

Public Information Meeting



Sump Pump Inspection Program

City of Boone, IA
May 6, 2019



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 30 Iowa and Minnesota communities with sump pump I&I reduction projects.**

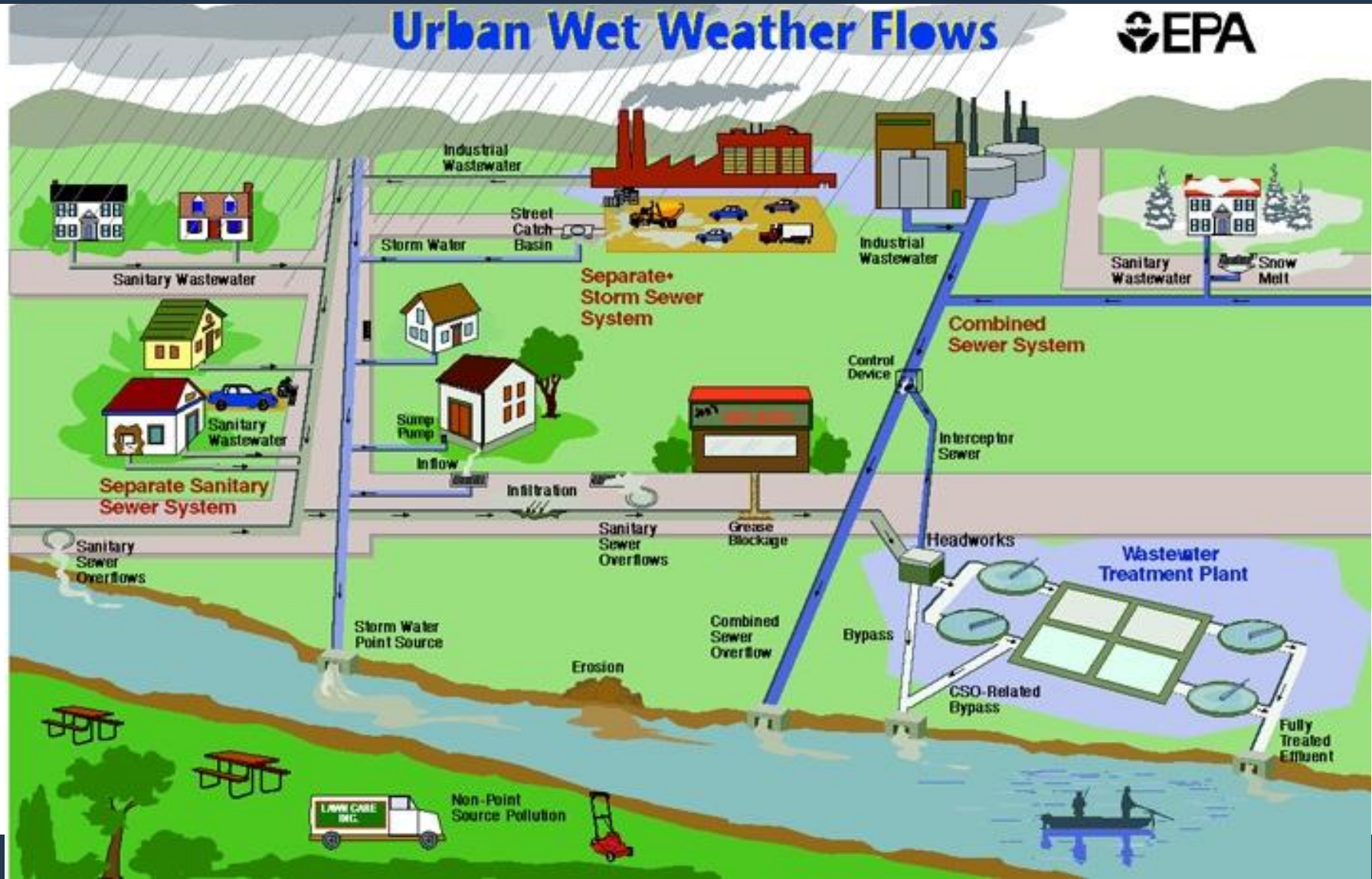
Presentation Objectives



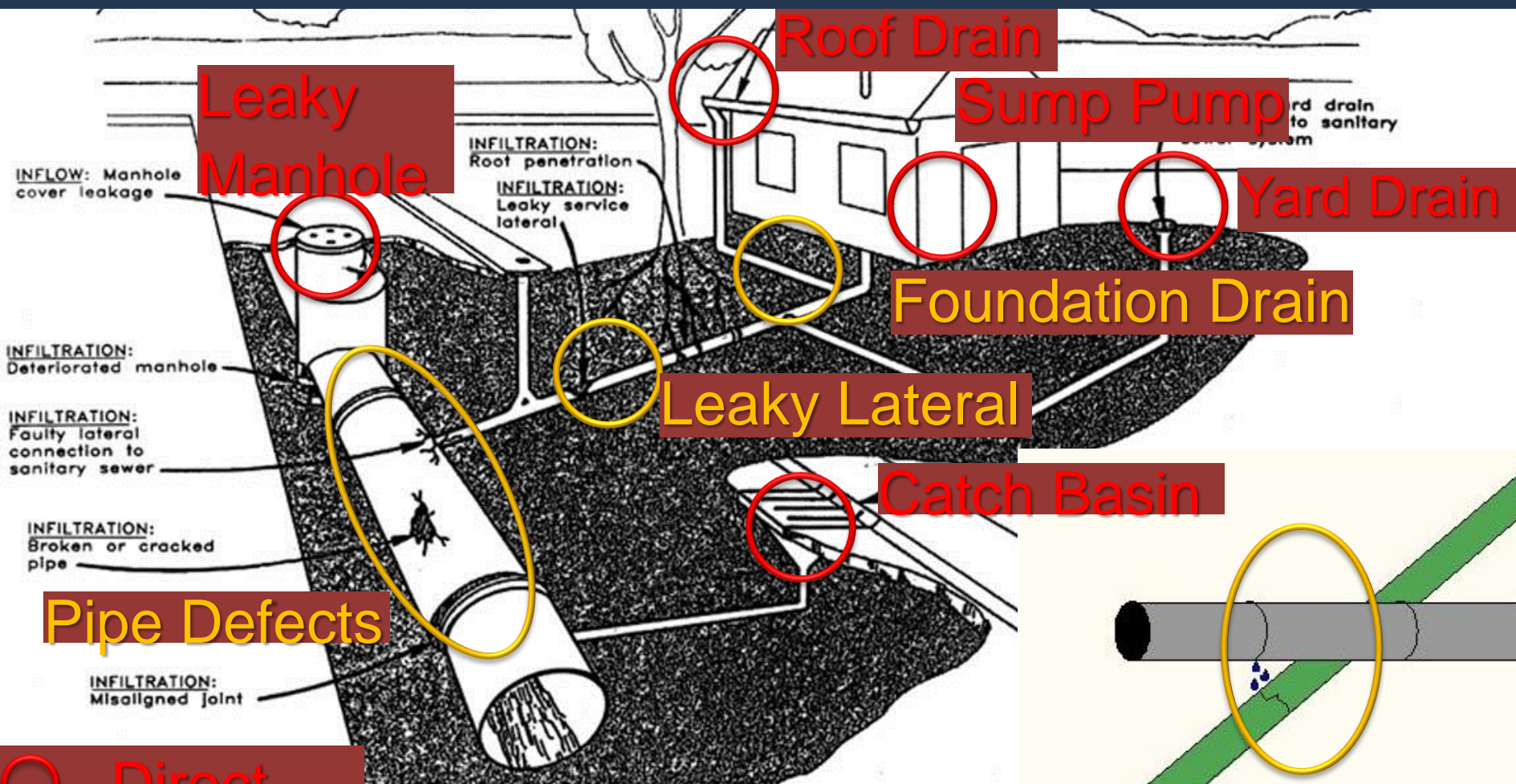
- **Why is a sump pump program being recommended?**
- **Discuss program details**
- **Discuss next steps**

What is I/I?

Inflow and Infiltration



Some Sources of I/I



SANITARY SEWER PROBLEMS

Indirect
Connection

○ Direct
○ Indirect

Inflow and Infiltration

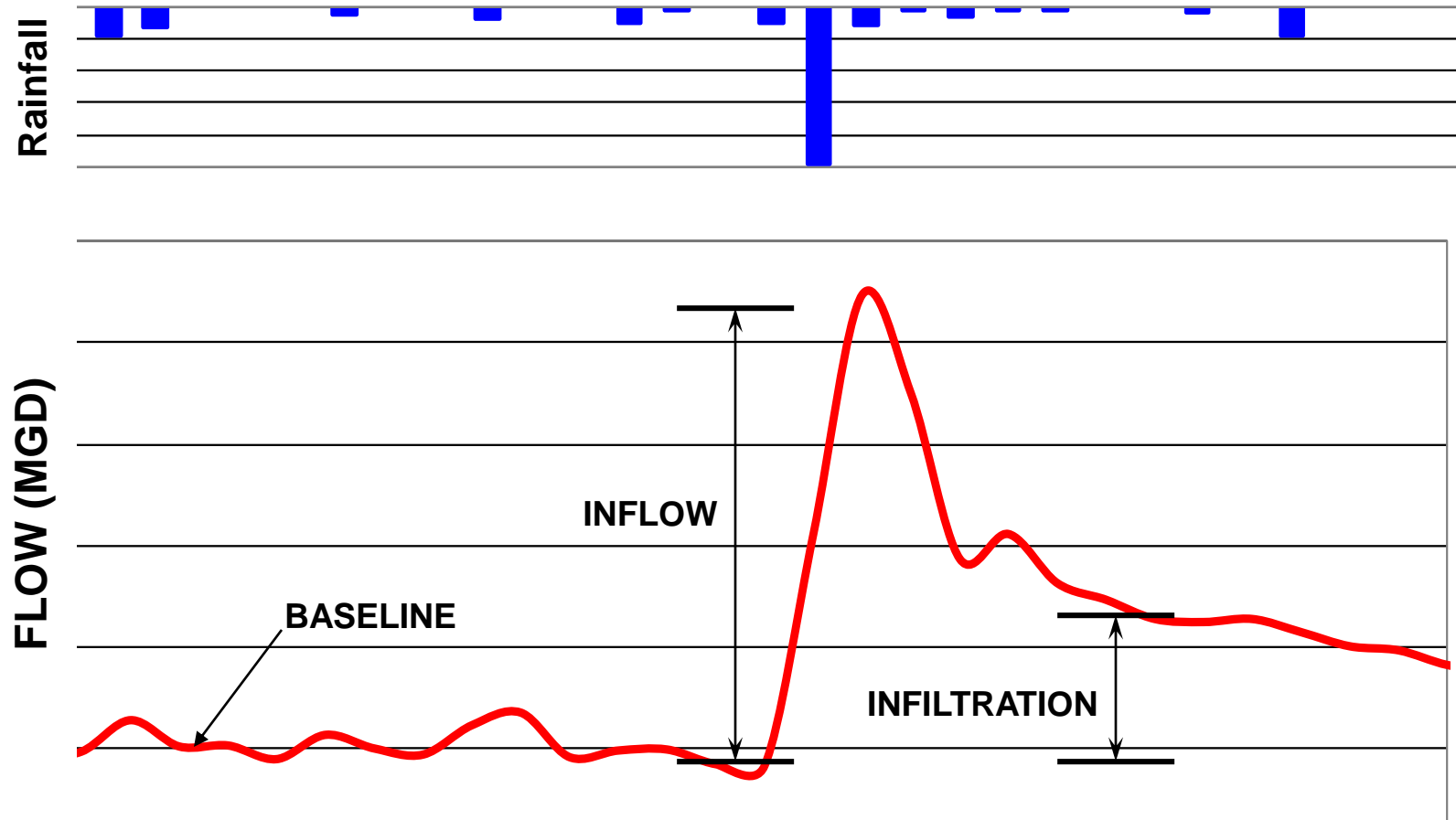


Boone System Description:

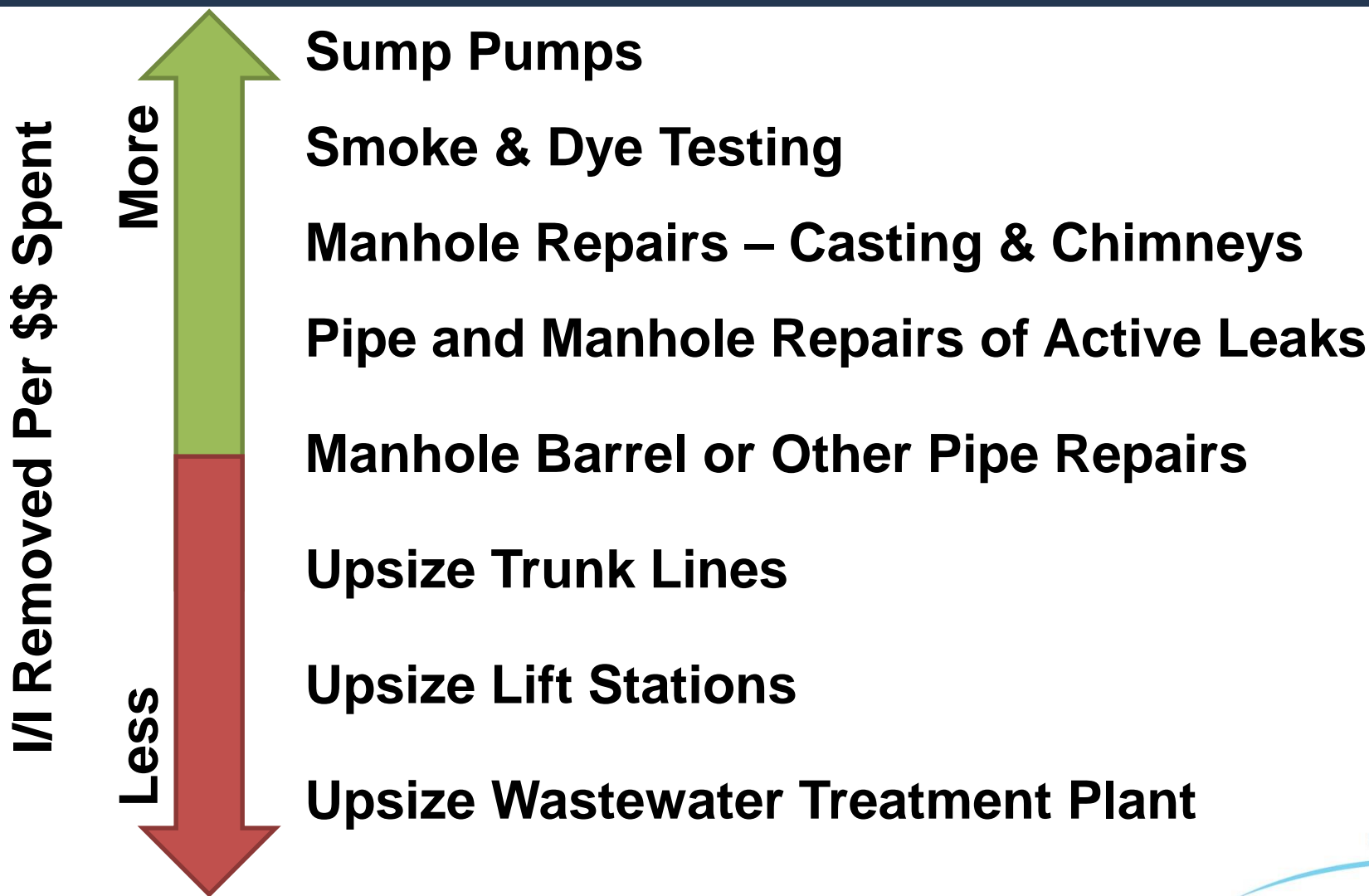
Average Dry Weather (ADW) flow (MGD): 2.1

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

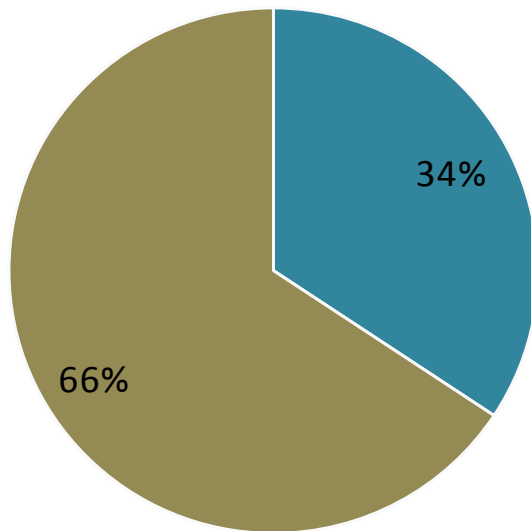
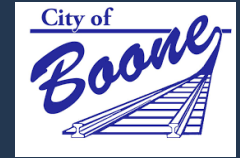
Peak Instantaneous Wet Weather (PIWW) flow (MGD): 24.6 **1170%**



Bang for your Buck



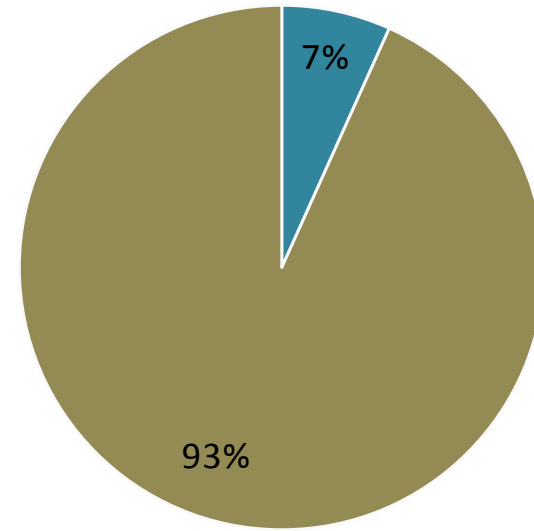
Example Flow Removal & Cost Public Sector vs. Private Sector



■ Private ■ Public

Sources of I/I

vs.



■ Private ■ Public

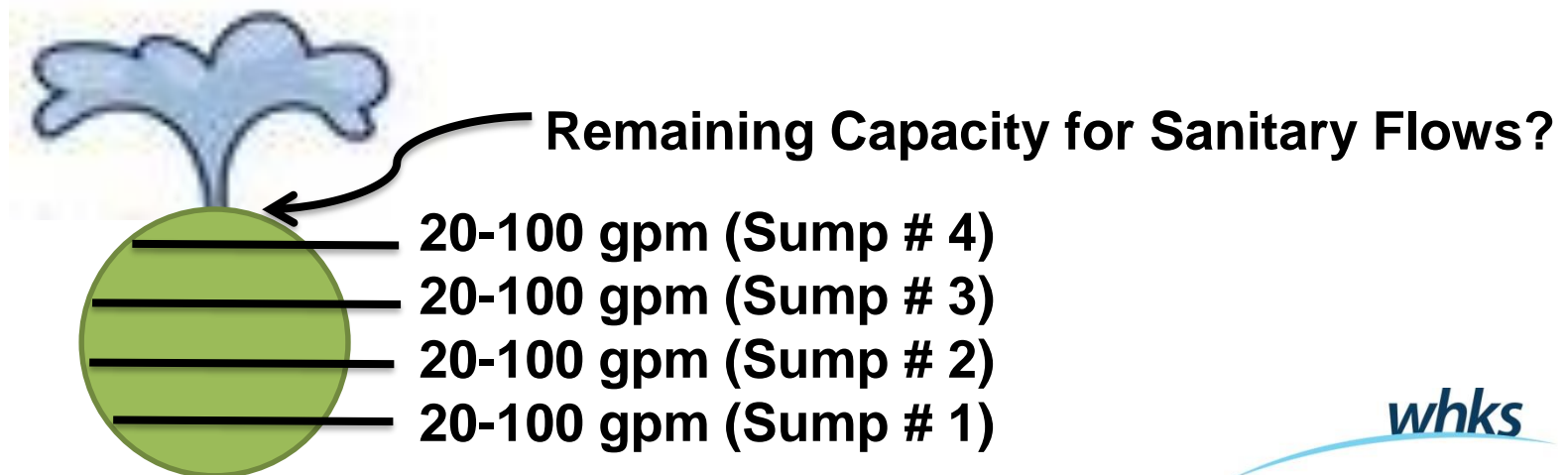
Cost to Remove I/I

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 17,000 inspections completed in thirty communities
- Hypothetically, if 5% rate applied to Boone's proposed 2019 inspection area:
 - Approx. 600 homes x 5% = 30 violations
 - If each pump contributed 50 gpm, 8 hours/day = 720,000 gpd
 - 2019 sump area = 10% of Average Wet Weather at WWTP (0.72 MGD / 7 MGD AWW = 10.3%)

Why a Sump Pump Program?

- **Sump pump programs are typically the MOST cost effective method to reduce I/I in the system**
 - **CIPP line sewer and rehab manholes @ \$25,000/block**
 - **Upsize sewer @ \$40,000/block (pipe only)**
 - **The cost of the current program is equivalent to approximately 1 block of upsized sewer.**
- **Cheaper to reduce wastewater than transport and treat**
 - **Duluth, MN Study - \$4/gal to treat, \$1/gal to remove**

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**

Sump Pump Program Approach



- **Public Information and Buy-in is KEY!**
- **Ordinance Revisions *completed!***
- **Public Info**
- **Public Meetings**
- **Scheduling & Inspections**

Public Info



Boone IA Sump Pump Inspection

BooneSump.com

Boone Sump Inspection

home program information FAQs notices inspection map contact

SUMP PUMP INSPECTION PROGRAM

Updated 4/09/2019

Received a Letter? [Click Here](#) to Schedule an Inspection

Have a Question? Please call toll free 844-630-0878.

Why is this important?

Like many cities in Iowa, Boone faces a challenge with its sanitary sewer system. During significant rain events, the sewer system can be overloaded. When it rains, flows can jump up to 20 times the normal amount. **Overloaded sewers lead to basement backups and overflows of untreated sewage.**

Boone News

Students continue to strive for Goeppinger...

Second week of May instated as 'Be Kind to Animals...'

Ames Chamber Artists features Boone Area Singers

United Community Midwest Childrens Choir Selection

United Community Honor Choir selections

BUDGET BLINDS

Request Your Free In-Home Consultation!

City Council Mandates Sump Pump Inspections

AT AMES FORD LINCOLN WE PROMISE YOU ...

You can't buy the wrong car with our 7-Day Like it or Return it Policy

By Logan Kahler Managing Editor | [lkahler@newsrepublican.com](#)

Posted Feb 18, 2019 at 12:01 AM

After attempting to receive voluntary approval compliance from residents to remove sump pumps from sanitary sewer lines, the Boone City Council met Monday evening to begin taking steps to mandate a program that will involve inspections of sump pumps and the location in which they discharge sewage.

The Cedars Assisted Living in Madrid

Any family who is concerned about finding a place for their older parents, The Cedars is the place they should look at. -Lara Galante, Resident

ADDRESSING THE NEEDS OF CITIZENS WITHIN THE CORPORATE LIMITS OF BOONE.

Your Government Boone

Sump Pump Inspection Program Coming Soon

The City of Boone has revised Ordinance 96.07 to prohibit all storm water including sump pumps from being connected to the sanitary sewer throughout the entire year. There will no longer be any seasonal sump pump connections allowed to the sanitary sewer. Any home or business that has a system that allows the switching of sump pump discharge to the sanitary sewer system will be required to remove it. The new ordinance will be implemented over several years throughout the City by specific targeted areas.

The City will be implementing a mandatory sump pump inspection program beginning in 2019.

Why is this important?

Like many cities in Iowa, Boone faces a challenge with its sanitary sewer system. During significant rain events, the sewer system can be overloaded. When it rains, flows can jump up to 20 times the normal amount. Overloaded sewers lead to basement backups and overflows of untreated sewage from Honey Creek and the Des Moines River.

The City is being urged by the EPA and Iowa DNR to reduce overflows. The City has already invested millions of dollars in improving the public sewer mains and lift stations. However it isn't enough to solve the problem. It is possible that DNR could require us to install an additional \$5 million dollar flow equalization basin at the wastewater treatment plant unless the excess clear water is removed from the sanitary sewer system.

Excess clear water enters the system from cracks in sewer mains and manholes along with private sources such as sump pumps, basement sewage collection and lift stations. A sump pump removes ground water from around a home's foundation or storm sewer street intake if available. The improper place for it to discharge is into the sanitary sewer. A single sump pump discharges between 20-100 gallons per minute (gpm). A household sewer main that has a typical capacity of 400 gpm.

By the sanitary sewer system, the City needs your help to remove clear water from your property and basement to observe exterior grading, prevent basement flooding and roof drains discharge outside your home to the street.

Beginning in 2019 to verify that clear water sump pump connections are properly installed and to ensure proper exterior grading, a sump pump inspection is completed in less than 15 minutes. There will be no charge for the inspection.

Approximately 600 homes south of the Union Pacific tracks from State Street to the upcoming work. Please visit the City website at [www.boonegov.com](#) for more information.

ADDRESSING THE NEEDS OF CITIZENS WITHIN THE CORPORATE LIMITS OF BOONE.

Your Government Boone

December Author Talk with Aaron Putze and special guest, Chuck Long

Friday, November 27 at 6:00 p.m.

Boone Public Library, Second floor Meeting Room

and Chuck will be sharing stories from Aaron's book, Chuck Long: Destined for Greatness, an autobiography of Chuck's life.

Hardbound (\$30) and softbound (\$20) copies of the book will be available.

will join in photos and sign one additional item for each book purchased!

Boone Theater, 1944-1945

3:30 p.m.

Second floor Meeting Room

Boone County Reenactment Company

and fight on the front lines in World War II authentic military items!

EPL is becoming a Scholastic Literacy Partner!

Starting in November, children who attend any storytime at Ericson Public Library will receive a punch card. After attending ten storytimes, each child will get to select a free book for their own home library!

This program is made possible through a generous donation from the Friends of Ericson Public Library.

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UPCOMING EVENTS

November 15th OPEN BURNING ENDS in the City of Boone

Santa Express November 23, 24, 25, 30 & December 1, 2, 7, 8, 9, 14, 15, 16, [www.boonegov.com](#)

November 25th Downtown Holiday Light Parade

December 13th "Shop with a Cop" County Law Enforcement

www.boonegov.com FOR MORE INFORMATION

Foundation Central Christian Church Farnout Lynn's Lounge Coney's 5 pm to 7 pm

ends May 15th burning allowed 8 am to 7 pm

Community Dedication Award details at [www.boonegov.com](#)

Hiernan Park Pavilion 7:30 pm

in April newsletter



Letter



Daniel Scott
City Engineer



April 25, 2019

Property Owner: Owner
Property Address: Property Address

Re: 2019 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. The 2019 inspection area includes approximately 600 homes located between Main St and Division St north of College St. Other areas of the City will be inspected over the next few 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 Monday, May 6th, 2019 at 5:00 pm at Boone City Hall to discuss the scheduling of inspections, length of inspection, proper sump pump connection and other miscellaneous items.

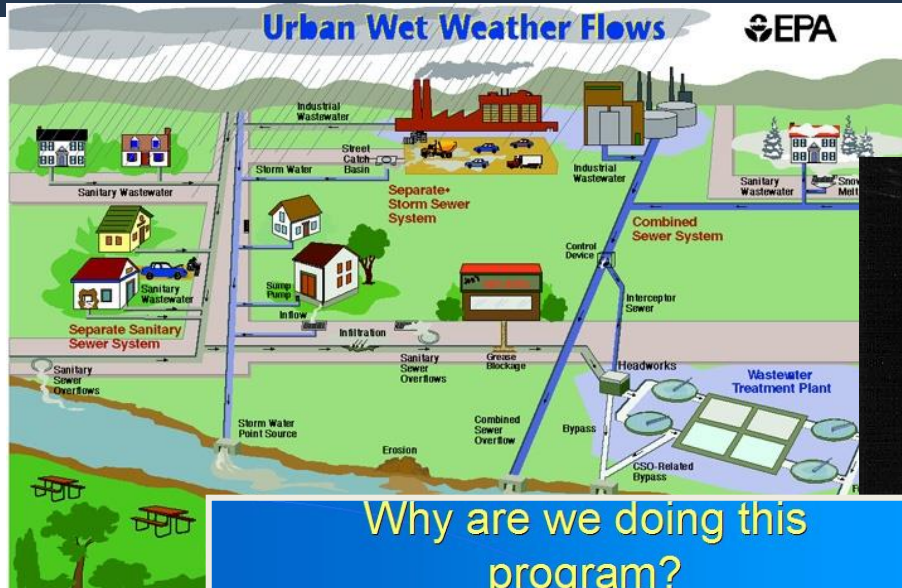
Thank you for your attention to this matter. If you have any questions, or require any additional information, please do not hesitate to contact Angie Kolz, WHKS & Co., (515) 663-9997, and check out the project website at <https://BooneSump.com>.

Sincerely,

A handwritten signature in blue ink that reads "Daniel Scott".

Daniel Scott, P.E.
City Engineer

Informational Meeting



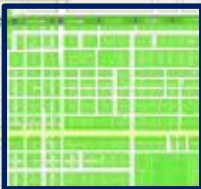
Why are we doing this program?

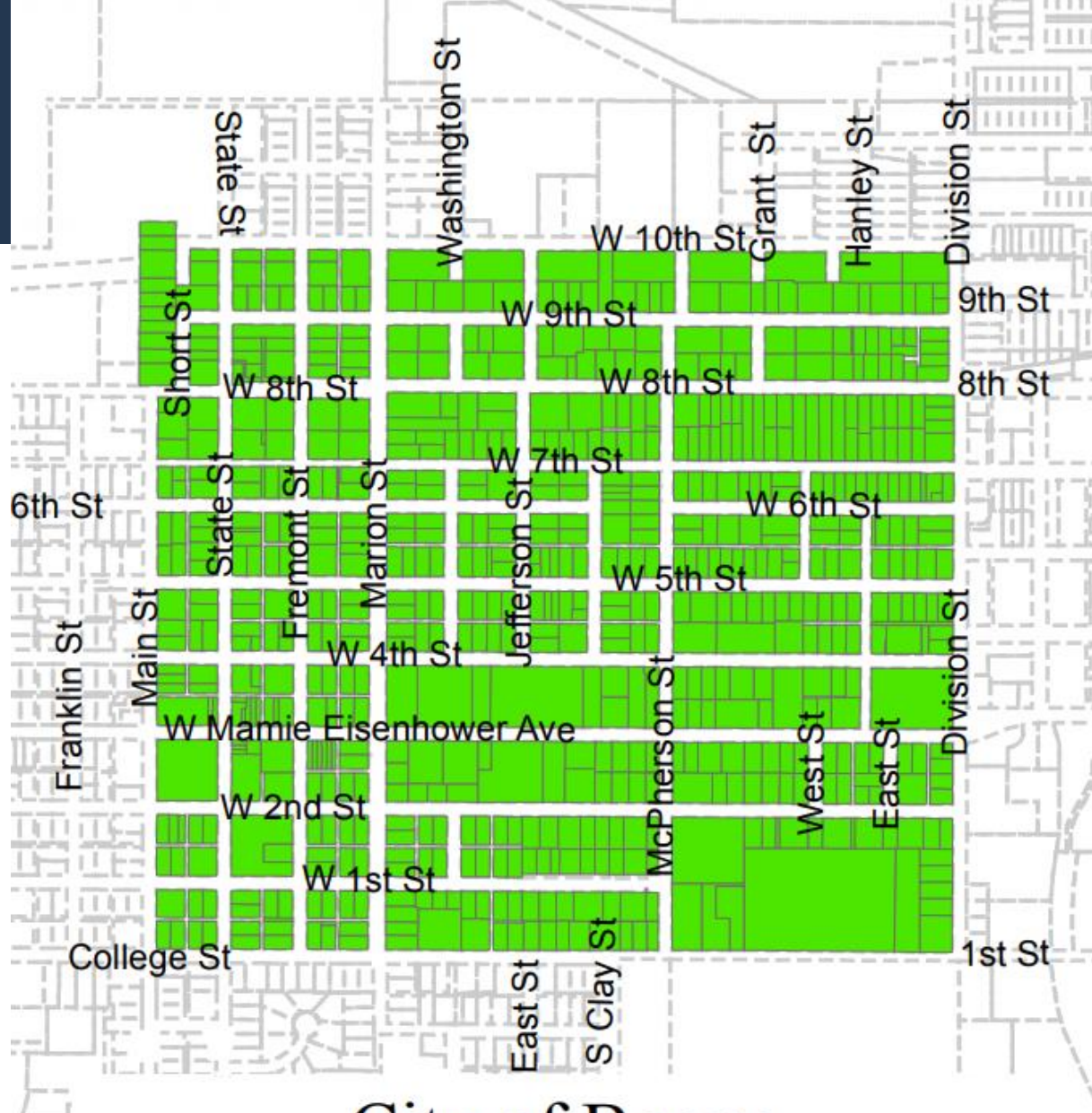
- ❖ Cheaper to reduce wastewater than to transport and treat
- ❖ Sewer replacement to upsize pipe, ~ \$40,000 per block
– (2.5 blocks for cost of this program)
- ❖ Duluth, MN Study - \$4/gal to treat, \$1/gal to remove

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 844-630-0878
- **Residents will receive a letter when it is time for their sector to schedule inspections.**





City of Boone

2019 Sump Inspection Program

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**

Inspection Form

Inspector _____
Plumbing License # _____

Property Address _____ Page 2 of 2

City of Boone Sump Pump Inspection Report

A. Initial Inspection

1. Owner and Address:
 - a. Owner Name(s): _____
 - b. Address: _____
 - c. Occupants Name (If different): _____
 - d. Owner Address (s): (If different) _____
2. Date of Initial Inspection: _____
3. Date of construction and Building Type? Building built in year _____ (ex. 1959)
Note residential, apt., commercial, industrial: _____
4. History of backups or flooding? Note date, source, and actions taken: _____

5. Does building have:
 - a. ☐ Yes ☐ No Exterior grading sloping towards the building?
 - b. ☐ Yes ☐ No Roof drains that go into the ground?
 - c. ☐ Yes ☐ No Basement?
 - d. ☐ Yes ☐ No Seepage collection (beaver) system?
 - e. ☐ Yes ☐ No Sump pit?
6. If building has a **roof drain** that goes into the ground, which of the following apply?
 - a. ☐ It is properly constructed to discharge to open air or storm system.
 - b. ☐ It is improperly constructed to discharge into the sanitary sewer system.
 - c. ☐ Discharge location not determined.
7. If there is a **seepage collection (beaver) system**, which of the following apply?
 - a. ☐ It is properly constructed to discharge into a sump pit
 - b. ☐ It is improperly constructed to discharge into the sanitary sewer system.
 - c. ☐ Discharge location not determined.
8. If there is a **sump pit**, which of the following apply?
 - a. ☐ Pump is properly plumbed to discharge outside the basement through rigid piping.
 - b. ☐ Pump is improperly plumbed to discharge into the sanitary sewer system.
 - c. ☐ Pump has the capability of discharging into the sanitary sewer system (ex. flex hose).
 - d. ☐ There is a pit with no pump. Plumbing is checked as (a) (b) or (c) if present.
 - e. ☐ Discharge location not determined.
9. Other comments (exterior drains, uncapped cleanouts, inactive sump pit, etc): _____

10. Photos taken of Interior Sumps and Collection System, and Building Exterior? ☐ Yes ☐ No
11. If 6b, 7b, 8b or 8c was checked, a Violation Notice was given to the Occupant or Owner directing them to correct the violation by (date): _____

PASS _____

FAIL _____

City Follow-Up _____




DIAGRAM: roof drains into ground, exterior drains, improper grading, sump pits and pumps, sump pump discharges, beaver systems, sanitary grinder pumps, etc

B. Subsequent Inspection

1. Date of subsequent inspection: _____
2. Inspection conducted by _____
3. Does the building now comply with the applicable Ordinance for the City of Boone?
☐ Yes ☐ No

I hereby verify that the City Representative has inspected the above-described sump pump and the information set forth above is true and correct to the best of my knowledge.

Occupant/Owner _____

Date _____

I hereby verify that the City Representative has inspected the above-described sump pump and the information set forth above is true and correct to the best of my knowledge.

City Representative _____

Licensed Plumbers: sign with license #.

Date _____

Inspector Identification



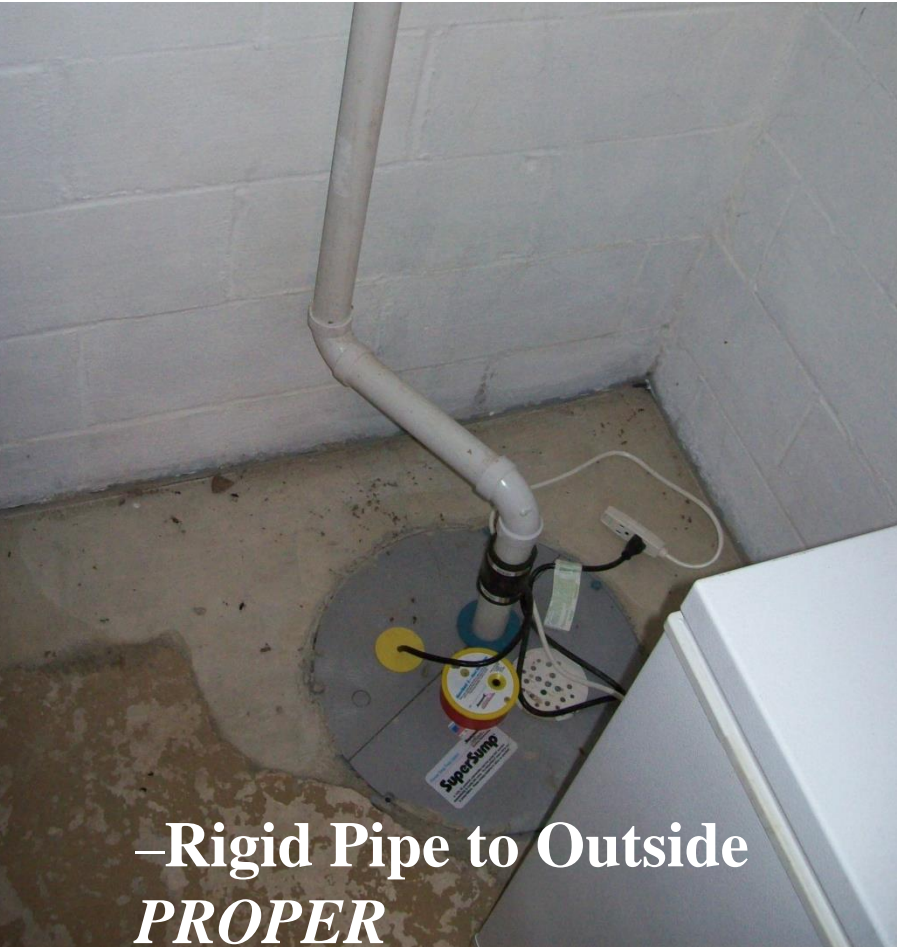
BOONE - I/I PROGRAM INSPECTOR



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



Installation Examples: Sump Pumps

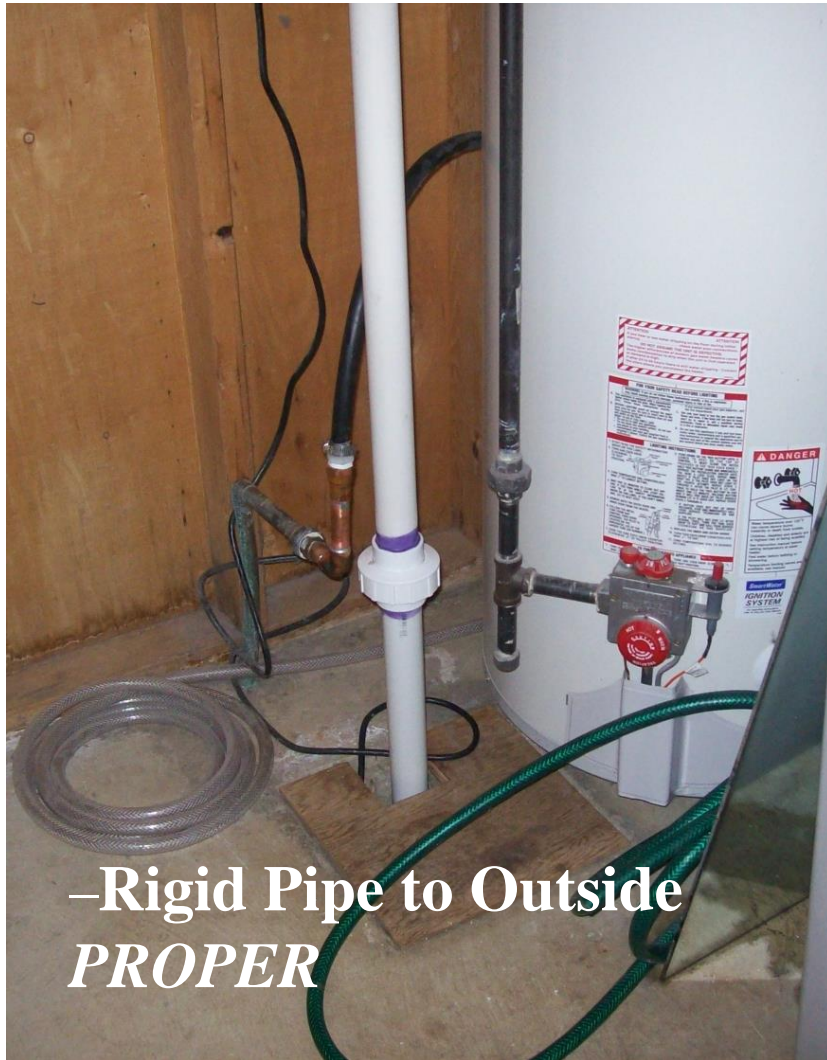


–Rigid Pipe to Outside
PROPER

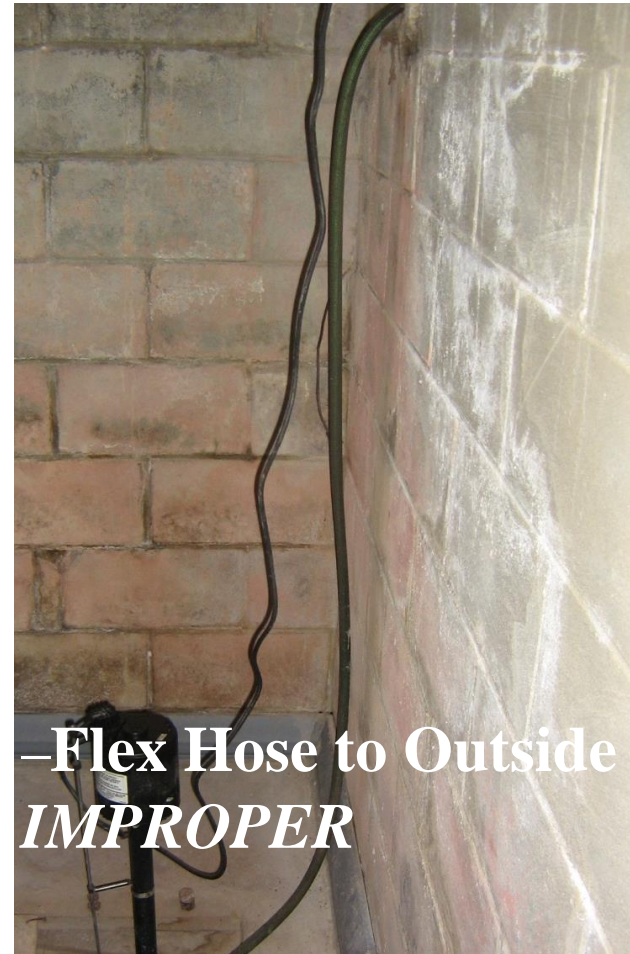


–Flex Hose to Drain
IMPROPER

Installation Examples: Sump Pumps



–Rigid Pipe to Outside
PROPER



–Flex Hose to Outside
IMPROPER

Installation Examples: Sump Pumps



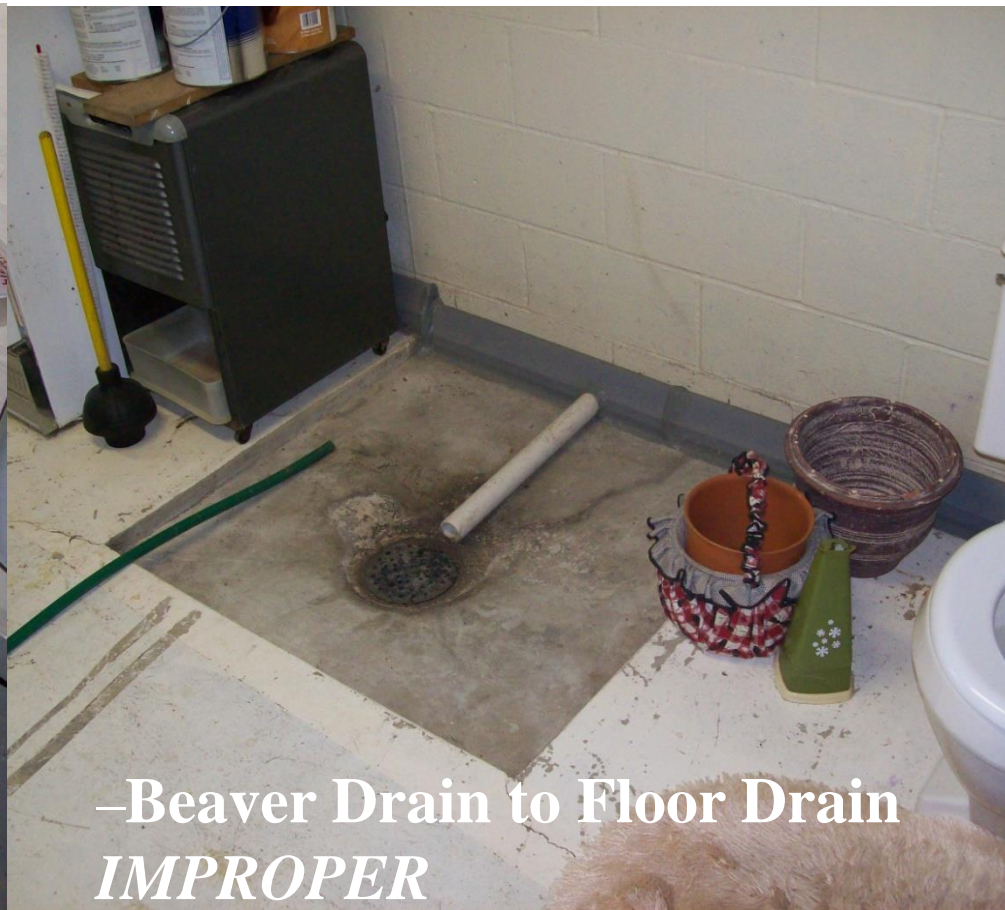
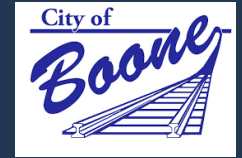
**Flex Hose to
Sanitary
via stool**

No.

[Mipsbe.com/post](https://mipsbe.com/post)

whks

Installation Examples: Beaver Drains



Installation Examples: Beaver Drain / Tile



Installation Examples: Tile Pit



Photo courtesy of WCF Courier

Tile Pit into Floor Drain
“Running Trap”
IMPROPER

Plugged + Pump Installed
PROPER



Discharge Options



Flexible Pipe



Discharge Options



- **Curb outlet**

Discharge Options



- **Air Gap & underground pipe**



whks

Discharge Options



Legal, but not a good idea

Discharge Options



Many options exist for discharge lines!

Any questions, call WHKS 515-663-9997 or your local plumber!

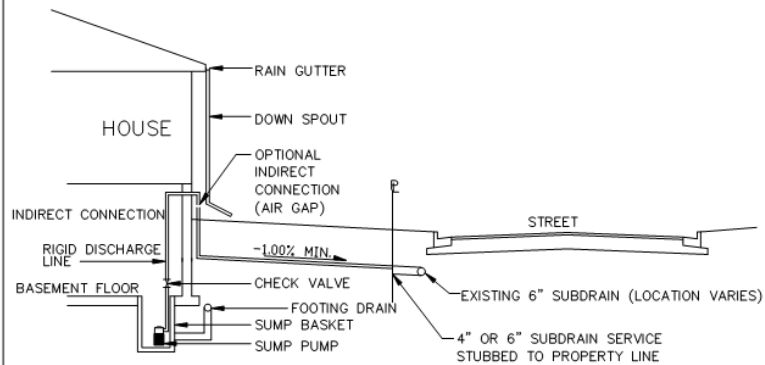


Sump Pump Diagrams



CITY OF BOONE

PROPER SUMP PUMP CONNECTION (WHEN CITY SUBDRAIN / STORM SEWER IS AVAILABLE)



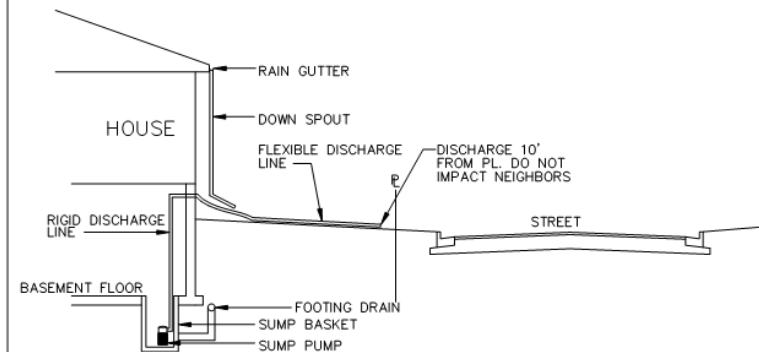
TYPICAL SECTION
NO SCALE



REV. 5/16/2016

CITY OF BOONE

PROPER SUMP PUMP CONNECTION (WHEN CITY SUBDRAIN / STORM SEWER IS NOT AVAILABLE)



TYPICAL SECTION
NO SCALE

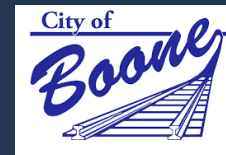


REV. 5/16/2016

Sump Pump Recommendations



- **Continue Public Info!**
- **Schedule Public Info Meeting**
- **Begin Inspections**



Ordinance & Inspection Timeline

Item	Date
Council Kickoff / Public Info Meeting	Feb 4, 2019
Public Information Meeting	May 6, 2019
Inspections: Inspections Begin	May 2019
Inspections: Inspections Complete	Nov 2019

Long Range I/I Plan: Field Investigations

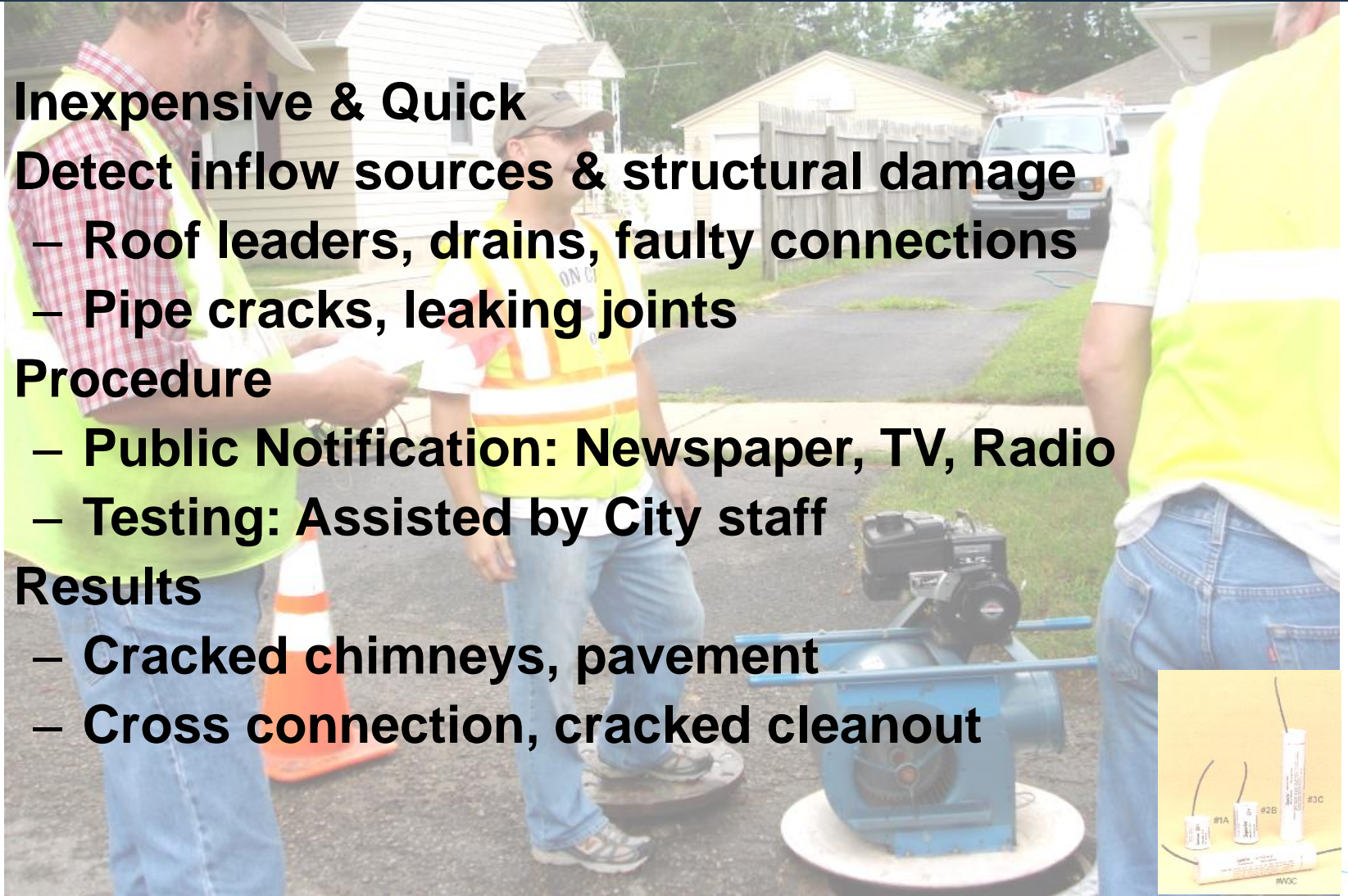


- **Private:**
 - **Building Inspections**
- **Public:**
 - **Smoke and Dye Testing**
 - **Manhole Inspections**

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 connection, cracked cleanout



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

515-663-9997

