a 1/2" continuous lining to frame	Private MH 1821, located in lawn	Map 4*	2
18	12	Builds - Post 1704 Blandidge, Derby	Apply a 1/2" continuous lining to frame	Private MH 1822, located in lawn	Map 4*	2
19	12	Builds - 1510 Stoneidge & Blandidge, Derby	Apply a 1/2" continuous lining to frame	Private MH 1824, located in lawn	Map 4*	2
20	12	Builds - Stoneidge, Derby	Apply a 1/2" continuous lining to frame	Private MH 1823, located in lawn	Map 4*	2
21	12	Tanglewoods Apartments, 6807 Route 0, Derby	Pressure-test MH with epoxy grout and note frame sagged at frame to curb joint and at base, followed by a 1/2" continuous lining to interior; 1/2" chimney seal material applied to the exterior exposed in ditch	MH 1869, located in ditch	Map 5	20
22	12	Builds of Tanglewoods Apartments at Niagara Inland Park 03, Route 0, Derby	Apply a 1/2" continuous lining to interior of frame; apply 1/2" chimney seal material to the exterior exposed in ditch	MH 1867, located in ditch	Map 5	15
23	12	Route 0, Derby	Apply a 1/2" continuous lining to interior frame; apply 1/2" chimney seal material to the exterior exposed in ditch; install inlet protector.	MH 1868, located in ditch	Map 5	8

Note: Route 0 is also known as Elm Road.  
 Updated Streets are shown in bold. \* Previous map listed streets incorrectly

Total MH Removal Estimated (gpm) 147

# Rehab Details

- Using the GIS, the contractor is provided with site maps and any pictures available
- Inspection must be done by County staff at the time of rehab
- Rehab details are logged by County



# Compiling the Rehab Work for the Developers

- Finding additional rehab work for developers has taken a considerable amount of ECSD 2 investigative field work (televising additional sewer main lines and service laterals).
- The rehab lists are then given the appropriate I&I removal value, and submitted to the NYSDEC and the Health Department for their approval.
- Once approved, the rehab list is a condition for the sanitary sewer extension approval which must be completed prior to any permits being issued.

# The DSM Project Overview

- Development is a very important economic factor for the County, the Towns (Hamburg and Evans) and for ECSD 2, which was realized by the NYSDEC.
- The coordinated and cooperative efforts between the DSM, the NYSDEC, and the developers should be acclaimed.
- The developers are provided with the most cost effective rehab in an effort to still be economically feasible for building in this area.

# Repair and Rehab Work to Private Laterals in ECSD 2

## ➤ Advantages to developers replacing laterals :

- **Homeowners** have their lateral replaced at no material or labor cost to them, only to have the responsibility of restoration to their property (lateral replacement cost is typically \$1,500-\$3,000).
- **Developers** remove the most I&I for their rehab costs in replacing laterals (42 gpm).

# Where Do We Go From Here...

- ECSD 2 and the other ECSDs will continue to be proactive with the I&I programs in place
  - Investigation & Rehabilitation work
  - Continuing to improve our level of service
  - Improve efficiency of our own records
- I&I work tracked through electronic forms, databases, and GIS/computerized maintenance management systems
- Online flow monitoring and SWMM hydraulic modeling of our system
- Capital Improvements Plan (CIP) is also in progress to determine future rehab and replacement projects

# Questions or Comments??

Contact Info:

*Thomas Whetham*

*716-858-8581*

*whethamt@erie.gov*

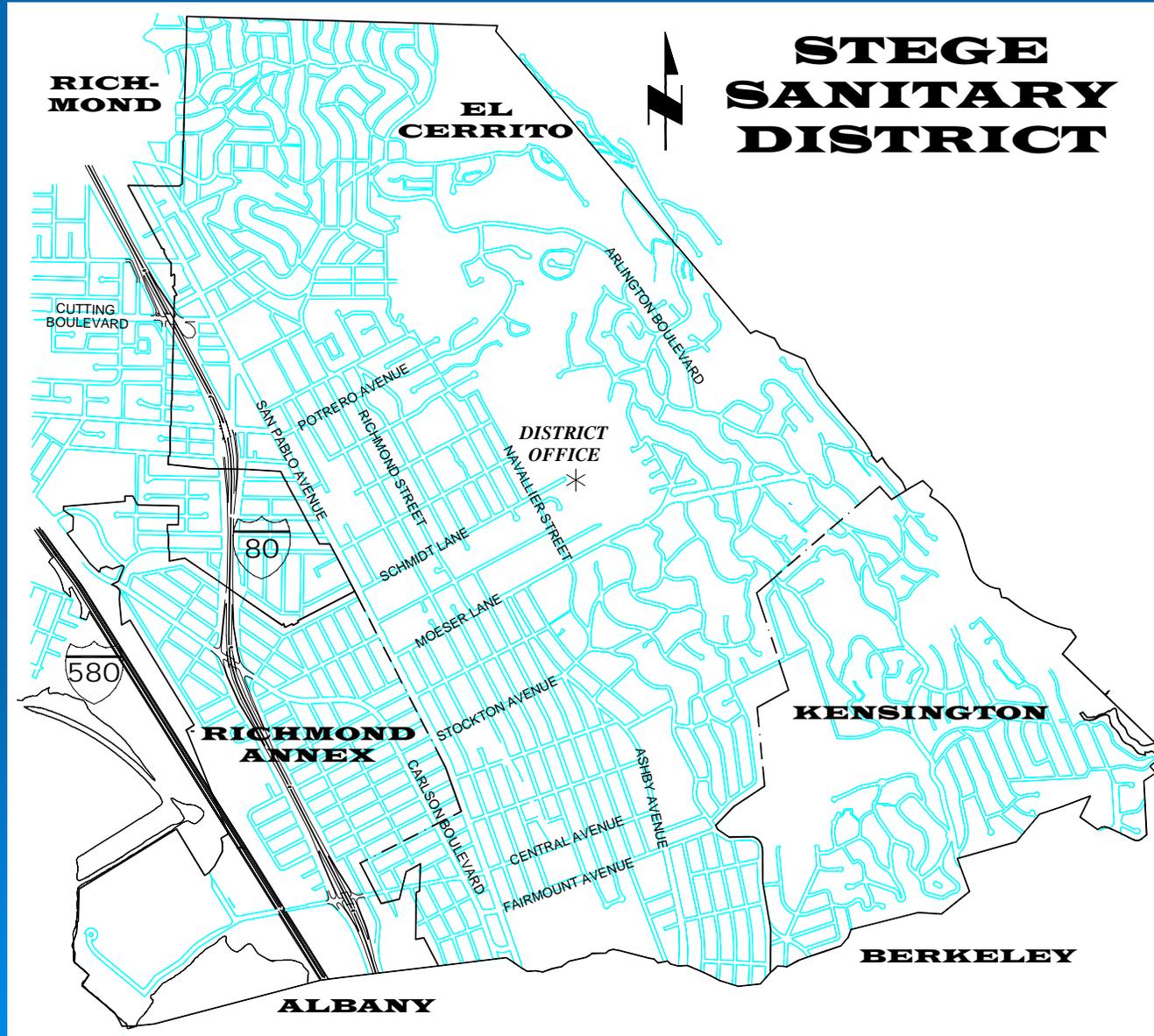
# Stege Lateral Testing & Replacement Program



Stege Sanitary District  
El Cerrito, California

Douglas Humphrey, District Manager

# STEGE SANITARY DISTRICT



# STEGER SANITARY DISTRICT

## Satellite Collection System Agency

Serves El Cerrito, Kensington, Richmond Annex

- *5.5 Sq. miles, 150 miles main lines, 2 pump stations*
  - Hayward Fault bisects the District
  - 30% of Main Lines are in Easements, 50% in hilly terrain
  - *Laterals – 13,000 connections, about 125 miles of laterals*
- 
- System Replacement Value = \$95 million
  - Annual Operating Budget = \$2.1 million
  - Annual Capital Budget = \$ 1 to 3 million

# HISTORY OF THE DISTRICT

## *About the District*

- *1913-1980* DISTRICT BUILD-OUT
- *1980-1985* EAST BAY I/I STUDY
- *1986-1997* I/I CORRECTION PROGRAM (\$12M)
- *1992 ...* DIGITAL MAPS OF THE DISTRICT
- *1996 ...* SYSTEM REHAB PROGRAM (SRP)
- *1997 ...* DEVELOPED AND IMPLEMENTED PROACTIVE OR RELIABILITY CENTERED MAINTENANCE
- *2005 ...* LATERAL INSPECTION PROGRAM

# Inflow/Infiltration (I/I)

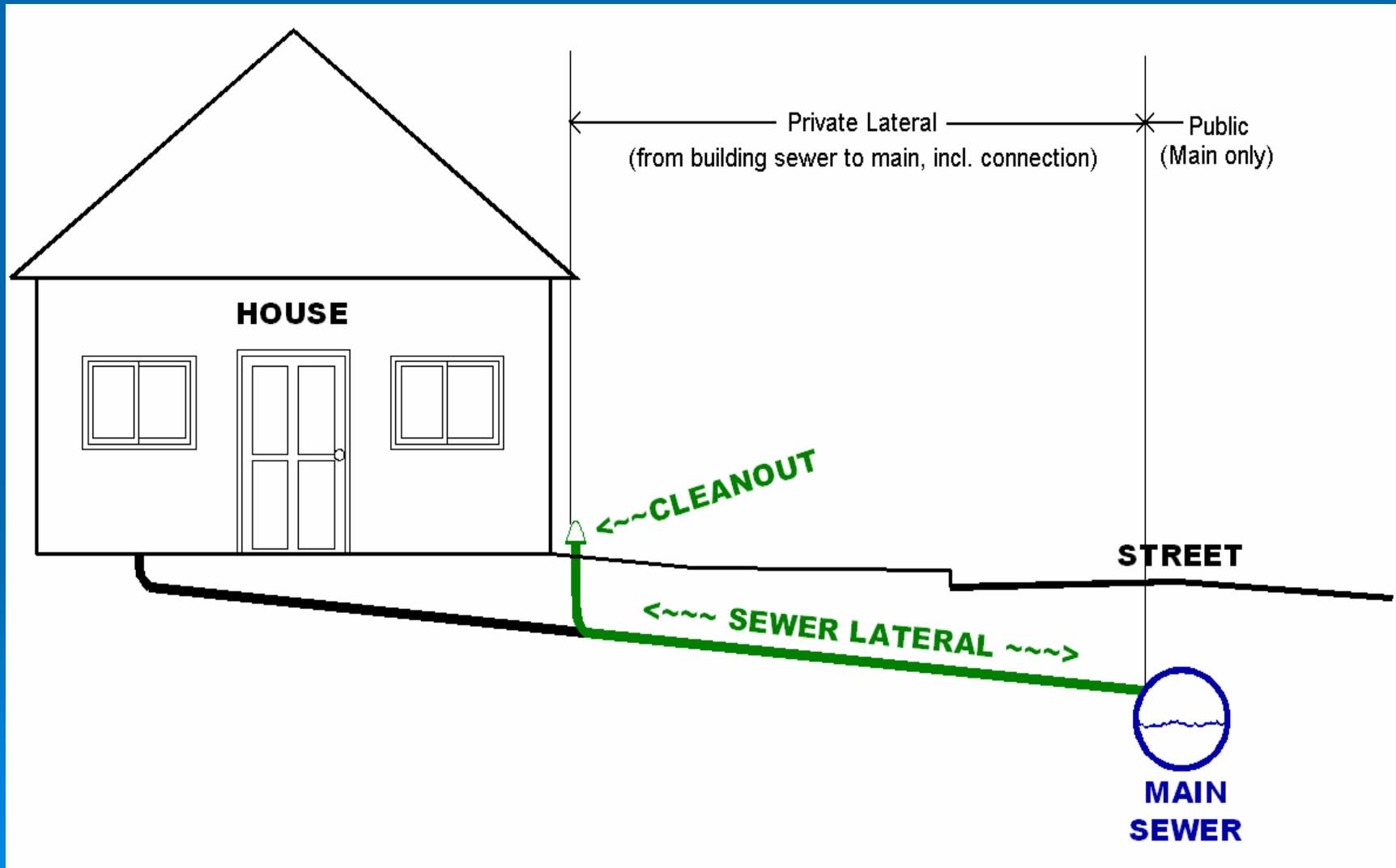
## EAST BAY I/I STUDY

- Excessive I/I in EBMUD Service Area
- Stege - ADWF of 2.8 MGD, PWWF of 50 MGD
- Majority of Stege I/I from Groundwater
- Each Satellite Agency in EBMUD Issued a Cease & Desist Order (CDO)
- Each Agency Responsible for Own Plan to Reduce Sanitary Sewer Overflows (SSOs) & Bypasses of Untreated Wastewater
- I/I Correction Program – A Regional Cost-Effective Plan

# LATERAL REHABILITATION - 1987

- Replaced all Laterals and Main Lines in one sub basin (small & separate – 110 residences)
- **Reduced I/I by 86%**
- Conclusion – **Laterals** responsible for majority of I/I
- Result – Changed cost-effectiveness assumptions, constructed more relief lines to provide capacity. Available downstream capacity at EBMUD Wet Weather Treatment Plant. This Plant treats (advanced Primary) “excess” flows during major storm events (about 6-8/year)

# Lateral – Includes Connection to Main

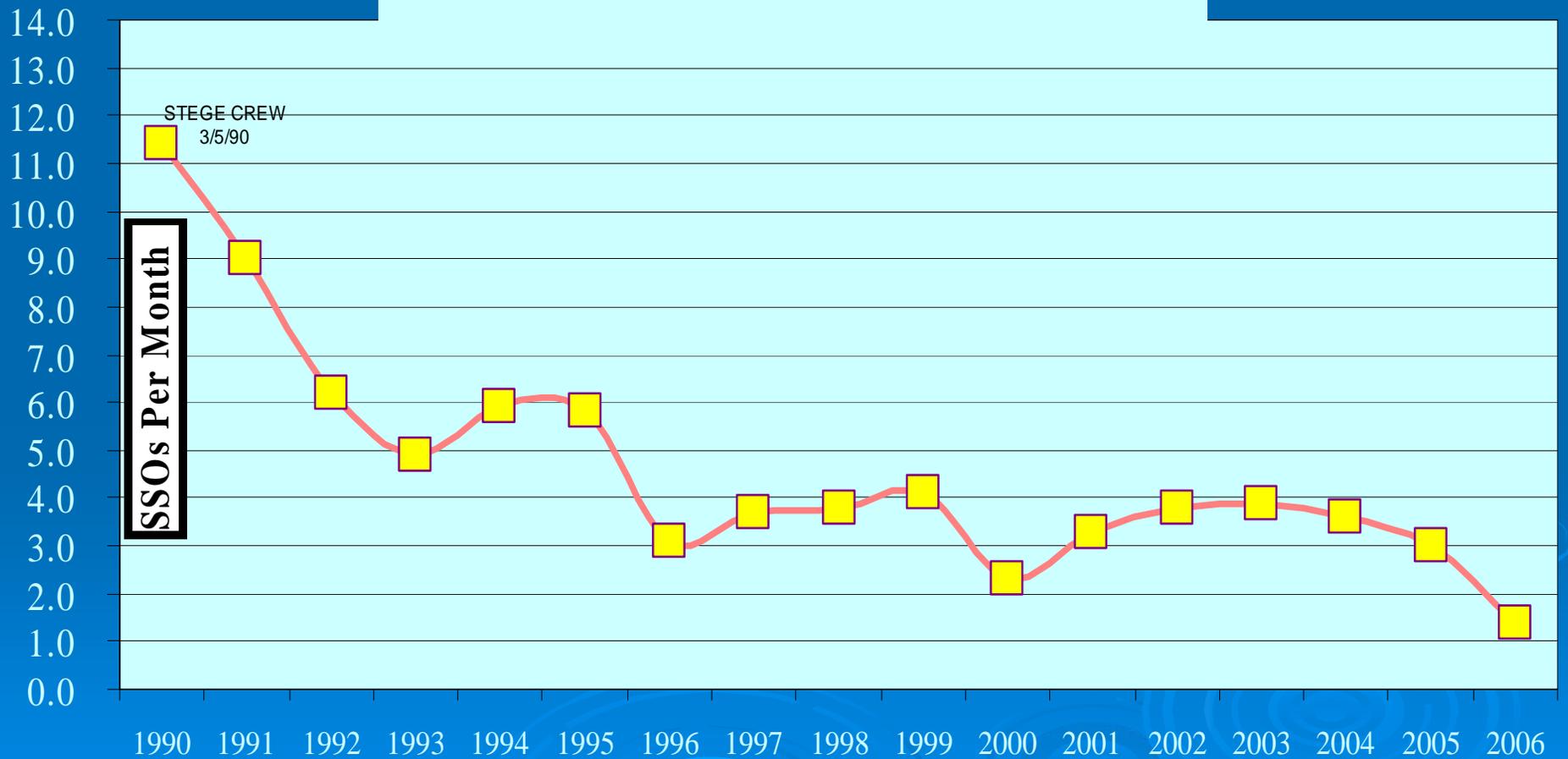


# LATERAL TESTING PROGRAM

- Discussions Regarding a Lateral Testing/Replacement Upon the Sale of Property Initiated in 1999
- Main Line Rehabilitation Program On-Going and Successful (Reduced Overflows, Bypasses Eliminated). Replacing 1.25 % of System/Year. SSOs Reduced from 150-160/year to 20
- Laterals – Still Significant Source of I/I
- Examples – Alameda, Albany, Burlingame, Tahoe-Truckee. Subsequently Berkeley, Richmond, & many others considering a similar program

# SSO History

## STEGE SANITARY DISTRICT MAIN LINE OVERFLOWS PER MONTH



# LATERAL TESTING PROGRAM

- Details of Program Completed in Early 2005
- Ordinance Revision Prepared – Adds the Sale of Property as Additional Requirement (to 5 existing) for the Testing of Laterals. Estimated at 400 to 450 sales per year
- Ordinance Passed in June 2005 – Implementation Date of September 6, 2005

# LATERAL TESTING PROGRAM

- Realtor Associations Contacted Regarding Program
- Contacted Again and Notified Formally about Ordinance
- Written Information & Notices Sent to Realtor, Title Companies, Associations. Much More Interest in August 2005!
- Notified ALL Property Owners – Letters (7/05) & Newsletters in October 2005 & Spring 2006

# LATERAL TESTING PROGRAM

- Video Testing - Property Owners Responsible
- Compliant for 10 Years After Lateral Replaced
- District Staff Reviews Video Tapes – No Charge. Permits for lateral work are \$25. Some Contractors Charge \$0 for Video Inspection
- HDPE is an Approved Material, & is the Predominant Type of Pipe Used
- Allowing Time Extensions – Modified Ordinance in 2007. Stege does NOT Prevent Closing of Sales or Escrow



**HDPE Installation  
Small Machine in Pulling Pit/Manhole**



**HDPE Fusing Machine**

# LATERAL TESTING PROGRAM

- Opposition Subsided Quickly
- Compliance Rate of about 90% by mid-2006. Was 75-80 % as of January 2006
- Additional 20 to 25 hours per week of Staff Time – Phone Assists, Video Assessment, Inspections, Records Management
- Following Up on Non-Compliance

# LATERAL TESTING PROGRAM

## ➤ Tracking

- Access Database
- On-Line Property Sales Data
- Initiated Use of Listing Databases in 2007

## ➤ Data

- Test Results, Compliance, Extensions & Dates.

Over 1000 Compliant as of November 2007 (8%)

Over 700 Compliant as Direct Result of Sale

About 450 Sales Per Year in District

Will Take Decades(35-40 years) to Complete System

Lateral "Failure Rate" is about 90 % - Old VCP

# LATERAL TESTING PROGRAM

## ➤ Enforcement

- Letters for Non-Compliance
- Letters to Agents upon Listing
- Future : Inspection Warrant, Testing, Replacement (when needed) by Stege. Expenses, including Staff Time, to be Placed on Property Tax Bill

# Suggestions

- Outreach to Real Estate Community is Vital – Explain This is Value Added to Their Clients & Community as a Whole
- Provide Notice to Everyone, and on Multiple Occasions
- Work with Realtors Prior to Implementation to Ensure Processes that Provide a Mutual Benefit are Included, and Processes that the Realtors Will Support

Questions ?



# Q & A Session

- Laurie Chase, PE, FMSM Engineers
- Charles Martin, PE – Director, LFUCG Division of Water and Air Quality
- Thomas Whetham, PE – Deputy Commissioner, Erie County Department of Environment and Planning
- Doug Humphrey, PE – District Manager, Stege Sanitary District