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Necessity is the Mother of **Invention**

Presented by:

Jerry Botts

Laterals are a large part of the problem!

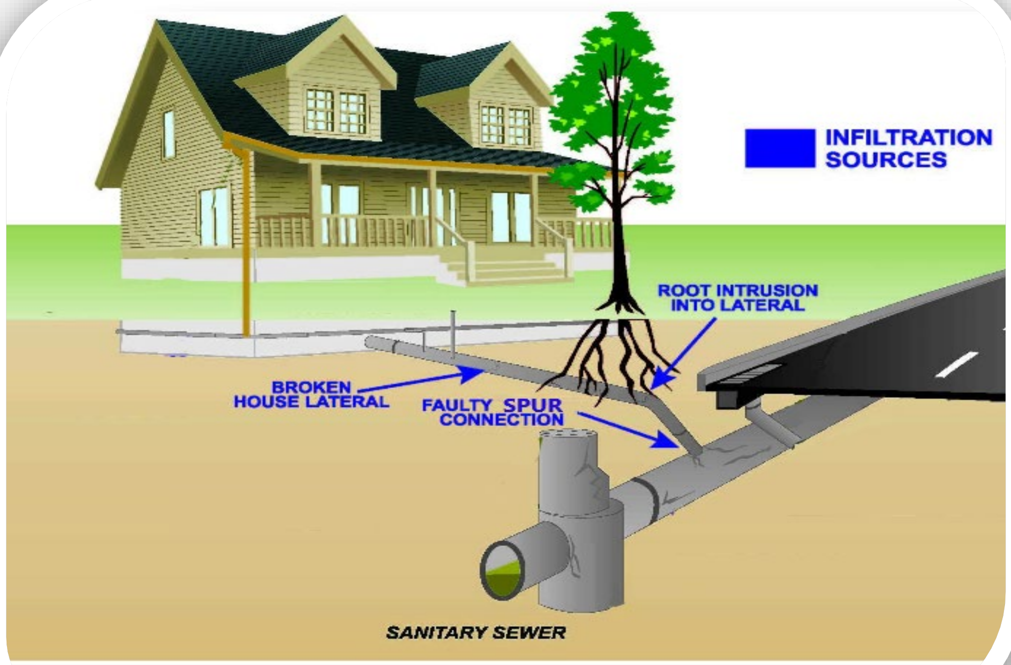

Diagram of common infiltration sources

According to the EPA, approximately 50% of sanitary sewer collection systems are comprised of laterals. Furthermore, laterals are responsible for up to **75%** of the inflow and infiltration (I & I).

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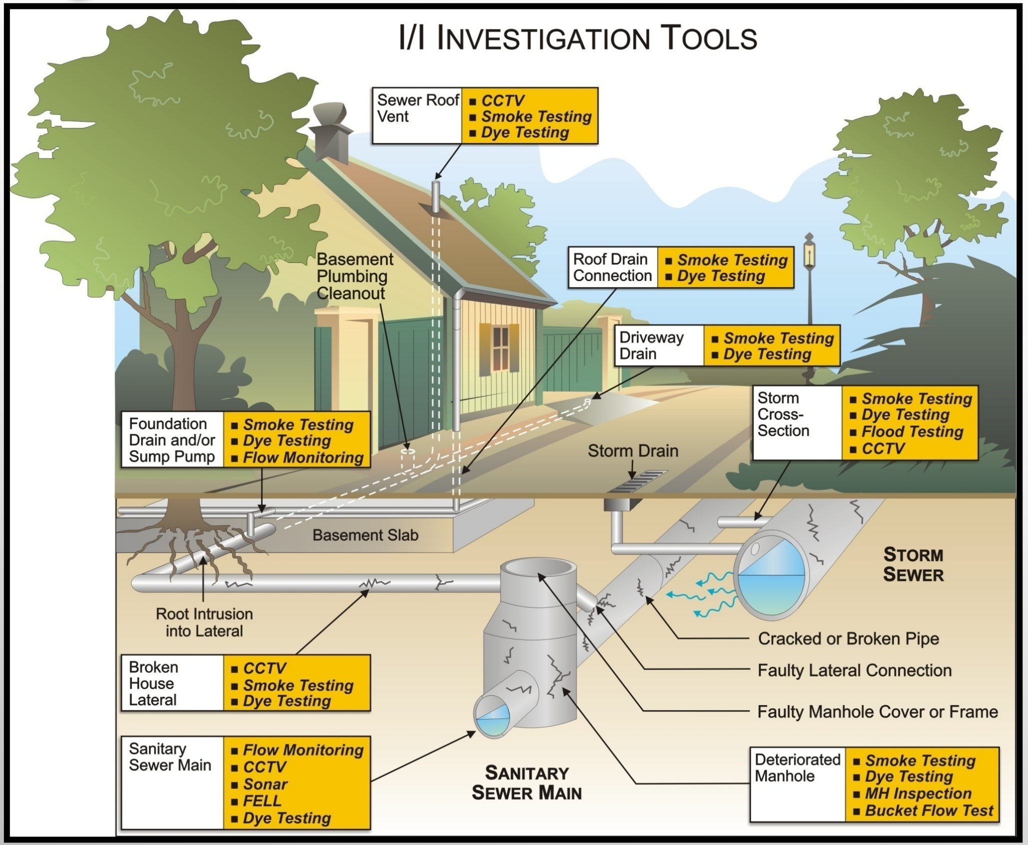
Countless case studies with less-than-desired or expected I & I reduction

A few examples of these programs:

A municipality of less than 200,000 people spent in excess of $ 40 million on a lining program and only experienced a 20% reduction in I & I.

A municipality of less than 195,000 people spent in excess of $ 400 million and experienced little or no reduction in I & I.

Infiltration and Inflow (I & I) Studies



I & I studies were prevalent in the infancy of manhole-to-manhole lining. However, due to limited technology, the utility owner could only inspect the mainline portion of their sewer system between structures.

The results of these inspections uncovered I & I entering the sewer system from cracks, breaks, root intrusion, failing joints, etc.

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Once the flow studies and inspections were completed, the owner had 5 principal choices…

1. Do nothing
2. Increase capacity at the WWTP
3. Dig and replace which was too expensive and invasive
4. Chemical grout (non-structural solution)
5. Line the mainline manhole-to-manhole (fully structural rehabilitation)

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The most acceptable practice became lining manhole-to-manhole

Communities spent millions of dollars and experienced initial favorable results with the lowering of I & I.

Over time, communities began to experience deficiencies in manhole-to-manhole lining technologies caused by shrinkage in the resin systems.

This shrinkage allowed the I & I to track behind the liner and enter the system at the lateral reinstatements and manhole connections.

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Realization…

The large investments made by communities had less than the anticipated I & I reduction.

This was NO ONE’S FAULT and CIPP is not poor technology.

In fact, CIPP technology is the method of choice still to this day and deservingly so.

What it proves is that lining manhole-to-manhole is not a stand-alone solution for stopping I & I.

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A VISUAL EXAMPLE OF I & I

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Lateral lining from the mainline was born

The lining of the mainlines raised ground water and moved the water to the lateral and manhole connections (path of least resistance).

Lateral lining systems were created by innovators to bridge the annulus space between the host pipe and the mainline liner. This move helped sustain our industry.

This technology has helped to mitigate the I & I at the lateral interface and as far up the lateral as it has been lined.

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Current Technology

The previous technology was appropriate for solving issues created by manhole-to-manhole lining.

The limitation of the technology was it was limited and had to be used in conjunction with manhole-to-manhole lining systems.

Communities were being forced to line mainlines to address lateral deficiencies.

You could use the lateral technology in an unlined pipe but trying to line the mainline afterwards became problematic.

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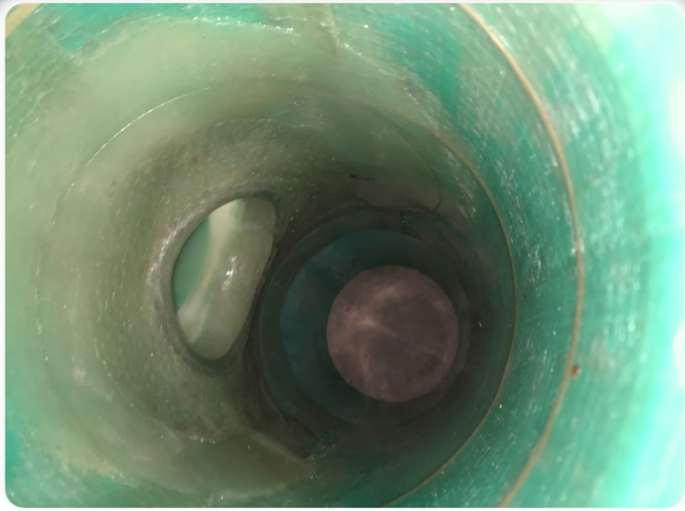
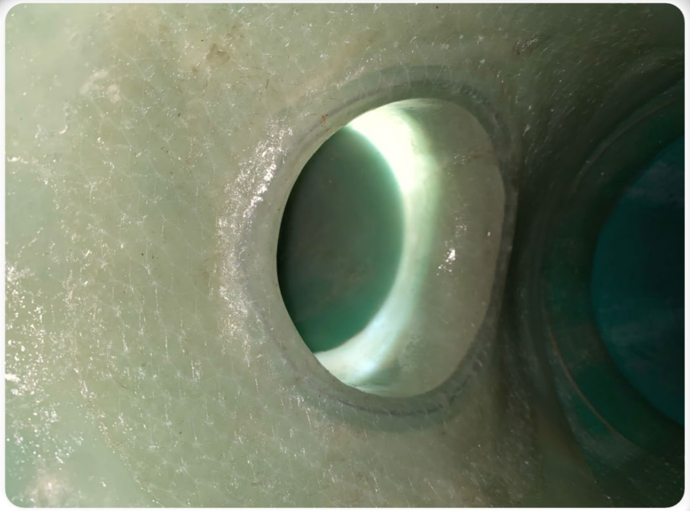
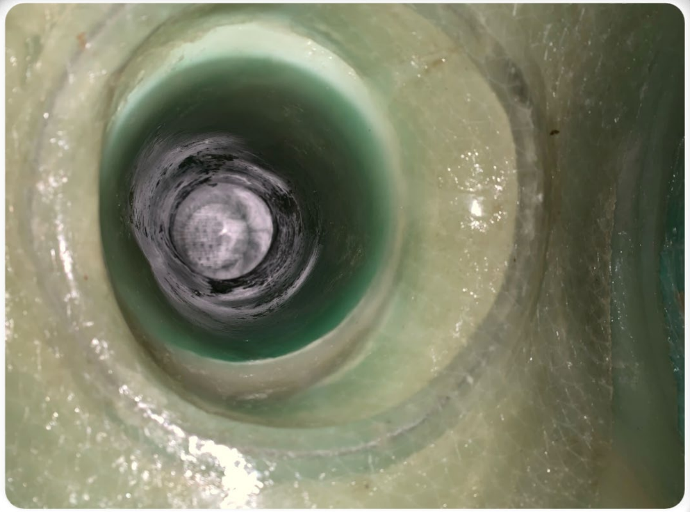
Fast-forward to today and the innovations of tomorrow







INTRODUCING THE PATENTED INNERCURE FULL CIRCUMFERENCE CONNECTION

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To solve a problem, you need to remove the cause, not the symptom!

InnerCure invented lateral connection technology so that communities could use the technology at any phase of their I & I reduction program.

Using InnerCure's patented technology, communities address their issues at the primary source where it is needed and eliminates wasting limited resources on pipelines that don't need to be rehabilitated at that time.

The positive result is communities will begin to have a better return on investment when addressing the source of I & I.

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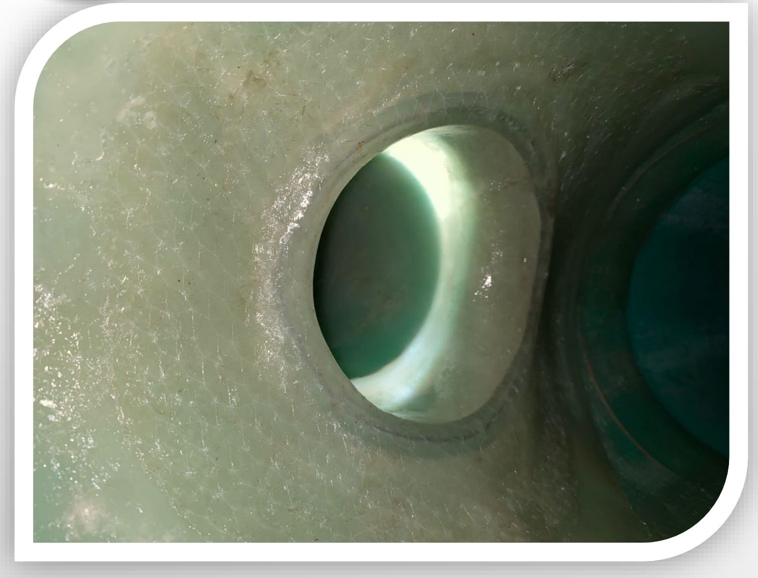
InnerCure PLC



InnerCure PLC (Pre-Lining Connection) is an uncoated fiberglass or felt full circumference connection that forms the foundation for eliminating I & I.

- UV Curing Technology- faster cure which lowers cost
- Full circumference, water-tight structural solution- increased surface area for bonding
- Lateral reinstatement indicator- identifies the lateral location behind the mainline liner
- Cutting protection- lateral protection while being reinstated
- Can be installed PRE or POST mainline CIPP lining

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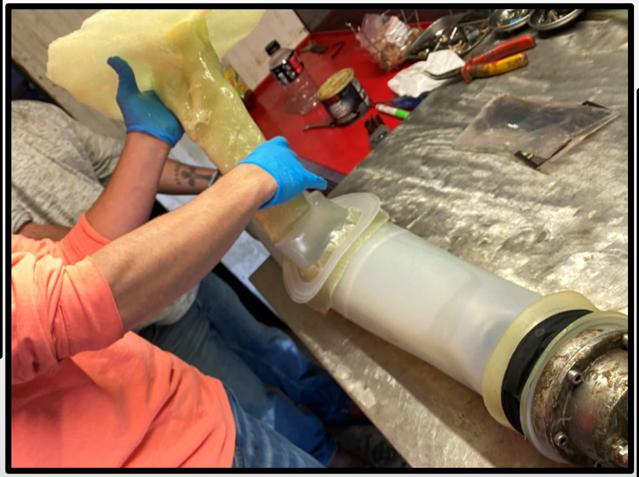
InnerCure PLC+

InnerCure PLC+ (Pre-Lining Connection + Lateral) is an uncoated fiberglass or felt connection which includes the lateral liner.

- Includes the attributes of the InnerCure PLC
- Lateral lining from the main or the property
- Uses coated fiberglass or felt for the lateral portion of the system
- Uses non-VOC resins for worker and general public safety
- Environmentally friendly

The assembly process for the InnerCure Technologies™ patented technology



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By utilizing the Innercure PLC and PLC+ technology prior to an inversion mainline liner, the resin from the mainline liner creates an independently tested bond BEHIND the liner, resulting in a more permanent connection and an unobstructed mainline liner.

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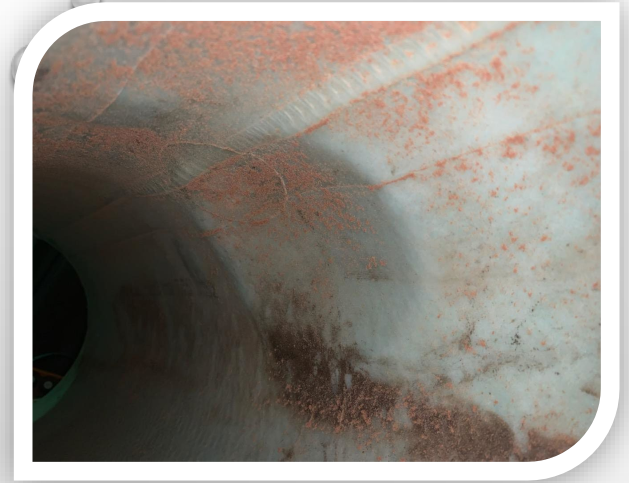
Patented UV Cure Technology for lining a lateral from the mainline.

- Faster installation time resulting in lower cost
- Non-VOC resin system
- Can be used before or after lining of the mainline
- ASTM compliant materials
- Superior lining materials
- Typically, no bypass of the mainline is required

InnerCure PLC or PLC+ Benefits



InnerCure system after lining of CIPP mainline liner (prior to reinstatement)

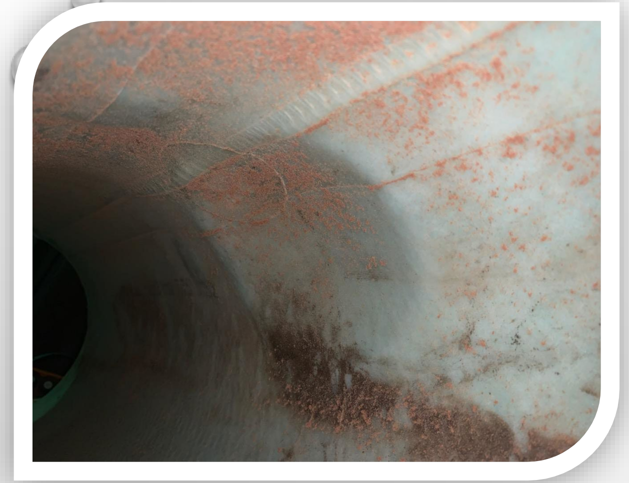
InnerCure system after lining of CIPP mainline liner (post reinstatement)

- By utilizing the Innercure patented technology, a utility owner or consulting engineer can confidently specify the right repair to address the point source of I & I. By implementing pre-CCTV inspections of both main and laterals, along with professional analysis, the process greatly extends budgets by strictly addressing the deficient areas.

- Eliminates the need to line the mainline prior to addressing deficient laterals. There is no immediate need to line the mainline if it is in satisfactory condition. Inversion lining can be done later, if the need arises.

- Places the bonding interface BEHIND the CIPP liner. The bond has been independently verified in actual field conditions.

InnerCure PLC or PLC+ Benefits (cont.)



InnerCure system after lining of CIPP mainline liner (prior to reinstatement)

InnerCure system after lining of CIPP mainline liner (post reinstatement)

- Alleviates the need to place any material in the mainline liner. This keeps the flow line of the mainline liner free from obstructions.
- Provides for an unobstructed connection to the mainline CIPP liner.
- Provides the cutter operator a clear indicator where to make reinstatements, avoiding damage to the previously installed lateral connection. No more missed cuts!
- Lowers O & M costs for the collection system and the WWTP by eliminating I & I and the effects of sea level rise in coastal areas.

THANK YOU FOR YOUR TIME

ANY QUESTIONS AT THIS TIME
OR STOP BY OUR BOOTH # 723

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