Lead and Copper Rule Improvements Webinar

Chuck Hansen
CEO
Electro Scan

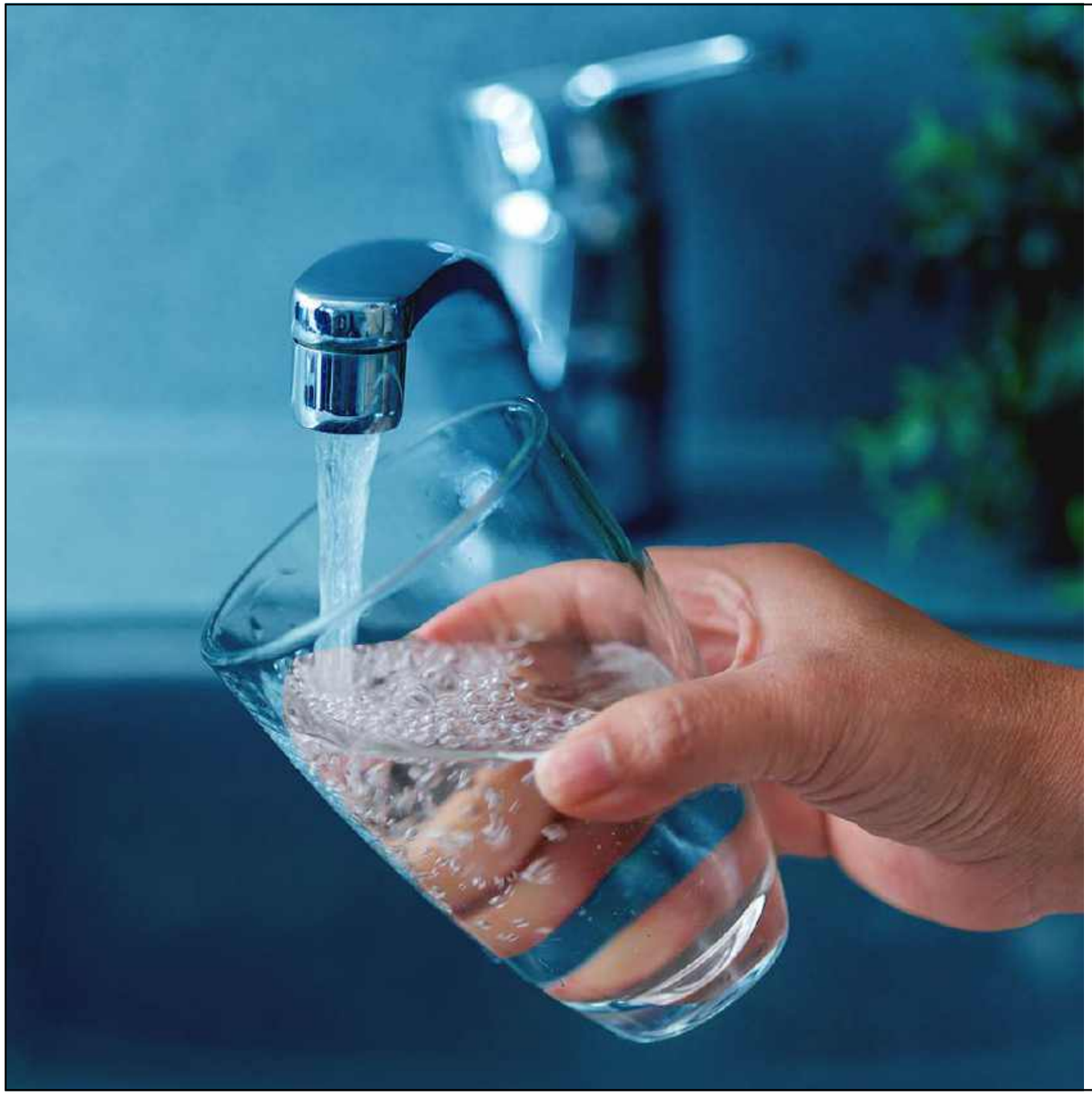
Mike App
Executive Vice President
Electro Scan

Matt Campos
VP, Product Development
Electro Scan

Richard Brown
Dir. of Marketing
Electro Scan

David Kinsella
President
Element 82 & PE Pipelines

1745 Markston Road
Sacramento, California 95825
Tel: +1 916 779 0660
Web: https://www.electroscan.com
Email: info@electroscan.com



Housekeeping

- ✓ Please mute all microphones.
- ✓ Use the Chat Box if you have any questions or comments.
- ✓ Type Questions into Chat Window or Email directly to richbrown@electroscan.com.
- ✓ A Link to this Presentation Will be Available at the end of the Webinar.

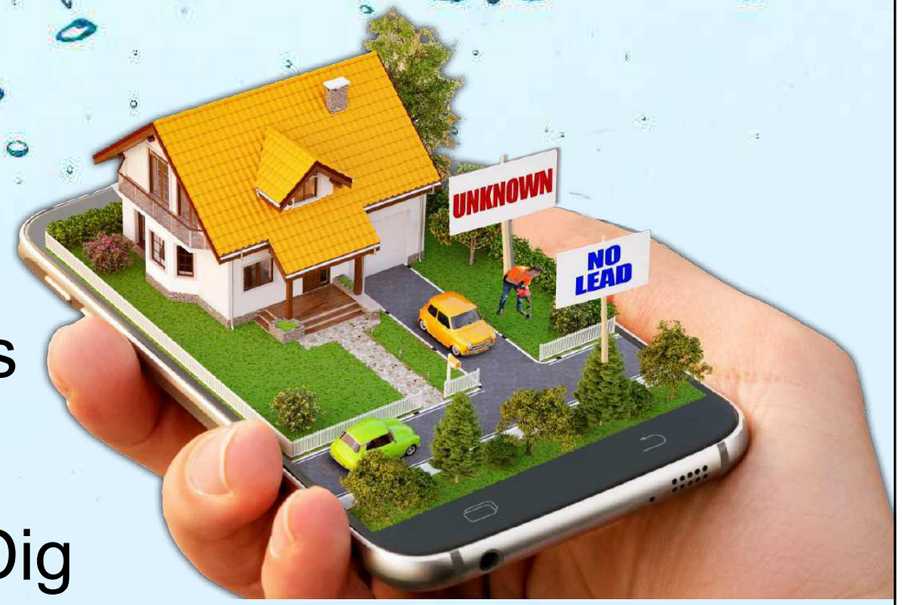
Question #1

True or False

The LCRI now requires flushing of all water lines after Potholing and Customer Notification.

Agenda

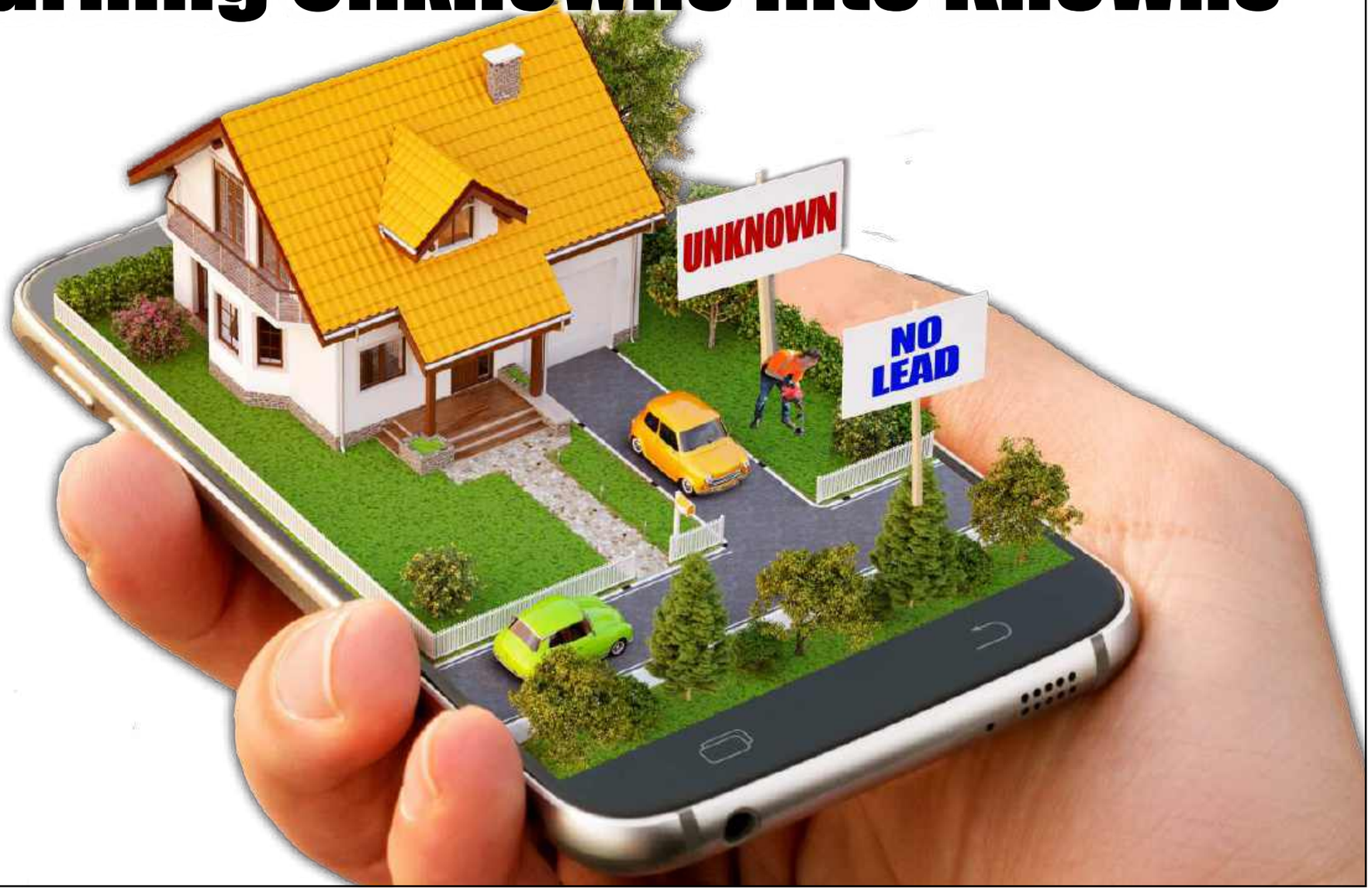
1. Turning ‘Unknowns’ Into ‘Knowns’
2. Validating Existing Service Line Inventories
3. Moving from Prediction to Certainty:
   Focusing on Pipe Verification Before You Dig
4. DC Water’s Benchmark (Test Pit, Electro-Magnetic, SWORDFISH)
5. Lead Replacement Strategies
6. Case Studies in Lead Detection
7. Wrap-Up / Q&A



Part 1

Turning Unknowns Into Knowns

Chuck Hansen
Sacramento, CA



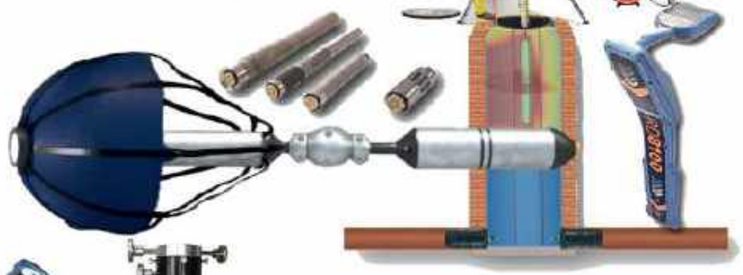
Hello and Welcome!

1983

HANSEN

2024

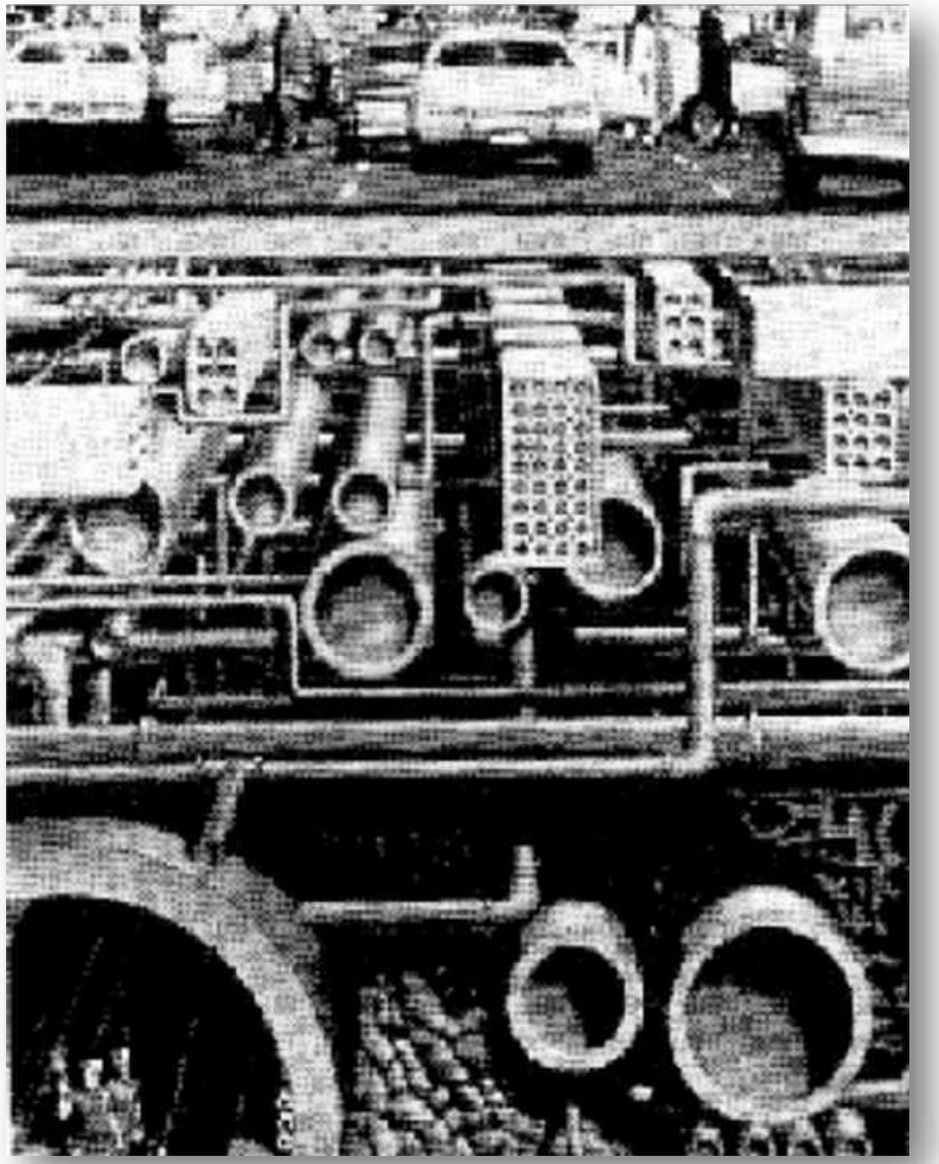
electro scan inc.

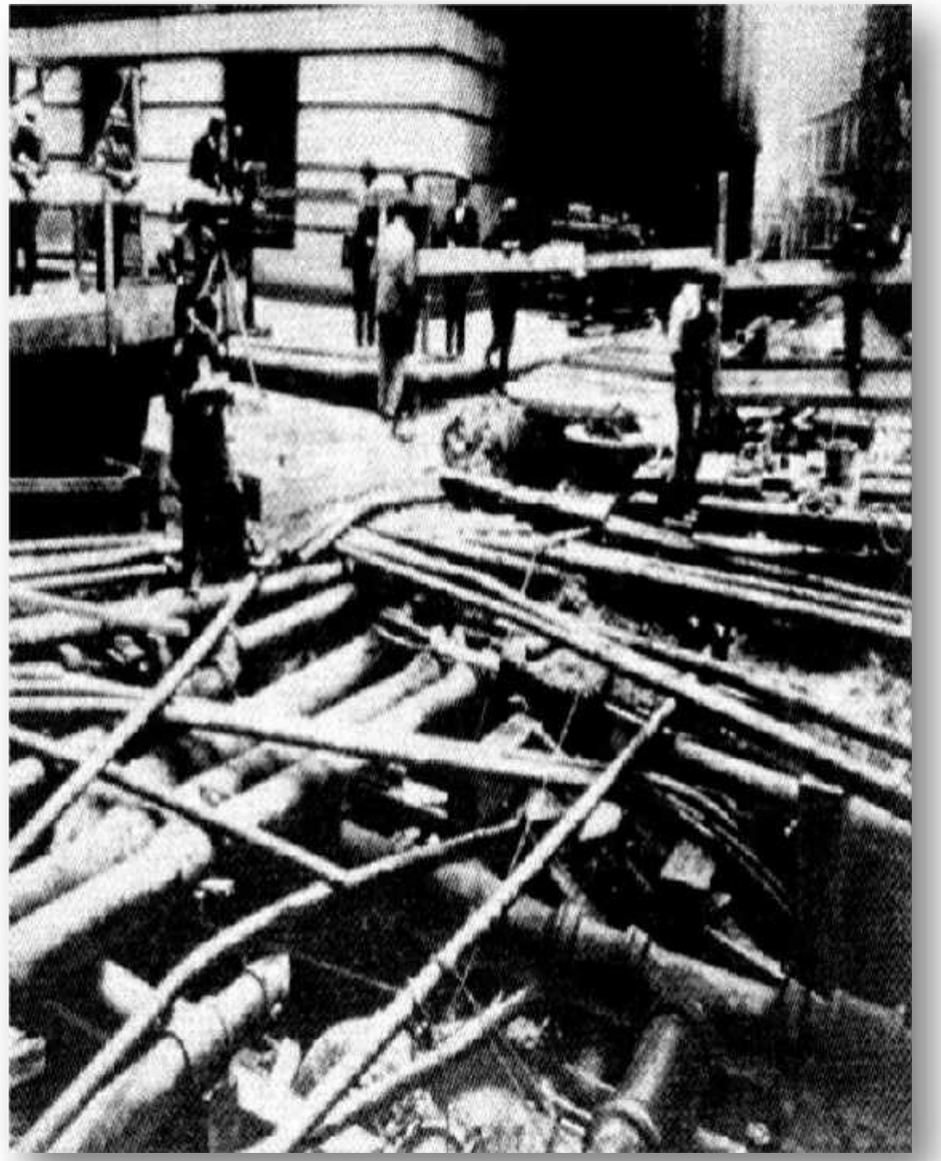


Career Highlights

- AWWA M77 2nd Ed. Committee
- AWWA Condition Assessment
- CA-NV AWWA New Tech
- ASTM, Former Chair, F36.20
- Former Chairman, Hansen Information Technologies
- Investment (1983-2007)
- Limited Partner Advisory Committee, Moneta Ventures
- Chief Advisor Lead Assessment, Crown Electrokinetics Corp.
- 2022 BUILTWORLDS Maverick 50
- 2024 TOP 100 UCLA BRUIN

What's Underground?



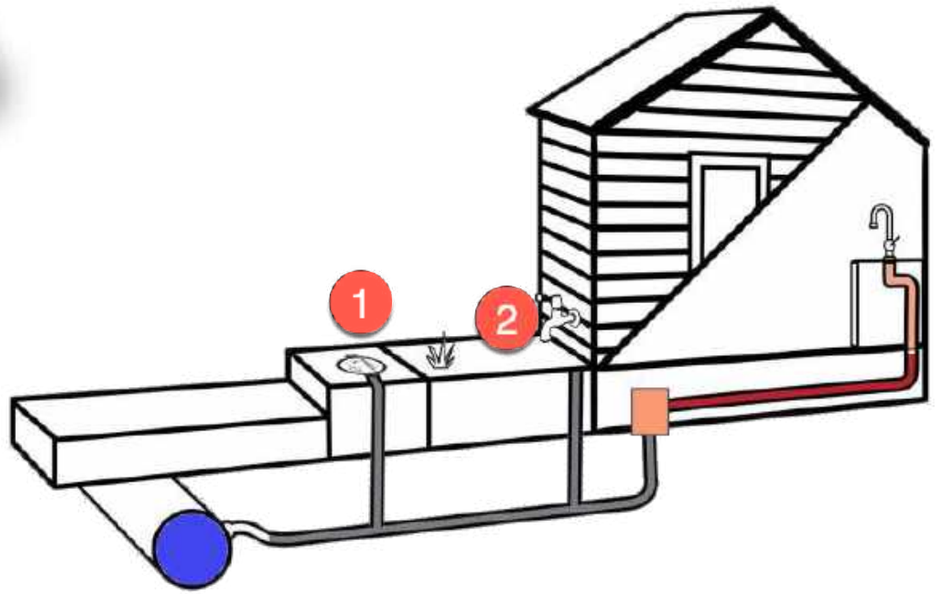


SPOILER ALERT!

How Does Underground Infrastructure Work?

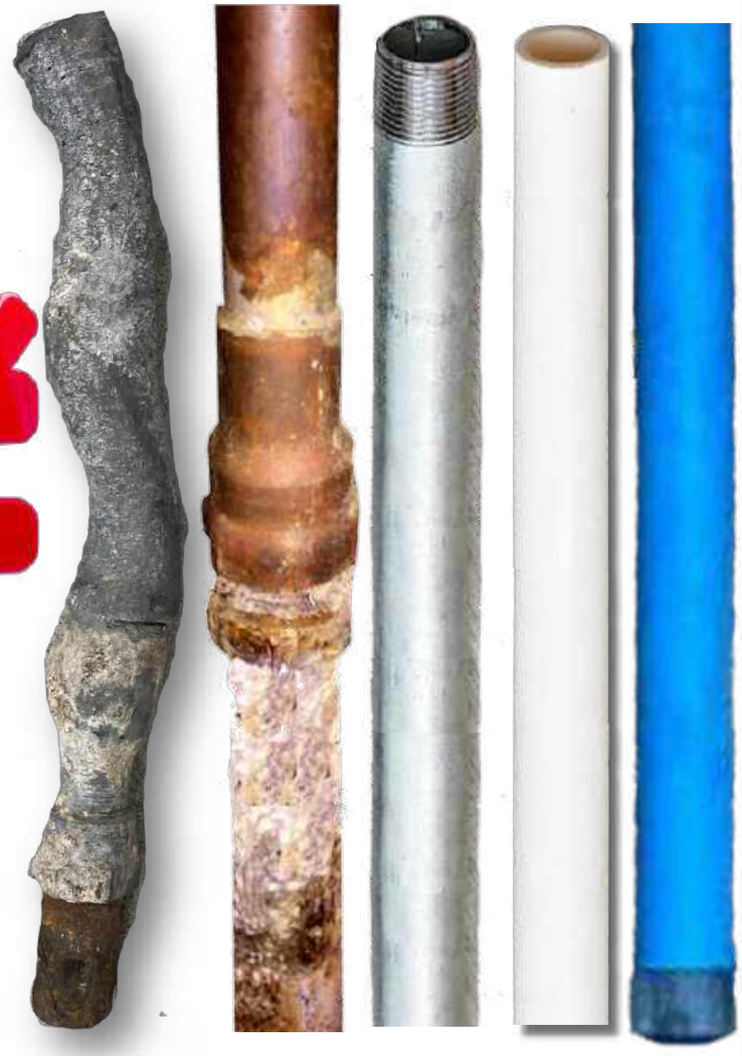
METER BOX + FAUCET / HOSE BIB

"TWO POINT" INSPECTION



Going Back to the Drawing Board

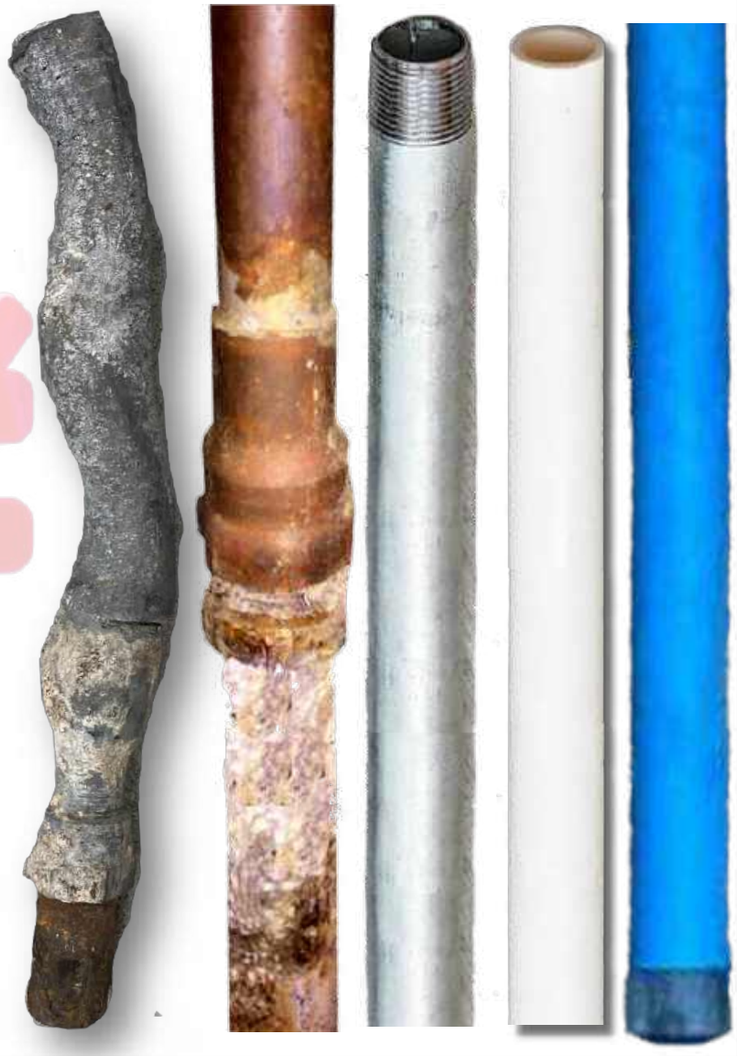
METER BOX + FAUCET / HOSE BIB ≠ UNKNOWNs



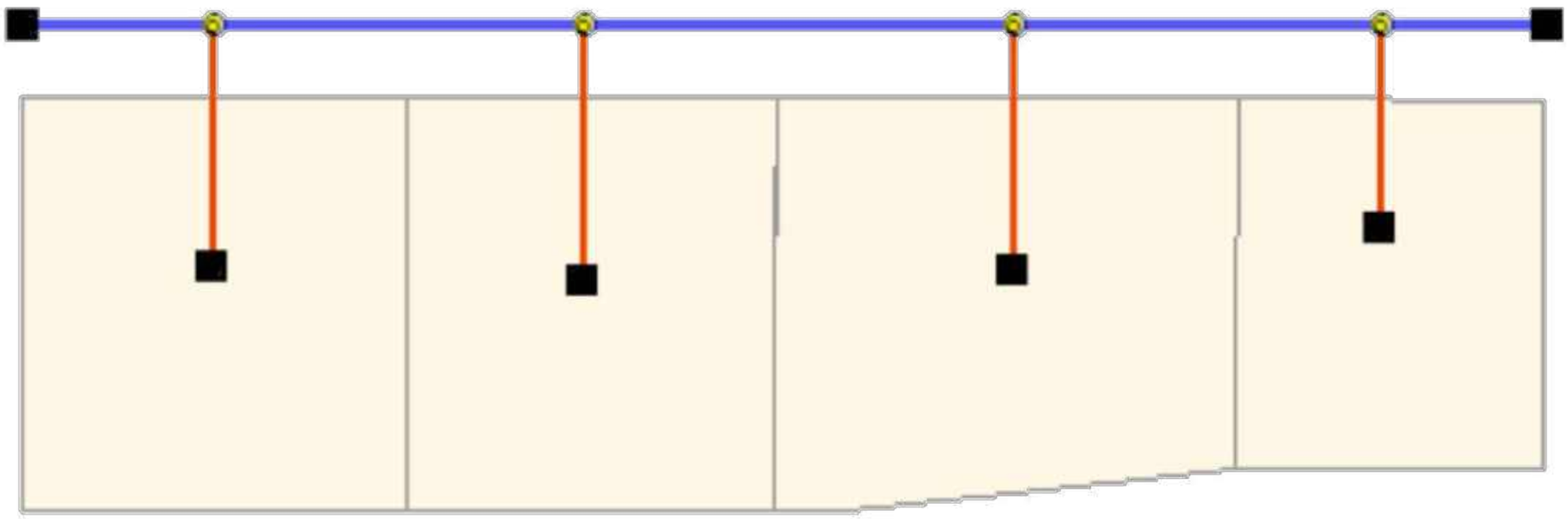
Going Back to the Drawing Board

METER BOX + FAUCET / HOSE BIB

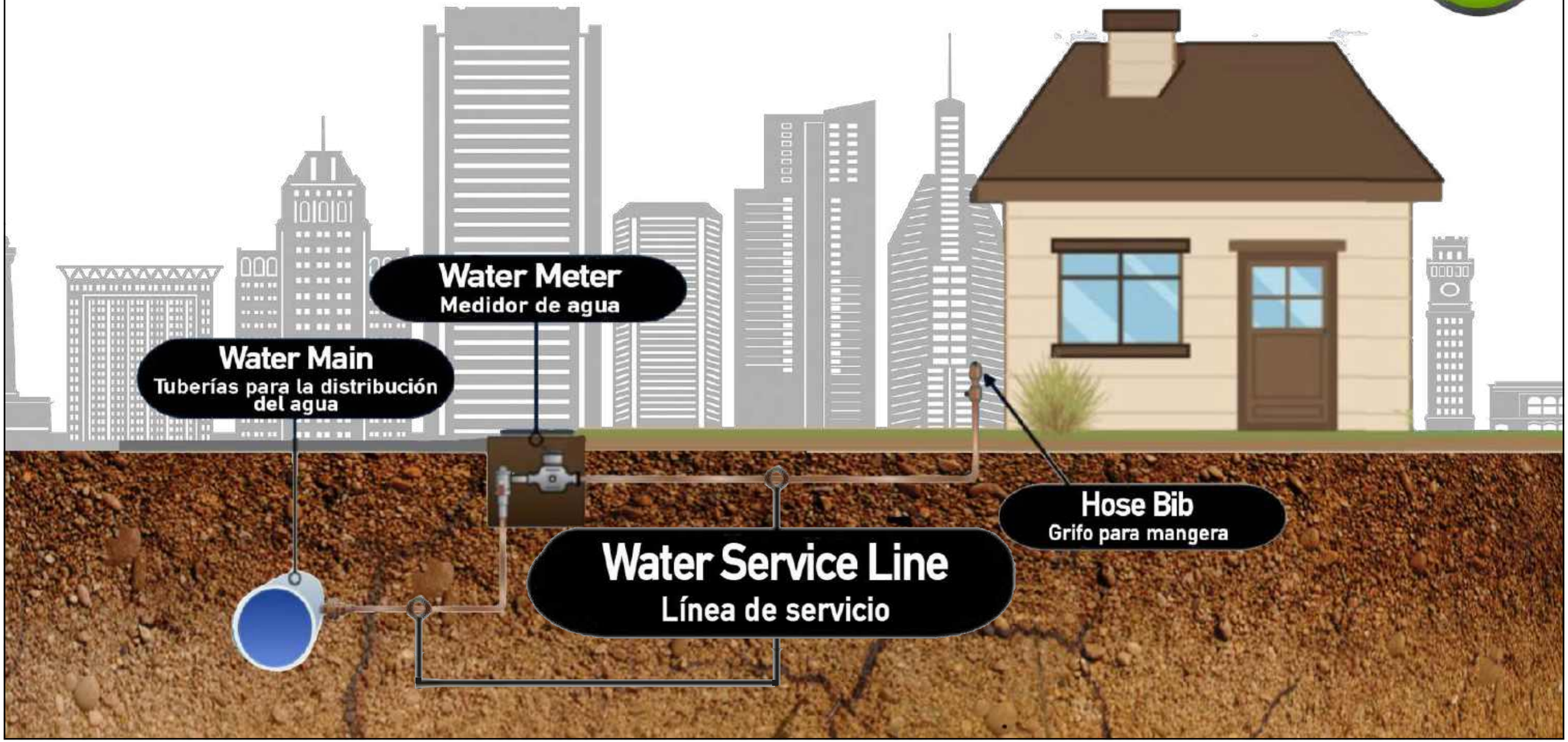
UNKNOWNs



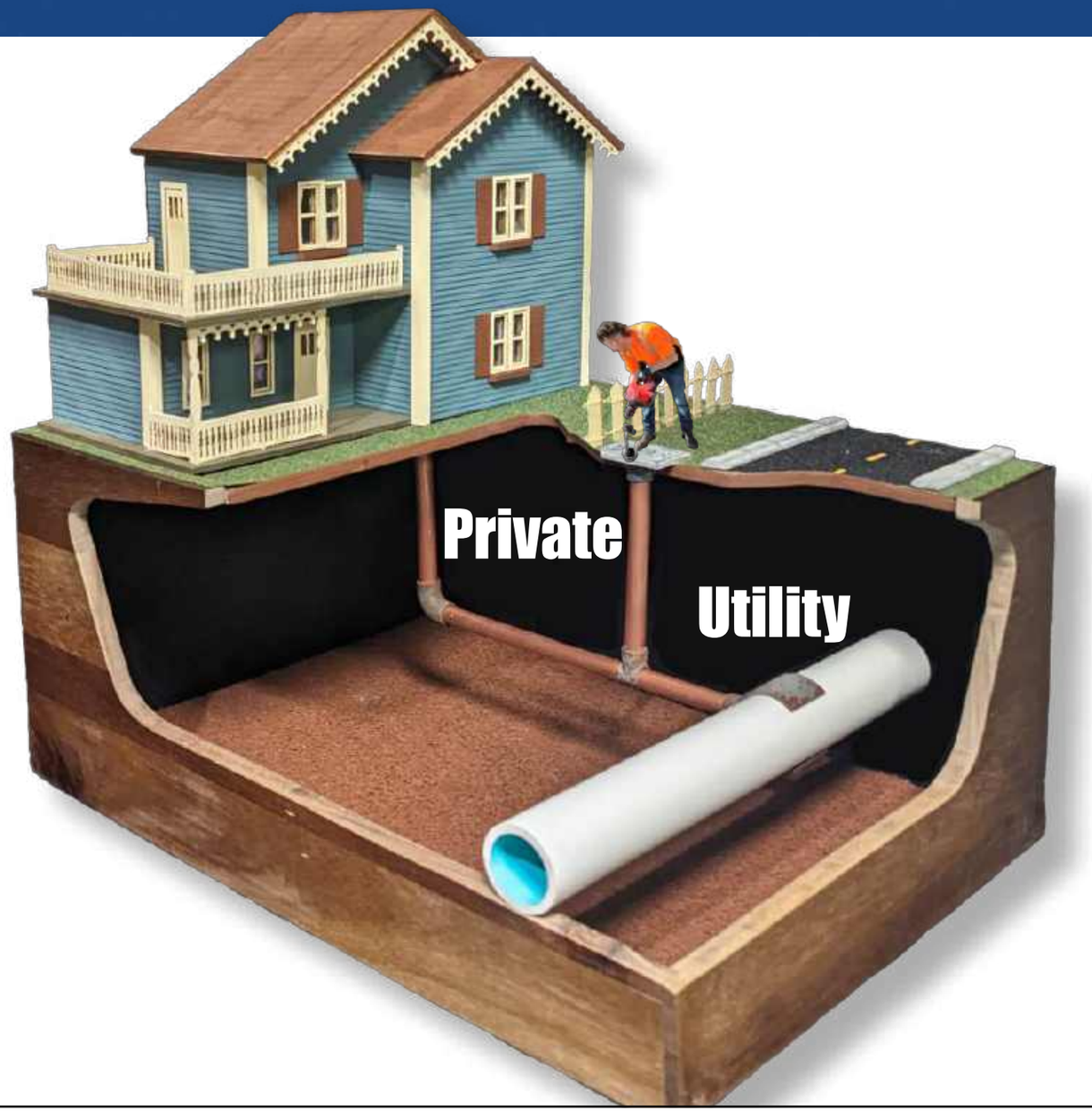
Desktop GIS & Predictive Models

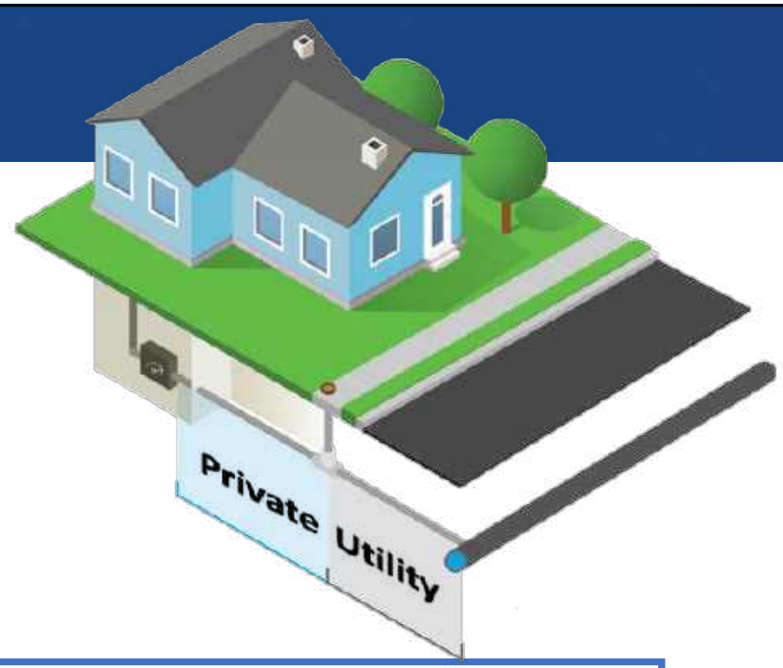


Lead Water Service Inspection



LCRR and LCRI





PRIVATE and UTILITY SERVICES

- Lead, Lead
- Lead, Non-lead
- Lead, No information
- Non-lead, Lead
- Non-lead, Non-lead
- Non-lead, No information
- No information, Lead
- No information, Non-lead
- No information, No information

Finding Lead: Is All About a Home's Year of Construction












Data Processing & Storage

Reporting

SWORDFISH

electroscaninc.

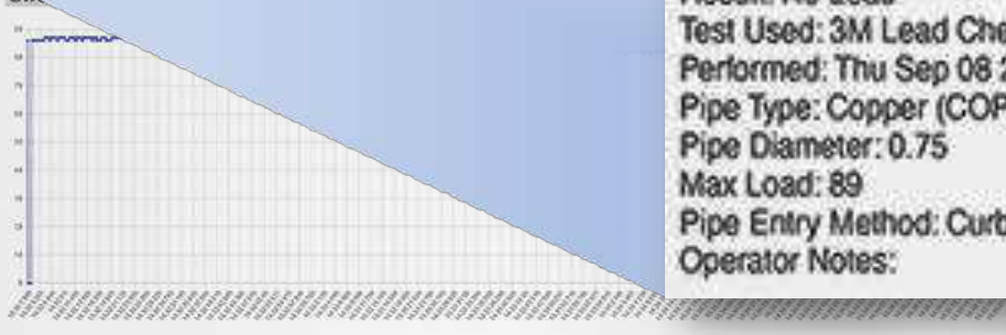
Swordfish deployed by thomas@electroscan.com at 94 South Cottage Road,Sterling on Thu Sep 08 2022 14:39:26 GMT-0500 (Central Daylight Time) with results indicating: No Lead

Agency
Loudon water
44865 Loudon water way
Ashburn Va 20147
Kathleen whitten
Kwhitten@loudonwater.org
5712917933

Worksite
94 South Cottage Road
Sterling Va 20164

Contractor
thomas@electroscan.com

Lead Test
Result: No Lead
Test Used: 3M Lead Check
Performed: Thu Sep 08 2022 14:39:2
Pipe Type: Copper (COP)
Pipe Diameter: 0.75
Max Load: 89
Pipe Entry Method: Curb Box
Operator Notes:



Lead Test
Result: No Lead
Test Used: 3M Lead Check
Performed: Thu Sep 08 2022 14:39:2
Pipe Type: Copper (COP)
Pipe Diameter: 0.75
Max Load: 89
Pipe Entry Method: Curb Box
Operator Notes:

SWORDFISH

electroscaninc.

NO LEAD

Reporting

SWORDFISH

electroscaninc.

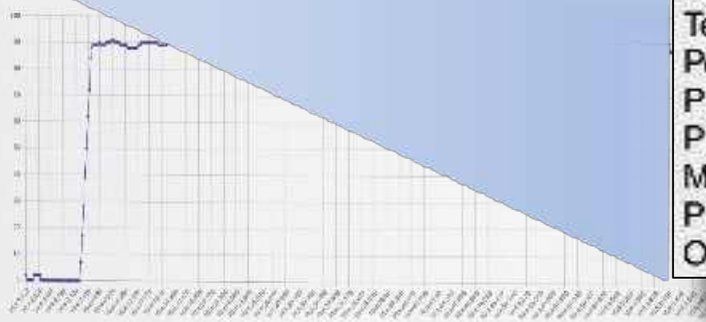
Swordfish deployed by matt@electroscan.com at 1625 tamarac street,Denver on Thu Oct 27 2022 10:08:54 GMT-0500 (Central Daylight Time) with results indicating: Lead Detected

Agency
Denver water
1600 west 12th street
Denver Co 80204
Austin Steckler

Worksite
1625 tamarac street
Denver Co 80220

Contractor
matt@electroscan.com

Lead Test
Result: Lead Detected
Test Used: 3M Lead Check
Performed: Thu Oct 27 2022 10:08:54
Pipe Type: Not Known (XXX)
Pipe Diameter: 0.75
Max Load: 96
Pipe Entry Method: Curb Box
Operator Notes:



Lead Test
Result: Lead Detected
Test Used: 3M Lead Check
Performed: Thu Oct 27 2022 10:08:5
Pipe Type: Not Known (XXX)
Pipe Diameter: 0.75
Max Load: 96
Pipe Entry Method: Curb Box
Operator Notes:

LEAD

Electro Scan's Objective: **Certify Test Results to Homeowners**

Most Cities Refuse to Certify their Lead Pipe Inventories.

Question #2

How many days will water systems have to respond to a Customer that disagrees with their initial pipe inventory?

____ A. 5 Days

____ B. 10 Days

____ C. 30 Days

 D. 60 Days

____ E. Water Systems are <u>not required</u> to follow up once the EPA has accepted their inventory.

Part 2

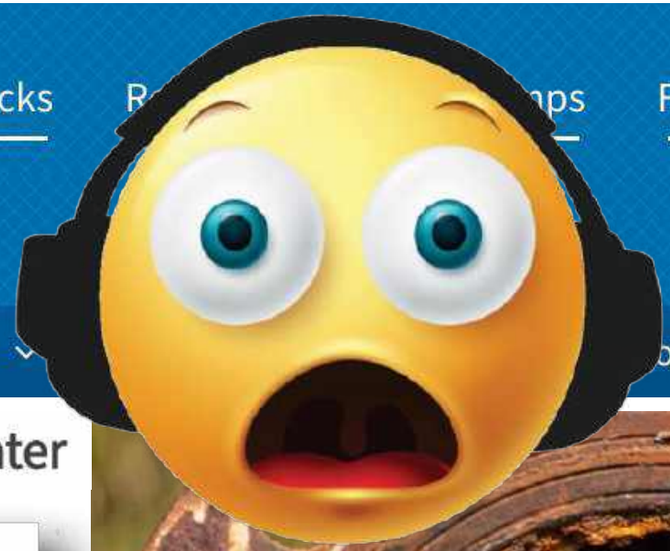
Validating Existing Service Line Inventories

Mike App, EVP
Executive Vice President
Electro Scan

MUNICIPAL SEWER & WATER

Inspection Infrastructure Trucks R… …ps Flow Control More Topics

Magazine Manufacturers Storefronts Classifieds …ories More search



Inside the April 2024 E-Zine of Municipal Sewer & Water

Acoustic wave analysis

Acoustic wave analysis is simple, nonintrusive (nothing in the service line), easy to deploy and can inspect the pipe within minutes without disrupting service. Two acoustic sensors are used to "bracket" the portion of the supply line to be screened for lead, with one placed on the external curb stop or meter box and another sensor placed on the internal shut-off valve. In some cases, the second sensor can be placed outside a customer's residence, such as on an external customer meter near the dwelling wall or

Acoustic Wave Analysis WITHDRAWN

Two Options to Locate Lead

To Dig or

Not to Dig

MAGNET TEST —Sticks→ Steel

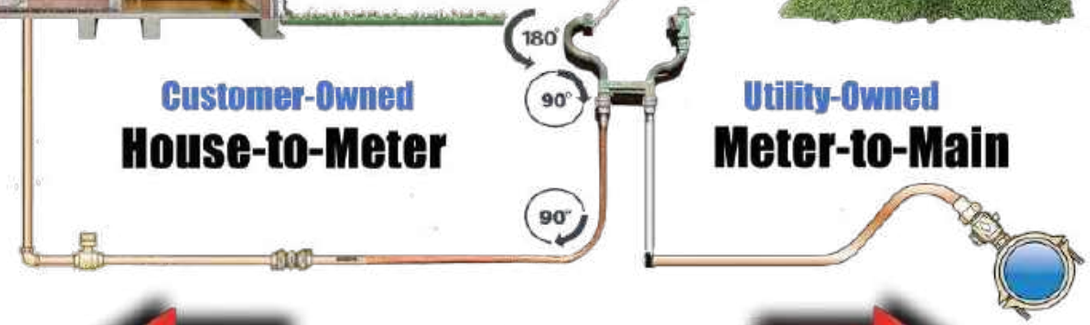
Doesn't Stick

SCRATCH TEST

- Color of a Penny → Copper
- No Shine → Plastic
- Silver Streaks → Lead

SWORD FISH

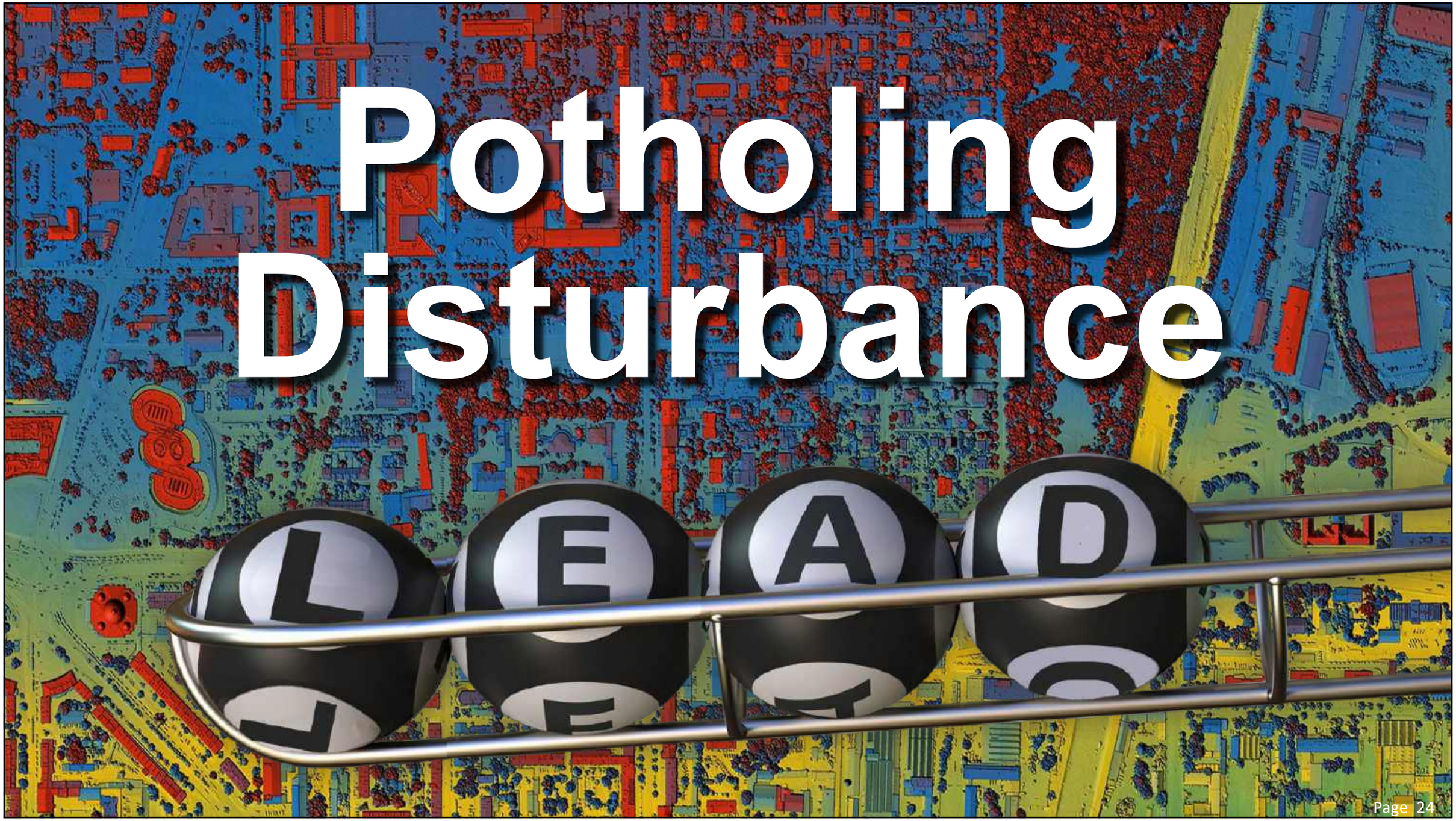
82	29
Pb	Cu
Lead	Copper
207.2	63.546



Customer-Owned
House-to-Meter

Utility-Owned
Meter-to-Main

UNKNOWN **EPA REQUIREMENT** KNOWN


Potholing
Disturbance
LEAD

‘Vibration’ from Potholing Creates Pipe Disturbances

TRUVAC APEX™ UP TO 3,000 PSI

X-CAVATOR™ UP TO 4,000 PSI

BRAVO UP TO 5,000 PSI


11:03:03 11-15-2022
100.6ft
254
723
69743
838
818
681
638
555
480
837
Potholing
Disturbance

AWWA C810-17 – Replacement and Flushing of Lead Service Lines

American Water Works Association
Dedicated to the World's Most Important Resource®

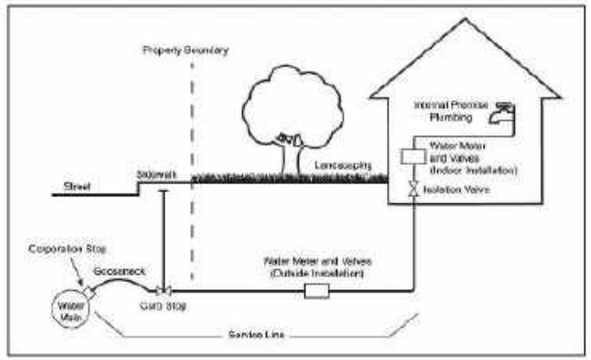
ANSI/AWWA C810-17
(First Edition)

AWWA Standard

Replacement and Flushing of Lead Service Lines

Effective date: Nov. 1, 2017.
First edition approved by AWWA Board of Directors June 11, 2017.
This edition approved by AWWA Board of Directors June 11, 2017.
Approved by American National Standards Institute Sept. 1, 2017.

STANDARD Since 1881



SECTION 5: VERIFICATION

Sec. 5.1 Documentation of Construction Activities

Documentation of construction activities for each service line work activity may support verification that the lead service line has been fully or partially replaced. The following information shall be documented and recorded:

- Picture of home with house number
- Picture of test pits and meter pit showing new pipe or pipe ends and old lead pipe if in same location
- Length and material type of new pipe installed
- Type of pipe material the new pipe is connected to inside home
- Method of installation (trenchless, hand-excavation, etc.)
- Length and location of any abandoned lead service line pipe left in the ground

Flushing time and location(s) (for example, an outside hose-bib) shall be recorded. Some homes may not have an outside hose-bib turned on or other situations may arise that do not allow for postflushing by the utility. These situations shall be documented in field reports along with any communication attempted with the customer.

Sec. 5.2 Water Testing Following Replacement

Testing the water following the replacement shall be done to determine if appreciable lead is still present in the drinking water. Lead may still exist inside home plumbing (lead solder, redeposited lead in scale of plumbing, and brass components) and could be disturbed during service line work. Therefore, lead present in the water following a full replacement does not mean the lead service has not been replaced. This condition should be explained to the customer. Flushing recommendations described in Sec. 4.4 can help remove released particles.

5.2.1 *Testing initiation.* Testing the water shall commence at least one month after the replacement to allow for sufficient in-house flushing and a period of normal use of water to occur. Utilities may consider initiating testing within the one-month period if supported by performance data. When only a partial replacement is completed and the lead service line replacement was mandatory as part of compliance with the Lead and Copper Rule (LCR), testing shall be conducted within 72 hours after the completion of the partial replacement of the service line per the requirements of the LCR.

5.2.2 *Test samples.* Testing shall include first-draw and second-draw samples. First-draw sample shall be the initial draw from the tap when it is turned on. Second-draw sample shall be collected with the objective of collecting water that stagnated in the service line, generally the fourth to seventh liter depending on site-specific conditions. Utilities may be able to omit the second draw sample if supported by documentation that the construction activities completely removed the lead service line and by acceptable first-draw lead data. Samples shall be collected from a frequently used tap inside the home, preferably the kitchen tap as the residents' consumption would likely be from the kitchen tap. Samples shall also be collected with the aerator on. Samples should be collected at the maximum flow rate of the tap and should be collected in wide-mouth bottles.

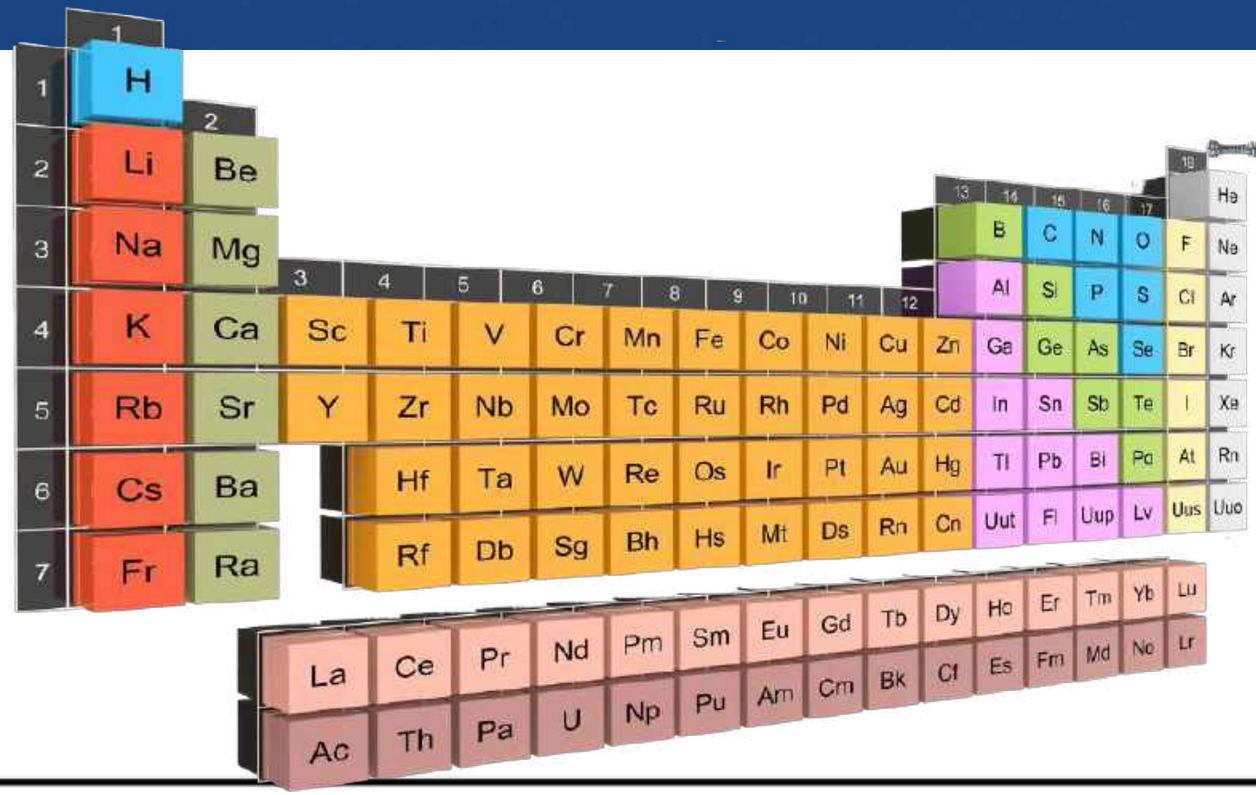
5.2.3 *Profile sampling.* Lead levels higher than expected from full lead replacements may occur and the utility or homeowner could investigate further with profile sampling. A profile is a series of bottles filled continuously following the stagnation period. The trend of lead concentrations coupled with measurements of the inside plumbing and service line will show which portion of plumbing or service contributes the highest lead by the liter number.

SWORDFISH: Total Solution

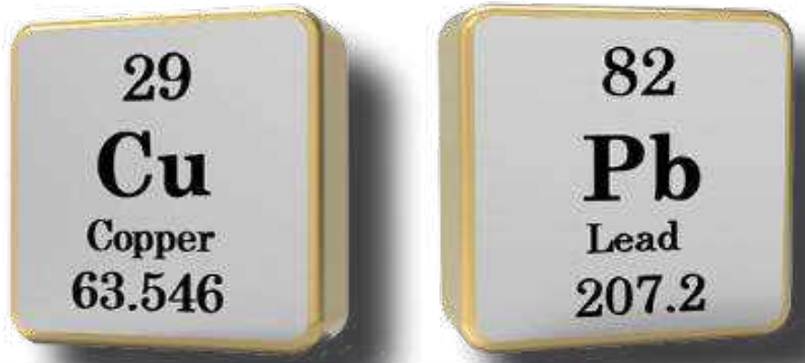
SWORDFISH

What is Electrical Resistance?

How Does It Work?



SWORDFISH



International Annealed Copper Standard (IACS)	100%	7%
Electric Conductivity (10.E6 Siemens/m)	58,7	4,7
Electric Resistivity (10.E-8 Ohms.m)	1,7	21,3
Thermal Conductivity (W/m.K)	386	35

Customers Understand Multiple Pipe Materials

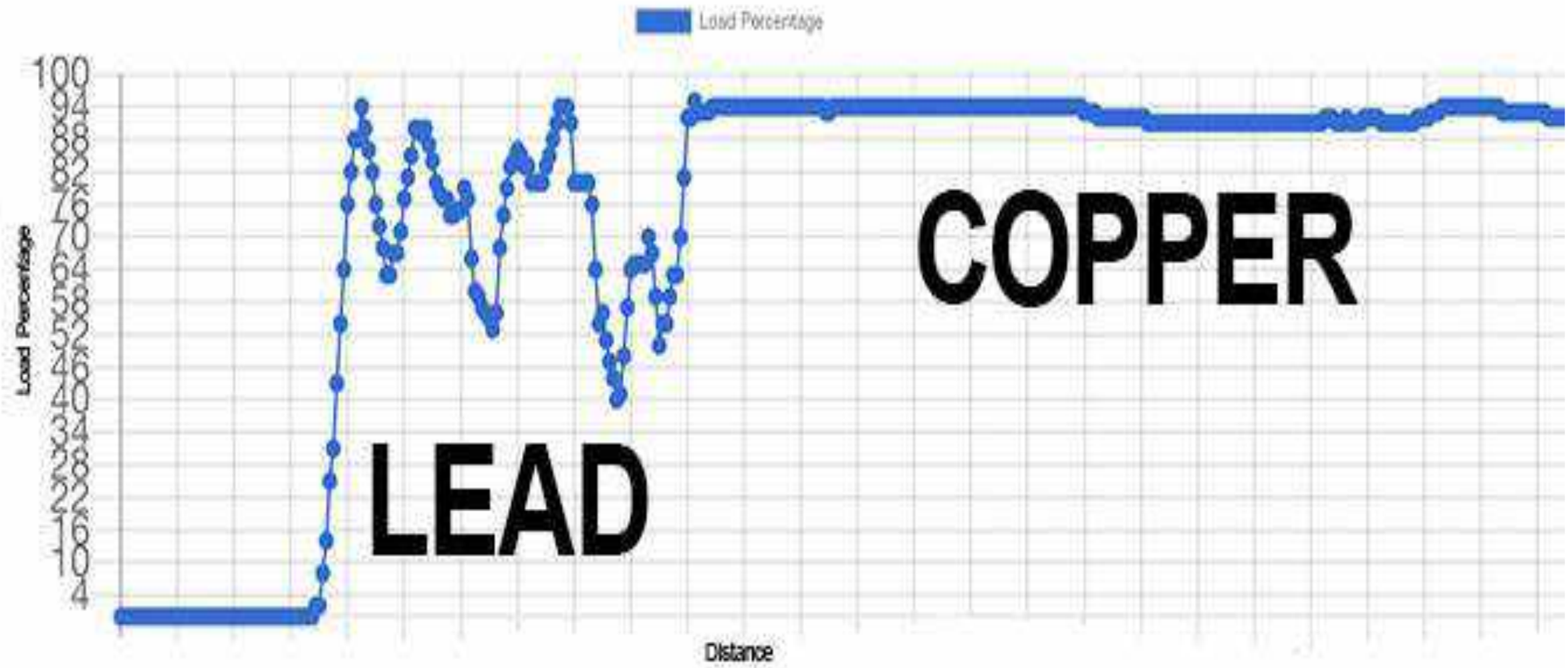
Automatically Identifying Pipe Materials

Pipe Material Reporting

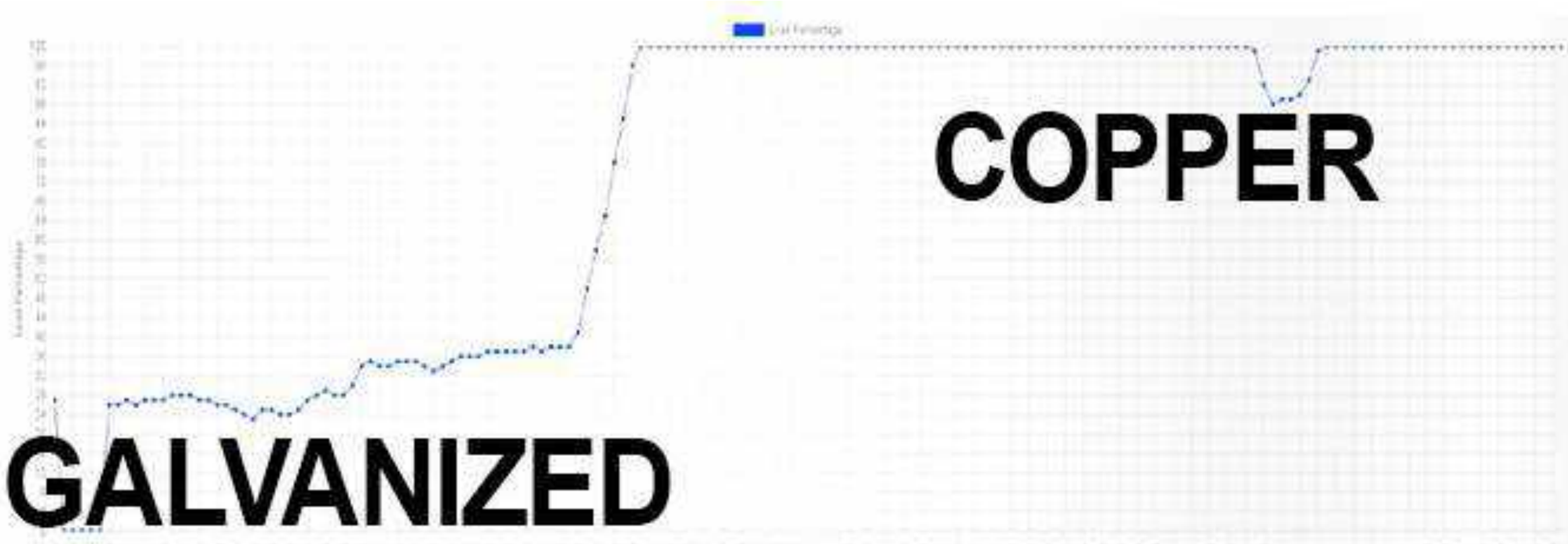
Pipe Material Reporting

Pipe Material Reporting

Pipe Material Reporting



Pipe Material Reporting



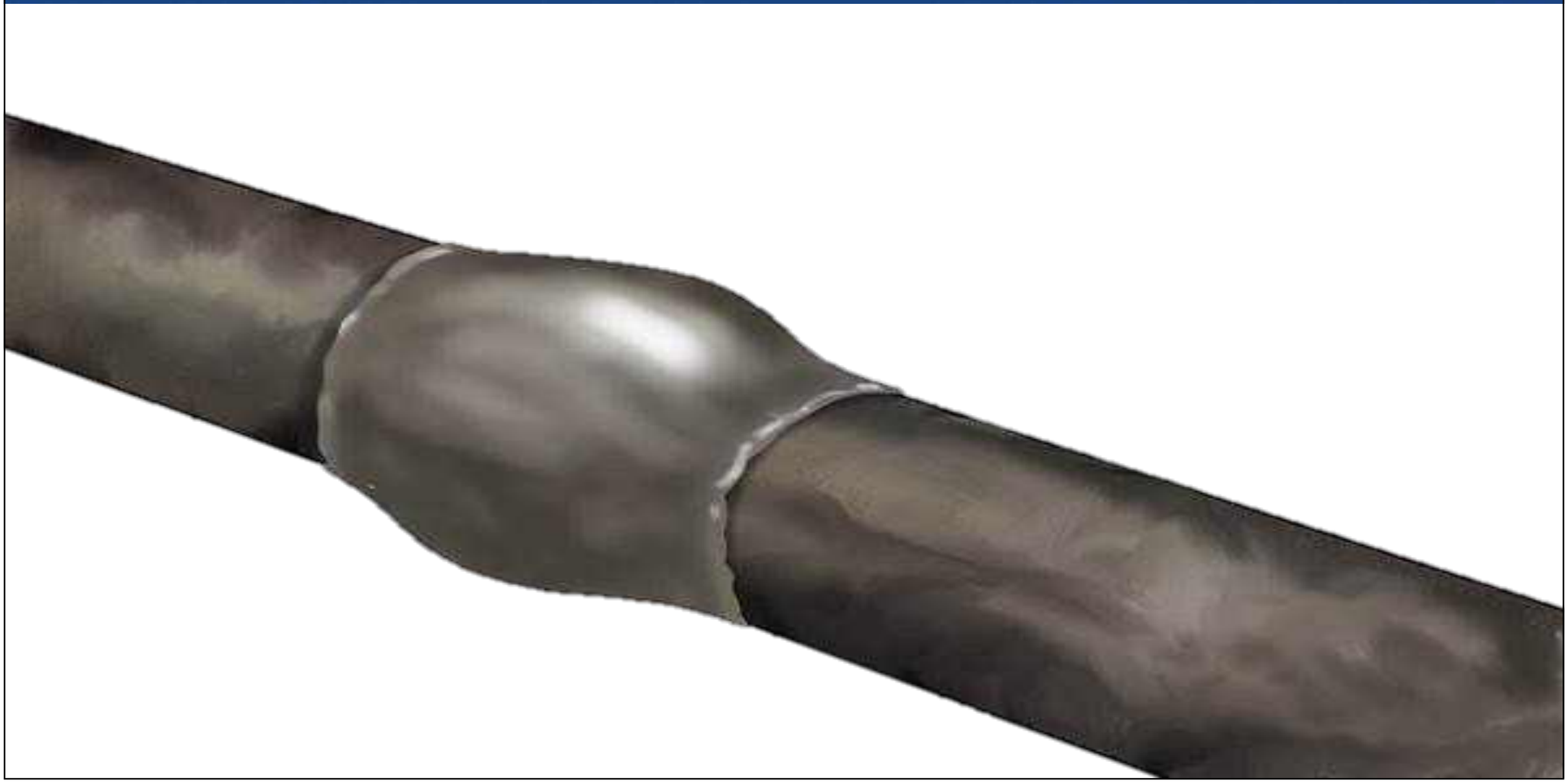
Pipe Material Reporting

Pipe Material Reporting

Water Lines By Material

Multiple Lead Connectors

Lead Soldered Joints



SWORDFISH

- Accurately detects multiple pipe materials.
- No digging or excavation required.
- National sales and services.
- Backed by industry water veterans.
- Instant reporting of results.
- Handles inventory, validation, and certification.

- Will not enter some fixtures.
- Requires flushing after testing.

Question #3

TRUE OR FALSE

The deadline for resolving all UNKNOWN pipe materials is 3 Years from the Date that the LCRI became effective (October 8, 2027).

The deadline for resolving all UNKNOWN pipe materials now matches the 10 Year Deadline for Lead Pipe Replacement.

AWWA

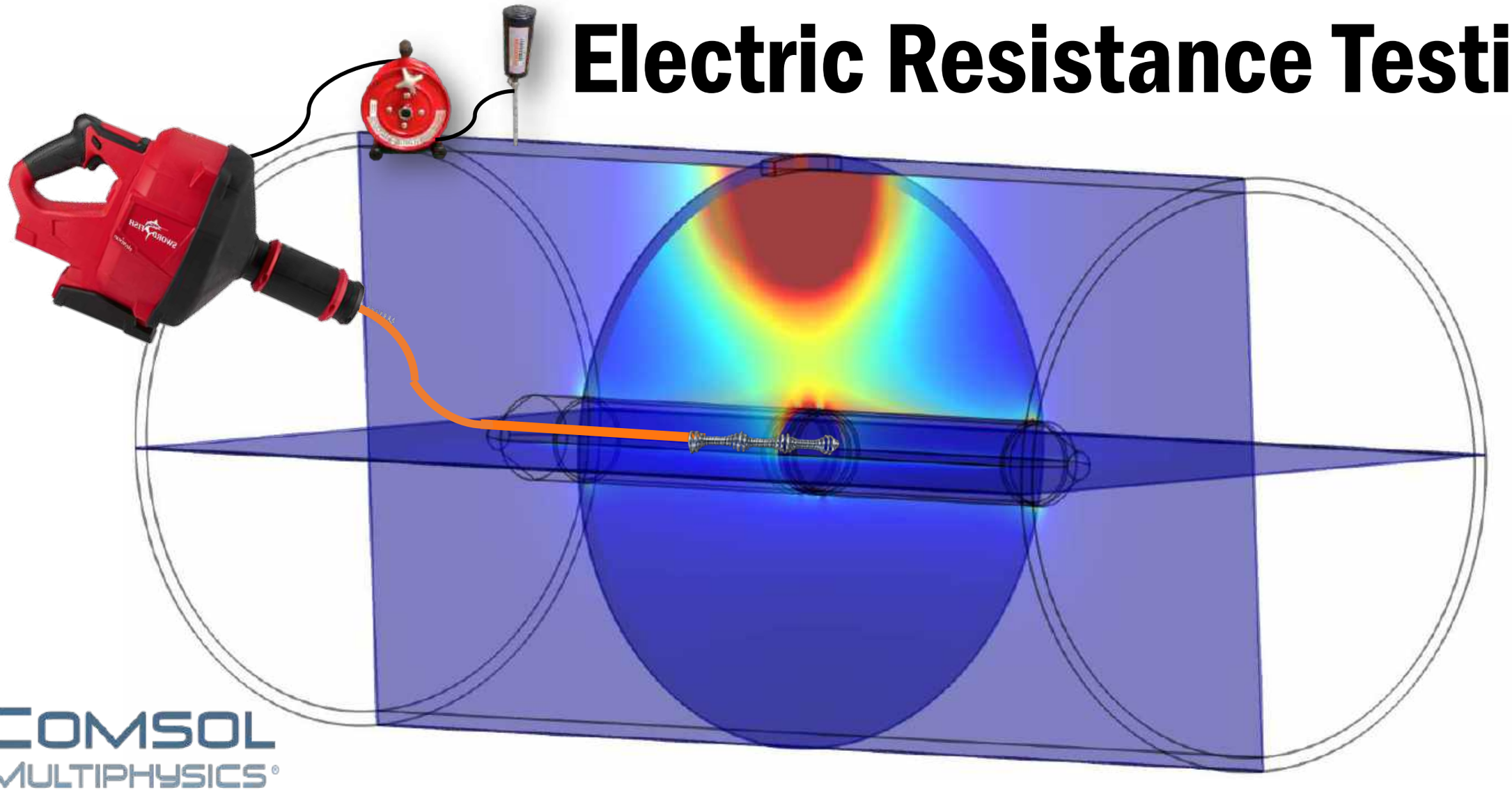
Part 3

Moving from Prediction to Certainty

Matt Campos
VP, Product Development
Electro Scan

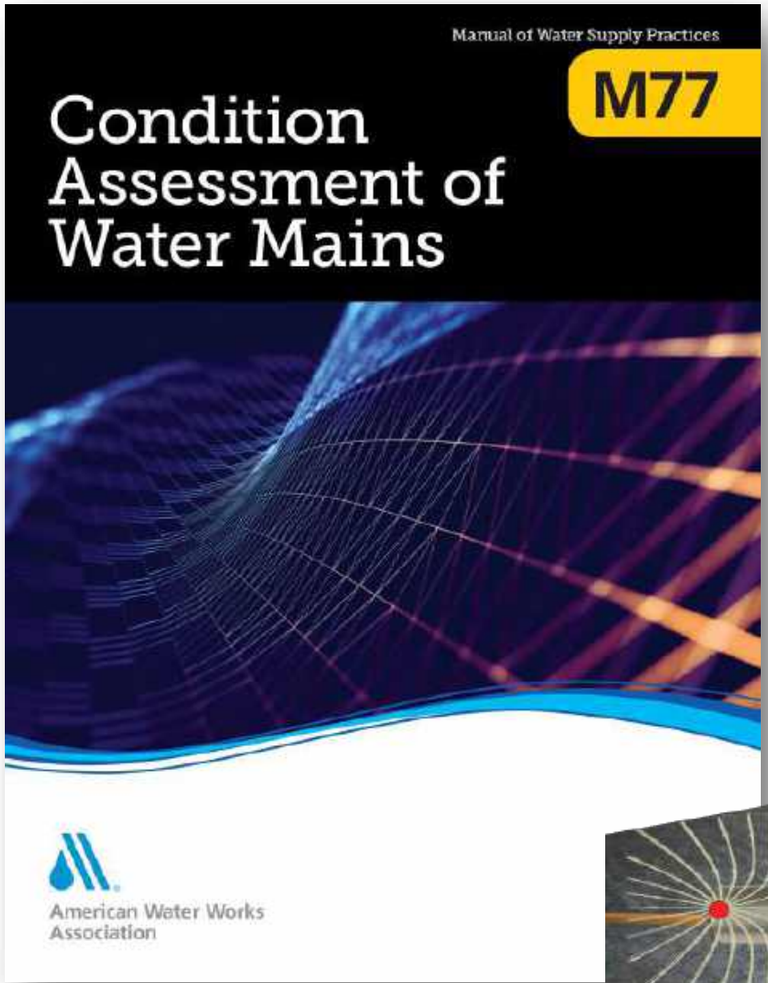
Technology Never Questioned

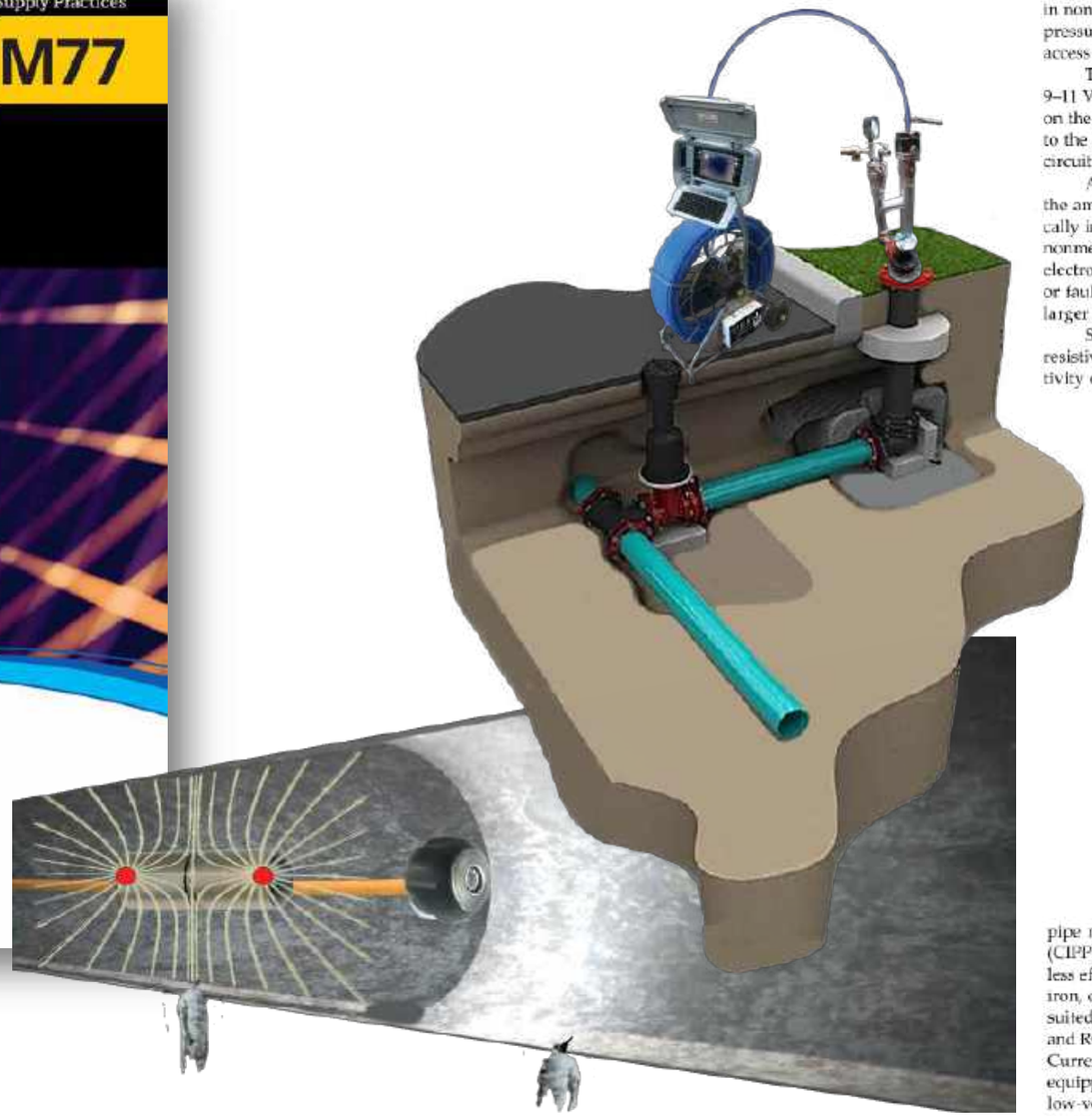
Electric Resistance Testing



COMSOL MULTIPHYSICS®

AWWA M77 Acceptance of Low Voltage Conductivity





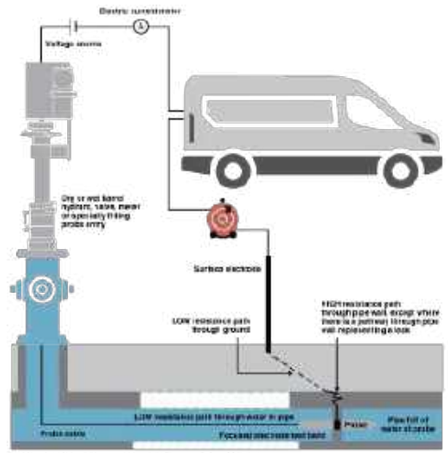
Low-Voltage Conductivity

Low-voltage conductivity testing is a technique that uses electric current to identify leaks in nonmetallic pipe. It is a tethered inspection method in which a probe is inserted into a pressurized water distribution pipe through a fire hydrant (wet or dry barrel) or another access point specifically prepared for launching the device.

The test is carried out by applying an electrical potential (typically in the range of 9–11 V with a frequency of 0.5–1.5 kHz) between an electrode in the pipe and an electrode on the surface. The exterior electrode can be anything that allows for electrical connection to the earth—such as a grounding rod, guy wire anchor, sign pole. A simplified electrical circuit for this procedure is shown in Figure 7-10.

As the electrode moves within the pipe, the location and sizes of leaks are found by the amount of electric current that is measured. Where water is leaking from the electrically insulating pipe, electrical current also leaks out. The high electrical resistance of the nonmetallic pipe wall allows only a very small electrical current to flow between the two electrodes unless there is a hole or void in the pipe wall, such as a crack, defective joint, or faulty connection. The greater the electric current flow through the pipe opening, the larger the size of the defect.

Since low-voltage conductivity testing is based on the difference of the high electrical resistivity properties of the pipe walls (i.e., nonconductive) versus the low electrical resistivity of the earth surrounding the pipe, this test method works well on nonconductive



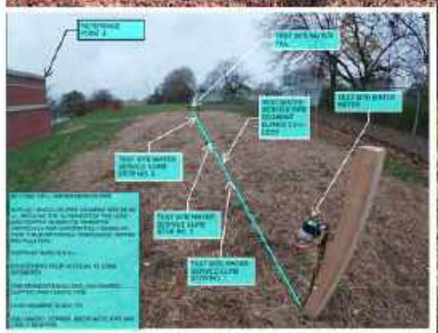
Adapted with permission from Electro Scan

Figure 7-10 Basic diagram of low-voltage conductivity circuitry

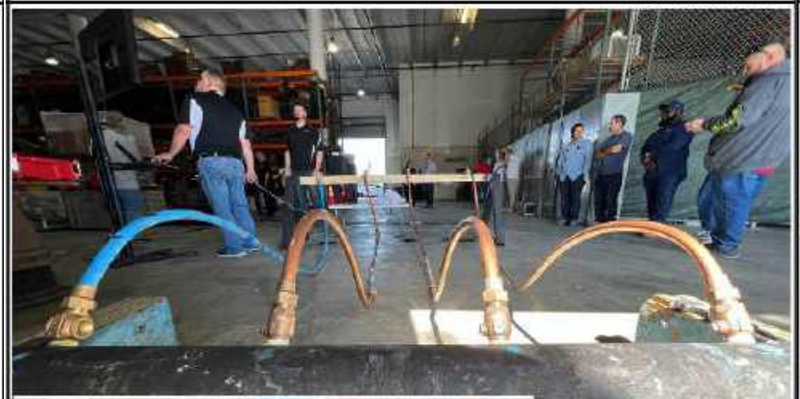
pipe materials such as plastic mains (PVC or PE), mains lined with cured-in-place pipe (CIPP), or fiberglass-reinforced pipe (FRP). Externally applied acoustic methods are often less effective on these types of pipe. On the other hand, metallic pipe materials (i.e., ductile iron, cast iron, and steel), which are excellent conductors of electrical current, are not well suited for low-voltage conductivity testing. Use on concrete pipe materials (AC, PCCP, and RCP) is less problematic—accurate results have been demonstrated on concrete pipes. Currently, this technology is only available through the services of a skilled and specially equipped service provider. Table 7-13 summarizes the capabilities and limitations of low-voltage conductivity testing.

Technology Never Questioned

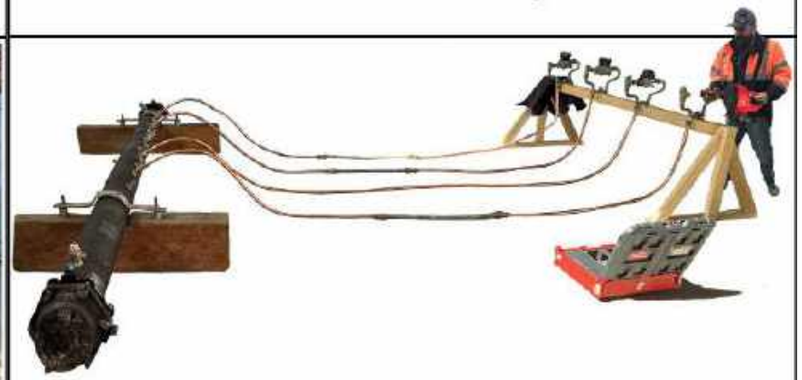
Cleveland, OH



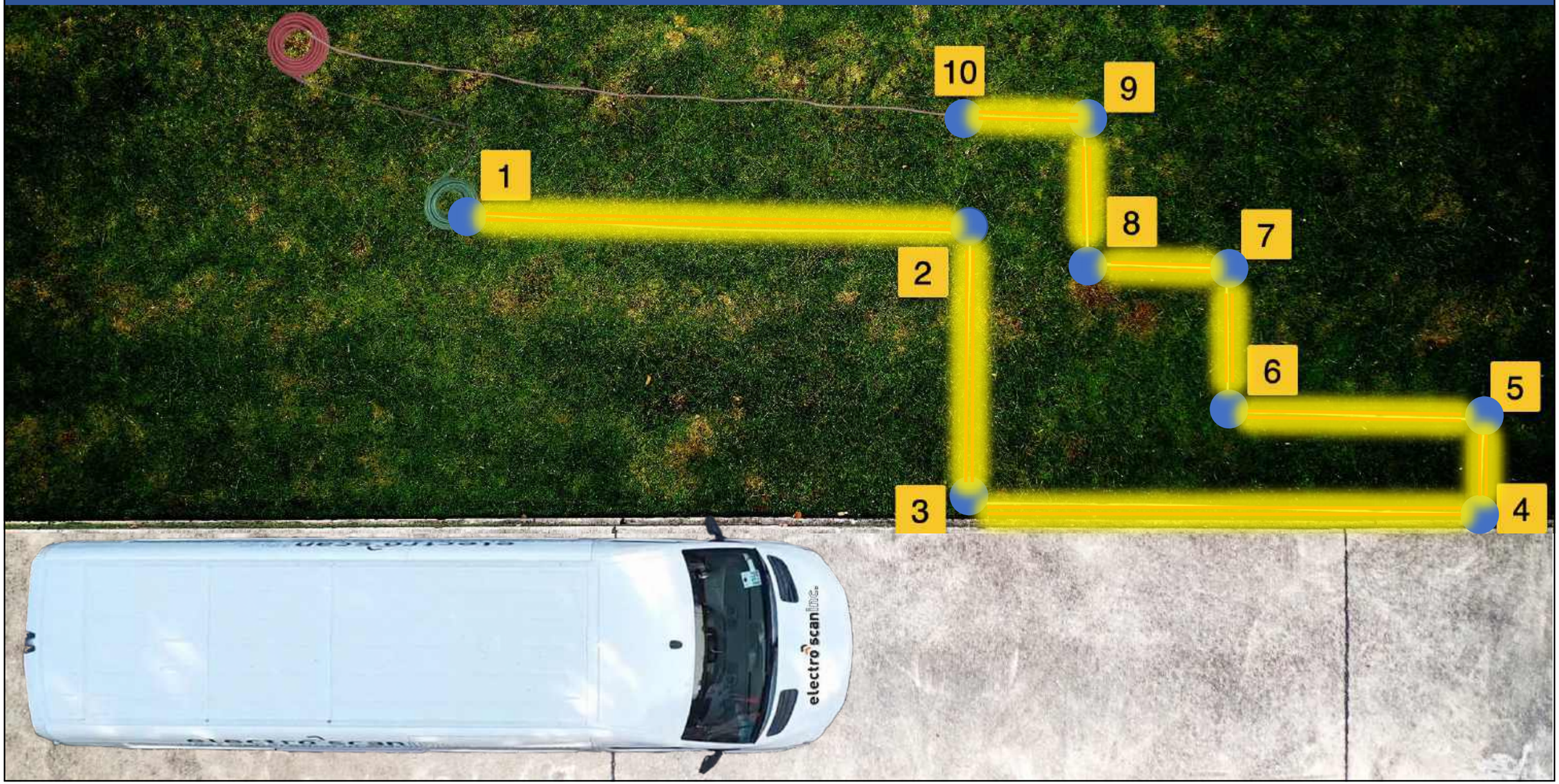
Miami-Dade Water, FL



Denver Water, CO



It’s All About Navigating Buried Infrastructure



First Hurdles to Tackle.

1. Pressurized Pipes

2. Chlorination

Designed for Meter to Main & Basement Entries

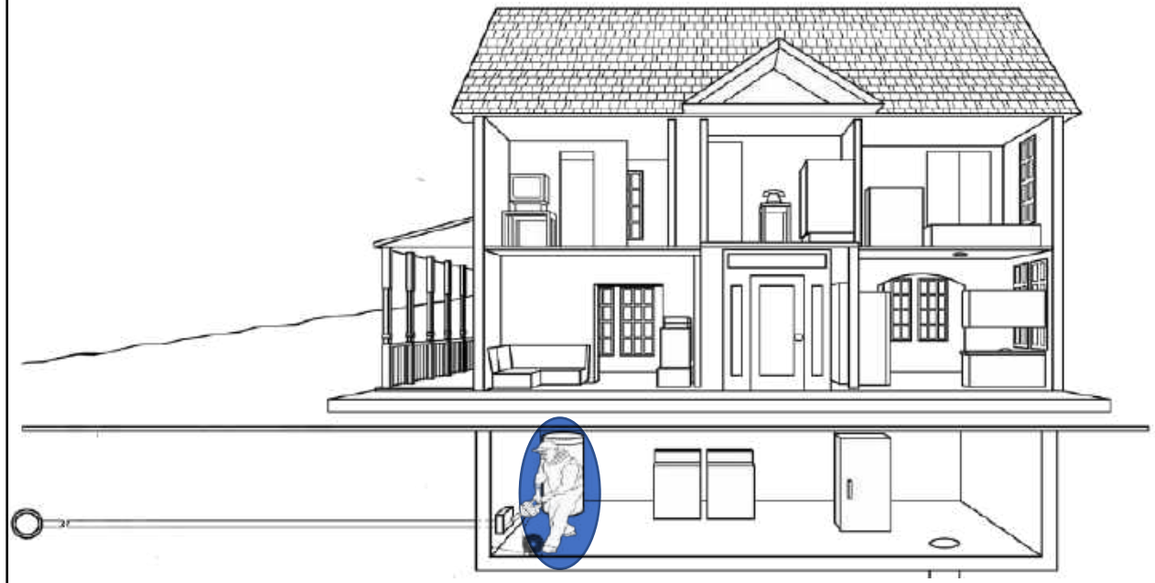
Chlorination Chamber

Electro Scan Inc.
Chlorination
Chamber

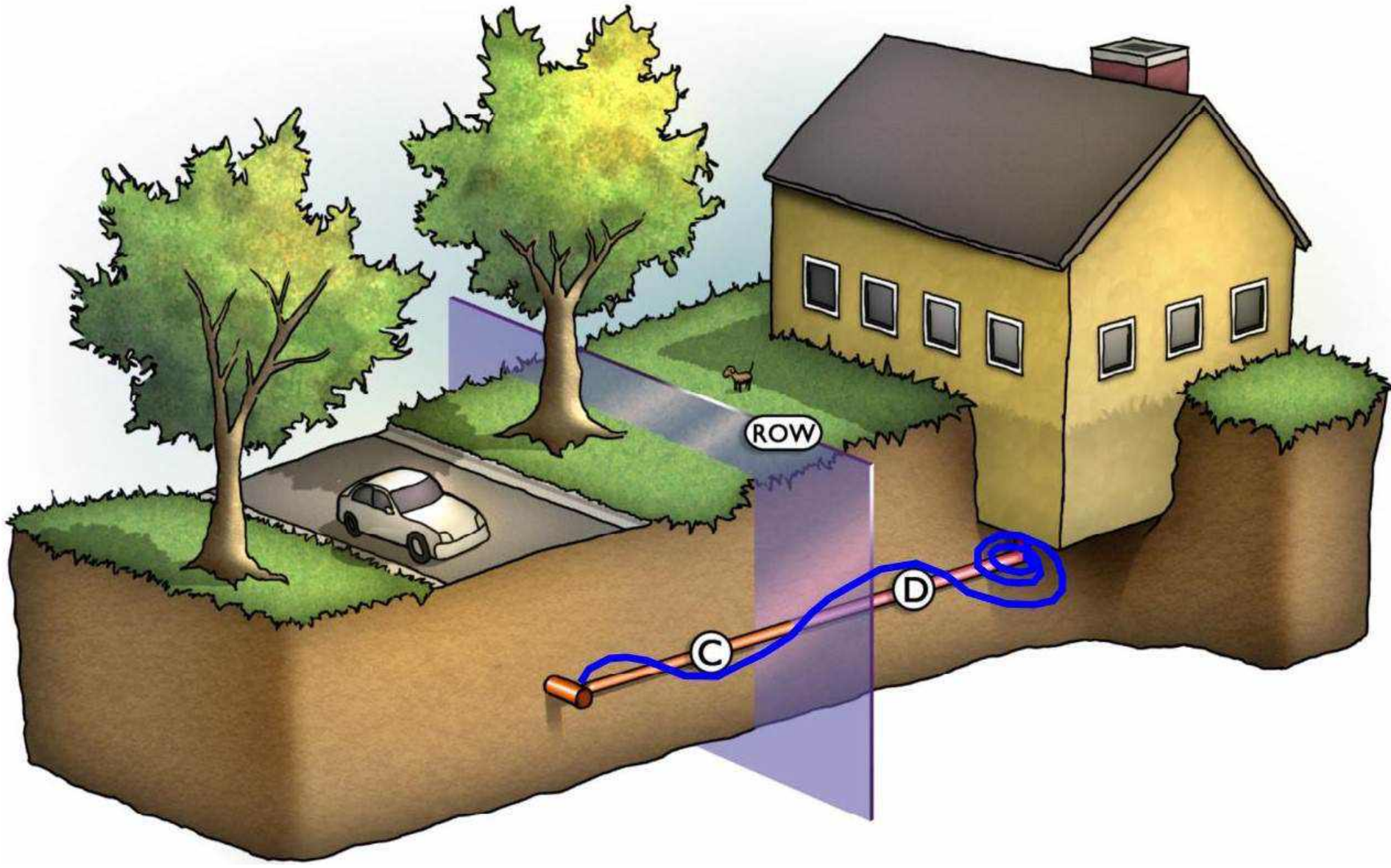
Footage Encoder

Electro Scan Inc.
Distance Encoder
Display

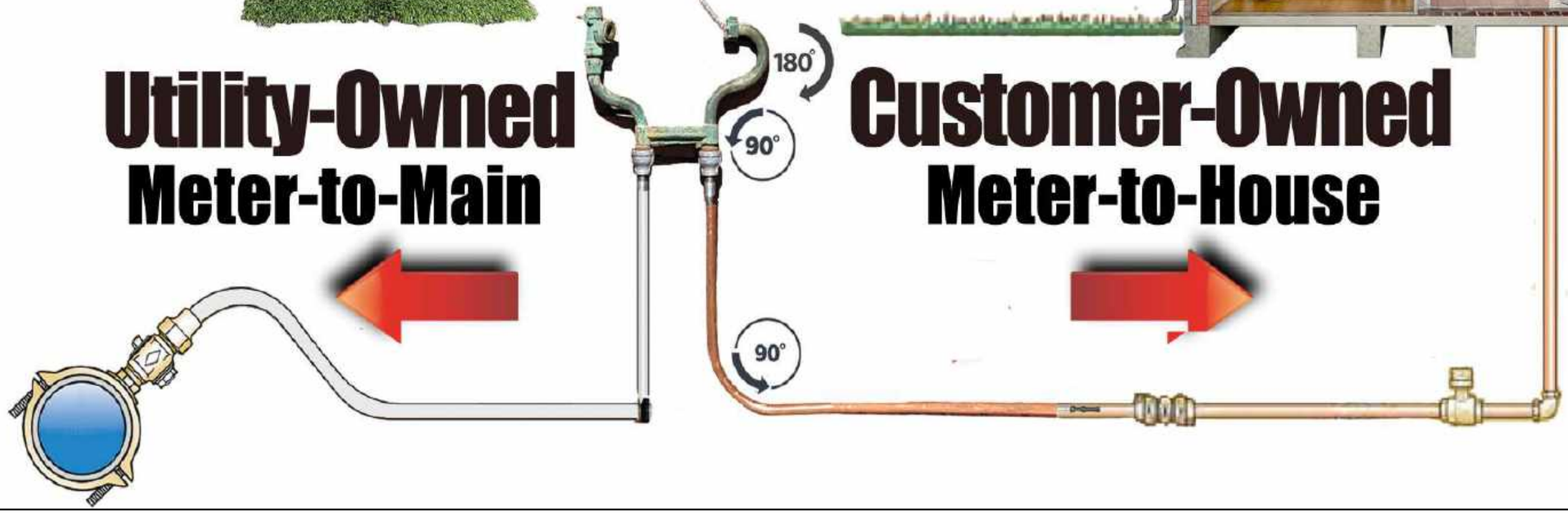
Basement or Curb Entry



What is Expected v. What is Found?



Next Hurdles…

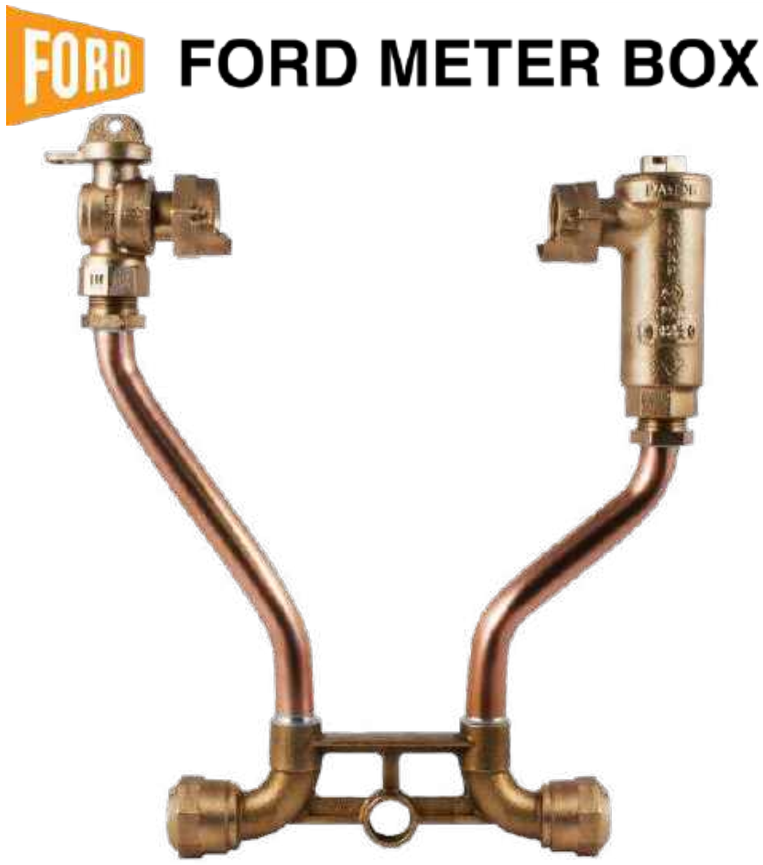


Utility-Owned
Meter-to-Main

Customer-Owned
Meter-to-House

Access Through Multiple Fixtures

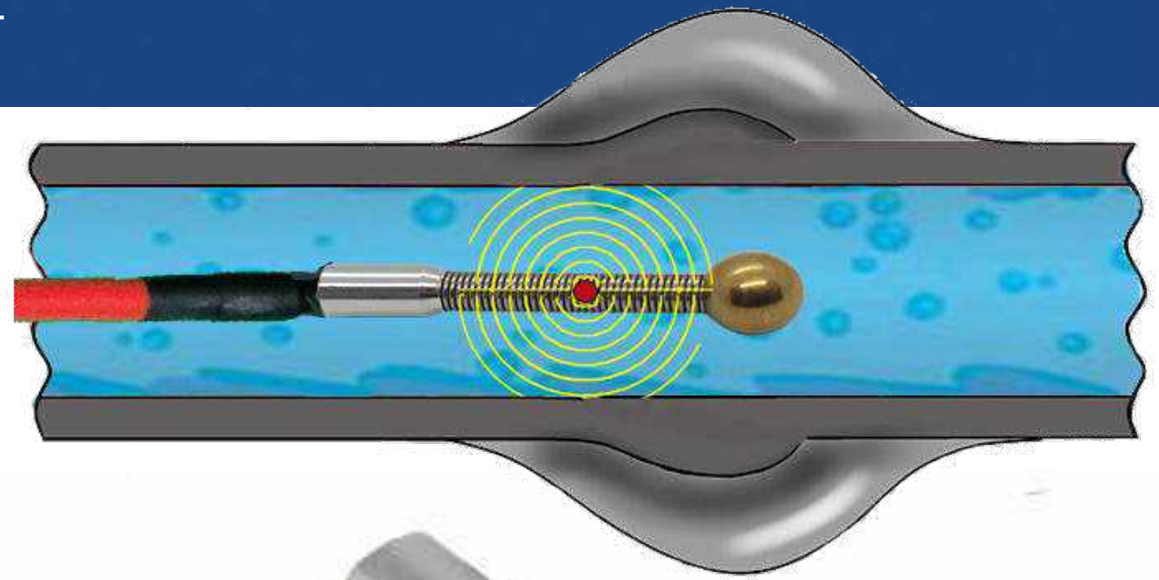
Standard Meter Settings

A.Y. McDonald	Ford	Mueller
		

More Meter Settings

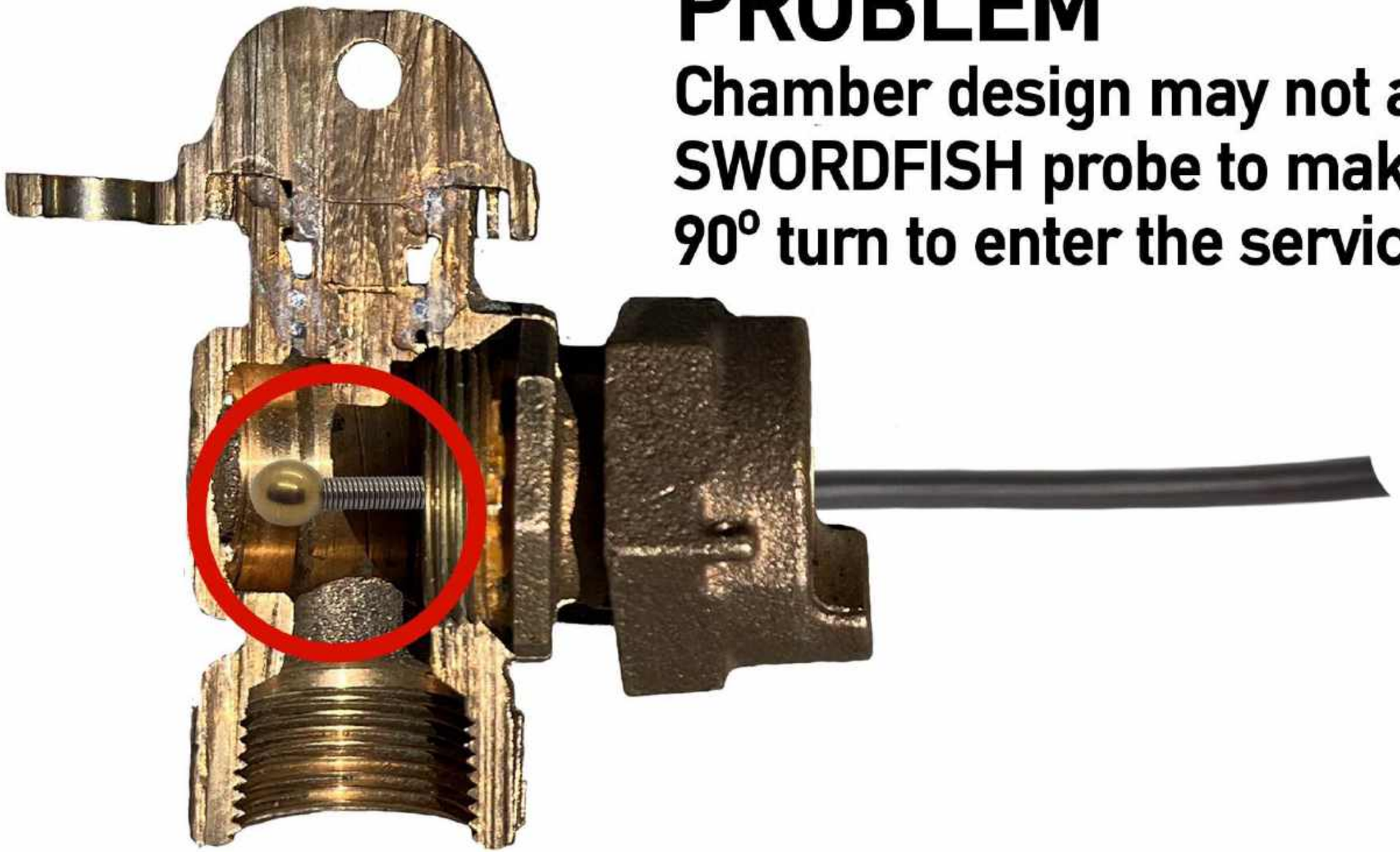
Standard Meters – BASEMENT ENTRY

Probe Evolution – 2021 to Present



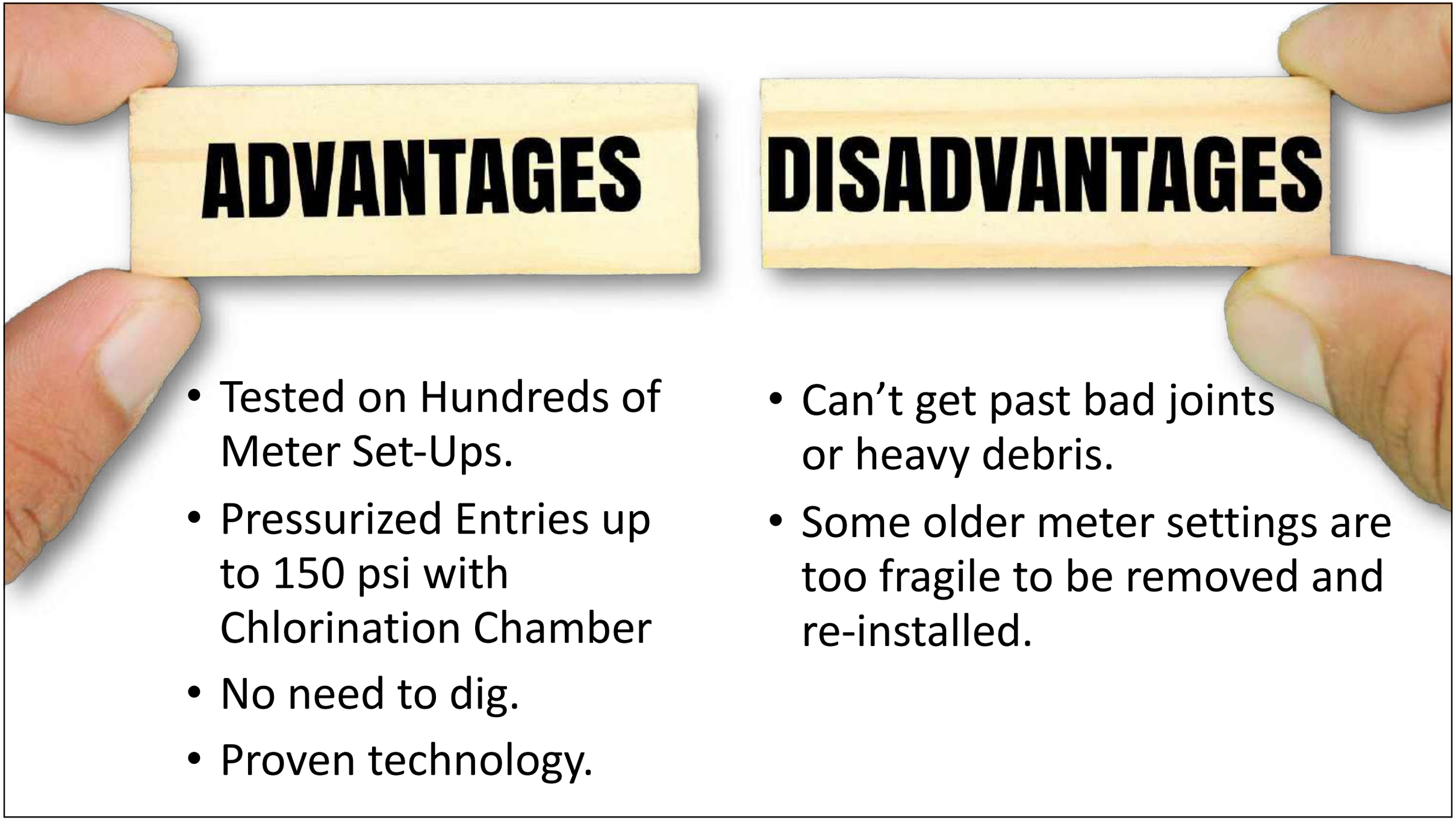
PROBLEM

Chamber design may not allow SWORDFISH probe to make the 90° turn to enter the service line.



SOLUTION

SWORDFISH Re-Direct Tube to assist in navigating first 90° turn.



- Tested on Hundreds of Meter Set-Ups.
- Pressurized Entries up to 150 psi with Chlorination Chamber
- No need to dig.
- Proven technology.

- Can’t get past bad joints or heavy debris.
- Some older meter settings are too fragile to be removed and re-installed.

Question #4

A major change in the LCRI was the addition of _LEAD CONNECTORS_ to be replaced in a 10-Year Period.

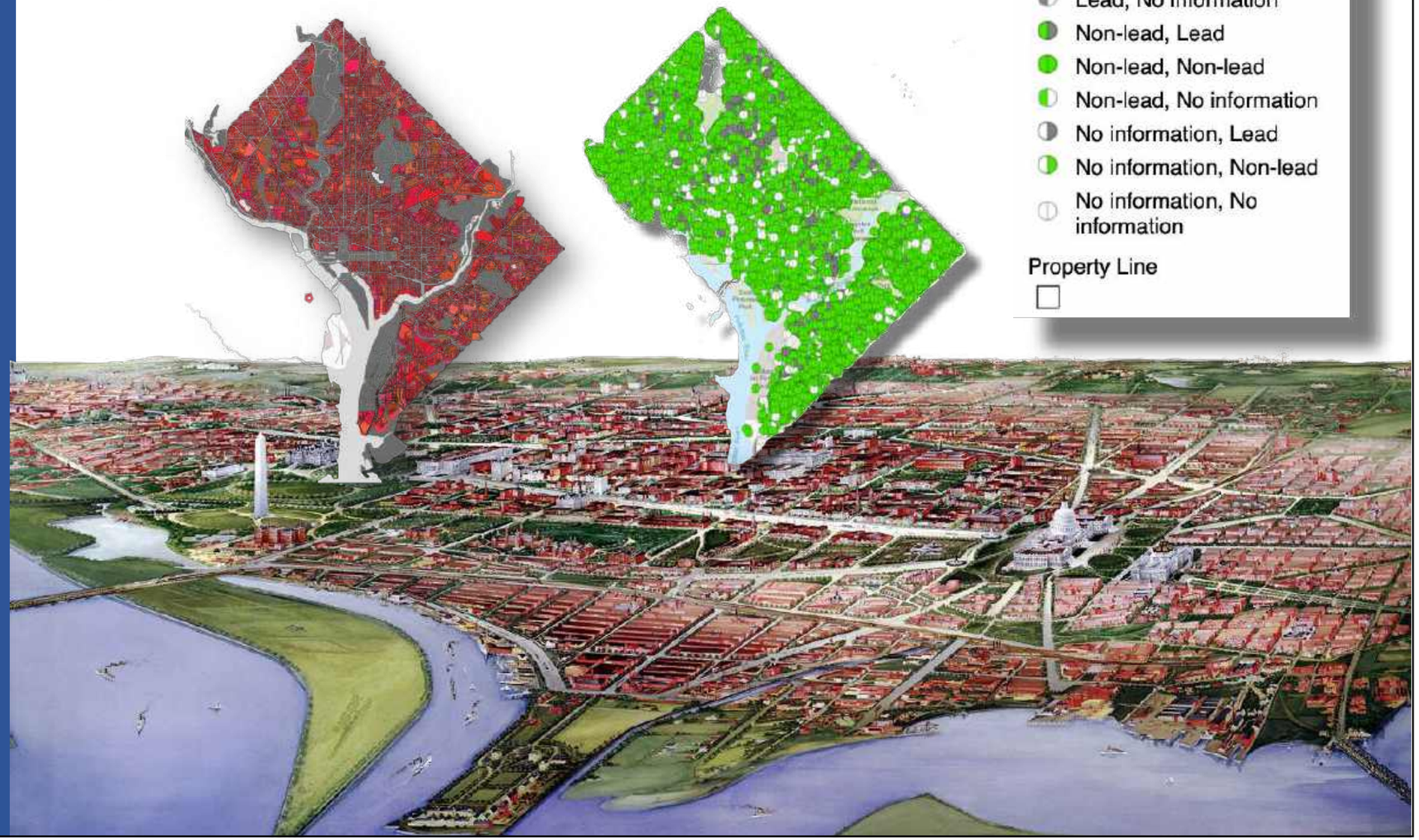
____ A. Lead Pipes Located Inside the Home.
____ B. Lead Soldered Joints in Asbestos Cement Pipe.

____ C. Lead Connectors
____ D. Galvanized Pipes Regardless of Upstream Lead.
____ E. All of the Above.

Part 4

Mike App
Executive Vice President
Electro Scan

DC Water's Benchmark



Service Line Identification Pilot - Update

Environmental Quality & Operations Committee

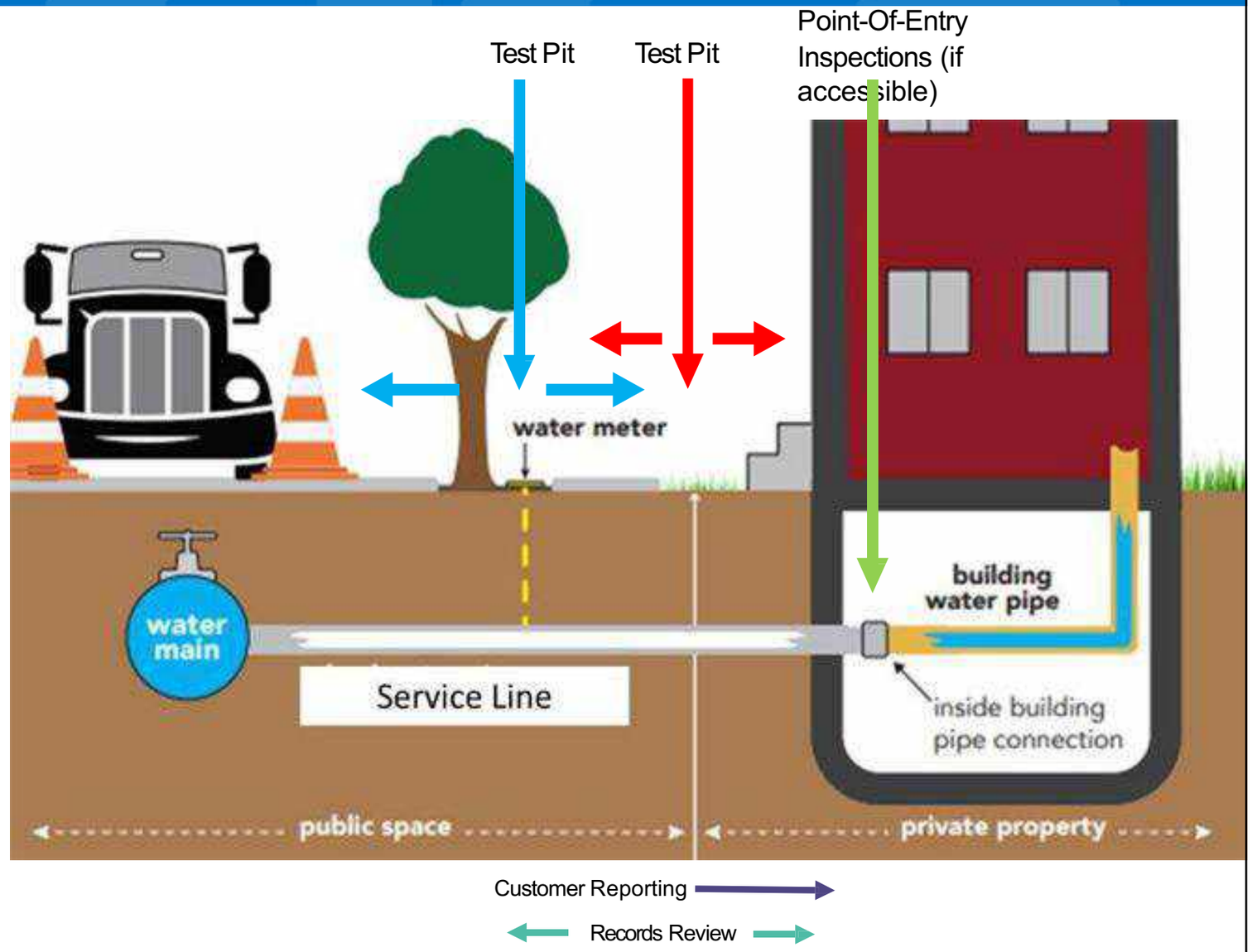
October 17, 2024

William Elledge, Director, Engineering & Technical Services

Verification of Service Line Material: Currently using test pits

Verification of the Service Line:

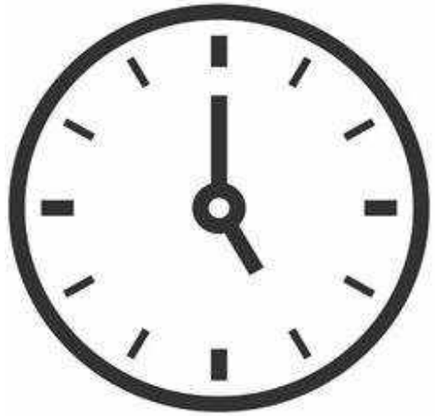
1. Test pit at meter
   - Main to meter
   - Meter to property line (i.e. curb-stop)
2. Test pit at curb-stop
   - Water meter to property line (i.e. curb-stop)
   - Property line to building
3. Interior point-of-entry inspection



Why pilot test alternatives?

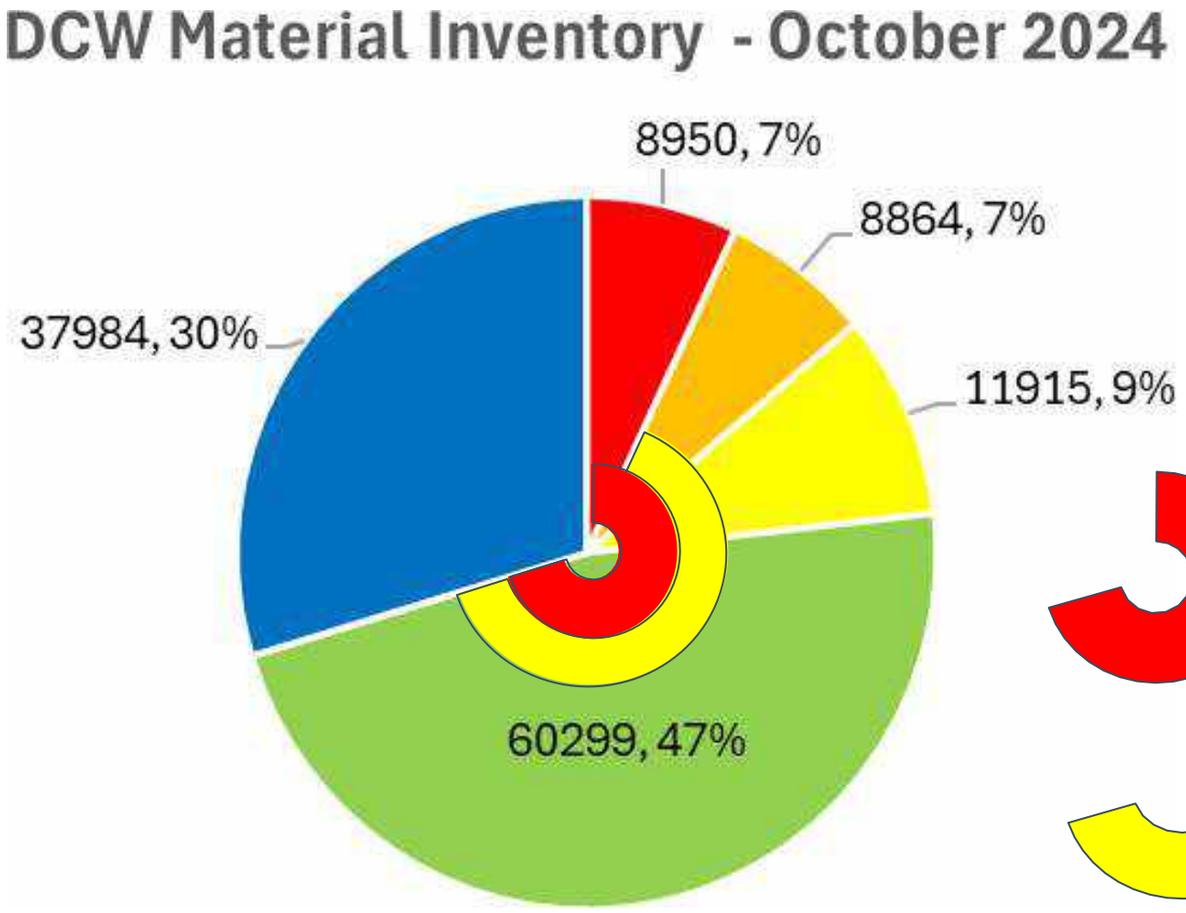
Disruptive

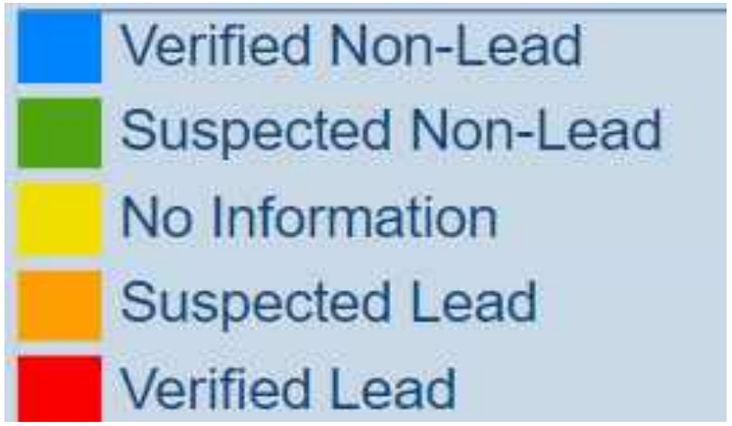
$100M

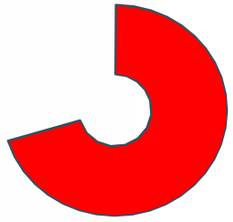


Currently there are no widely used, non-invasive, rapid, and cost-effective methods to determine buried service line material accurately.

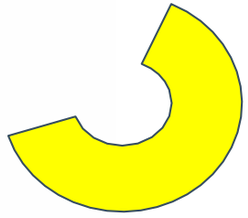
Why pilot test alternatives?







EPA Definition of "replacement pool" 90,028



EPA Definition of "unknown" 81,078

DC Water must reduce "replacement pool" (per EPA's definition) by ~60k.

Possible contract for verification of less than 40k service lines.

Possible Additional Challenges With New METHODS

Why pilot test alternatives?

Test Pit

EDT SMIT

Electro Scan
SWORDFISH

Electro Scan SWORDFISH

1. Remove water meter
2. Disinfect probes
3. Test public & private service line
4. Flush (external) for 30 mins w/o meter +5 mins w/ meter
5. Report results. Provide filters and flushing (internal) instructions.

Material Evaluation

Pipe Material: Copper
Pipe Diameter: 0.5
Max Load: 100
Total Distance Scanned: 8 ft
Pipe Entry Method: Meter To Home
Third Party Chemical Test:
Lead Test Status: Performed
Result: No Lead
Inspection Checklist: Completed
Post Flush: Completed
Operator Notes: 2 areas of concern
3m confirmed

Time to Test: 1-hr

Preliminary Observations

- Swordfish staff have high confidence on service lines tested
- Swordfish cannot make it through all plumbing configurations
- EDT needs additional calibration

Next Steps

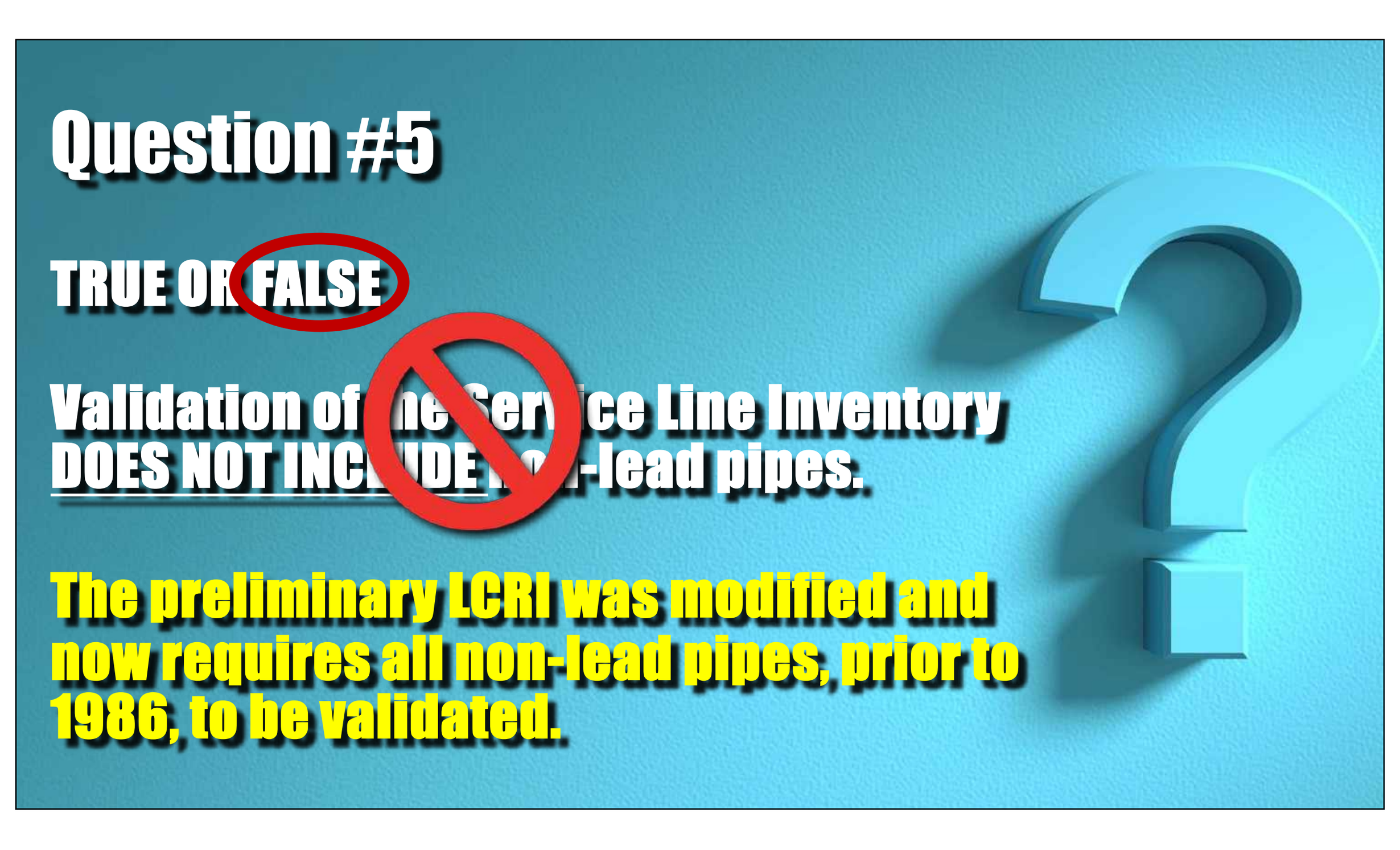
- Obtain remaining results from both technologies
- Confirmatory test pits
- Compare results with findings from test pits
- Make recommendation for a potential alternative to test pitting
- LCRI Final Rulemaking
- We have until Oct 2027 to reduce “replacement pool” (per EPA’s definition) by ~60k
- Possible contract for verification of less than 40k service lines

Question #5

TRUE OR FALSE

Validation of the Service Line Inventory DOES NOT INCLUDE non-lead pipes.

The preliminary LCRI was modified and now requires all non-lead pipes, prior to 1986, to be validated.



Part 5

Inspection-to-Remediation

David Kinsella
President
Element 82 & PE Pipelines

Innovating For A Better Future

Nasdaq: CRKN

Who is Element 82 & PE Pipelines?

CROWN

ELEMENT 82

Value = reduction in community impact

PE PIPELINES

#ValueInTrenchless BY MURPHY PIPELINES

2018: Open Cut (75%) vs Trenchless Technologies (25%)
2028: Open Cut (25%) vs Trenchless Technologies (75%)

TRENCHLESS REDUCES THE FRICTION IN OUR DAILY LIVES.

Engineering
- GIS for design
- No utility relocates
- No easement issues
- Reduction in time/expense
- Limits change orders
- Less project oversight (inspectors)

Construction
- 92% less digging
- Reduces noise and dust
- Open traffic lanes
- 90% reduction in carbon outputs
- Reduction in social costs
- 30% to 50% less time

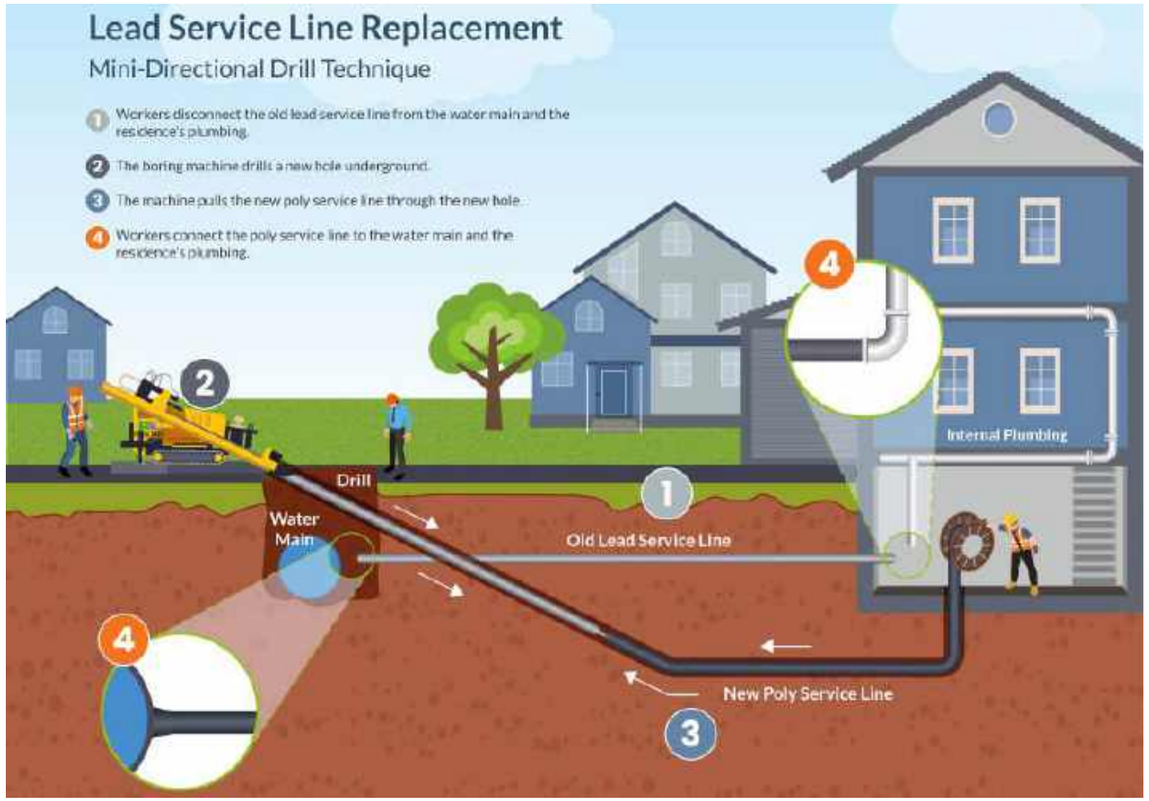
Happy Homeowners and Politicians

Our Services

Horizontal Drilling

Specializing in the replacement of lead service lines leveraging 4 techniques.

- Disconnect the old lead service line from the water main and the residence's plumbing
- Use boring machine to drill a new hole underground
- Machine pulls the new poly service line through the new hole
- Connect the poly service line to the water main and the residence's plumbing

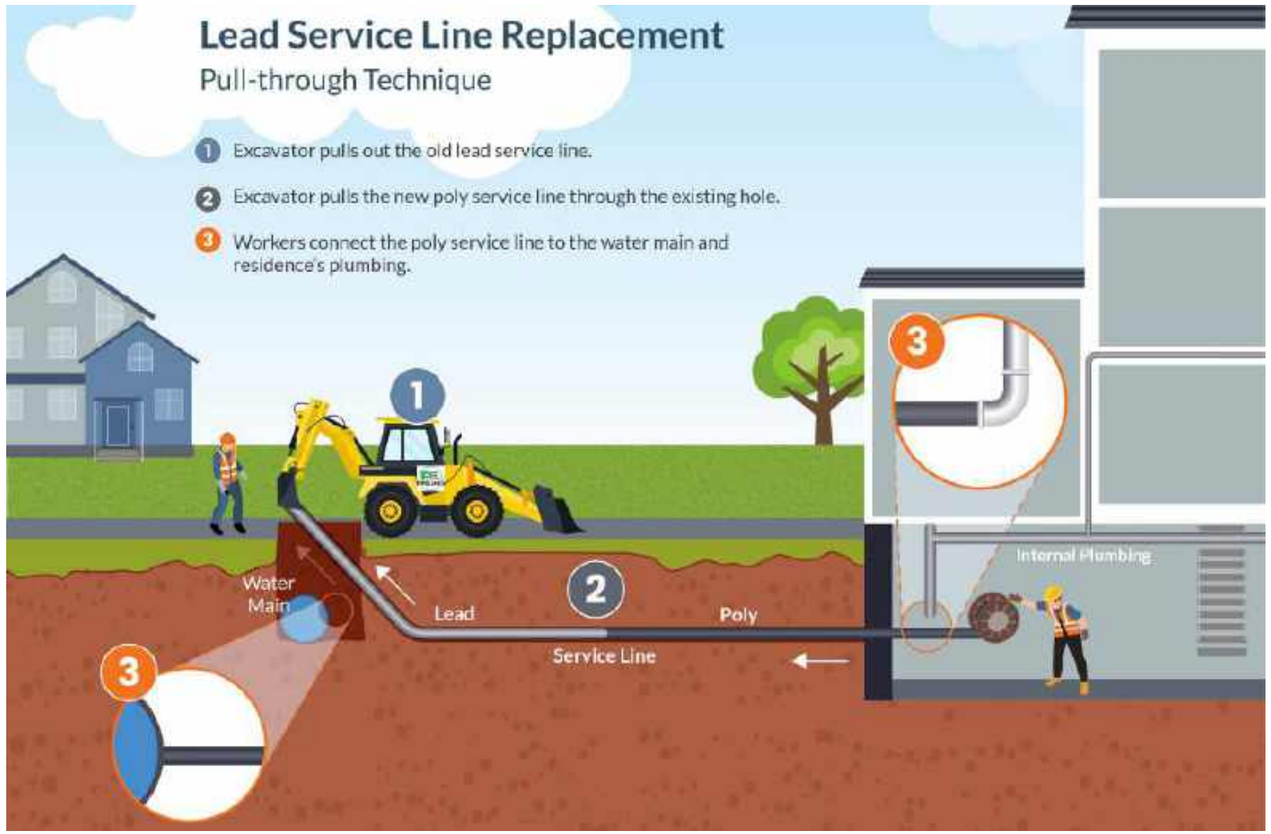


Our Services

Pull Through Method

Specializing in the replacement of lead service lines leveraging 4 techniques.

- Excavator pulls out the old lead service line
- Excavator pulls the new poly service line through the existing hole
- Connect the poly service line to the water main and residence's plumbing

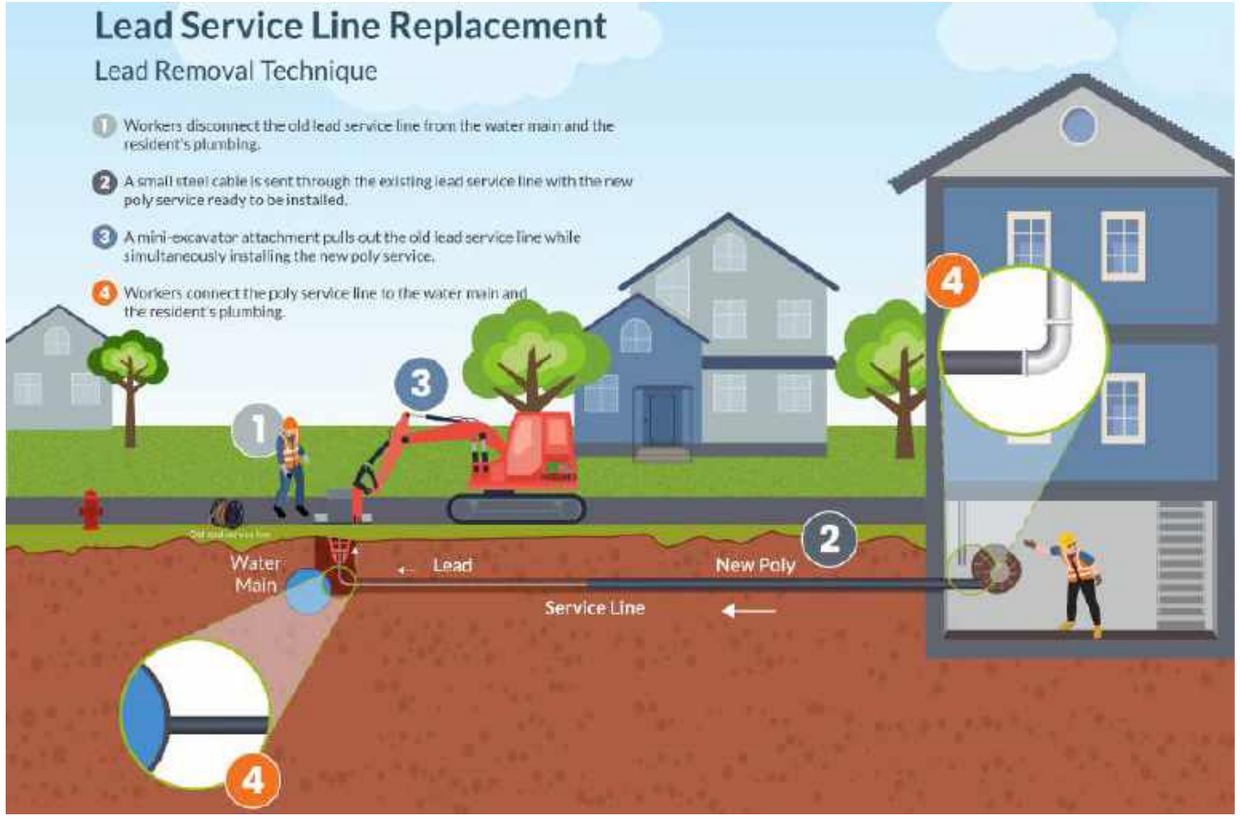


Our Services

Lead Removal

Specializing in the replacement of lead service lines leveraging 4 techniques.

- Disconnect the old lead service line from the water main and the residence's plumbing
- Send a small steel cable through the existing lead service line with the new poly service ready to be installed
- Mini-excavator attachment pulls out the old lead service line while simultaneously installing the new poly service line
- Connect the poly service line to the water main and residence's plumbing



Our Services

Mole Pipe Replacement Technique

Specializing in the replacement of lead service lines leveraging 4 techniques.

- The impact mole can be launched using a sighting level. It advances by a percussion action creating a bore hole.
- The new poly line is pulled through the bore hole and connected to the water main and residents plumbing.

CROWN

ELEMENT 82

Nasdaq: CRKN

PE PIPELINES

360°

davidk@pepipelines.com

+1 407.919.6112

https://element82.co/

INVENTORY GIS CONTACT SCHEDULING INSPECTION TESTING REPLACEMENT

CROWN

Question #6

The following is TRUE about Galvanized Pipes Requiring (GRR) Replacement:

____ A. Cannot be partially replaced.
____ B. Requires lead pipe to be anywhere upstream.
____ C. Attracts lead particulates on its surface.
____ D. Is a major reason why Electro Scan performs a lead swab test to confirm a GRR, and lead residue.

__✓__ E. All of the Above.

Part 6

Mike App
Executive Vice President
Electro Scan

Case Studies

1. City of Baltimore, Maryland
2. City of Rock Hill, South Carolina
3. Town of Medley, Florida
4. Elementary School, California
5. Bard College, New York

Case Study #1

Baltimore, Maryland Population 565,239

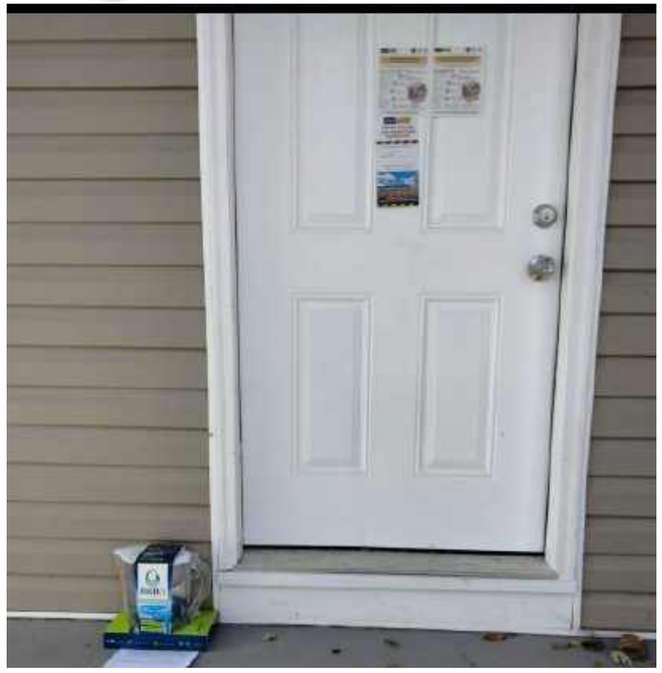
1 Door Hanger Notices
30-Day | 2-Day

2 Service Line Inspection

3 Reporting

4 Flush the Line

5 Customer Notification



Case Study #1

30-DAY

BALTIMORE SERVICE LINE PARTNERSHIP

IMPORTANT NOTICE

Dear Customer:

The 2021 revisions to the Lead and Copper Rule require the Baltimore Service Line Partnership to identify the material of all water service lines.

The Partnership engaged Electro Scan, Inc. to inspect water service lines in this area. A small probe will be inserted directly into the service line to verify its material.

Water service will be shut off during the inspection. The inspection will take less than an hour to complete.

2-DAY

BALTIMORE SERVICE LINE PARTNERSHIP

WATER SERVICE LINE INSPECTION NOTICE

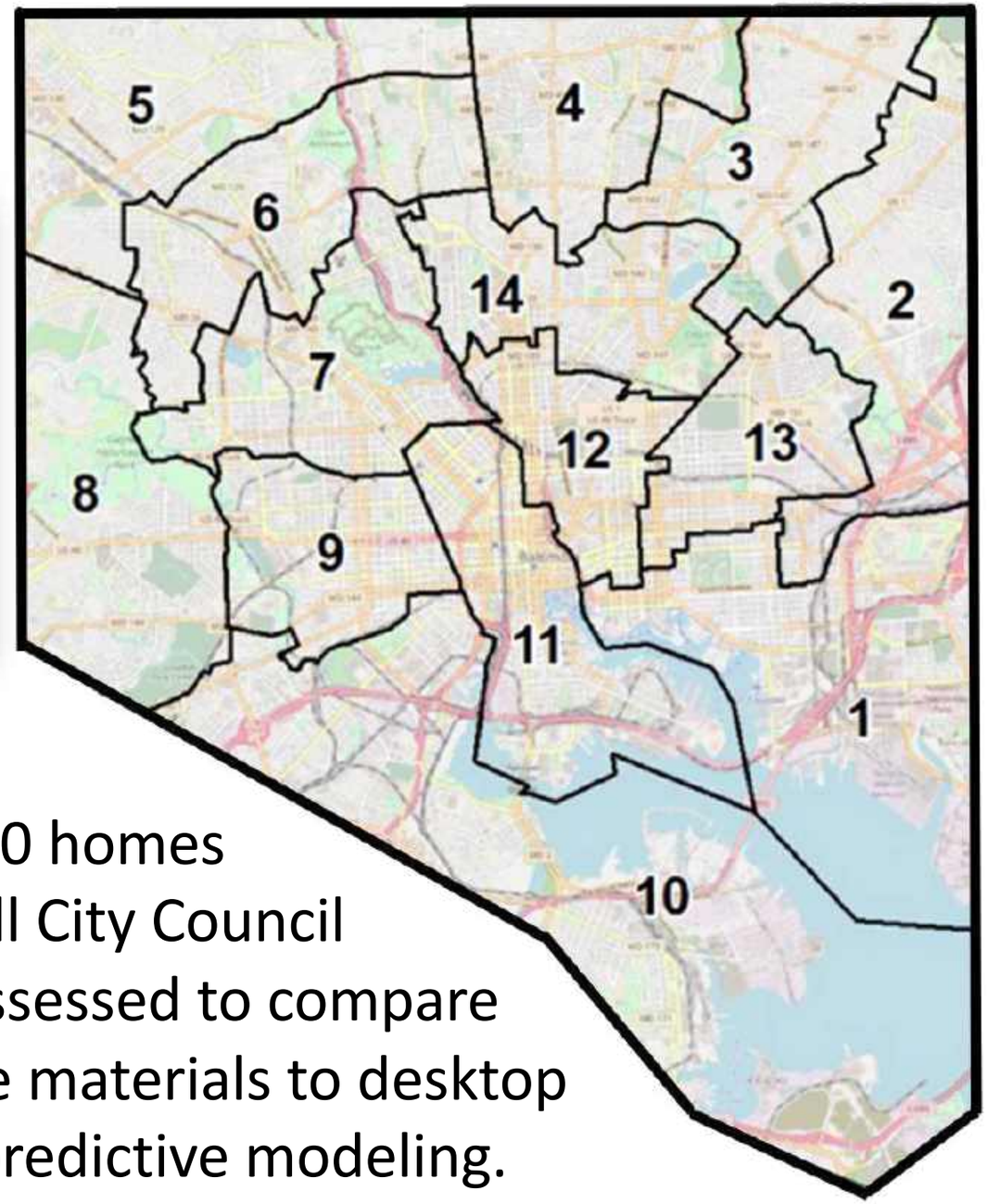
Dear Customer:

An Electro Scan representative may conduct a water service line material inspection at this address on

Date:_____

Morning___ Afternoon___

If you want to be present during the inspection, call the Electro Scan scheduling line at **(667) 843-9500**.



Initial 4,000 homes covering all City Council Districts assessed to compare actual pipe materials to desktop data and predictive modeling.

Case Study #2

City of Rock Hill, South Carolina

Population 74,372

550 miles of Water Main | **34,200** Water Meters

JANUARY FEATURE

IDENTIFYING WATER SERVICE LINE PIPE MATERIALS USING MACHINE INTELLIGENT TECHNOLOGY

By Chuck Hansen

One of the most far-reaching pieces of legislation – the Bipartisan Infrastructure Law – is now helping to fund drinking water projects across the United States. In addition, the U.S. Environmental Protection Agency's (EPA) Revised Lead and Copper Rule requires water utilities to complete detailed water service inventories, mapping, and replacement of 100 percent of lead service lines that are utility-owned and private property-owned. EPA estimates there are more than 9 million lead lines connecting homes to water systems in the United States.

Water systems are facing several challenges in developing service line inventories. In addition to having poor records for utility-owned pipe (usually limited to connecting water mains to curbside meters), there is little to no information available that identifies pipe materials on private property – which was not the responsibility for public, private or municipal water companies before enactment of this law.

The most common way to determine whether water pipes are made of copper, galvanized steel, lead or plastic is to excavate to expose the pipe and mark with a magnet. Now, if any cities have successfully identified all their water services and inspected pipe materials by parcel or customer address.

But even the plight of the City of Flint, Michigan, provides a good model for other cities to follow.

Representing the most closely identified city where the citizens' health effects of lead-contaminated drinking water were widely documented and aided by federal and state intervention, a recent lawsuit filed against the City of Flint stated that the city still needed to assess 26,000 homes or 62 percent of the city's 31,578 homes.

While geographic information systems (GIS) and predictive modeling applications can be used to provide probabilities for locating lead pipes, information can be inconclusive, inconsistent or incorrect. Field verification of utility-owned and private property-owned service materials is required before pipes can be scheduled for replacement.

This is not exactly what the City of Rock Hill, South Carolina, had in mind when reviewing its options to develop a comprehensive water service line inventory by the EPA deadline of Oct. 16, 2024.

Seeking an Alternative

Looking for an alternative, administrators in Rock Hill sought a trenchless process that could assess buried water service pipes and they were presented with Electro Scan's SWORDFISH solution.

Despite being founded in 1852 as a depot and watering station on the Charlotte and South Carolina Railroad, Rock Hill's housing data shown in Figure 1, indicates a Median Year Built of 1993 – well beyond 1986 when lead pipes and lead connectors were banned by the EPA.

"We knew that the EPA had used electrical resistance testing as an alternative method to help inventory water service lines as part of its EPA Tools & Resources Webinar: Identifying Lead

JANUARY FEATURE

Service Lines in the Community (Oct. 20, 2022)," said Maurice Walsh, P.E., PWAM, utility engineering manager, Utilities – Water & Sewer, City of Rock Hill. "After additional research and reference checks, we confirmed Electro Scan's ability to tell the difference between copper and lead pipe materials, using its new SWORDFISH product."

Not wanting to unnecessarily dig up customers' yards, sidewalks and streets, the City invited Electro Scan Inc. to demonstrate how it would work.

Launched in 2021, Electro Scan's patented low-voltage technology was already proven to work on the same bonding sewer cases typically caused by closed-circuit television (CCTV) cameras and defects in buried in-place pipe (CIPP) liners not properly watertight.

After confirming test joints in asbestos-cement pipe in a 2021 pressurized water main investigation, Electro Scan reengineered its solution to error circular diameter service lines ranging from ¾ to 1 in. diameter.

Measuring the change in electrical resistance as its probes move through a pipe, Electro SWORDFISH is automatically identify copper, galvanized, lead and plastic pipe materials, including multiple pipe materials in the same pipe – all without operator intervention or data interpretation.

Most new-build/post-automated readings are then transferred to a Microsoft Surface tablet computer via Bluetooth in real-time during each survey, where additional photos and data entry can be added before uploaded to the Electro Scan's Critical Water cloud application.

Based on field validation confirmed buried pipe identification, the City of Rock Hill purchased two SWORDFISH units, including pressurized insertion tube, Bluetooth surface tablet computer, licensing to access the Electro Scan Critical H2O cloud application, spare probes, and cowlings to the city's GIS.

As a result, field verifications will be focused on homes built before 1969, representing approximately 14,000 or 44 percent of the homes in the city.

The City of Rock Hill has been satisfied with its decision to adopt SWORDFISH and has even received calls from the EPA confirming its results.

The Lead & Copper Rule

Recently, the EPA published its proposed changes to the Lead and Copper Rule Revision, called the Lead and Copper Rule Improvements (LCRI).

Representing an acceleration and expanded set of proposed modifications, the LCRI would introduce significant enhancements, including a mandatory 10-year replacement requirement for lead and galvanized requiring replacement (GRR) service lines, continuous verification of unknown service lines, and a reduced action level of exceedance from 15 parts per billion (ppb) to 10 ppb.

Key LCRI Recommendations:

- Require water systems to include corrosive materials in Downtown line inventory.
- Prohibit water systems from partially replacing lead or GRR services, unless part of an emergency repair.
- Require a street address of each service line and be made publicly accessible.
- Test lead inventory methods so water systems could take advantage of new ways to identify pipe materials.
- Create a market for service line material identification technologies.
- Establish a deadline to specifically identify UNKNOWN pipe materials for all service lines.
- Require water systems to re-inspect a service if the Customer thinks assigned material is incorrect.
- Require Customer Notice if pipe disturbances occur due to potholing or other investigative efforts.

It is crucial to note that the LCRI has yet to undergone legislative process before becoming law, and specific steps will be followed, with the anticipated effective date after baseline water service inventories are due Oct. 16, 2024.

Chuck Hansen is the chairman and CEO of Electro Scan Inc. and Parsons Analytics LLC.

Figure 1. City of Rock Hill, South Carolina, Housing Units By Decade

Population	74,372	
Median Year Built:	1993	
Housing Units By Decade	31,657	100%
Built in 1939 or Earlier	1,223	3.9%
Built between 1940 and 1949	828	2.6%
Built between 1950 and 1959	2,410	7.6%
Built between 1960 and 1969	2,975	9.4%
Built between 1970 and 1979	3,416	10.8%
Built between 1980 and 1989	3,237	10.2%
Built between 1990 and 1999	5,378	17.0%
Built between 2000 and 2009	8,158	25.7%
Built between 2010 and 2019	3,994	12.6%
Built in 2020 or Later	58	0.2%

Source: Point2, 2023

Case Study #3

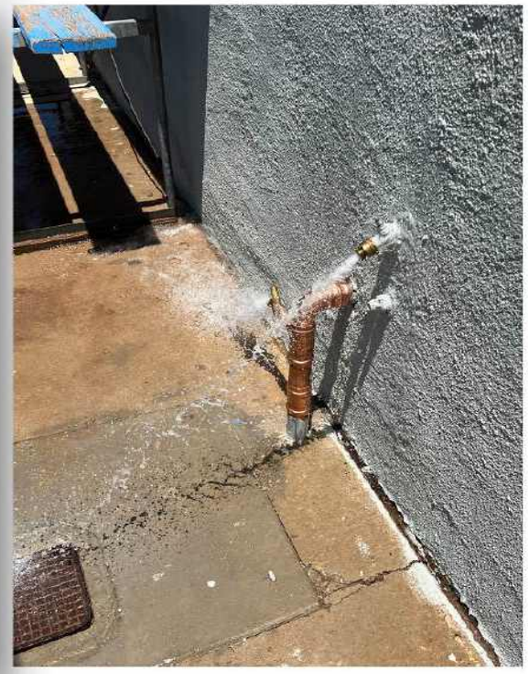
Town of Medley, Florida

Population 1,036

Case Study #4

California Elementary School

Total Enrollment 384



Case Study #4

HANSEN
Hansen Analytics, LLC

criticalh2o

All Scans Standard | Swordfish | Scans | Project and Jobs Reports | Support | Log Out

Worksites | Inspections **33** | Lead Detected **15** | No Lead

Case Study #5

Bard College, New York

Total Enrollment 2,469

Question #7

TRUE OR FALSE

Predictive Models can easily tell if multiple pipe materials are present.

Predictive models are Best to provide neighborhood-level assessments, but have a poor track record predicting Utility-side & Private-side pipe materials.

Part 7

Wrap Up / Q&A

Richard Brown
Dir. of Marketing
Electro Scan


Lead Pipe Removal


Copper Pipe Removal


GOAL 100% Removal


GOAL 0% Removal


Q&A

Download a Copy of this Presentation.

File Format

Microsoft PowerPoint

.pptx

File Size

381mb

Link Expires

Nov 30, 2024

https://bit.ly/2024_Webinar

From Your Sponsors
Thank You For Attending

electro scan inc.

HANSEN
Hansen Analytics, LLC

ELEMENT 82

PE PIPELINES

SWORD FISH

Lead and Copper Rule Improvements Webinar

Chuck Hansen
CEO
Electro Scan

Mike App
Executive Vice President
Electro Scan

Matt Campos
VP, Product Development
Electro Scan

Richard Brown
Dir. of Marketing
Electro Scan

David Kinsella
President
Element 82 & PE Pipelines

1745 Markston Road
Sacramento, California 95825
Tel: +1 916 779 0660
Web: https://www.electroscan.com
Email: info@electroscan.com

Contact Richard Brown

richbrown@electroscan.com

+1 916.952.5160

https://www.electroscan.com

INVENTORY GIS CONTACT SCHEDULING INSPECTION TESTING REPLACEMENT


That's all Folks!