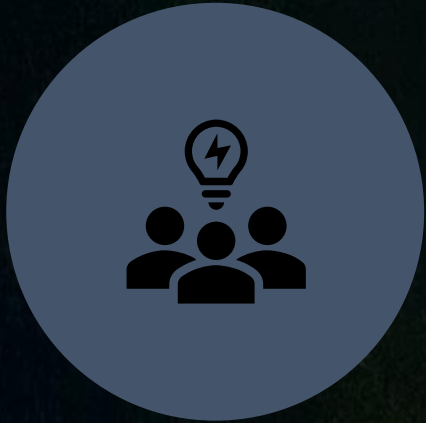


SANITARY SEWER PROJECT PLANNING



WILLIAM SHEPPARD
RISK MANAGER - OMAG

OBJECTIVES



REMOVE GUESSWORK



REDUCE PROJECT COST



HELP IS AVAILABLE

PROJECT LIFECYCLE



MAINTAIN



ANALYZE/PLAN



DESIGN



CONSTRUCT



CLOSING



“IF YOU FAIL TO PLAN, YOU ARE PLANNING TO FAIL” BENJAMIN FRANKLIN



Basic Analysis of Collection Systems

- **Determine Potential SSO Causes**
- **Prioritize Maintenance Activities**
- **Reduce Maintenance & Rehabilitation Costs**



SL-RAT



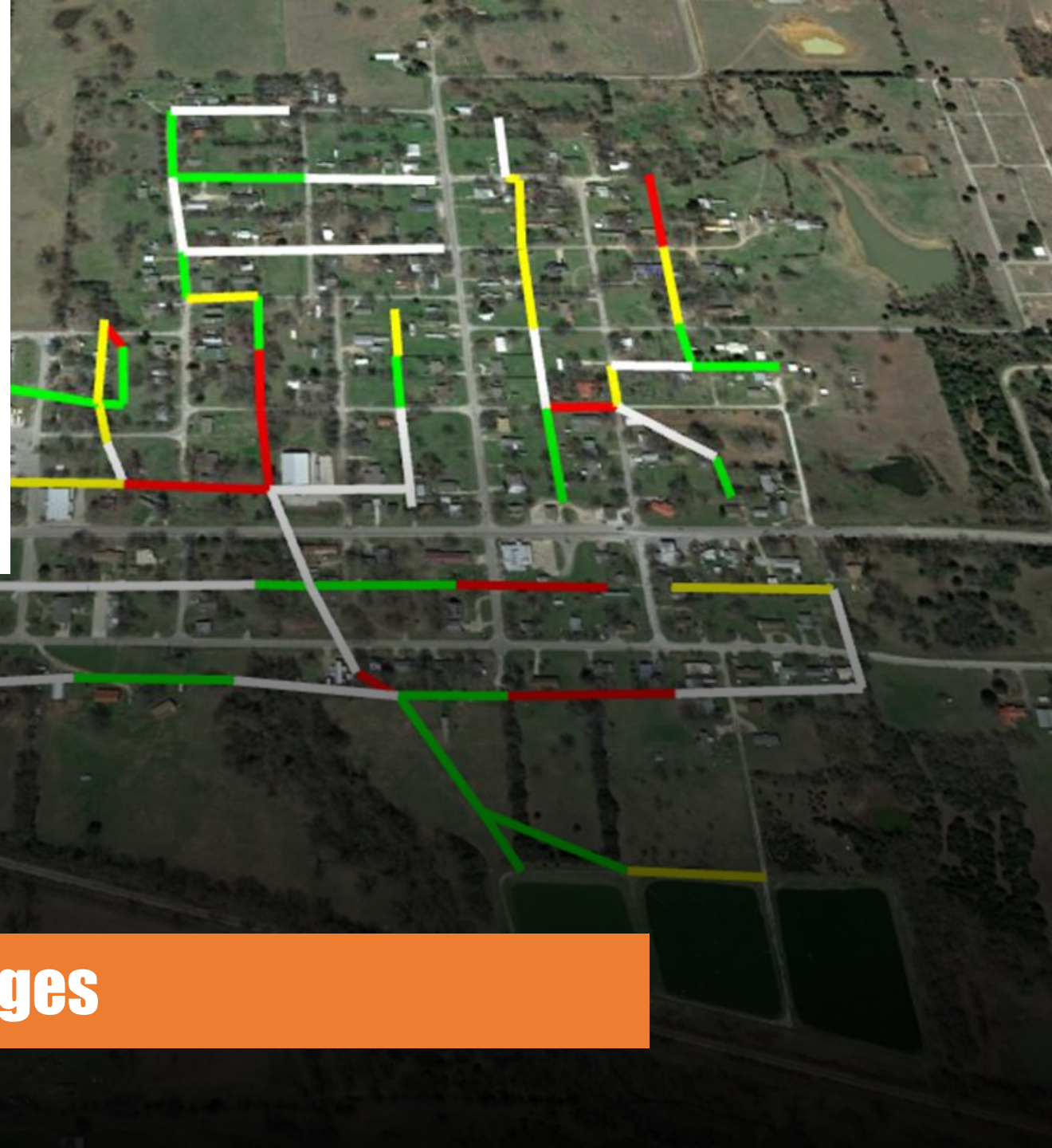
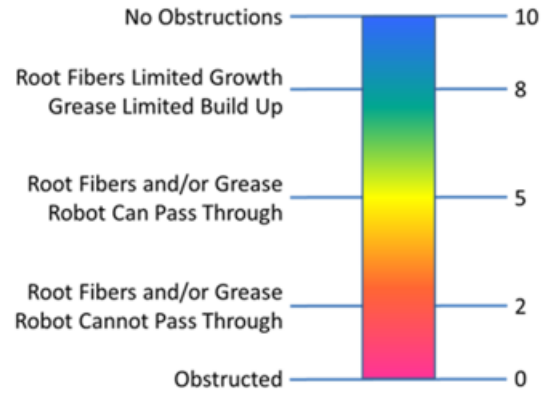
CCTV Inspection



I&I Detection

ACOUSTIC INSPECTION TECHNOLOGY

- Scoring System



TRIAGE

Quickly identify potential blockages



SL-RAT SCORES STATEWIDE

(as of August 24, 2021)



43% OF LINES ARE ESSENTIALLY CLEAN

CLEANING CLEAN PIPES

NOT CLEANING A DIRTY PIPE

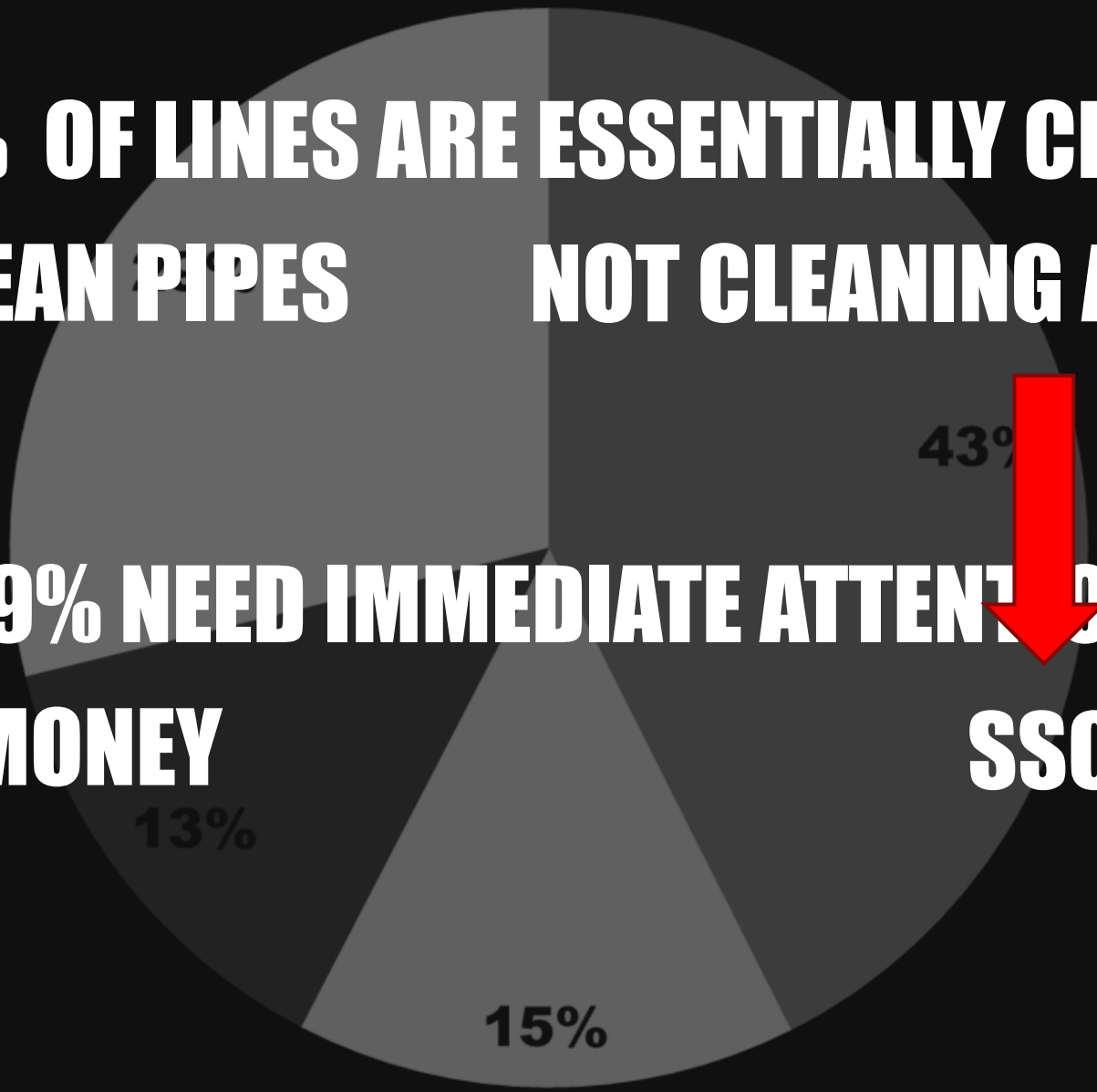


29% NEED IMMEDIATE ATTENTION

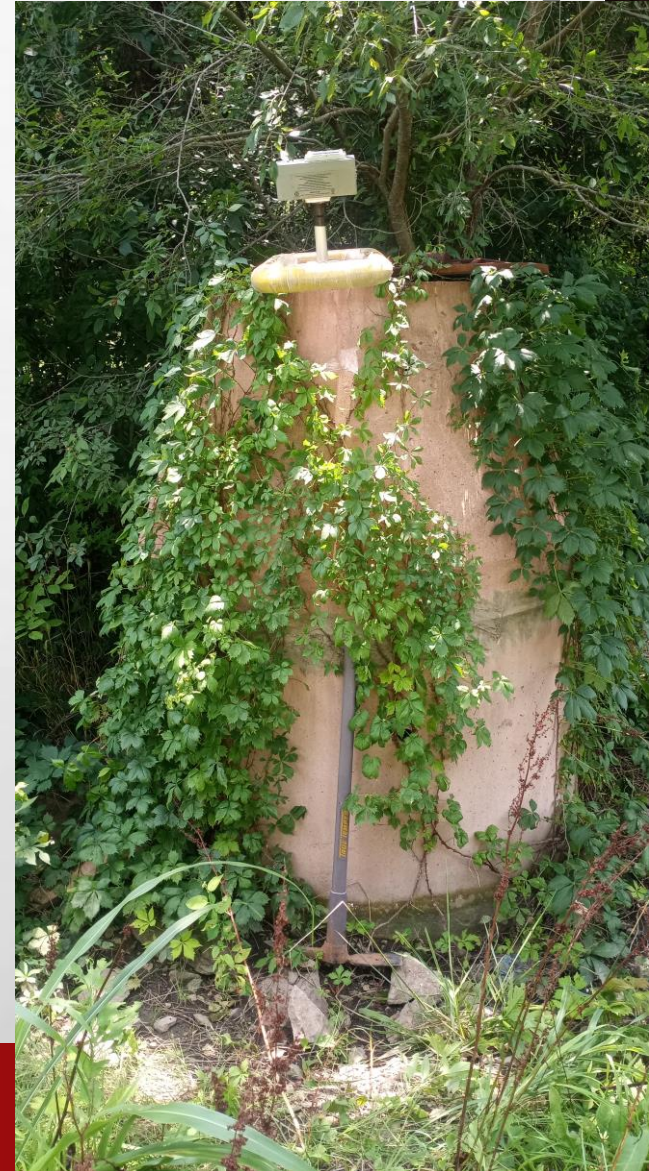


WASTED MONEY

SSO



OMAG





CCTV Sewer Inspection



USMH: East of Lift Station
DSMH: Lift Station

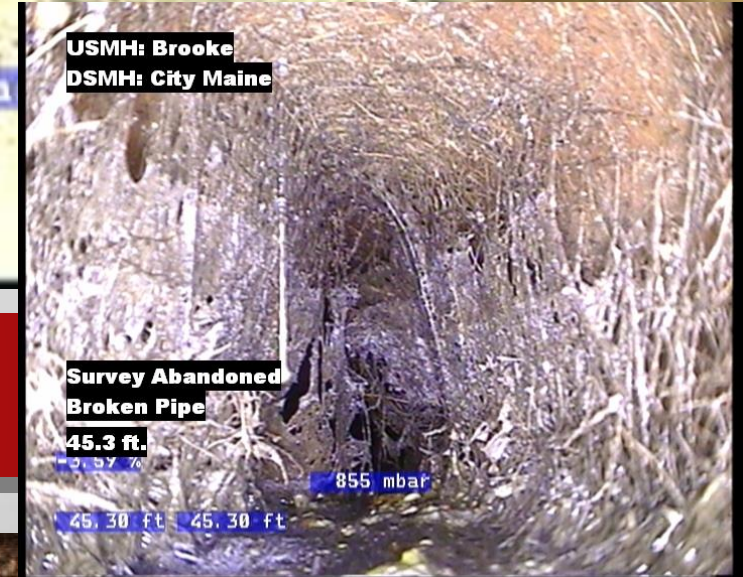
Lift Station

08:00:46 AM / 2018-06-14



Del
50.
-0.4
50.

[22' 7"]



USMH: Brooke
DSMH: City Maine

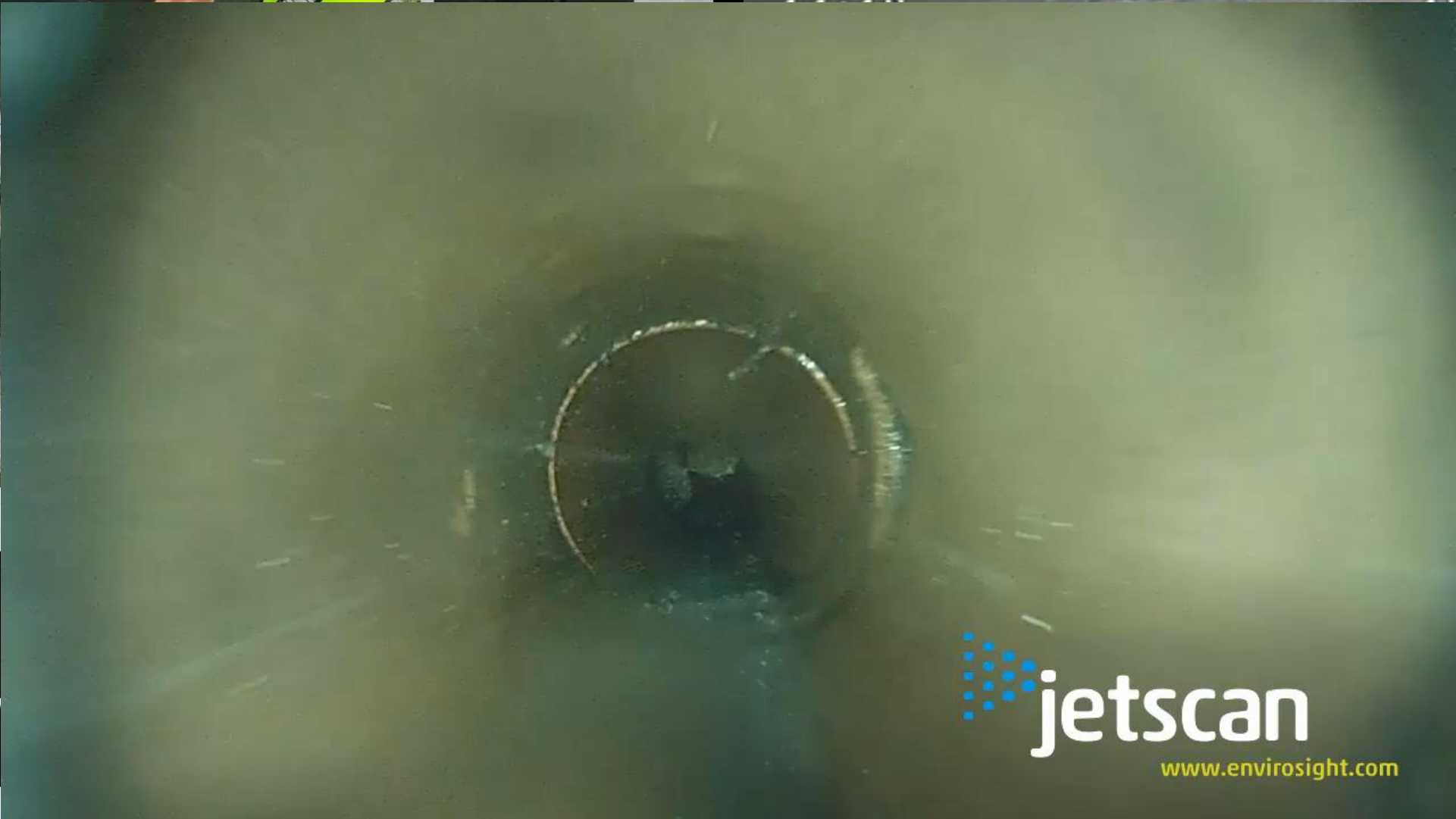
Survey Abandoned
Broken Pipe

45.3 ft.

0.37 %

855 mbar

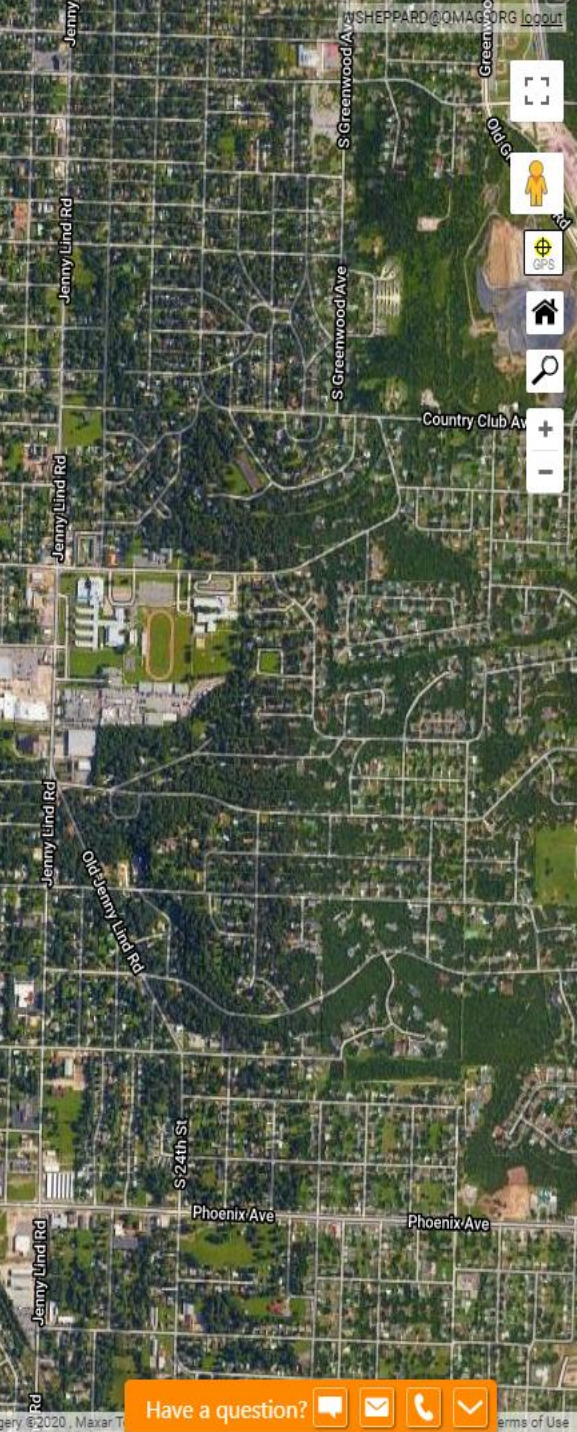
45.30 ft 45.30 ft



CCTV
Inspection

 jetscan
www.envirosight.com





Legend

1000 ft

Manholes

Manholes2



I&I Detection

- **80% of I&I is occurring in less than 20% of the collection system**

Inexpensive Sensor



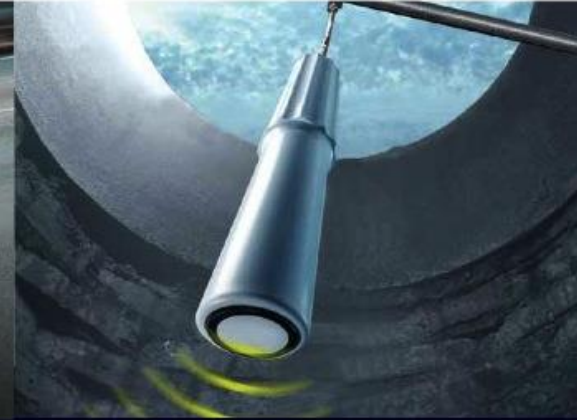
- Non-Contact Sensor
- Weight: 1.9 lbs
- Dual Lithium Batteries
- Wi-Fi or Cellular Enabled
- 15 – 30 Minute Installation
- Integrated Data Logger



No Confined Space Entry



Cellular Data Retrieval



Zero Maintenance

MAINTENANCE ACTIVITIES

TABLE 2 FREQUENCY OF
MAINTENANCE ACTIVITIES

Activity	Average (% of system/year)
Cleaning	29.9
Root removal	2.9
Manhole inspection	19.8
CCTV inspection	6.8
Smoke testing	7.8

Source: ASCE, 1998.

ACOUSTIC TECHNOLOGY 100%

FINANCIAL IMPACT

- **JETTING = \$1/FT**
- **CCTV INSPECTION = \$2/FT**
- **SL-RAT INSPECTION IS 15¢/FT**
- **REDUCE COST BY 50%**





STAGES OF ROOT INFILTRATION



ROOT of the Problem

- **Tree root intrusion: EPA States...**

“The intrusion of roots into sewers is probably the most destructive single element that faces those maintaining wastewater collection systems.”





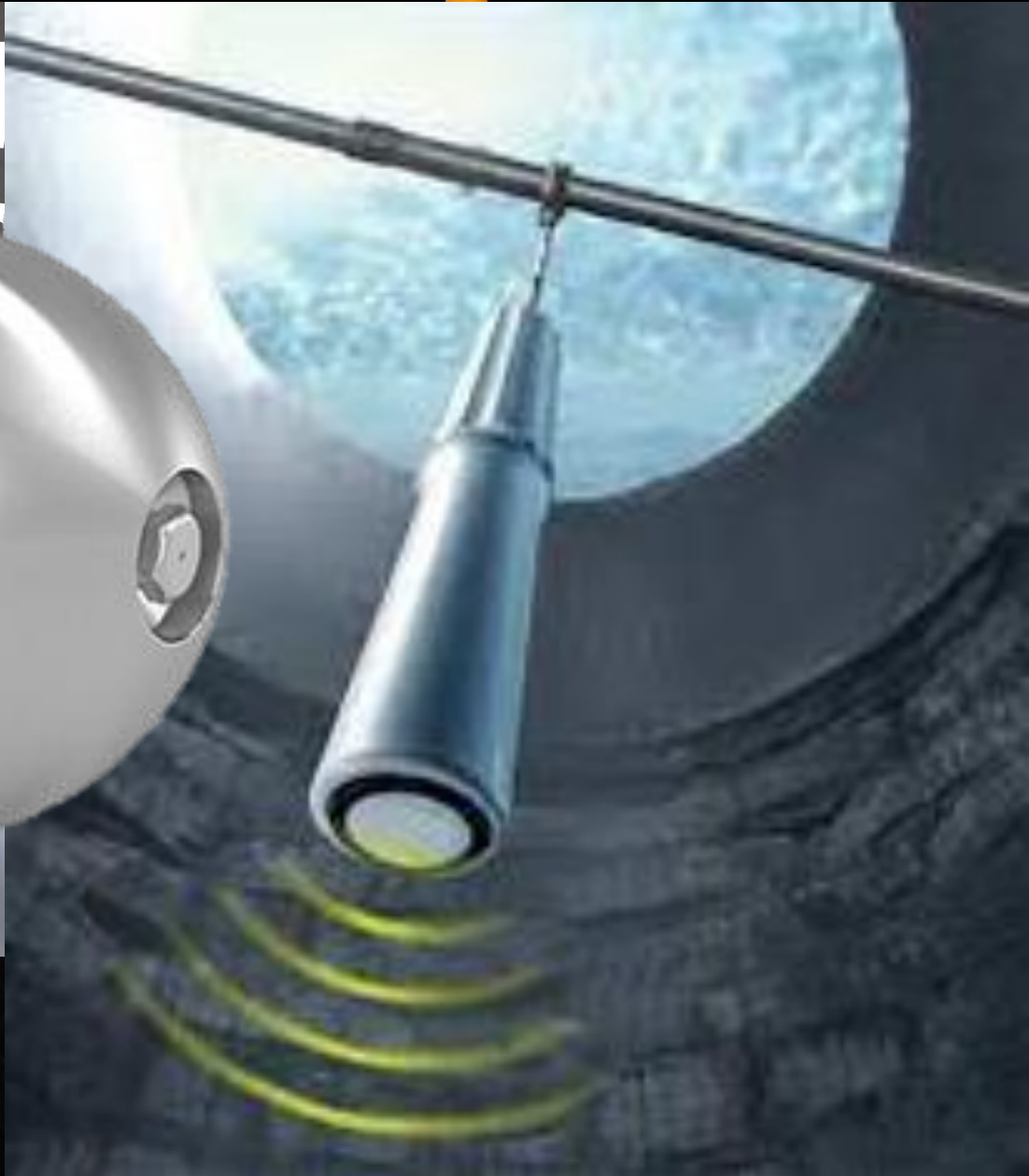
ROOT CONTROL

- **Hydraulic Cleaners**
- **Cutting Tools**
- **Rodding Machines**
- **Chemical Root Control**



OMAG

SEW INTE



Excavation Vs. Trenchless

EXCAVATION & REPAIR



PERMA-LINER™ SECTIONAL REPAIRS



Sanitary Sewer Project Planning – Review

- **Preventative maintenance**
- **Have a plan and follow it**
- **Leverage new technology**
- **Choose the right
Equipment/Process**
- **Do it right the first time**



REFERENCES

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- OKLAHOMA WATER RESOURCES BOARD (2015) OKLAHOMA COMPREHENSIVE WATER PLAN, PUBLIC WASTEWATER SYSTEM PLANNING GUIDE 4-12
- LUCKINBILL PERMA-LINER™ SECTIONAL POINT REPAIRS (2021) SECTIONAL POINT REPAIRS, ADVANTAGES OF SECTIONAL POINT REPAIRS
- ENVIROSIGHT (2018) PHASED ASSESSMENT STRATEGY FOR SEWERS (PASS) A PLAN FOR UNDERSTANDING SEWER CONDITION QUICKER, WITH FEWER RESOURCES
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[HTTPS://SMARTCOVERSYSTEMS.COM/WPCONTENT/UPLOADS/2021/10/SMARTCOVER_CASESTUDY_ROSS_VALLEY_FINAL.PDF](https://smartcoversystems.com/wpcontent/uploads/2021/10/SMARTCOVER_CASESTUDY_ROSS_VALLEY_FINAL.PDF)



THE END OF THE LINE

ARPA SANITARY SEWER PROJECT PLANNING

DECEMBER 16, 2021

MOORE NORMAN ★ TECH CENTER



OKLAHOMA