

# Public Information Meeting



## Sump Pump Inspection Program

**City of Boone, IA**

**May 9, 2023**



# Introductions



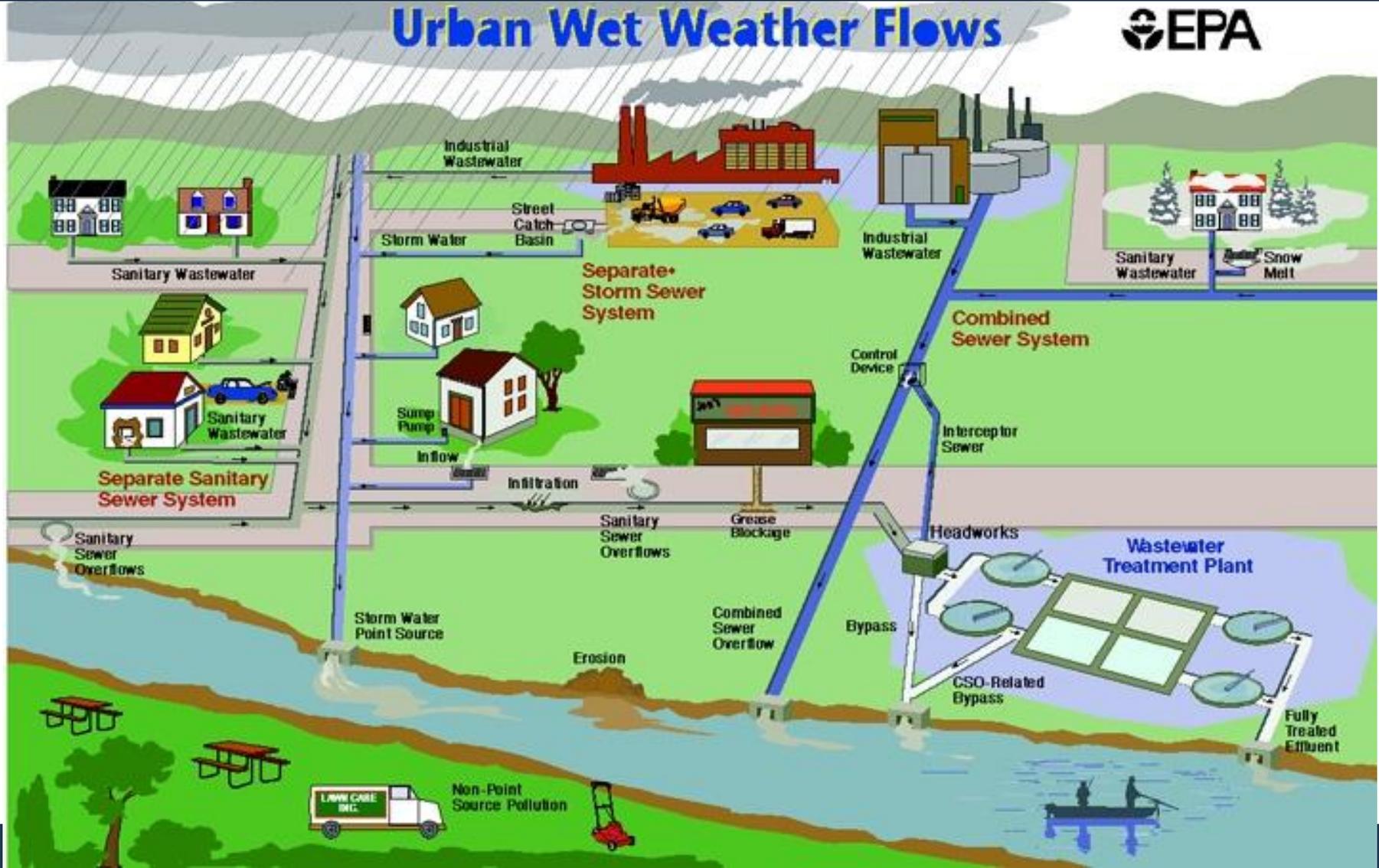
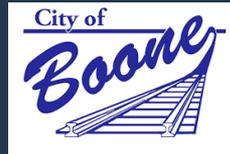
- **WHKS & Co. is a multidisciplinary Civil Engineering Firm headquartered in Mason City, Iowa, with offices in Ames, Rochester MN, East Dubuque & Springfield IL.**
- **Angie Kolz, PE is practice area leader for WHKS & Co water/wastewater department. WHKS has assisted over 50 Iowa and Minnesota communities with sump pump I&I reduction projects.**

# Presentation Objectives

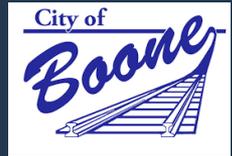


- **Why is a sump pump program being recommended?**
- **Discuss program details**
- **Discuss next steps**

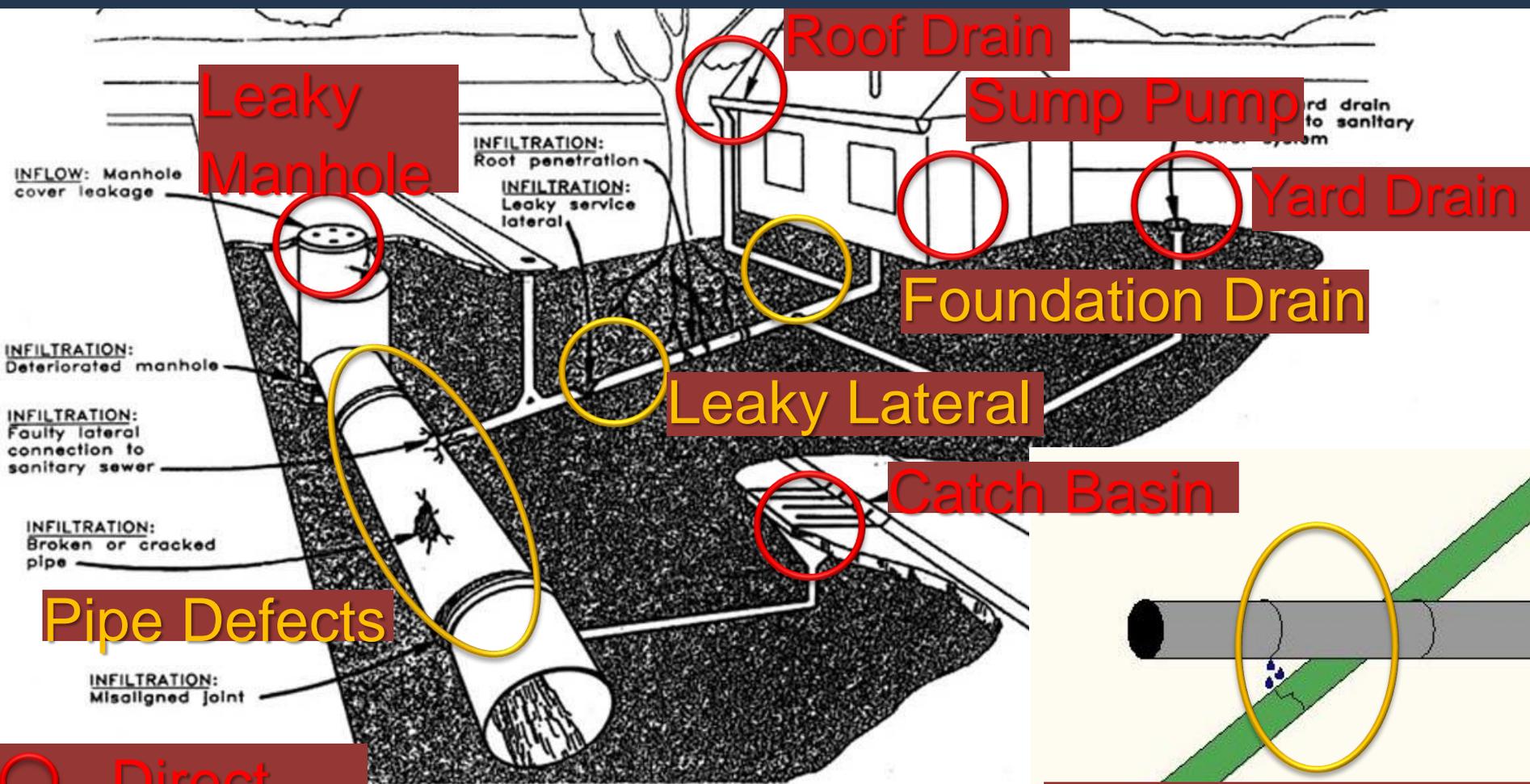
# What is I/I? Inflow and Infiltration



# Consequences of I/I



# Some Sources of I/I



- Direct
- Indirect

Indirect  
Connection

## SANITARY SEWER PROBLEMS

# Inflow and Infiltration

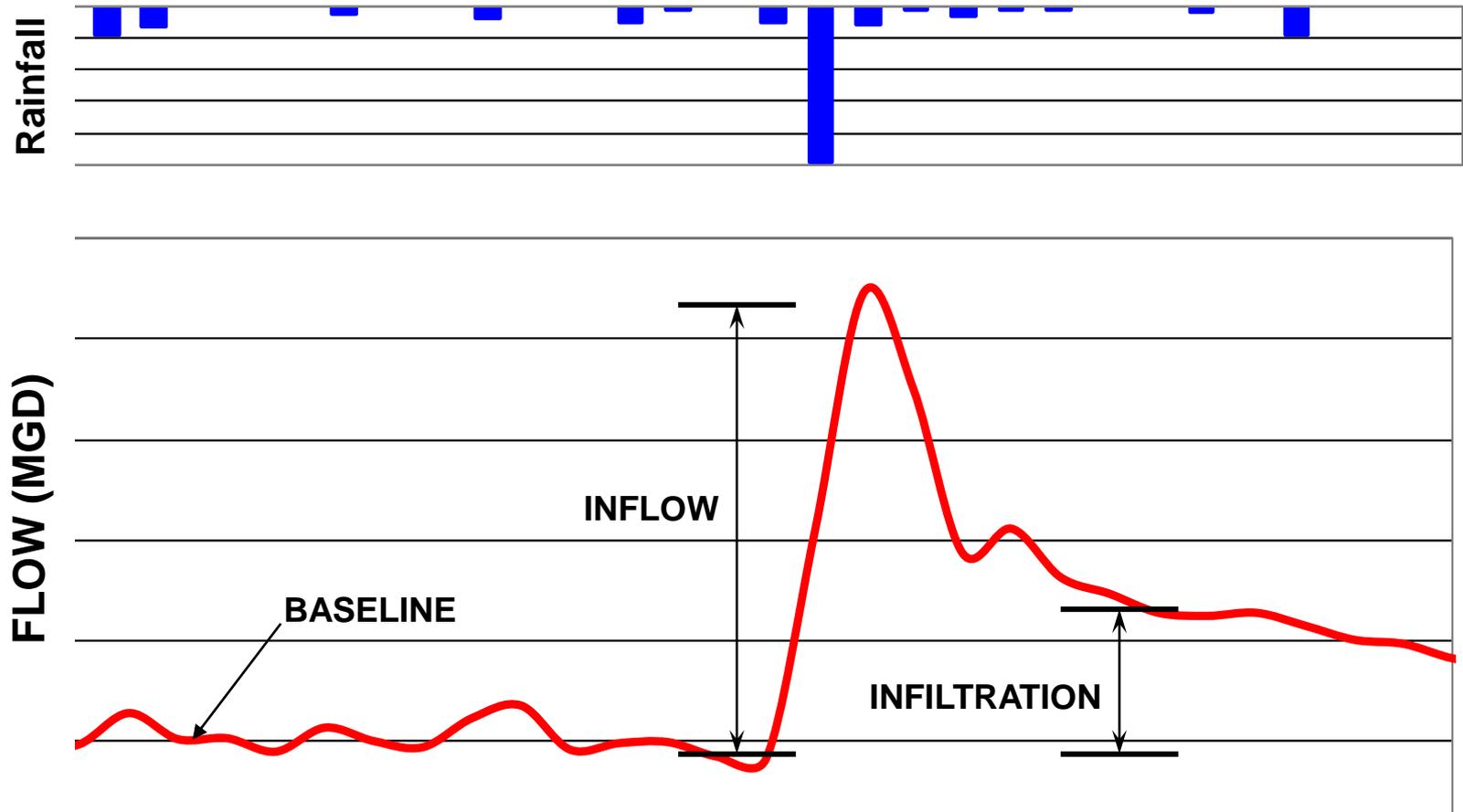


## Boone System Description:

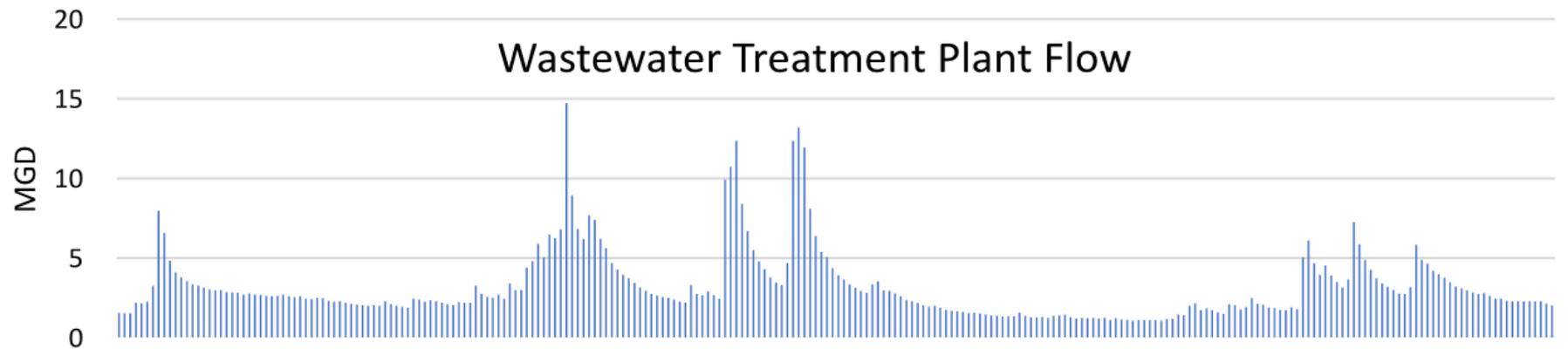
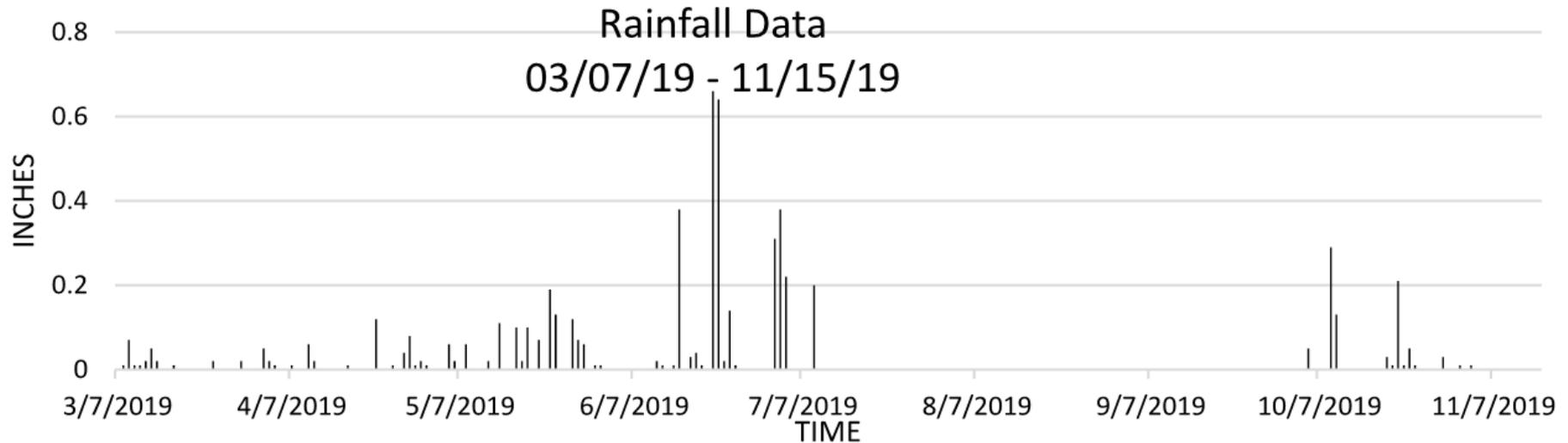
Average Dry Weather (ADW) flow (MGD): 2.1

Average Wet Weather (AWW) flow (MGD): 7.0

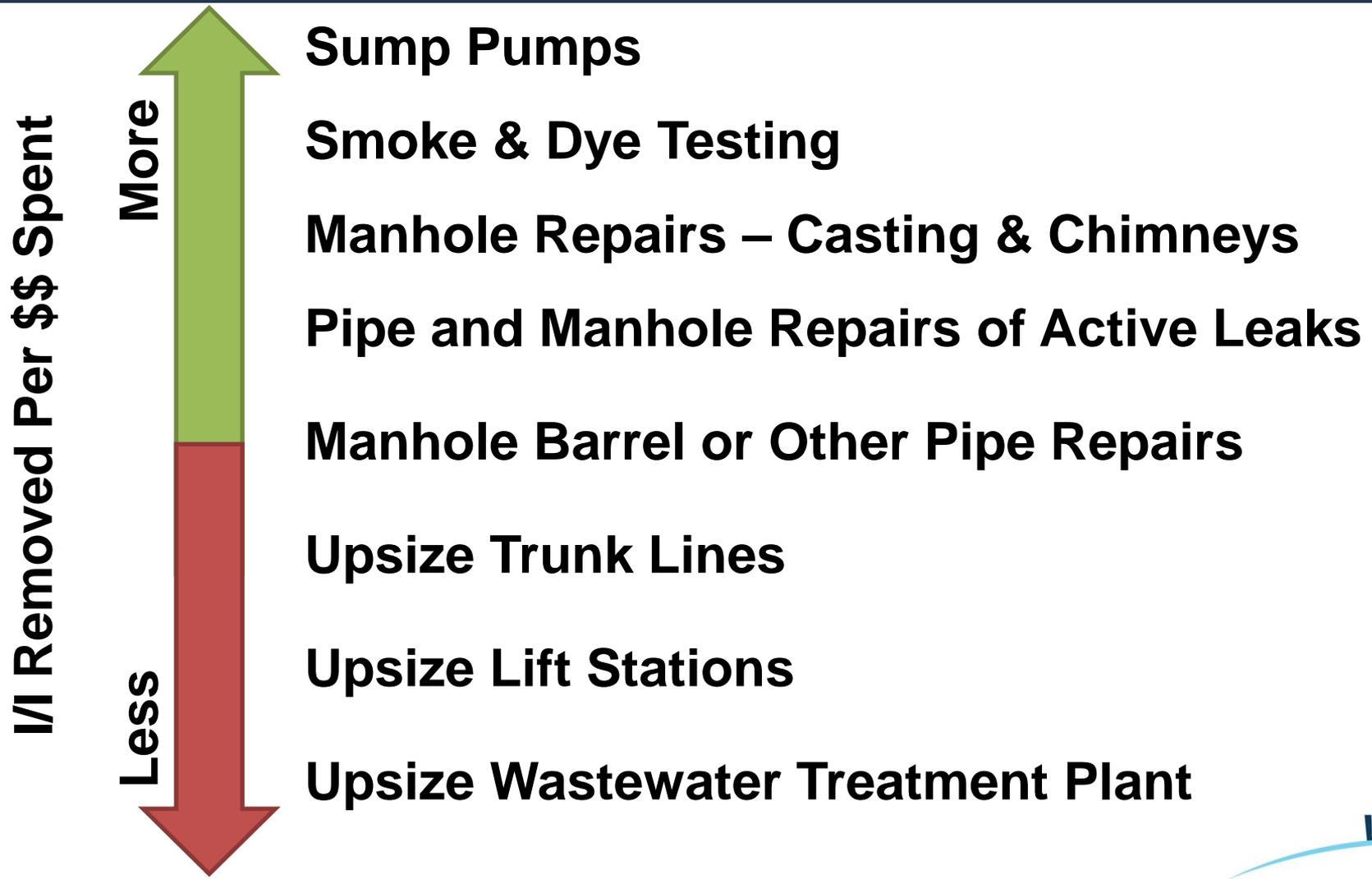
Peak Instantaneous Wet Weather (PIWW) flow (MGD): 24.6 **1170%**



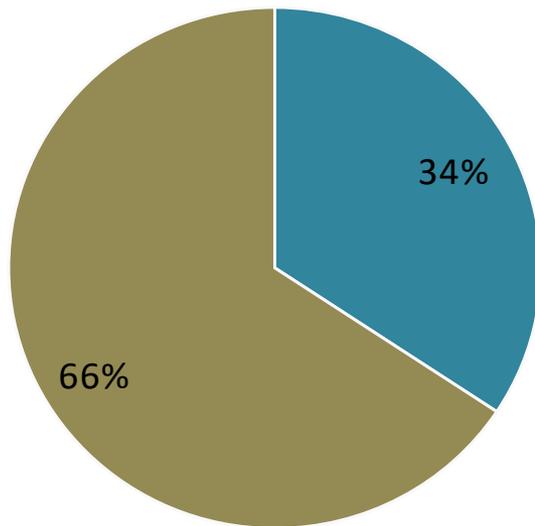
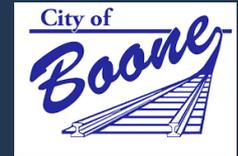
# Inflow and Infiltration



# Bang for your Buck



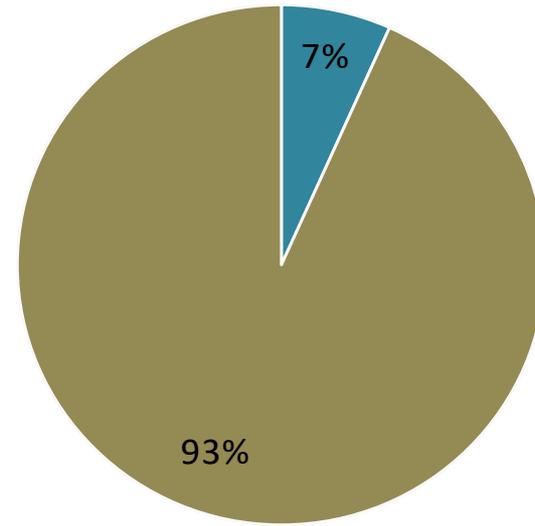
# Example Flow Removal & Cost Public Sector vs. Private Sector



■ Private ■ Public

**Sources of I/I**

vs.



■ Private ■ Public

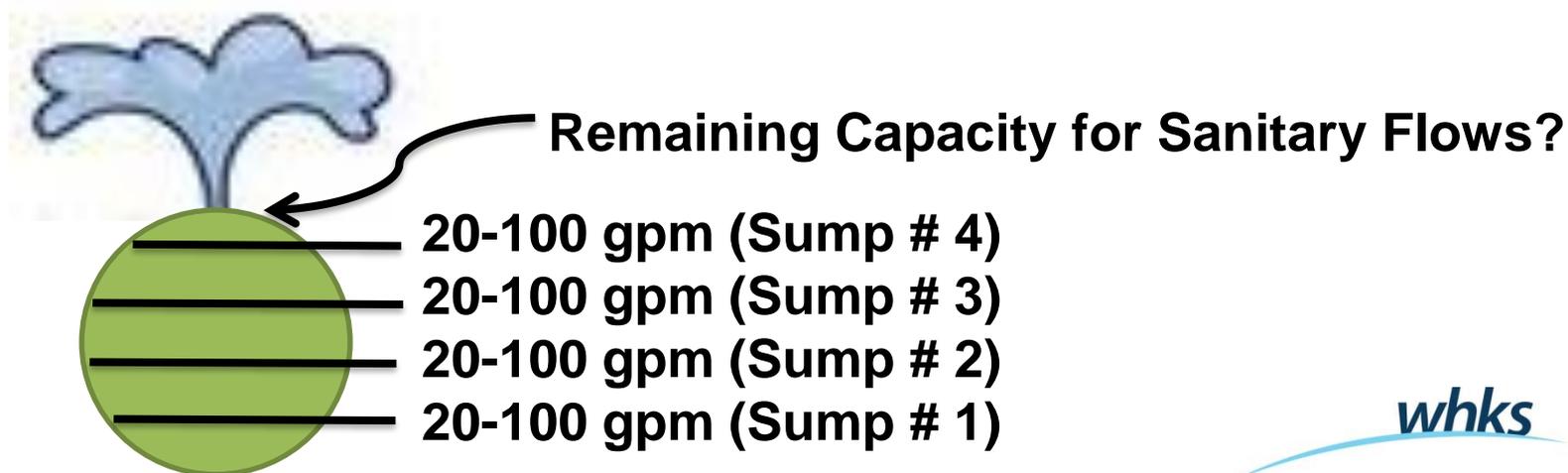
**Cost to Remove I/I**

Example from Kutzky/Slatterly Pilot I/I Study, Rochester MN 2008  
National averages range from 50/50 - 75/25



# Why a Sump Pump Program?

- **A few sump pumps can make a big difference**
  - **Typical sump pump 20-100 gpm apiece**
  - **Typical 8” sewer capacity 350 gpm.**
  - **As few as FOUR pumps can take up the pipe capacity and cause a backup in the neighborhood.**





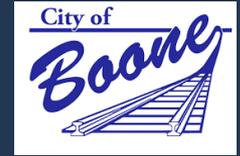
# Why a Sump Pump Program?

## Perspective:

- **5%-10% violation rate typical out of 33,000 inspections completed in fifty communities**
- **Hypothetically, if 5% rate applied to Boone's proposed 2023 inspection area:**
  - **Approx. 500 buildings x 5% = 25 violations**
  - **If each violation contributed 50 gpm, 8 hours/day = 600,000 gpd**
  - **2023 area = 8% of Average Wet Weather at WWTP (0.6 MGD / 7 MGD AWW = 8%)**

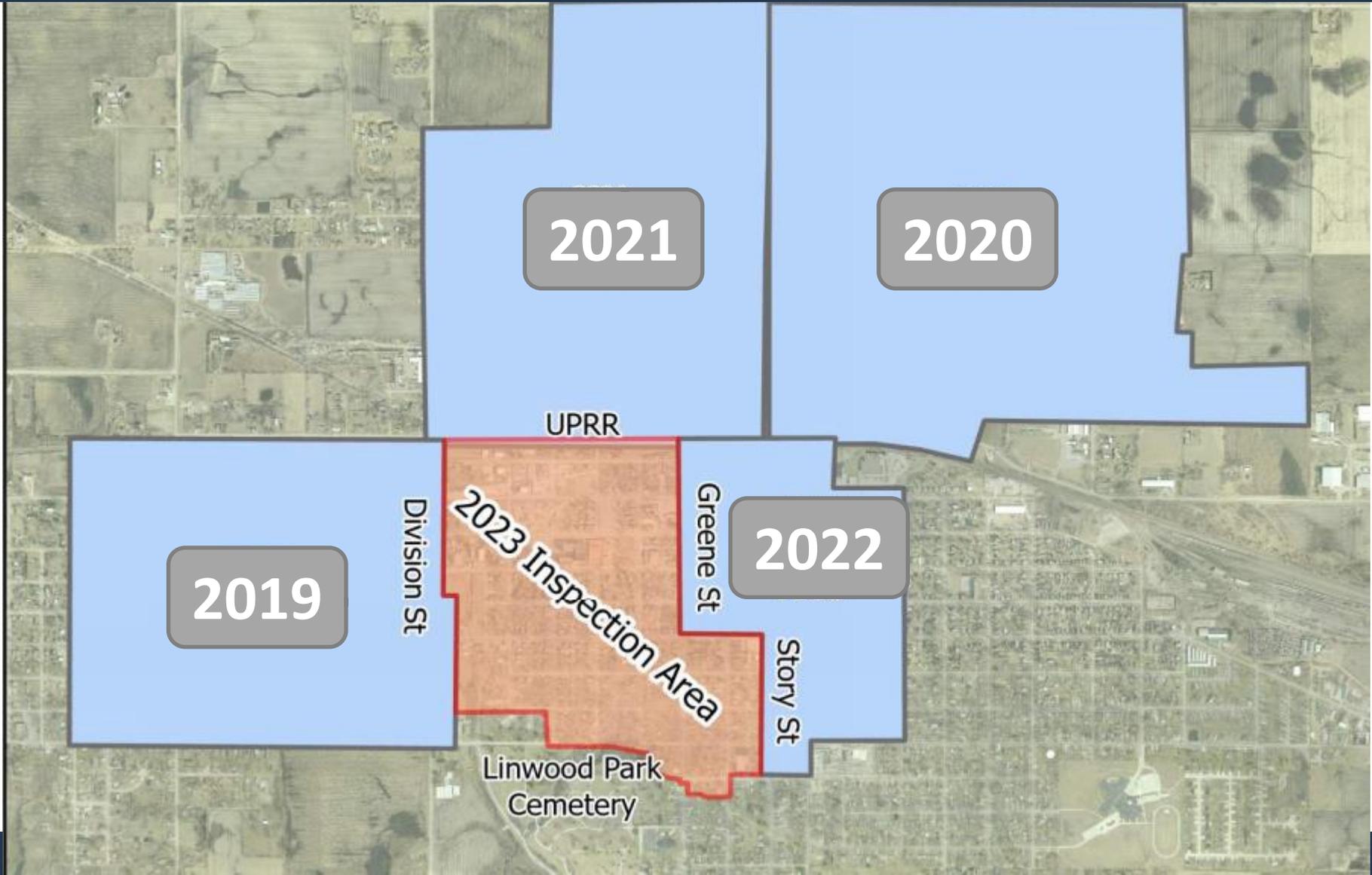
# Why a Sump Pump Program?

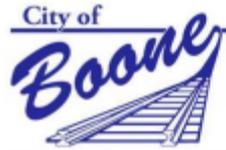
## Talking Points



- **The jump in flows during wet weather is evidence that clear water is entering the system.**
- **I/I sources are typically 50/50 Public vs Private, recent studies as high as 25/75 Public vs Private**
- **Removing Inflow/Infiltration (I/I):**
  - **Reduces Backups**
  - **Protects Health**
  - **Controls Costs**

# 2019-2023 Areas





**William J. Skare**  
*City Administrator*

April 21, 2023

Property Owner:  
Property Address:

Re: 2023 Sump Inspection Program – Public Information Meeting

Due to high wastewater flows in the sanitary sewer system during wet weather, the City of Boone has adopted an Ordinance prohibiting the discharge of clear water into the sanitary sewer system. Clear water from any roof, surface, ground, sump pump, footing tile, swimming pool, seepage collection system ("beaver system") or other natural precipitation is prohibited from discharging into the sanitary sewer.

The City will be conducting mandatory sump pump inspections to verify that sump pumps, roof drains, and other clear water sources are not connected to the sanitary sewer system. This year (2023) is the fifth year of the program, and it includes the west central portion of the City. Over 2,400 homes have been inspected in other areas of the City since the program began in 2019. Other areas of the City will be inspected over the next couple years. The engineering firm, WHKS & Co., is coordinating this program and will serve as Project consultant.

**Public Informational Meeting:** The City will host a public informational meeting on Tuesday, May 9, 2023, at 5:00 pm at Boone City Hall 2<sup>nd</sup> floor Auditorium to discuss the scheduling of inspections, length of inspection, proper sump pump connection and other miscellaneous items. The meeting will be broadcast. Please access the broadcast via [www.zoom.us](http://www.zoom.us), Meeting ID: 827 8541 4672 and Passcode: 495950.

Thank you for your attention to this matter. If you have any questions, or require any additional information, please do not hesitate to contact Angie Kolz, WHKS & Co., toll-free 866-880-8004.

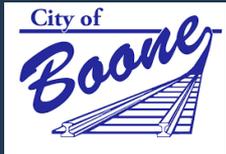
Sincerely,

William J. Skare, CPM  
City Administrator

# Scheduling



- **All inspections are scheduled, no door-to-door inspections.**
- **Scheduling is fast and easy**
- **Schedule through website or telephone**
  - BooneSump.com or toll free 1-866-880-8004
- **Residents will receive a letter when it is time for their sector to schedule inspections.**



# Scheduling and Info Website

## BooneSump.com

### Find Appointment Availability



	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

#### Available times for 06/03/2009:

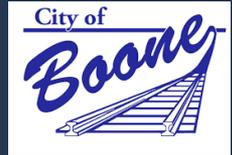
- 12:00 PM - 12:15 PM
- 12:15 PM - 12:30 PM
- 12:30 PM - 12:45 PM
- 12:45 PM - 01:00 PM
- 01:00 PM - 01:15 PM
- 01:15 PM - 01:30 PM
- 01:30 PM - 01:45 PM
- 01:45 PM - 02:00 PM
- 02:00 PM - 02:15 PM
- 02:15 PM - 02:30 PM
- 02:30 PM - 02:45 PM
- 02:45 PM - 03:00 PM
- 03:00 PM - 03:15 PM
- 03:15 PM - 03:30 PM

# The Inspection



- **Completed in under 15 minutes, many under 5 minutes**
- **Adult must be present**
- **Inspector looks at:**
  - **Sump pumps**
  - **Beaver drains**
  - **Roof drains**
  - **Site grading**
- **Occupant and inspector signs**
- **Notice of Violation and instructional diagrams given if needed**





# Inspector Identification

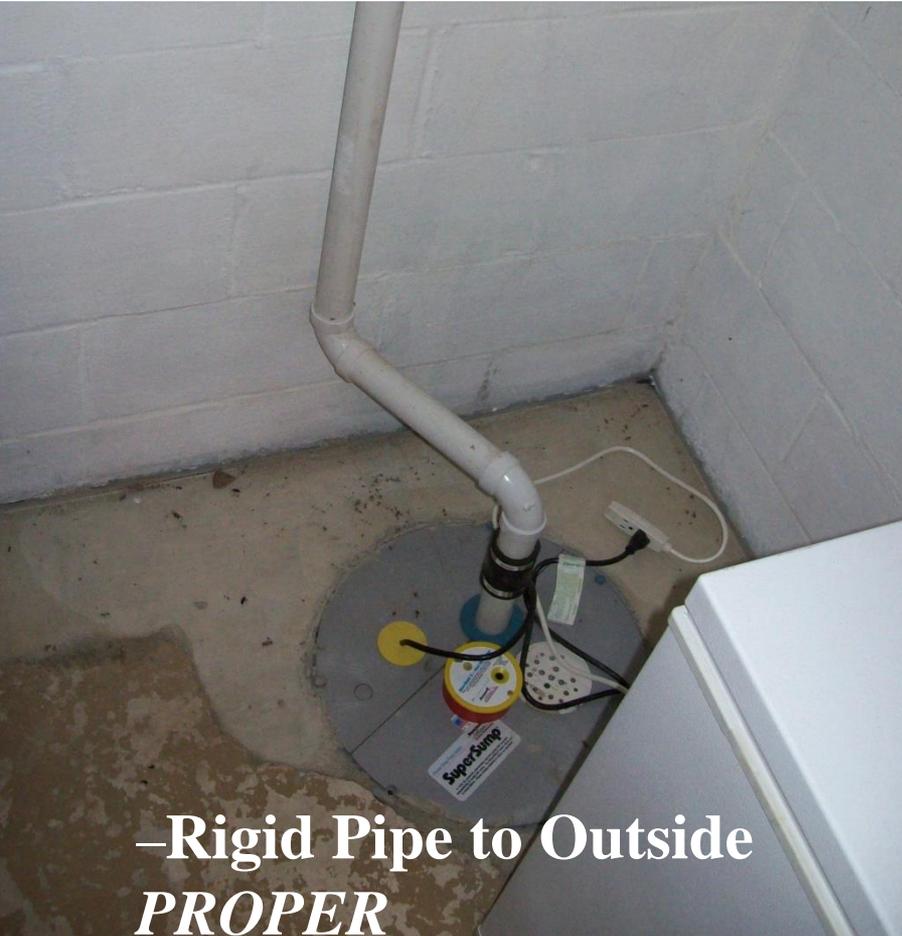
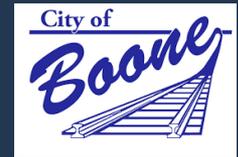
## BOONE - I/I PROGRAM INSPECTOR



- All inspections are scheduled
- No door-to-door
- WHKS logos on
  - Badges
  - Clothing
  - Vehicles



# Installation Examples: Sump Pumps

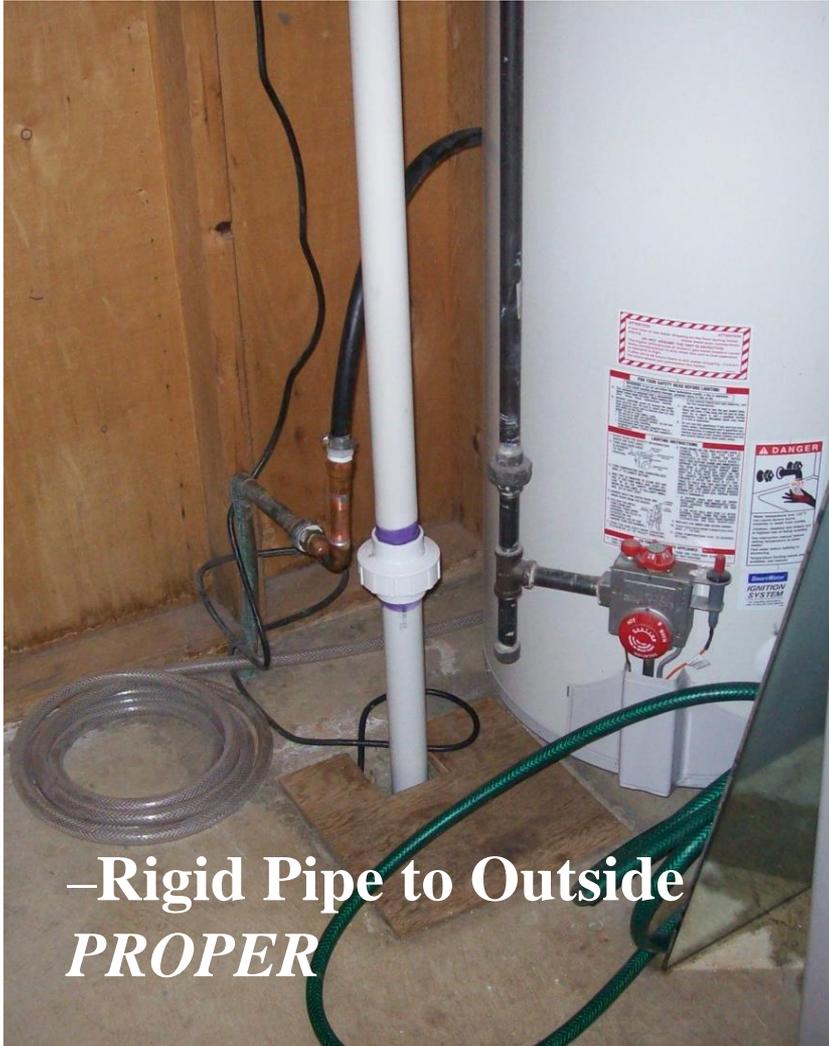


-Rigid Pipe to Outside  
*PROPER*

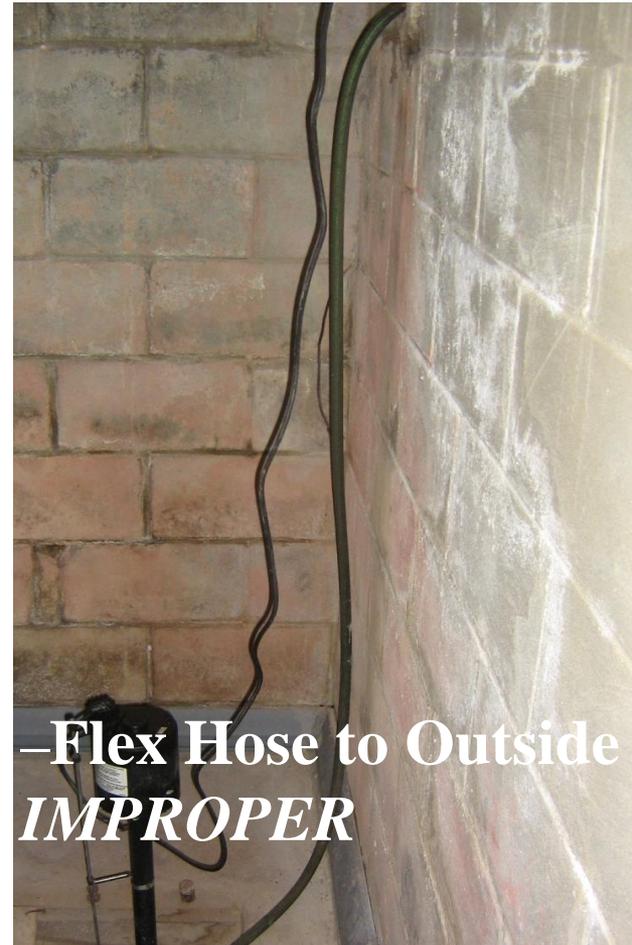


-Flex Hose to Drain  
*IMPROPER*

# Installation Examples: Sump Pumps

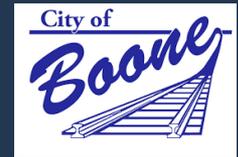


-Rigid Pipe to Outside  
*PROPER*



-Flex Hose to Outside  
*IMPROPER*

# Installation Examples: Sump Pumps



**Flex Hose to  
Sanitary  
via stool**

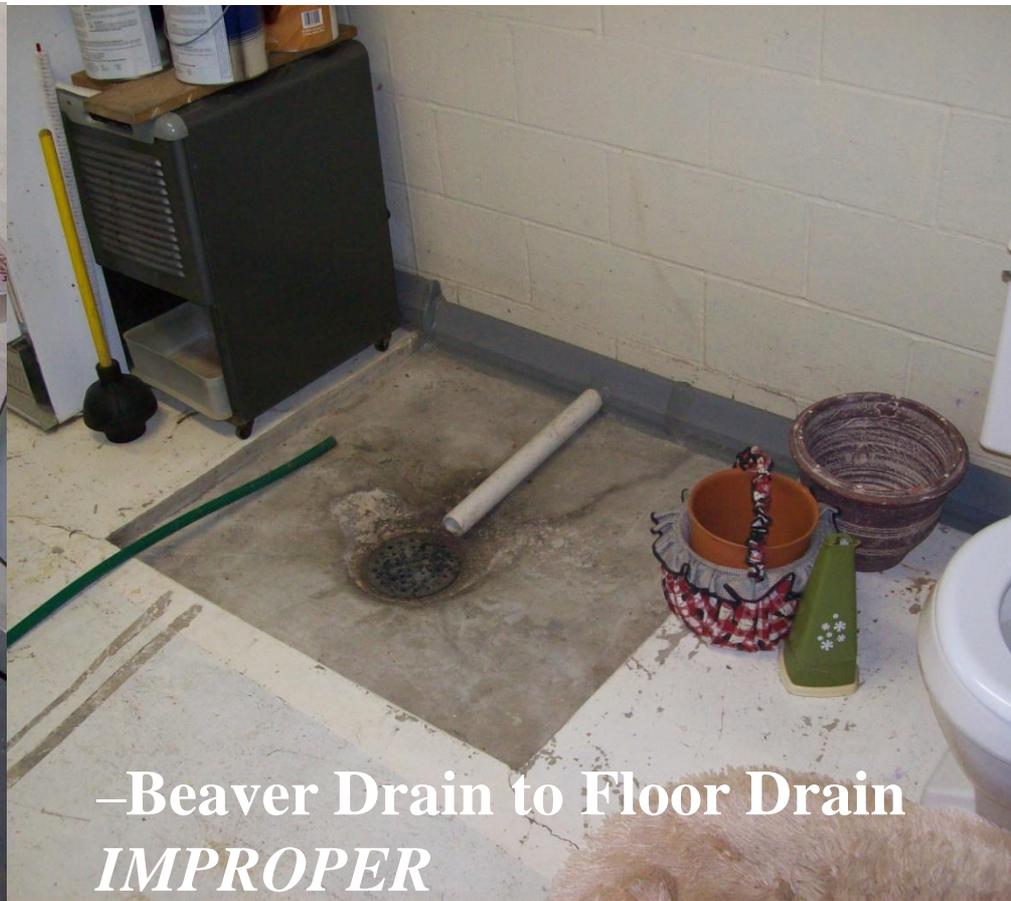
***No.***

**whks**

# Installation Examples: Beaver Drains

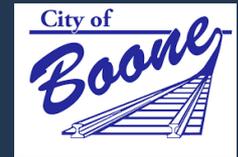


-Beaver Drain to Sump Pit  
*PROPER*



-Beaver Drain to Floor Drain  
*IMPROPER*

# Installation Examples: Beaver Drain / Tile



-Tile into Floor Drain under Cover  
*IMPROPER*

# Installation Examples: Tile Pit



Photo courtesy of WCF Courier

**Tile Pit into Floor Drain**

**“Running Trap”**

***IMPROPER***

**Plugged + Pump Installed**

***PROPER***

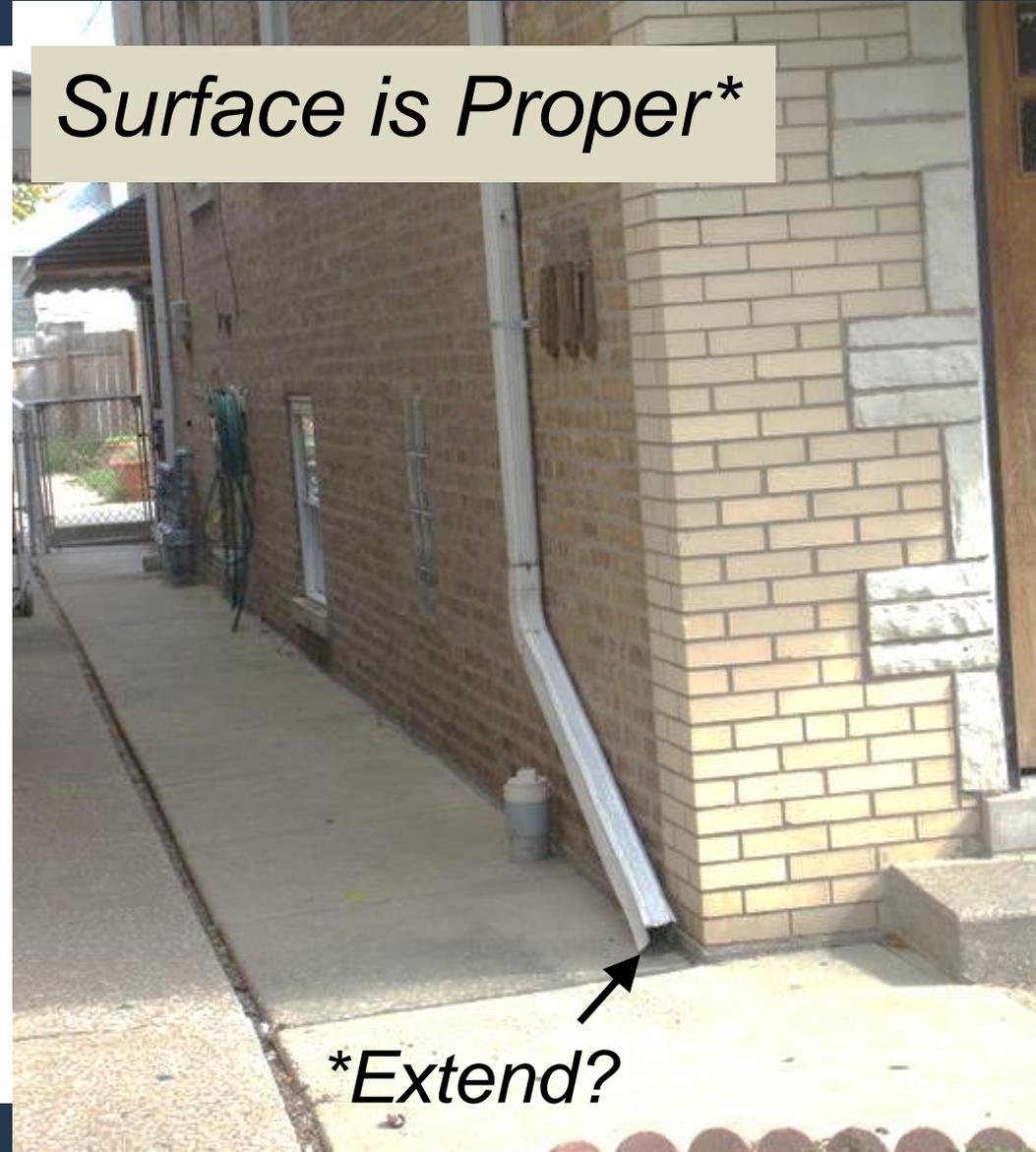


# Roof Drains

*Underground and  
ties into Sanitary,  
Improper*

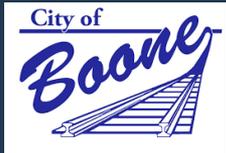


*Surface is Proper\**



*\*Extend?*

# Discharge Options



**Flexible Pipe**



# Discharge Options



- **Curb outlet**

# Discharge Options

- **Air Gap & underground pipe**



# Discharge Options

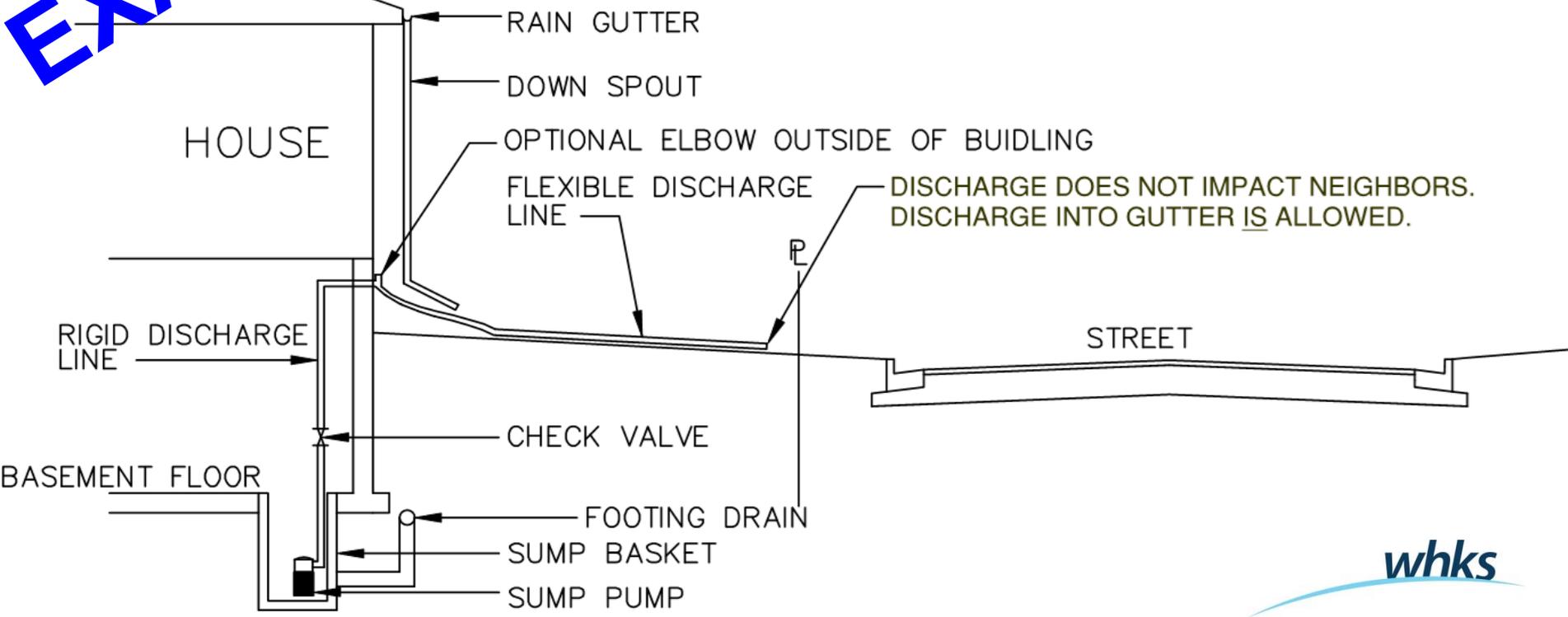


**Legal, but not a good idea**

# Sump Pump Diagrams

**EXAMPLE**

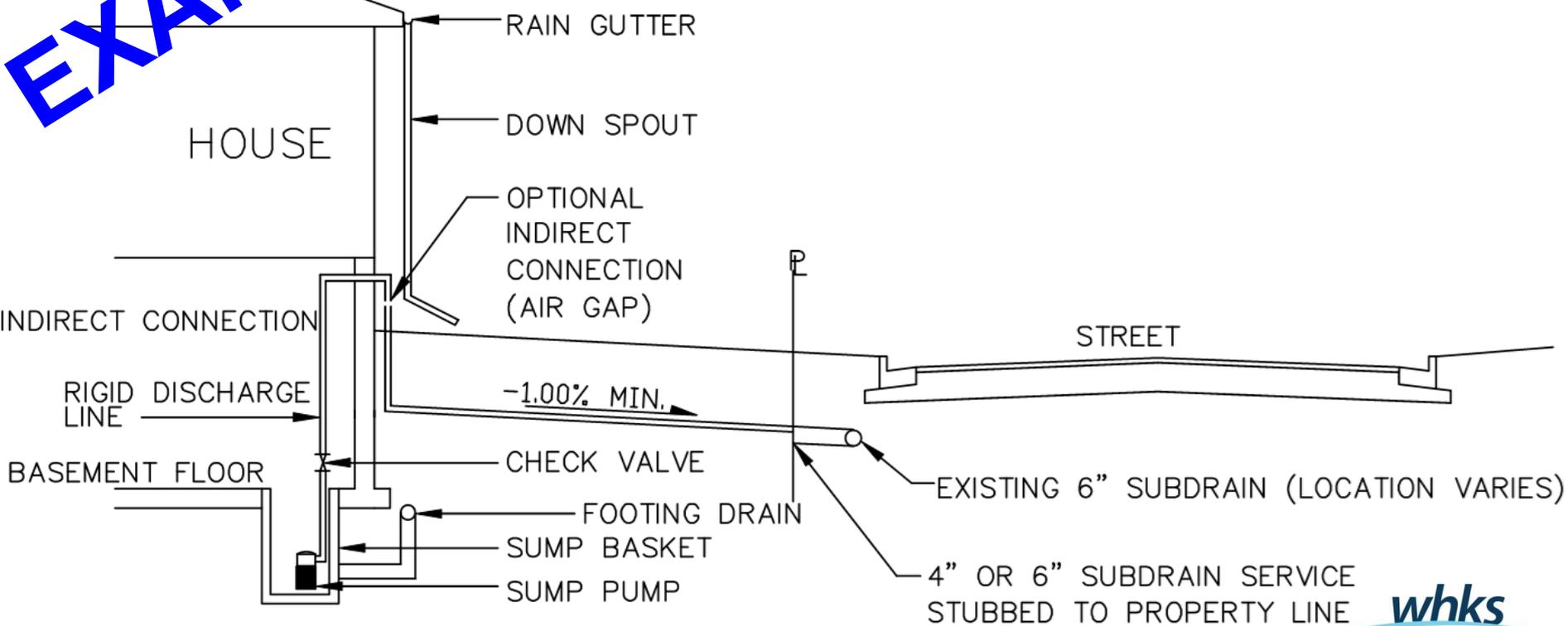
## Proper Connection

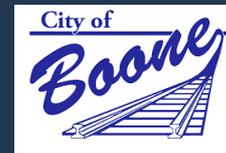


# Sump Pump Diagrams

**EXAMPLE**

## Proper Connection (with subdrain)





# Inspection Timeline

Item	Date
<b>2023 Public Meeting</b>	<b>May 9, 2023</b>
<b>Receive Letters and Start Inspection</b>	<b>May – July 2023</b>



# Long Range I/I Plan: Field Investigations

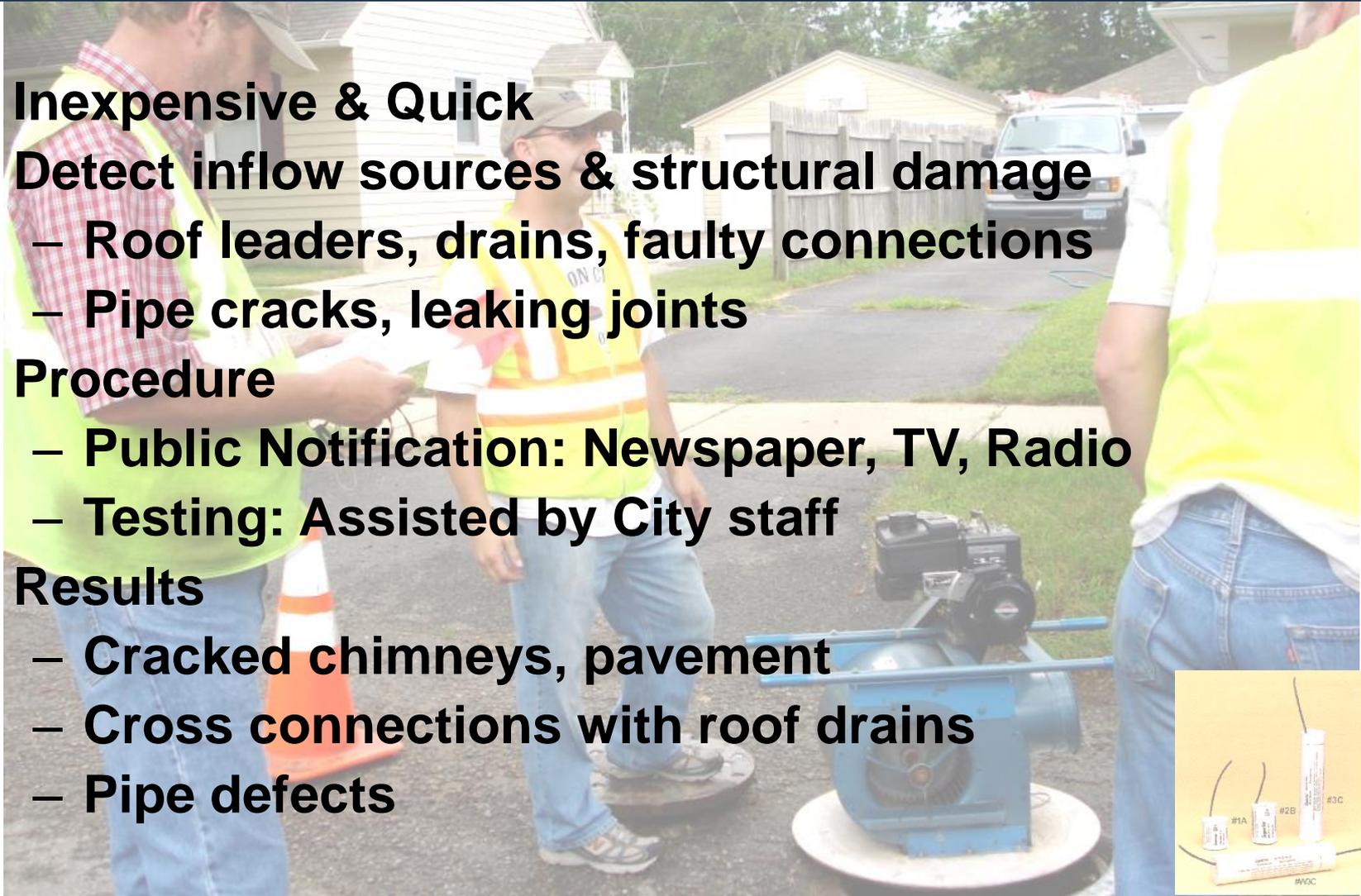


- **Private:**
  - **Building Inspections**
- **Public:**
  - **Smoke and Dye Testing**
  - **Manhole Inspections**

# Smoke Testing



- **Inexpensive & Quick**
- **Detect inflow sources & structural damage**
  - Roof leaders, drains, faulty connections
  - Pipe cracks, leaking joints
- **Procedure**
  - **Public Notification: Newspaper, TV, Radio**
  - **Testing: Assisted by City staff**
- **Results**
  - Cracked chimneys, pavement
  - Cross connections with roof drains
  - Pipe defects



# Manhole Inspection



- **I/I defects**
  - **Cover, frame seal, chimney, barrel**
- **Confirmed/updated system configuration**
  - **Location, depth, pipe size**

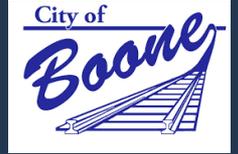




# Questions?



# Contact and Project Information



- Contact/ Project information

- Angie Kolz, PE

[akolz@whks.com](mailto:akolz@whks.com)

515-663-9997