MoDNR Lead Service Line Inventory (Based on Federal LCRR Guidance)

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Important Links:

MoDNR Lead Service Line Homepage:
https://dnr.mo.gov/water/business-industry-other-entities/technical-assistance-guidance/lead-service-lines

Download Mo DNR LSLI Spreadsheet and Customer Outreach Documents:
https://dnr.mo.gov/water/business-industry-other-entities/technical-assistance-guidance/lead-service-lines/inventory

EPA Federal "Guidance On Maintaining and Developing a Service Line Inventory":
https://www.epa.gov/system/files/documents/2022-08/Inventory%20Guidance_Final%20080322_1.pdf

EPA LCRR Homepage: (Do NOT use EPA Template! It is example only—not for reporting)
https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule

Lead & Copper Rule Revisions: National Primary Drinking Water Regulation:
https://www.govinfo.gov/content/pkg/FR-2021-01-15/pdf/2020-28691.pdf

How to Identify Service Line Materials: For PWS staff & Customers

https://www.youtube.com/watch?v=1JUGIpuH9a4

https://dnr.mo.gov/document-search/do-you-have-lead-service-line-pub3046/pub3046

https://dnr.mo.gov/document-search/how-identify-your-water-service-line-material-pub3052

Funding Opportunities: Email: fac@dnr.mo.gov Phone: (573) 751-1192
https://dnr.mo.gov/water/business-industry-other-entities/financial-opportunities/financial-assistance-center/drinking-water

“Lead & Copper Rule Revisions” (LCRR) effective December 16, 2021

“All water systems must prepare an inventory of service lines connected to its distribution system, whether or not they are owned or controlled by the water system, to identify those service lines made of lead or of unknown material. . .

Community water systems and non-transient, non-community water systems must comply with the requirements of this subpart no later than October 16, 2024 . . .”

40 CFR, Ch 1, Part 141.81, Subpart 1 (7-1-21 Edition) pg 560 (pg 4 of 70 in PDF).

Includes all service lines in distribution system

"Systems must include all service lines (40 CFR 141.84(a)(2)), regardless of the actual or intended use. These include, for example, service lines with non-potable applications such as fire suppression or those designated for emergency. These service lines could be repurposed in the future for a potable or non-emergency use. Water systems must include in their inventory service lines connected to vacant or abandoned buildings, even if they are unoccupied and the water service is turned off."

US EPA (Federal) "Guidance for Developing and Maintaining a Service Line Inventory," published August 4, 2022. pg 2-9 (pg 30 of 164 in PDF)

Definitions to know:

Water Main—a primary underground pipe in a municipal water distribution system (from the well/tower/tank?). These often run parallel to street or sidewalk. Water is almost constantly moving in the mains.

Service Line—an underground pipe that connects from the water main to the building inlet (typically ends at the indoor shutoff valve). This supplies cold "potable" drinking water that has already been treated.

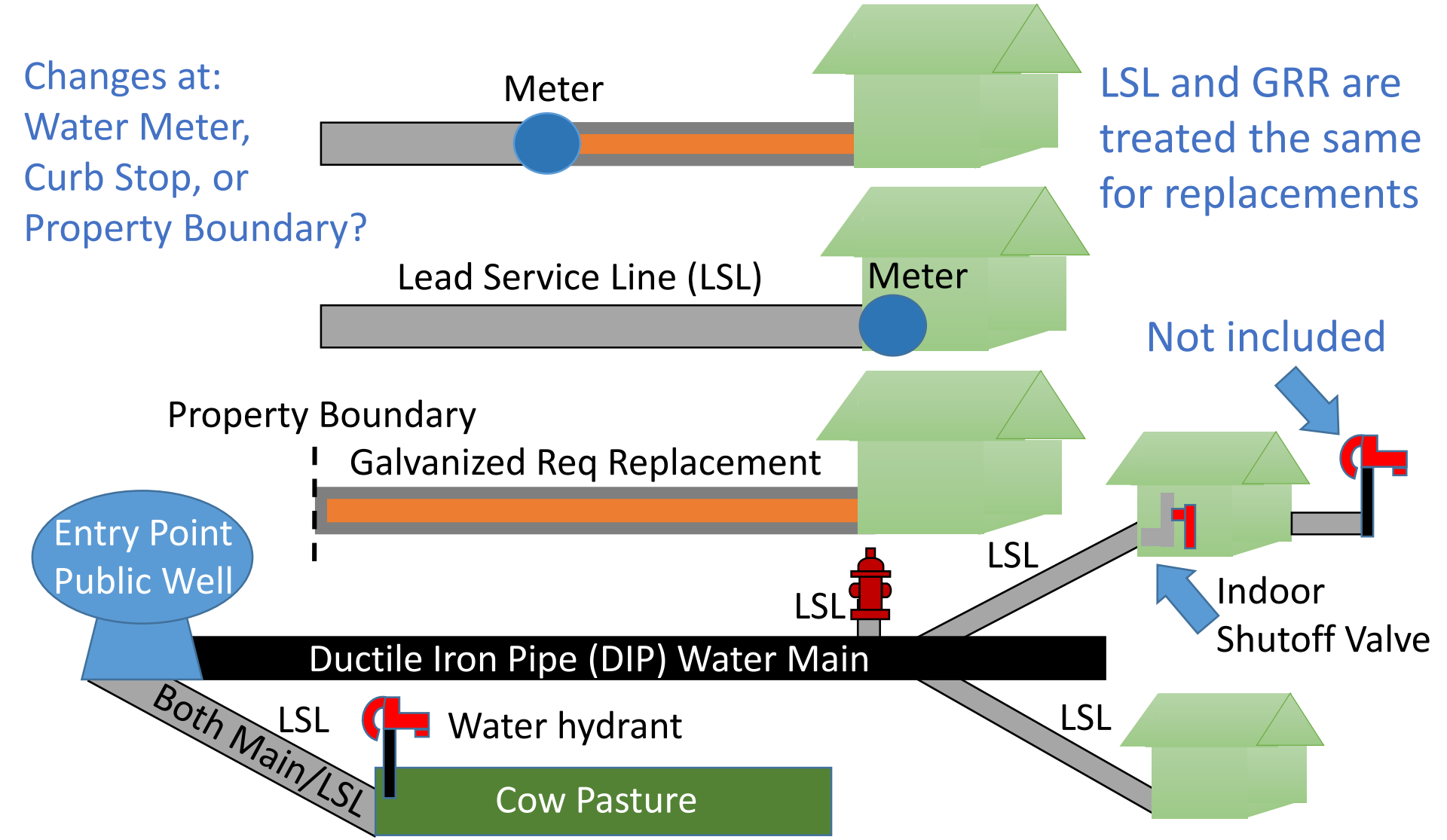
Service lines typically have split ownership between the public utility and private resident (proper term is "system-owned" & "customer-owned"). Ownership may change at the meter, curb stop, or property boundary. Please check local laws & with HOA to see how your system defines it? "Full replacement" refers to both halves of the service line (if applicable)

Premise Plumbing—the buildings interior plumbing or "household plumbing" that begins at the indoor shut-off valve coming through basement/wall. Household plumbing is not regulated by federal LCR. We only need to check it for risk tier calculation of sample sites.

Connectors—a short section of piping which can be bent and used for connections between rigid service piping. Check if your system uses connectors? Usually, main to service line and on either side of meter?

Where does PWS, City, or HOA define service line ownership change?

Full Replacement—replacing the entire length of a Lead Service Line (LSL) as well as Galvanized Requiring Replacement (GRR) to meet SDWA Sec 1417 definition of "lead free" regardless of service line ownership



All CWS & NTNCWS must create a service line inventory regardless of whether or not they have confirmed Lead Service Lines (LSL) or GRR. Inventory is a "living record" to develop, maintain, & submit to MoDNR

PWS must use MoDNR spreadsheet for official submission to the State. Do **NOT** use EPA's federal template (that is example—not for reporting)

October 16, 2024 is deadline to submit "initial" inventory to MoDNR This date will not change—even if LCRI is proposed in 2023

First submission does not need to be 100% completed as far as identifications (include as many identified service lines as possible)

Remaining service lines must be labeled "Unknown: Possibly Lead" until they are identified using records and/or approved methods.

If done early, submit LSLI by email or upload to DNR's secure FTP site.

LSLI does NOT apply to Transient Non-Community Water Systems, "non-system" private wells, & "wholesalers" with no distribution system

Start by entering all street addresses for residences. For service lines without street address--use location identifier (GPS or fixed# reference)

Must list total number of service lines in the water system and as many identified materials as possible (goal is to eliminate unknowns). System must show progress each time they submit updated inventory.

Includes all service lines in the distribution system regardless of actual or intended use. Even if this service is not currently connected to a house—it could be in the future.

Beneficial to identify as many unknowns as possible before submission. Remaining unidentified service lines are “Unknown: Possibly Lead”

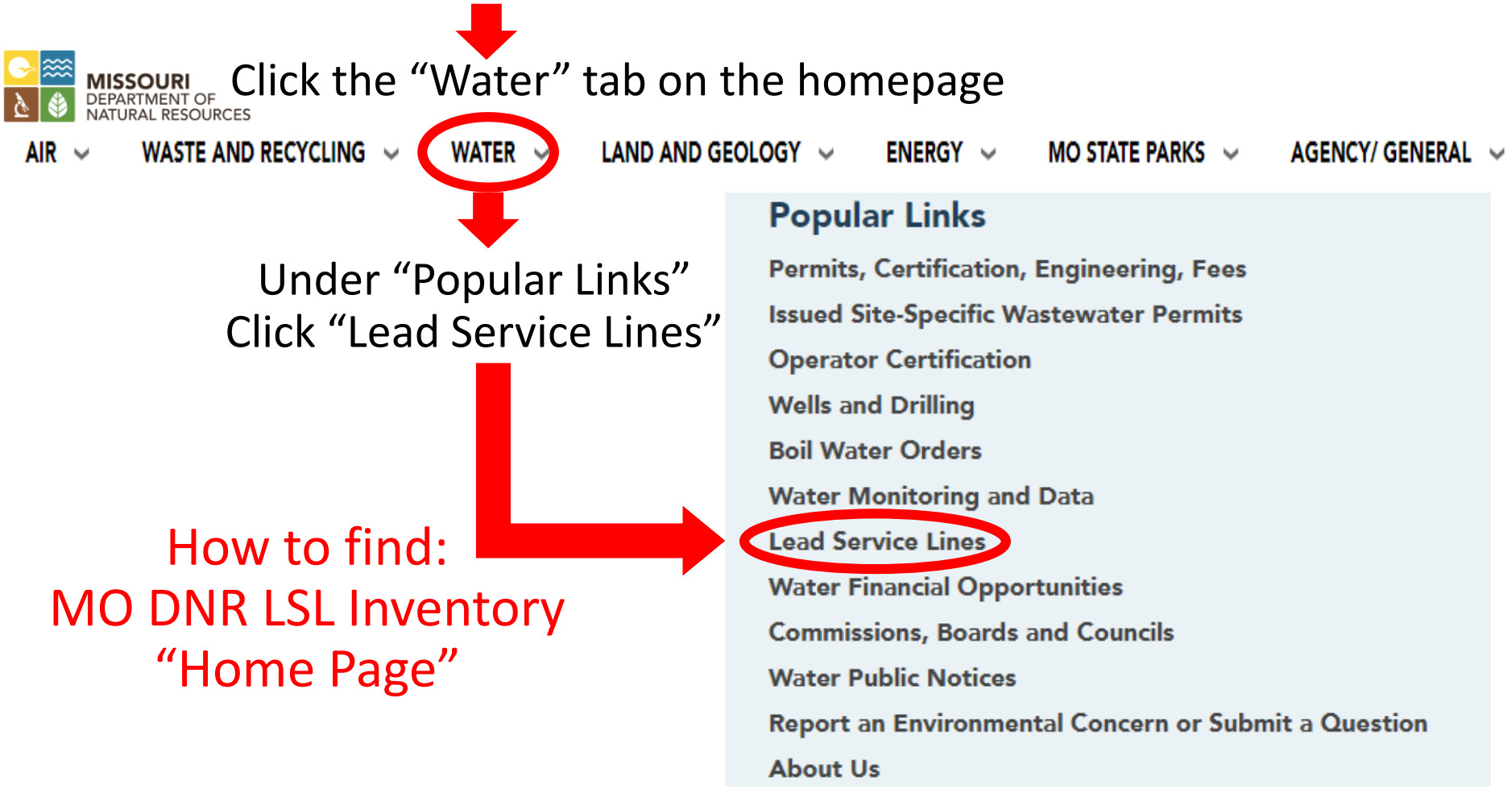
“Unknowns” are “guilty” (Lead) until “proven innocent” (Non-lead). LCRR requires systems to notify customers annually until the given “unknown” is verified to be “non-lead.” GRR treated same as LSL.

Provide updated LSLI spreadsheet to MO DNR on a 1 or 3 year basis (After initial, it follows Lead & Copper monitoring schedule)

Inventory Instructions: Tab 1

Table 2: Water System Acronym Definitions
PWS = Public Water System
CWS = Community Water System
NTNCWS = Non-Transient Non-Community Water System
TNCWS = Transient Non-Community Water System
LSL = Lead Service Line
LSLI=Lead Service Line Inventory
LSLR = Lead Service Line Replacement
LCR = "Old" Lead & Copper Rule (Rule set that is currently active regarding compliance as of 2022)
LCRR = Lead & Copper Rule Revisions (Rule set that is effective but not compliant as of 2022)
LCRI = Lead & Copper Rule Improvements (If proposed, new rule might replace LCRR before Oct 16, 2024)
SA = Sample Administrator (The person in charge of sampling for the Public Water System)
DO = Designated Operator (The certified operator in charge of the Public Water System)
DNR = MO Department of Natural Resources (The State regulatory agency)
EPA = US Environmental Protection Agency (The Federal regulatory agency)

In Web Browser search bar: type “DNR.MO.GOV” and press “Enter”



This is the main homepage of MoDNR LSLI:

According to the U.S. Environmental Protection Agency, the most common sources of lead in drinking water are lead pipes, faucets and fixtures. This includes the service line that carries water to a home or building from the public water main. The federal government banned using leaded pipe and solder in new plumbing in 1986. Missouri's lead ban became effective Jan. 1, 1989. Plumbing installed before this ban may contain lead.

The lead free standard effective in 1989 allowed 8% lead in pipes, fittings and fixtures and 0.2% lead in solder. On Jan. 4, 2014, the **Reduction of Lead in Drinking Water Act** changed the lead free standard to 0.25% lead as a weighted average on all wetted surfaces for pipes, fittings and fixtures. The standard for solder remained the same at 0.2% lead.

An old lead service line is attached to this water meter.

What are we Doing?

The Missouri Department of Natural Resources is helping Missouri's water systems develop an initial lead service line inventory. An inventory is required for all Community and Non-transient Non-community water systems. The water system is required to submit an initial inventory to the department on or before Oct. 16, 2024. The department developed various documents and other media that focus on specific information, which are locate within the links below.

There are also financial assistance programs available for lead service line inventories and lead service line replacements. Links to these programs, and other information as it becomes available, are provided below.

Questions?

Scroll down to bottom of the page

If you have questions concerning lead service line inventories or lead service line replacements, please contact either of the following department team members:

- Austen Dudenhoeffer: **573-751-6171** or **austen.dudenhoeffer@dnr.mo.gov**
- Jeff Pinson: **573-751-1406** or **jeff.pinson@dnr.mo.gov**

In This Section:

Lead in Drinking Water: How to Protect your Health - PUB2409 ← Click this link for Health Information

Do you have a Lead Service Line? - PUB3046 ← Pictures for identification

How to Identify your Water Service Line Material - PUB3052 ← Guide sheet for identification

Lead Service Line Identification Procedures - Video ← Click this link for video on Identification

Lead Service Line Inventory ← Click to download **MoDNR LSLI Spreadsheet**

Financial Assistance ← Click this link for Financial Assistance information

MISSOURI DEPARTMENT OF NATURAL RESOURCES

AIR ⌄ WASTE AND RECYCLING ⌄ WATER ⌄ LAND AND GE

DROUGHT ALERT - Drought conditions persist in 52% of Missouri, with severe drought conditions i

Lead Service Line Inventory

Or, Google Search "MO DNR Lead Service Line Inventory"

This page contains useful information that will help public water systems develop their initial **lead service line** inventory. Additional documents will be added as they become available, so check back occasionally.

Link to view EPA Federal Guidance

The U.S. Environmental Protection Agency (EPA) released its **Guidance for Developing and Maintaining a Service Line Inventory** on Aug. 4, 2022. This document can also be found on EPA's **Revised Lead and Copper Rule** webpage. On that webpage is also a link to a recording of EPA's webinar about the guidance and template, held Aug. 10, 2022.

Inventory Spreadsheets

The department developed Lead Service Line Inventory spreadsheets, which are the required reporting form for each public water system. To avoid unneeded or additional inventory efforts, do not use EPA's inventory spreadsheet for reporting to the department. The two spreadsheets provided below are the same, but are different sizes in order for public water systems to use the one best needed for their size. Click on the appropriate link below to download a zipped Microsoft® Excel® file containing the spreadsheet.

Links to download MoDNR LSLI Spreadsheet

- **Small/ Medium System Lead Service Line Inventory (LSLI) spreadsheet** (2 MB) ← Small/Medium 10,000 service lines
- **Large System Lead Service Line Inventory (LSLI) spreadsheet** (15 MB) ← Large 500,000 service lines

*These are large files, which may result in a long download time for individuals with slow internet connections. If you have any problems accessing these spreadsheets, please contact the department's Water Protection Program, Public Drinking Water Branch.

Google Search “MO DNR Lead Service Line Inventory”

Education Documents

These documents may be helpful to get water system customers involved in identifying their service lines. Each document is a different contact method for informing and educating customers about the lead service line inventory that water systems are conducting. These methods can be used according to the circumstances water systems may encounter. These documents can be edited so water systems can insert their contact information for customers to ask questions about how to identify their service line material. Customers can also use the contact information to report their service line material composition.

- **Water System Bill Stuffer**
- **Water System Door Hanger**
- **Lead in Drinking Water Flier**

The following document can be used to inform customers that have a lead service line, have a disturbance to a lead service line or a service line of unknown material composition about the health effects of lead exposure and how to reduce the amount of lead in their drinking water.

- **Lead in Drinking Water: Important Information on How to Protect your Health**

The following document contains answers to the most frequently asked questions concerning lead service line inventories. The questions are ones the department has received from contacts with public water systems and customers.

- **Lead Service Line Inventory Frequently Asked Questions - PUB3042**

Questions?

If you have questions concerning lead service line inventories, please contact either of the following department team members:

- Austen Dudenhoeffer: **573-751-6171** or **austen.dudenhoeffer@dnr.mo.gov**
- Jeff Pinson: **573-751-1406** or **jeff.pinson@dnr.mo.gov**

ID Methods Approved for Missouri: System & Customer sides separately

1 = Visual Inspection at Meter Pit
2 = Customer Self-Identification
3 = CCTV Inspection at Curb Box - External
4 = CCTV Inspection at Curb Box - Internal
5 = Mechanical Excavation
6 = Vacuum Excavation
7 = Paper Records (>10% Validated Accuracy)
8 = Digital/Database Records (>10% Validated Accuracy)
9 = Water Quality Sampling - Targeted
10 = Water Quality Sampling - Flushed
11 = Water Quality Sampling - Sequential
12 = Water Quality Sampling - Other
13 = Predictive Modeling (Not ID Method)
14 = Other

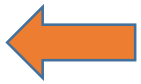
System >50,000 population must make inventory "publically accessible" online (Privacy Laws may apply?)

The system is NOT required to use street address/locations in the "publically accessible" version posted online.

However, the address/specific ID# must be included in the submission to the State (MoDNR) and PWS internal tracking

- ☐ Interactive online map
- ☐ Static online map
- ☐ Online spreadsheet
- ☐ Printed service line map
- ☐ Printed tabular data
- ☐ Information on water utility mailings or newsletter
- ☐ Hard copy information available in water system office
- ☐ Other

If "Other", please describe:



Multiple options to satisfy EPA's online posting requirement

EPA Guidance on Developing & Maintaining LSLI, A-7, pg 112 of 164 in PDF
https://www.epa.gov/system/files/documents/2022-08/Inventory%20Guidance_Final%20080322_1.pdf

Customer Communication:

The owner of the water system inherits the responsibility of maintaining & developing the service line inventory as a "living document."

Communication with customers is key to identify privately-owned side?

Systems can assure customers they will not "get in trouble" if a Lead Service Line is discovered. There is no penalty or fine if customer refuses to replace privately-owned LSL or GRR. Most will probably be non-lead.

The PWS has right of easement to perform meter inspections, but PWS needs permission before entering private property. Customers have the right to refuse access to private property for inventory or replacements. If so, the system should document this as a "refusal" and move on. That service line must remain classified as "Unknown: Possibly Lead"

In order to use low interest loans or grants through BIL/DWSRF, the customer must agree to "full replacement" of a confirmed LSL or GRR. Partial replacements are not eligible to use federal funding allocations.

Systems may offer a monetary incentive, such as water bill credit, for customers who take a picture of the service line entering their house and text/email it to the system. System verifies & keeps records as "proof"

Funding Opportunities: MoDNR Financial Assistance Center (FAC)
Email: fac@dnr.mo.gov Phone: (573) 751-1192

ARPA Funds: "American Rescue Plan Act" Inventories only—not LSLR
>1,000 Missouri PWS applied: this fund is already allocated

~$15 billion through BIL/DWSRF: option to hire contract services
Can be used for inventories and "full" replacements of LSL/GRR
Low interest loans, grant component with principle forgiveness
Priority ranking criteria: 49% for underserved communities/small PWS

To apply for and receive LSL/GRR Replacement funding—
the PWS must demonstrate LSL/GRR is present and how many?

Only "full replacements" of service line qualify for federal funding
Includes "system-owned" & "customer-owned" portions together

If customer "refuses" access for identification or replacement—
PWS should document this refusal and "move on"
(education/communication is key)

If customer/staff saw service lines installed—they can sign notarized affidavit. This counts as "visual inspection"—no need to dig it up again.

Use paper or digital records (if available) to eliminate as many unknowns as possible. Each record set (regardless of year) must have ≥ 10% validation (ideally, visual inspection with at least 95% accuracy)—to prove the record set is reasonably reliable. Look at tap cards, plumbing permits/codes, maintenance records, meter installation records, "As Built" plans, & property tax records?

Get list from County Assessor "What year was building constructed?" After the January 1, 1989 Missouri Lead Ban, it was technically "illegal" to install a LSL. Therefore, records of buildings constructed after 1989 can be validated as "other non-lead" service lines--if 10% visual inspection (with 95% accuracy) proves PWS complied with 1989 Missouri Lead Ban.

For example, there are 1,000 buildings constructed after 1989—you visually inspect 10% of these (100 total) and find that 95 of them are "non-lead." The record is good. If 6 or more of the 100 sampled are confirmed Lead—other records/approved ID methods must be used. Buildings pre-1989 could have a LSL (need other records/ID methods?)

Limitations of certain ID Methods:

Customer side is biggest challenge. Customer Self Identification: door hangers, mail paper surveys, offer incentive to text/email a picture to water system? Saves time/hassle of gaining access to private property.

Volunteers/summer hires to help identify service lines & for outreach? Free to watch our service line identification video (link below): https://www.youtube.com/watch?v=1JUGIpuH9a4

Somebody trained needs to verify it is Lead, Copper, Galvanized, or Colored Plastic? Customer texts/emails picture with street address.

MoDNR does NOT consider Predictive Modeling approved ID Method. It may serve as indicator for targeted search to utilize limited funding.

Sequential sampling may not work: treatment prevents pipe leaching? Natural calcium hardness/orthophosphate can inhibit corrosion, prevent leaching, and mask presence of Lead pipe?

Electrical Resistivity: not yet approved by EPA for drinking water? It is used for waste water, but not ID Method for LSLI yet? Stay tuned

Visual inspection has the greatest accuracy of any method (undeniable current proof of what is actually "in the ground")

EPA recommends **3 Points of Identification** for visual inspections:
1 on each side of the meter and 1 near foundation of building.
Can system staff or customer see service line entering the basement?
Otherwise, might need to "pot hole" at outer wall foundation to see?

Some systems do not have connectors—and the service lines are visible in the meter pit? Most will need to "pot hole" several feet on each side of meter to see past connectors.

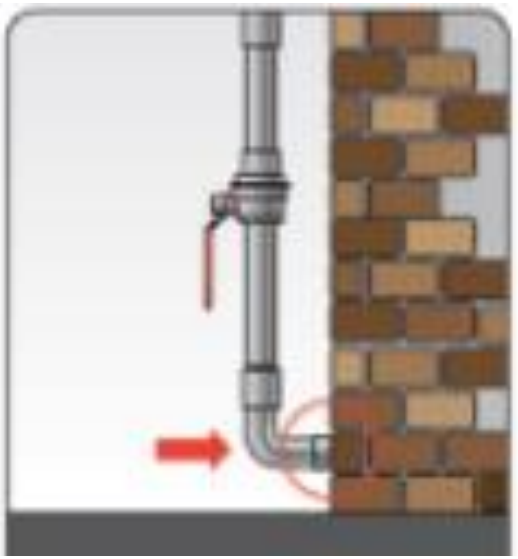


Photo credit: US EPA "Guidance on Maintaining and Developing LSLI" & MoDNR Webpage

Inventory needs to begin first to find where LSL are located? However, you can get started with replacements before inventory is completed (Some replace LSL or GRR when found during potholing disturbance). Galvanized may be rusty and “crumble” when disturbed (replace it).

If disturbance of LSL, PWS should provide pitcher filter & flushing instruction to residents. Filter is NSF/ANSI 53 Certified to remove Lead

To use federal funding, EPA specifies “full-replacement” of the LSL is required.

For confirmed LSL & GRR, systems may have percentage “goal based” replacement plan. LCRR says 3% annually is required if system exceeds “Trigger Level” or the Lead “Action Level”

LCRR has “two year rolling average”
(If 1% replaced first year, then 5% replacements required 2nd year)

NOTE:* If LCRI is proposed during summer 2023, these LSL replacement percentages could change? Stay tuned for updates

First, read “Instructions Tab” and click column headings on “MO_LSLI” tab.

Type the Public Water System ID# in orange cell “A3” and press “Enter.”

Start by listing all street addresses for service lines in your water system.

You can still have “unknowns,” but must put “something” for each service line for the initial LSLI submission by October 16, 2024 to MoDNR. PWS will submit updated LSLI to MoDNR on a 1 or 3 year basis (monitoring)

For service lines that do not have a street address—leave address line blank and use location identifier in “System Specific ID” (Column B).

System Specific ID needs to be a fixed reference# that does not change: Can use GPS coordinate (decimal degrees) or a “made up” number/code. Some use Meter# or Account#, but these will change over time and need to be updated?

To get free GPS coordinates: you can open “Google.com/maps” and click a point on satellite base-map where service line is? (acceptable accuracy). Please note smart phone GPS or “cheap GPS” has 10-20 feet inaccuracy. To mark GPS in the field, some use mapping grade receiver (costs $8,000). A cheaper option is monthly subscription based (e.g. Trimble Catalyst or other brands). The State does not endorse or market any specific brands.

History of Lead Reduction Acts in the State of Missouri:

- June 19, 1986: Safe Drinking Water Act (SDWA) National Lead Ban
- 1988 Lead Contamination Control Act (LCCA) enacted by Congress to protect schools/childcare (remove lead-lined water-cooler tanks)
- January 1, 1989: **Missouri Lead Ban** effective date:
  It was "illegal" to install a LSL in Missouri after this date
  - 100% Lead water pipes reduced to ≤ 8% Lead
  - 50% Lead solder reduced to 0.2% Lead for plumbing
- 1991 original Lead & Copper Rule (LCR) becomes effective as a "National Primary Drinking Water Regulation"
- August 6, 1998 Leaded plumbing fixtures "banned" from sale in USA
- 2011 Reduction of Lead in Drinking Water Act (RLDWA)
  Effective: January 4, 2014 in Missouri
  - Amends 1986 SDWA to define "Lead free" water pipes & fittings ≤ 0.25% Lead (instead of ≤ 8%)

January 15, 2021 – “Lead & Copper Rule Revisions” (LCRR) published in Federal Register "86 FR 4198” “New Primary Drinking Water Regulation”

January 20, 2021 – Executive Order 13990 delays “effective date” (Presidential directive)

March 12, 2021 – EPA ruled to delay effective date until June 17, 2021 to allow time for public comment

April-August 2021 – EPA engagement for public input and received >80,0000 comments

On June 16, 2021 – EPA said new “effective date” of LCRR is December 16, 2021 and new “compliance date” is October 16, 2024

December 16, 2021 – LCRR did become “effective” on this date

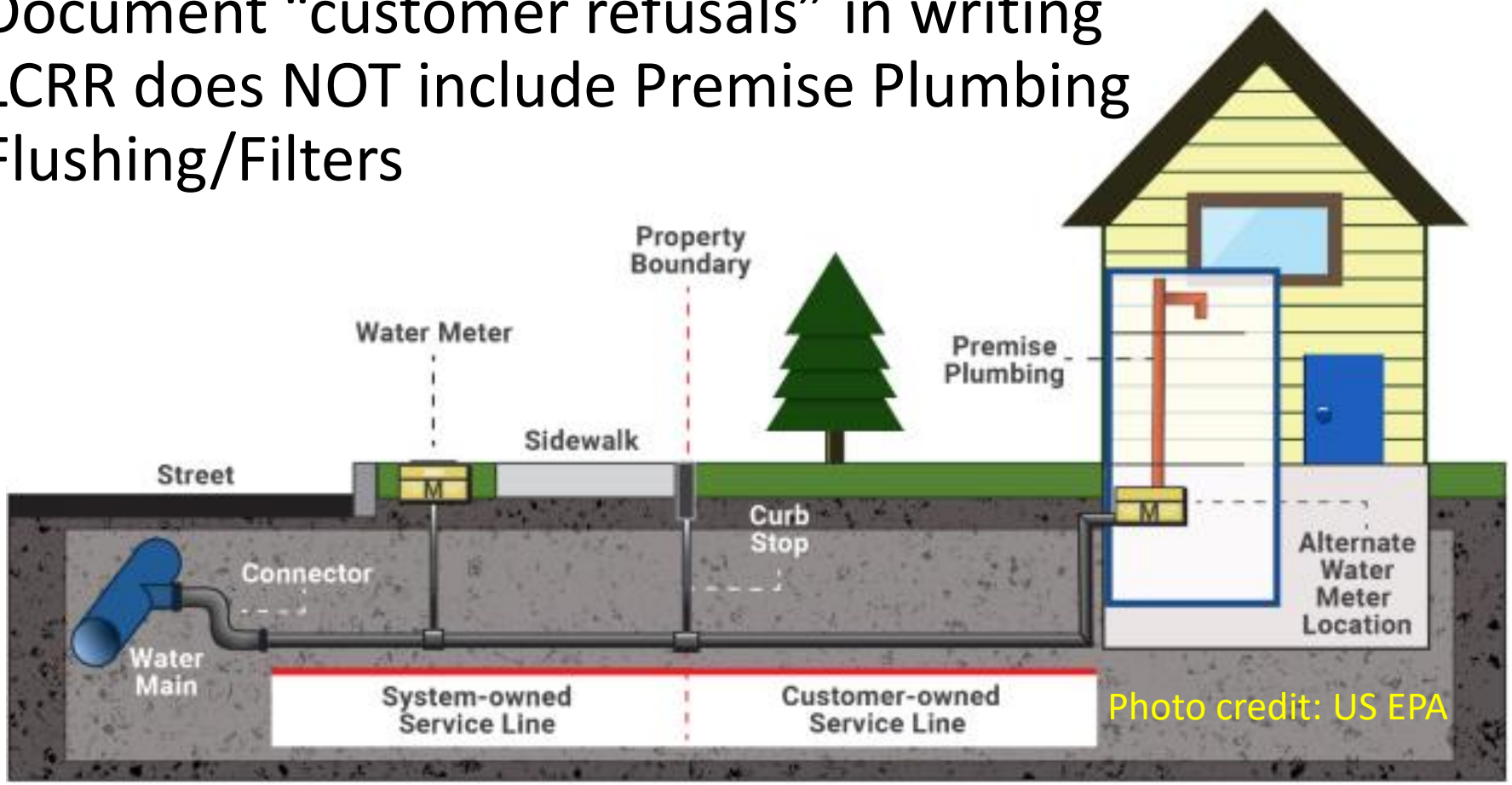
December 17, 2021 – EPA announced intention to propose “Lead & Copper Rule Improvements” (LCRI) to replace LCRR before October 16, 2024 compliance date?

August 4, 2022 – EPA Federal Guidance on maintaining & developing LSLI (>160 pages)

September 12, 2022 – LSL Inventory Excel Spreadsheet published: MO DNR webpage

October 16, 2024—Deadline to submit initial LSLI spreadsheet to MoDNR

Define: PWS, Service Line, Premise Plumbing
Connectors are classified separately: “Find & Fix”
Initial LSLI by October 16, 2024 for CWS & NTNCWS
“System Owned” & “Customer Owned”
“All service lines regardless of actual or intended use”
Document “customer refusals” in writing
LCRR does NOT include Premise Plumbing
Flushing/Filters



Service Line Material Identification: Visual Inspection

Lead	**Galvanized**	**Copper**	**Plastic**
Dark bluish-grey	Grey, rusty brown, or black paint	Gold color or green patina	White=PVC Black=HDPE Blue=PEX
Silver streak	Silver streak	Gold streak	Color infused
Non-magnetic	Magnetic	Non-magnetic	Non-magnetic
≤ 2 inch pipe wiped lead joint	Exposed threads zinc coated steel or iron	Gold color or green patina	Looks and feels like plastic

Photo credit: Missouri American/MO DNR

EPA's definition of "Galvanized Requiring Replacement":

(ii) "Galvanized Requiring Replacement" where a galvanized service line is or was at any time downstream of a lead service line or is currently downstream of a "Lead Status Unknown" service line. If the water system is unable to demonstrate that the galvanized service line was never downstream of a lead service line, it must presume there was an upstream lead service line.

40 CRF, Ch 1, Subpart 1 (7-1-21 Edition) 141.84, pages 578 (pg 22 of 70 in PDF)

"Find and Fix" Lead connectors during planned or unplanned infrastructure work.
"Full Replacements" of LSL & GRR service lines to be eligible for federal funding.

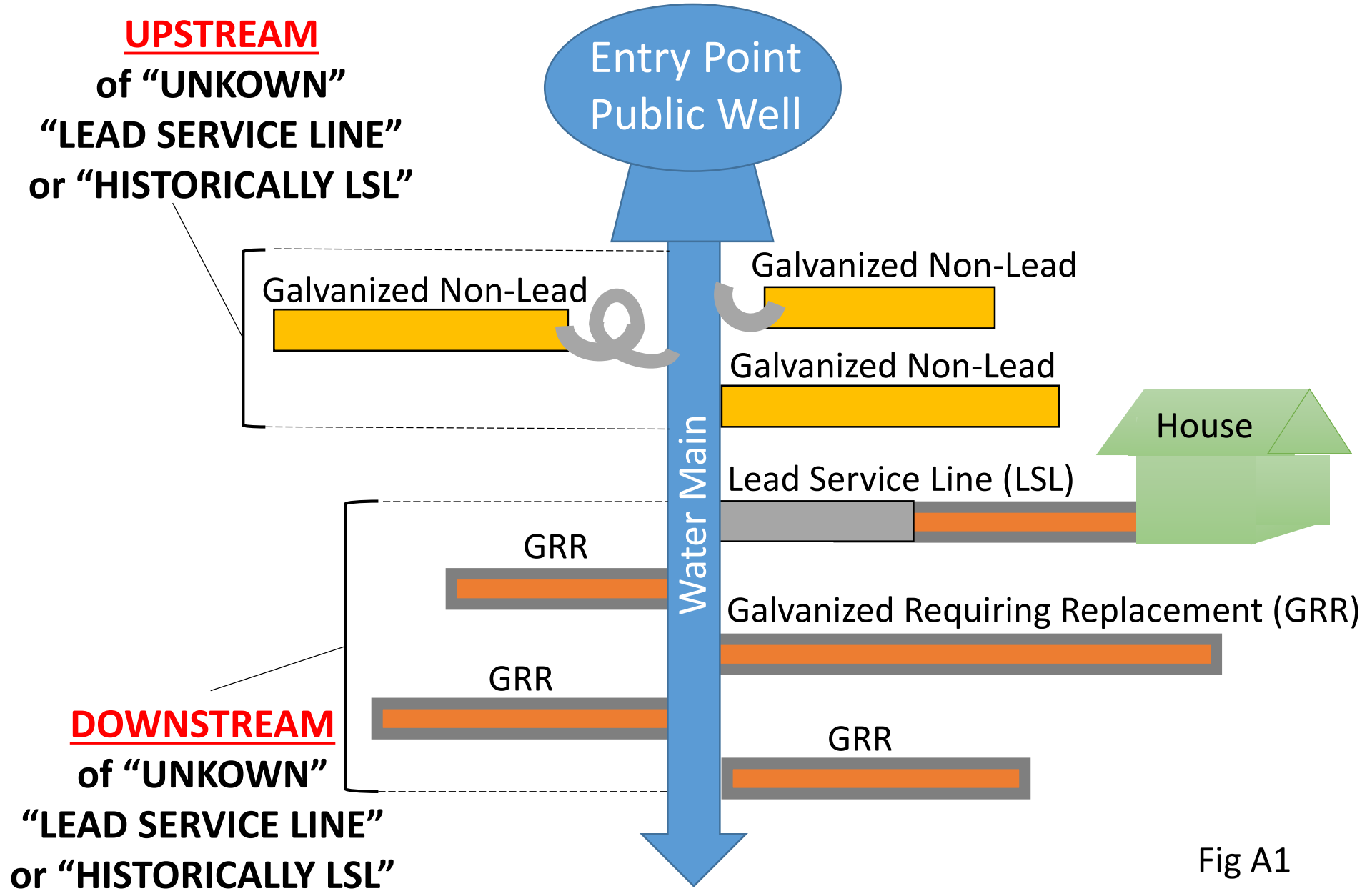


Fig A1

"Find and Fix" Lead connectors during planned or unplanned infrastructure work.
"Full Replacements" of LSL & GRR service lines to be eligible for federal funding.

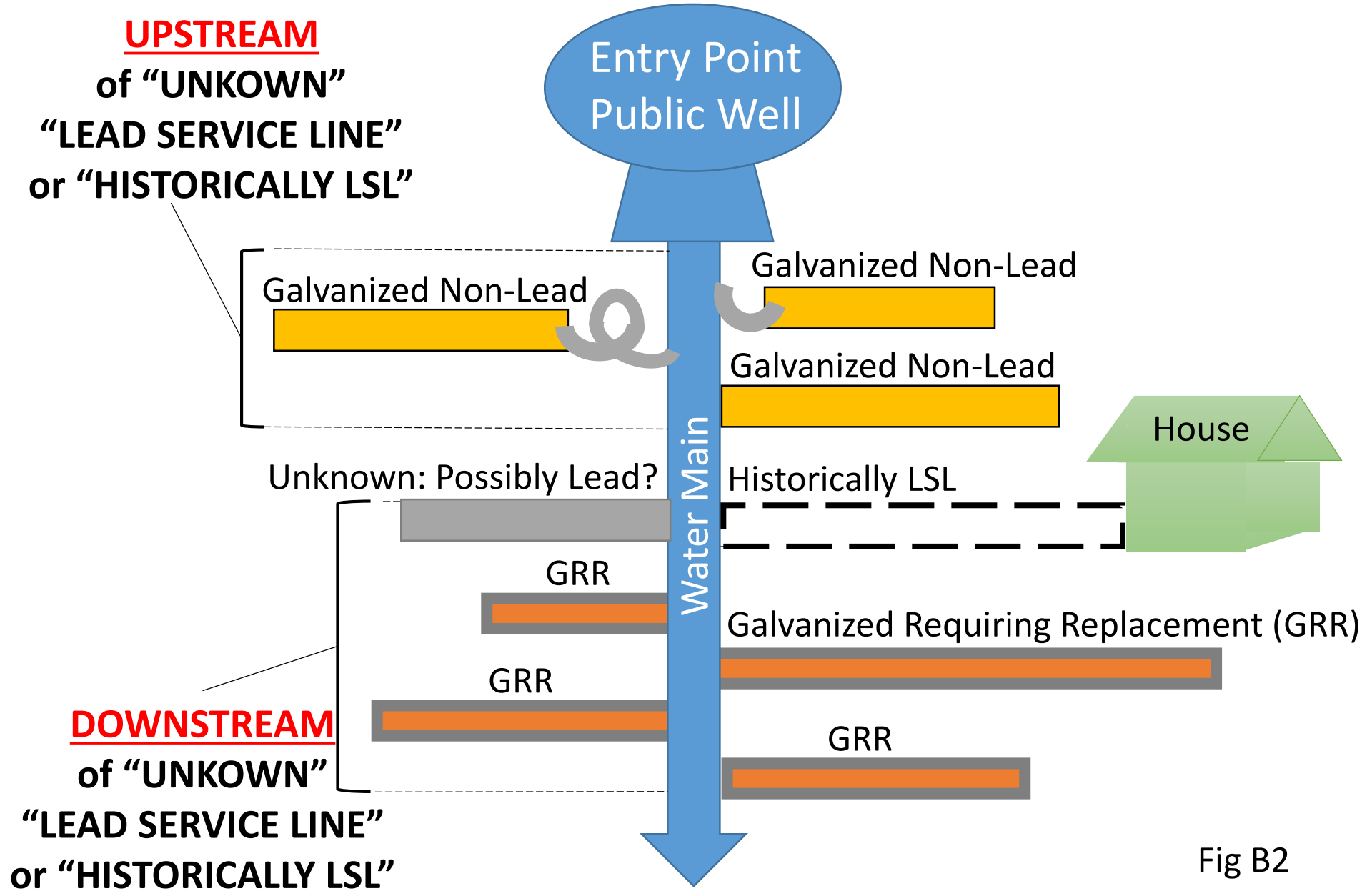


Fig B2

EPA Region 7 confirmed: If primary system has LSL, historically LSL, or any remaining "unknown" service line—all galvanized service lines downstream in secondary system would be classified as GRR (depends if the same water flows through 2nd system?).

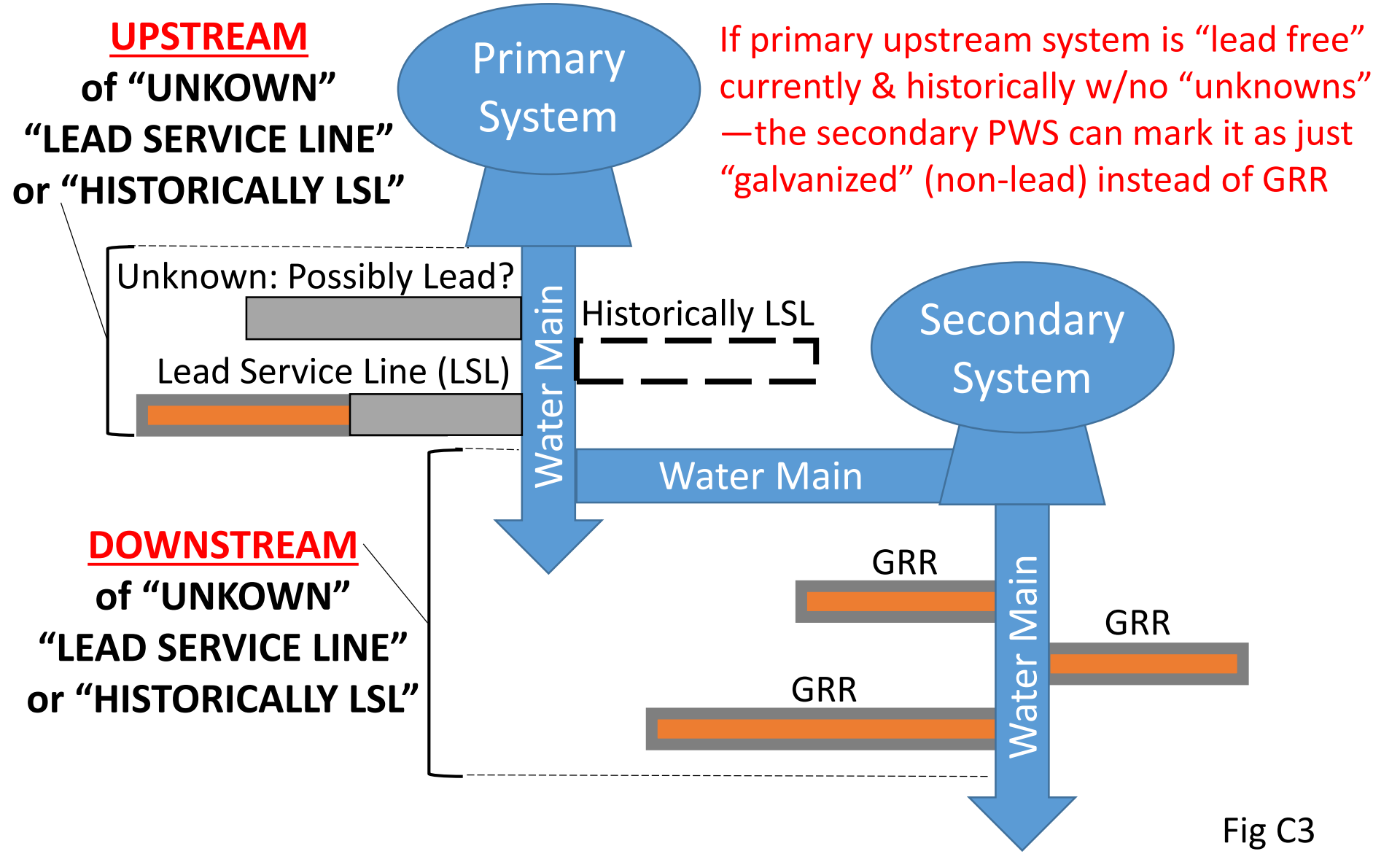


Fig C3

Lead Service Line Inventory Spreadsheet:

Previously, a lead connector was included in the LSL definition:

"A service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such lead line"

LCRR 40 CRF, Ch 1 (7-1-21 Ed) 141.2, p 435.

However, EPA amended this definition later in the LCRR.
Lead connectors are now classified separately from a LSL:

"Gooseneck, pigtail, or connector is a short section of piping, typically not exceeding two feet, which can be bent and used for connections between rigid service piping. For the purposes of this subpart, lead goosenecks, pigtails, and connectors are **not** considered to be part of the lead service line but may be required to be replaced pursuant to 141.84 (c)."

40 CRF, Ch 1 (7-1-21 Edition), 141.2, pg 440-441

“Find and Fix” provision for Lead Connectors:

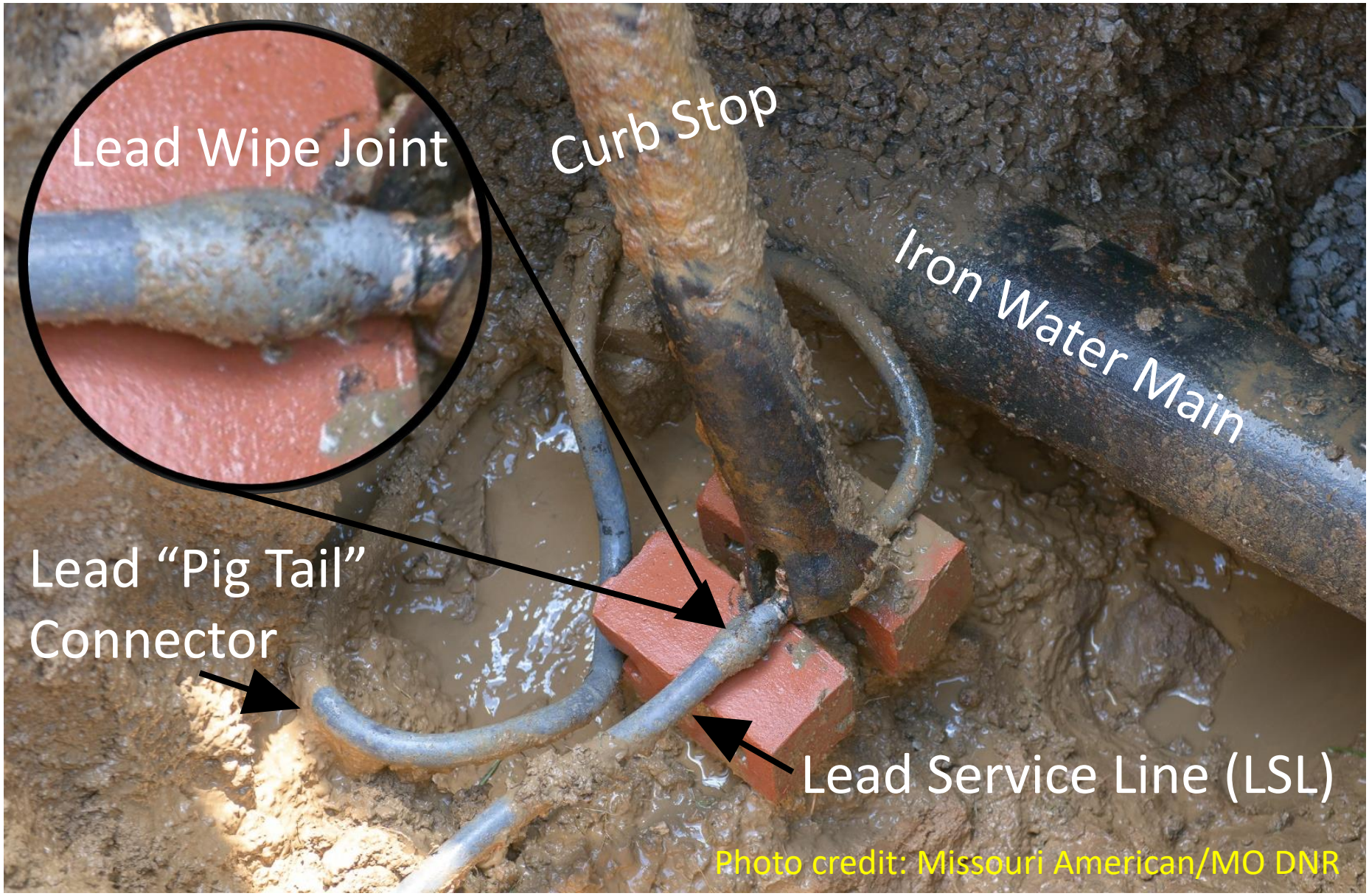
(c) *Operating procedures for replacing lead goosenecks, pigtails, or connectors.* (1) The water system must replace any lead gooseneck, pigtail, or connector it owns when encountered during planned or unplanned water system infrastructure work.

(2) The water system must offer to replace a customer-owned lead gooseneck, pigtail, or connector; however, the water system is not required to bear the cost of replacement of the customer-owned parts.

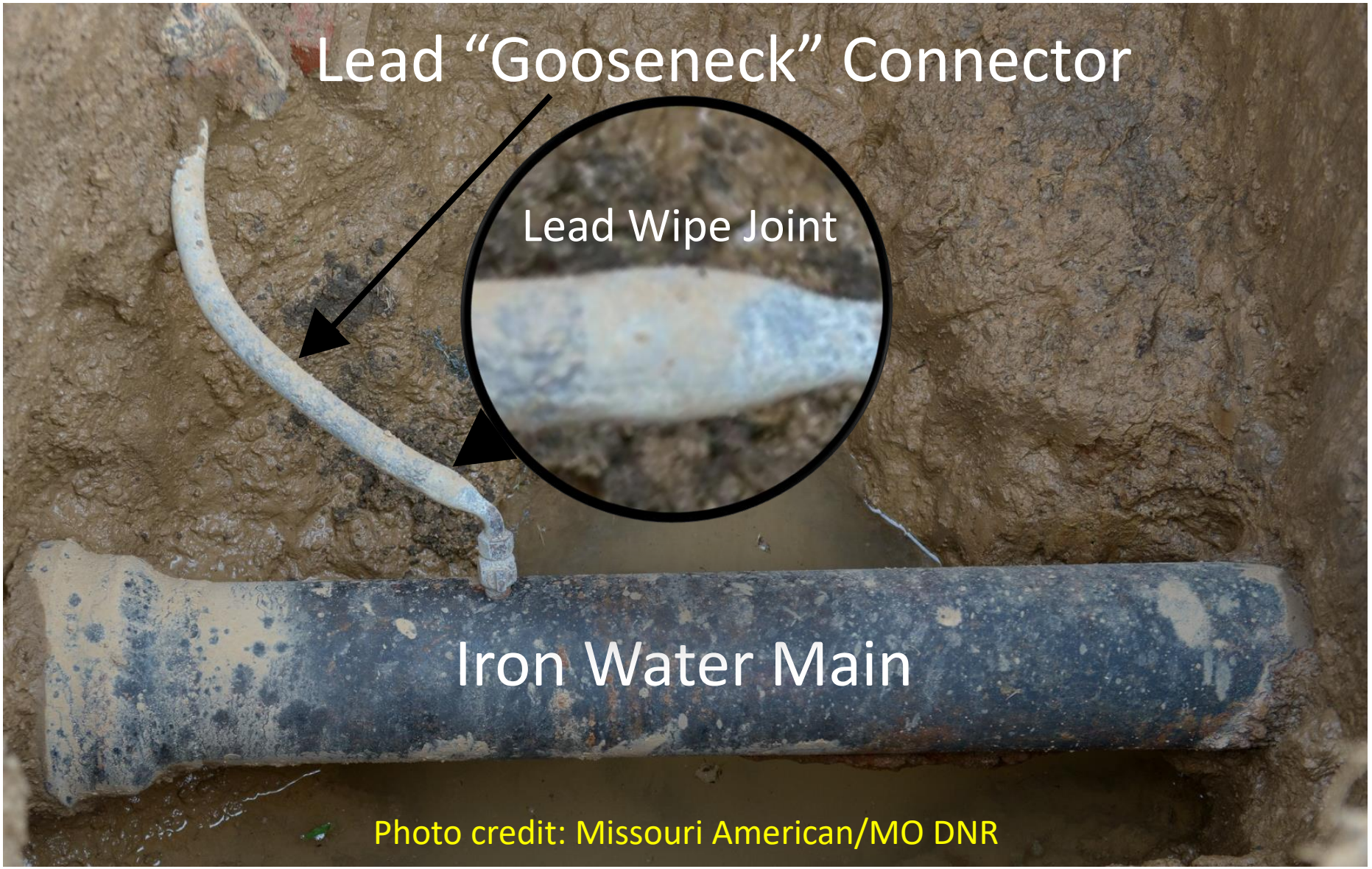
(3) The water system is not required to replace a customer-owned lead gooseneck, pigtail, or connector if the customer objects to its replacement.

40 CFR, Vol25, Part 141.84, Subpart 1 (7-1-21 edition) pg 579
(pg 23 of 70 in PDF)

Confirmed Lead Service Line (LSL) & “Pig Tail”



Is this a confirmed LSL or not? (See pile of bricks)



Lead Service Line Inventory Spreadsheet:

In the state of Missouri, the connector alone does NOT make it a LSL or GRR according to the LCRR:

In Missouri, a section of the service line itself must be Lead to be classified as a “Lead Service Line.”

> (4) Each service line, or portion of the service line where ownership is split, must be categorized in the following manner:
> (i) ‘‘Lead’’ where the service line is made of lead.

40 CRF, Vol 25, Part 141.84, Subpart 1 (7-1-21 Edition) page 578 (pg 22 or 70 in PDF)

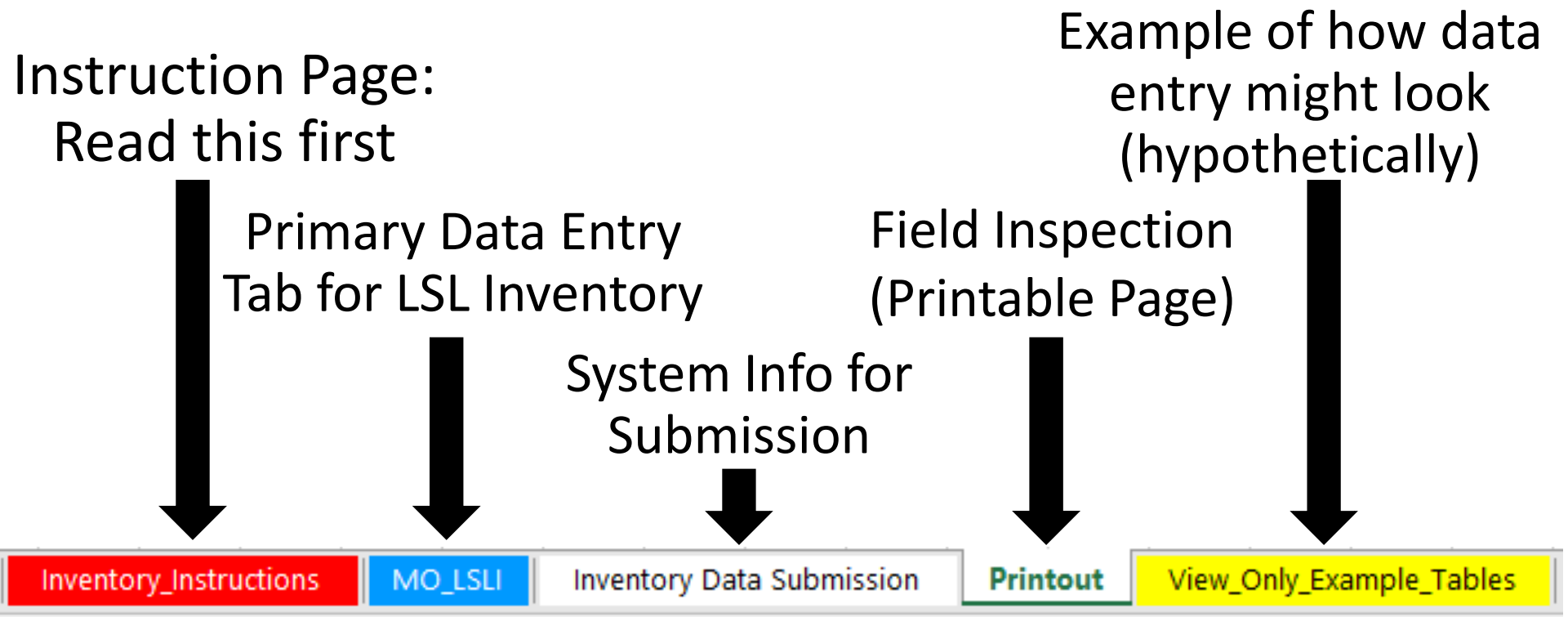
The terms “LSL” and “GRR” are treated the same as far as disturbance & replacement requirements

Exhibit 2-3: Classifying Service Line Materials When Ownership is Split According to the LCRR 40 CFR §141.84(a)(4)

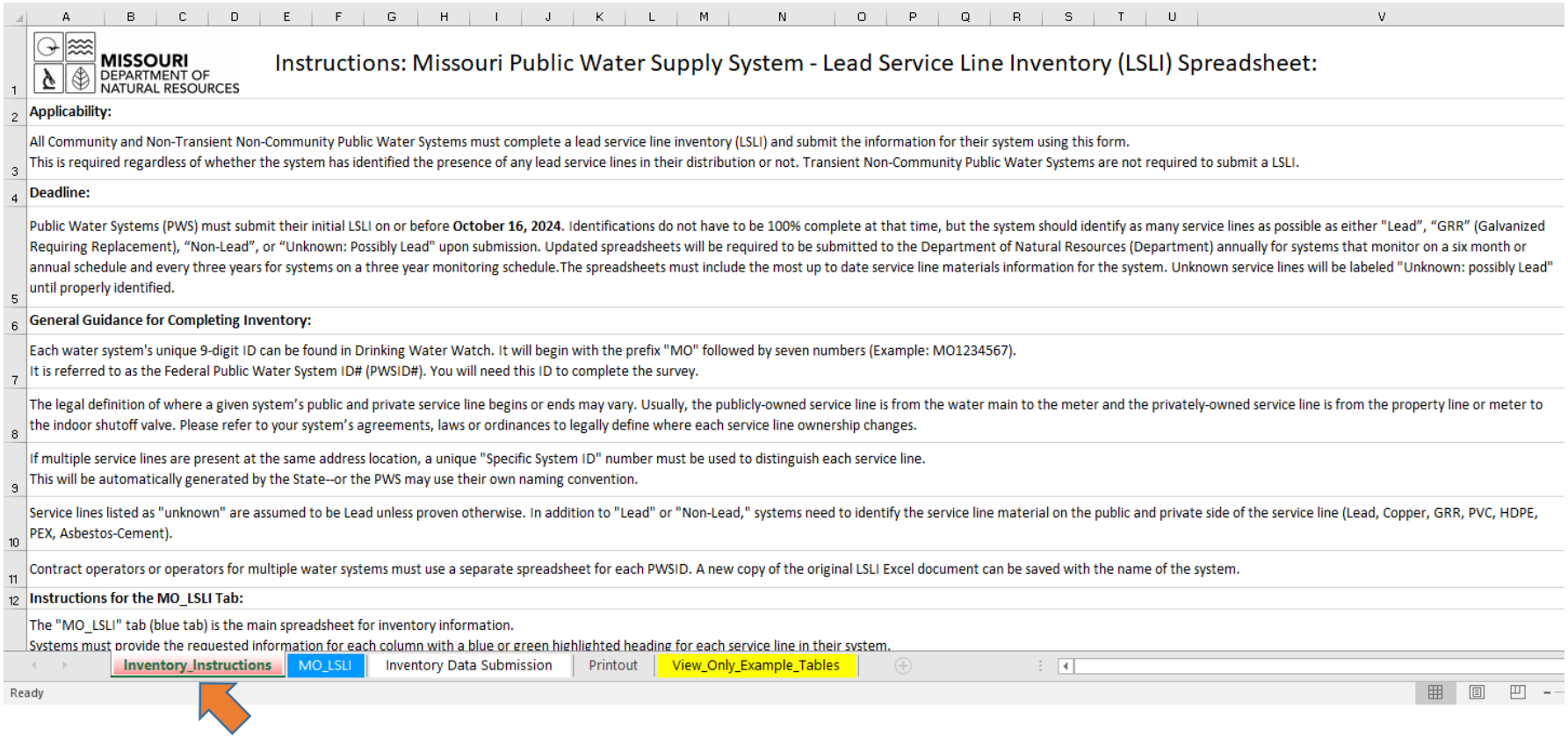
EPA Guidance Aug 4, 2022

System-Owned Portion	Customer-Owned Portion	Classification for Entire Service Line
Lead	Lead	Lead
Lead	Galvanized Requiring Replacement	Lead
Lead	Non-lead	Lead
Lead	Lead Status Unknown	Lead
Non-lead	Lead	Lead
Non-lead and never previously lead	Non-lead, specifically galvanized pipe material	Non-lead
Non-lead	Non-lead, material other than galvanized	Non-lead
Non-lead	Lead Status Unknown	Lead Status Unknown
Non-lead, but system is unable to demonstrate it was not previously Lead	Galvanized Requiring Replacement	Galvanized Requiring Replacement
Lead Status Unknown	Lead	Lead
Lead Status Unknown	Galvanized Requiring Replacement	Galvanized Requiring Replacement
Lead Status Unknown	Non-lead	Lead Status Unknown
Lead Status Unknown	Lead Status Unknown	Lead Status Unknown

MoDNR Lead Service Line Inventory Spreadsheet Tabs



Inventory Instructions: Tab 1



MISSOURI DEPARTMENT OF NATURAL RESOURCES

Instructions: Missouri Public Water Supply System - Lead Service Line Inventory (LSLI) Spreadsheet:

Applicability:

All Community and Non-Transient Non-Community Public Water Systems must complete a lead service line inventory (LSLI) and submit the information for their system using this form.
This is required regardless of whether the system has identified the presence of any lead service lines in their distribution or not. Transient Non-Community Public Water Systems are not required to submit a LSLI.

Deadline:

Public Water Systems (PWS) must submit their initial LSLI on or before **October 16, 2024**. Identifications do not have to be 100% complete at that time, but the system should identify as many service lines as possible as either "Lead", "GRR" (Galvanized Requiring Replacement), "Non-Lead", or "Unknown: Possibly Lead" upon submission. Updated spreadsheets will be required to be submitted to the Department of Natural Resources (Department) annually for systems that monitor on a six month or annual schedule and every three years for systems on a three year monitoring schedule.The spreadsheets must include the most up to date service line materials information for the system. Unknown service lines will be labeled "Unknown: possibly Lead" until properly identified.

General Guidance for Completing Inventory:

Each water system's unique 9-digit ID can be found in Drinking Water Watch. It will begin with the prefix "MO" followed by seven numbers (Example: MO1234567).
It is referred to as the Federal Public Water System ID# (PWSID#). You will need this ID to complete the survey.

The legal definition of where a given system's public and private service line begins or ends may vary. Usually, the publicly-owned service line is from the water main to the meter and the privately-owned service line is from the property line or meter to the indoor shutoff valve. Please refer to your system's agreements, laws or ordinances to legally define where each service line ownership changes.

If multiple service lines are present at the same address location, a unique "Specific System ID" number must be used to distinguish each service line.
This will be automatically generated by the State--or the PWS may use their own naming convention.

Service lines listed as "unknown" are assumed to be Lead unless proven otherwise. In addition to "Lead" or "Non-Lead," systems need to identify the service line material on the public and private side of the service line (Lead, Copper, GRR, PVC, HDPE, PEX, Asbestos-Cement).

Contract operators or operators for multiple water systems must use a separate spreadsheet for each PWSID. A new copy of the original LSLI Excel document can be saved with the name of the system.

Instructions for the MO_LSLI Tab:

The "MO_LSLI" tab (blue tab) is the main spreadsheet for inventory information.
Systems must provide the requested information for each column with a blue or green highlighted heading for each service line in their system.

Inventory_Instructions | MO_LSLI | Inventory Data Submission | Printout | View_Only_Example_Tables

Ready

Inventory Instructions: Tab 1

Blue is a “required” field to manually enter data
Enter data you have or put “unknown” until verified? Lead connectors?

Green is a “required” field with drop down menu options (double left click or copy/paste). Excel only displays 8 options at a time here—drag the scroll bar “up/down” to see others

Pink is “optional” field, but needed for sample site “risk tier” calculation and helpful for “sample site pool” customer contacts? Additional blank columns are “unlocked” on the far right for system’s personal use.

Yellow is “locked” fields that auto-calculate based on embedded formulas. To populate yellow cells, you must enter information in blue, green, and pink columns

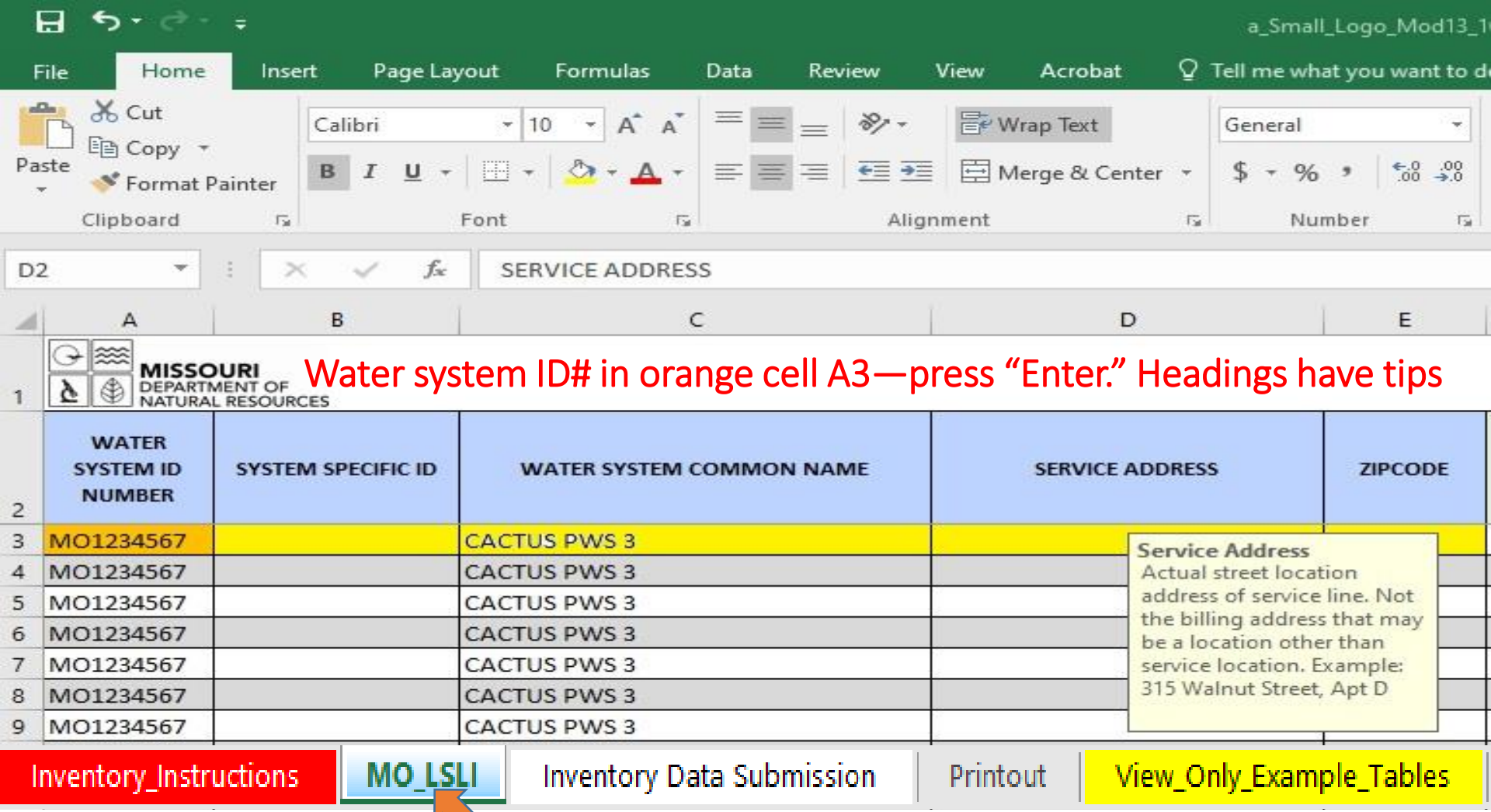
Inventory Instructions: Tab 1

Enter one or more identification methods used
Such as as “1” or “1,3” or “2,7,8” etc.

Table 1: PWS-Owned Service Line ID Method or Information Column V on MO_LSLI (blue tab)	**Table 1:** Customer-Owned Service Line ID Method or Information Column W on MO_LSLI (blue tab)
1 = Visual Inspection at Meter Pit	**1** = Visual Inspection at Meter Pit
2 = Customer Self-Identification	**2** = Customer Self-Identification
3 = CCTV Inspection at Curb Box - External	**3** = CCTV Inspection at Curb Box - External
4 = CCTV Inspection at Curb Box - Internal	**4** = CCTV Inspection at Curb Box - Internal
5 = Mechanical Excavation	**5** = Mechanical Excavation
6 = Vacuum Excavation	**6** = Vacuum Excavation
7 = Paper Records (>10% Validated Accuracy)	**7** = Paper Records (>10% Validated Accuracy)
8 = Digital/Database Records (>10% Validated Accuracy)	**8** = Digital/Database Records (>10% Validated Accuracy)
9 = Water Quality Sampling - Targeted	**9** = Water Quality Sampling - Targeted
10 = Water Quality Sampling - Flushed	**10** = Water Quality Sampling - Flushed
11 = Water Quality Sampling - Sequential	**11** = Water Quality Sampling - Sequential
12 = Water Quality Sampling - Other	**12** = Water Quality Sampling - Other
13 = Predictive Modeling (Not ID Method)	**13** = Predictive Modeling (Not ID Method)
14 = Other	**14** = Other

Inventory Instructions: Tab 1

Table 2: Water System Acronym Definitions
PWS = Public Water System
CWS = Community Water System
NTNCWS = Non-Transient Non-Community Water System
TNCWS = Transient Non-Community Water System
LSL = Lead Service Line
LSLI=Lead Service Line Inventory
LSLR = Lead Service Line Replacement
LCR = "Old" Lead & Copper Rule (Rule set that is currently active regarding compliance as of 2022)
LCRR = Lead & Copper Rule Revisions (Rule set that is effective but not compliant as of 2022)
LCRI = Lead & Copper Rule Improvements (If proposed, new rule might replace LCRR before Oct 16, 2024)
SA = Sample Administrator (The person in charge of sampling for the Public Water System)
DO = Designated Operator (The certified operator in charge of the Public Water System)
DNR = MO Department of Natural Resources (The State regulatory agency)
EPA = US Environmental Protection Agency (The Federal regulatory agency)



Download LSLI spreadsheet, right click & "extract" file

Need Microsoft Office 2007 or later version?

Excel is free! Can use "Office Online" or "Google Docs" after you create a Microsoft or Google Account

MISSOURI DEPARTMENT OF NATURAL RESOURCES

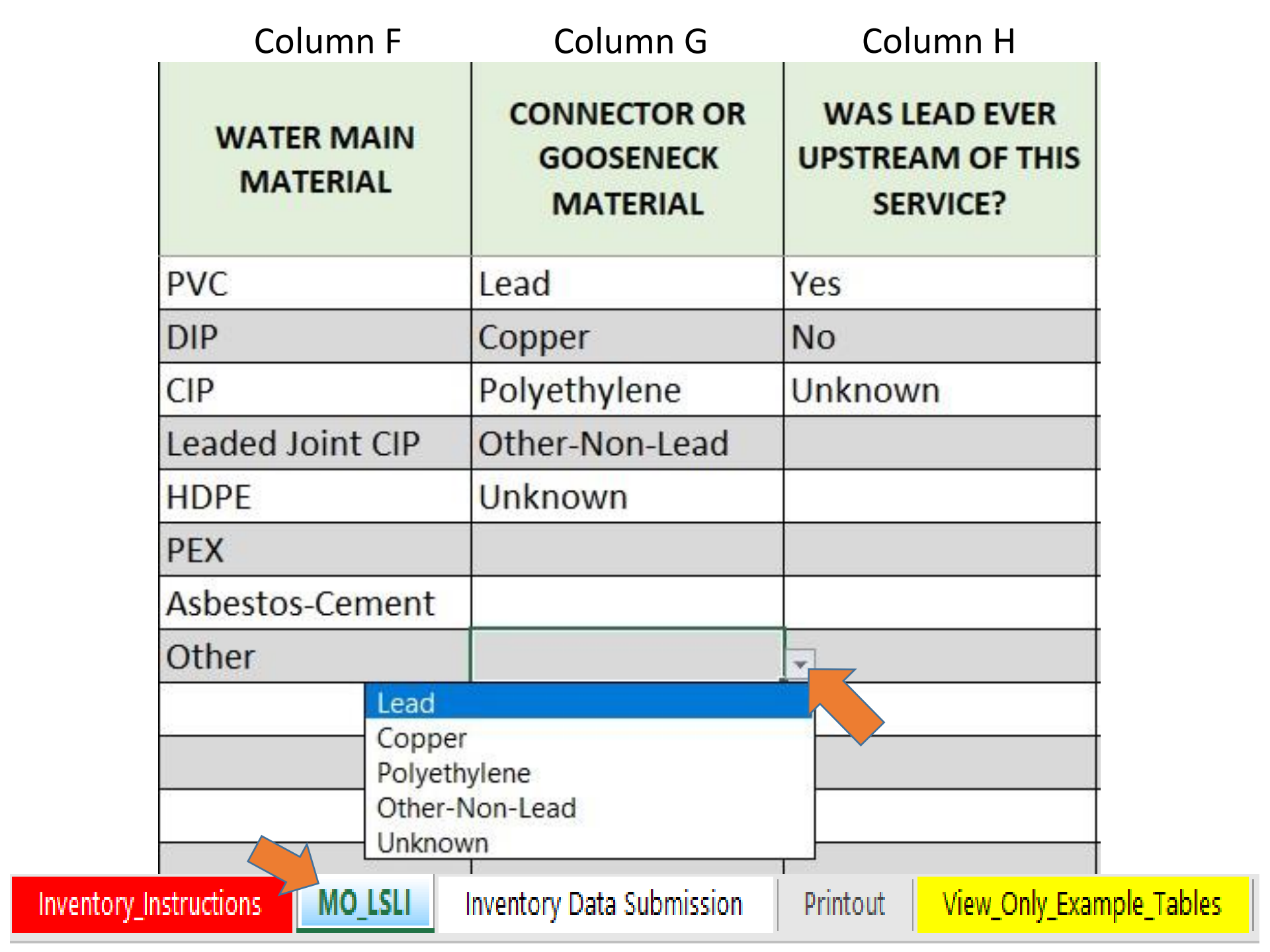
Try to use fixed “forever” number for System Specific ID!
Otherwise, you must update it when it changes
GPS coordinates, Meter#, Account#, or “Made Up” #?

	A	B	C
1			
2	WATER SYSTEM ID NUMBER	SYSTEM SPECIFIC ID	WATER SYSTEM COMMON NAME
3	MO1234567	38.574055, -92.188256	CACTUS PWS 3
4	MO1234567	38.572612, -92.186211	CACTUS PWS 3
5	MO1234567	38.574071, -92.184434	CACTUS PWS 3
6	MO1234567	1b	CACTUS PWS 3
7	MO1234567	2b	CACTUS PWS 3
8	MO1234567	3b	CACTUS PWS 3
9	MO1234567	Meter#: 29009098205	CACTUS PWS 3
10	MO1234567	Meter#: 20904680153	CACTUS PWS 3
11	MO1234567	Meter#: 32098092573	CACTUS PWS 3
12	MO1234567	Account#: 0101567	CACTUS PWS 3
13	MO1234567	Account#: 0236548	CACTUS PWS 3
14	MO1234567	Account#: 0005678	CACTUS PWS 3

D	E

Systems must include the Street Address (or location) in submission to MoDNR (not required for public “online report” pop >50,000)

SERVICE ADDRESS	ZIPCODE
111 South Country Road	65101
212 County Road 567	65109
1441 Elm Street, Cactus City, MO	65101
1890 Main Street, Cactus City, MO	65102
4567 East Avenue, Ravin City, MO	65109
987 Mockingbird Lane, Cactus City, MO	65102
7584 Johnson Court Rd, Ravin City, MO	65109


Column F
Column G
Column H
WATER MAIN MATERIAL
CONNECTOR OR GOOSENECK MATERIAL
WAS LEAD EVER UPSTREAM OF THIS SERVICE?
PVC
Lead
Yes
DIP
Copper
No
CIP
Polyethylene
Unknown
Leaded Joint CIP
Other-Non-Lead
HDPE
Unknown
PEX
Asbestos-Cement
Other
Lead
Copper
Polyethylene
Other-Non-Lead
Unknown
Inventory_Instructions
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Column I	Column J	Column K	Column L
PWS-OWNED SERVICE LINE MATERIAL	**WAS PWS-OWNED SERVICE LINE EVER LEAD?**	**PWS-OWNED SERVICE LINE SIZE**	**YEAR PWS-OWNED SERVICE LINE INSTALLED**
Lead	Yes	3/8"	1970
Copper	No	1/2"	1991
Galvanized	Unknown	5/8"	1980
PVC		3/4"	1972
HDPE		1"	1992
PEX		1-1/4"	1940
Asbestos-Cement		1-1/2"	1962
Other-Non-Lead		1-3/4"	
		2"	

3"
4"
6"
8"
10"
12"
14"
16"

Column M Column N Column O Column P

CUSTOMER-OWNED SERVICE LINE MATERIAL	CUSTOMER-OWNED SERVICE LINE SIZE	YEAR CUSTOMER-OWNED SERVICE LINE INSTALLED	BUILDING TYPE
Lead	3/8"	1980	Single Family House/Subdivision
Copper	1/2"	1999	Multi Family Apartment/Condo
Galvanized	5/8"	2002	School/Childcare NTNCWS
PVC	3/4"	2019	Business NTNCWS
HDPE	1"	1958	Hospital/Medical Care Facility NTNCWS
PEX	1-1/4"	1997	Nursing Home NTNCWS
Asbestos-Cement	1-1/2"	2015	
Other-Non-Lead	1-3/4"		
	2"	1987	
	3"	015	
	4"	975	
	6"		
	8"		
	10"		
	12"		
	14"		
	16"		

Inventory_Instructions MO_LSLI Inventory Data Submission Printout View_Only_Example_Tables

Column Q	Column R	Column S
POINT-OF-ENTRY OR POINT-OF-USE TREATEMENT PRESENT?	STRUCTURE - PRIMARY PLUMBING MATERIAL 1	YEAR STRUCTURE PLUMBING INSTALLED
Yes	Lead	1980
No	Copper	1999
Unknown	Copper Pipe with Lead Solder	2002
	Galvanized Steel	2019
	PVC	1958
	HDPE	1997
	PEX	2015
	Other Non-Lead	1987

Inventory_Instructions | MO_LSLI | Inventory Data Submission | Printout | View_Only_Example_Tables

Column T	Column U
YEAR (RANGE) STRUCTURE PLUMBING MATERIAL INSTALLED	**THIS LOCATION WILL BE USED FOR LEAD AND COPPER SAMPLE SITE PLAN?**
Before 1989	Yes
Between 1989 and 1-4-2014	No
After 1-4-2014	Unknown
Unknown	

Column V	Column W
SOURCE 1: PWS-OWNED SERVICE LINE ID METHOD OR INFO USED (ENTER ONE OR MORE)	**SOURCE 2: CUSTOMER-OWNED SERVICE LINE ID METHOD OR INFO USED (ENTER ONE OR MORE)**
1,2,7	8,1

There is no drop-down menu for this one

Enter numbers that match methods/validated records

See “Instruction Tab” Table 1

State approved ID methods based on EPA’s Guidance

ID Methods Approved for Missouri: System & Customer sides separately

1 = Visual Inspection at Meter Pit
2 = Customer Self-Identification
3 = CCTV Inspection at Curb Box - External
4 = CCTV Inspection at Curb Box - Internal
5 = Mechanical Excavation
6 = Vacuum Excavation
7 = Paper Records (>10% Validated Accuracy)
8 = Digital/Database Records (>10% Validated Accuracy)
9 = Water Quality Sampling - Targeted
10 = Water Quality Sampling - Flushed
11 = Water Quality Sampling - Sequential
12 = Water Quality Sampling - Other
13 = Predictive Modeling (Not ID Method)
14 = Other

MO_LSLI Data Entry: Tab 2

SOURCE 2: CUSTOMER-OWNED SERVICE LINE ID METHOD OR INFO USED (ENTER ONE OR MORE)	REPLACE GOOSENECK/PIGTAIL CONNECTOR	LSL CATEGORY IN INVENTORY	GRR PRESENT?	RISK TIER: LCR SAMPLE SITE SELECTION	Calc T1 or T2	Calc Type	Calc Range PWS	Calc Range Premise	REQUIRES RESIDENT NOTIFICATION IF LSL DISTURBED	REQUIRES RISK MITIGATION (POU OR PITCHER FILTER)	Service Line Ref Year
7	Yes	GRR	GRR	Tier 3		Single Family	Before 1983	Before 1983	Yes	Yes	1980
8,2	Yes	Non-Lead	No GRR	Tier 2	Yes 2	Multi Family	After 1982	After 1982	Yes	Yes	1999
14	Yes	Lead	GRR	Tier 3		Single Family	Before 1983	After 1982	Yes	Yes	1980
1	Yes	Unknown: Possibly Lead	No GRR	Info Needed Column I, M, L, P, & Q			After 1982	After 1982	Yes	Yes	2010
5	Yes	Unknown: Possibly Lead	No GRR	Info Needed Column I, M, L, P, & Q			Before 1983	Before 1983	Yes	Yes	1958
1	Yes	Unknown: Possibly Lead	No GRR	Info Needed Column I, M, L, P, & Q			After 1982	Before 1983	Yes	Yes	2022
	Yes	Unknown: Possibly Lead	No GRR	Info Needed Column I, M, L, P, & Q			Before 1983	After 1982	Yes	Yes	1956
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Before 1983	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	After 1982	Yes	Yes	I,L,M,O,R,S
	Yes							After 1982	Yes	Yes	I,L,M,O,R,S
	Yes							After 1982	Yes	Yes	I,L,M,O,R,S
	Yes							After 1982	Yes	Yes	I,L,M,O,R,S
	Yes							Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes							Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes							Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes							Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S
	Yes	Unknown: Possibly Lead	Possibly GRR	Info Needed Column I, M, L, P, & Q			Info Needed Column L & O	Info Needed Column S	Yes	Yes	I,L,M,O,R,S

Microsoft Excel

The cell or chart you're trying to change is on a protected sheet. To make a change, unprotect the sheet. You might be requested to enter a password.

OK

Some cells, columns, and tabs are “locked” (password protected) to preserve formulas as well as preserve the format of the Excel spreadsheet overall

When you double click on these locked cells, a warning message will appear. You should have access to all the cells you need to enter information in.

You can request custom password unlocked version to collapse columns, edit width, trim rows for faster saving, etc.

Lead Service Line Inventory Data Submission: Tab 3

	A	B
1	 MISSOURI DEPARTMENT OF NATURAL RESOURCES — Enter this information & save before submission to MoDNR	
2	**Water System ID Number:**	MO1234567
3	**Water System Common Name:**	CACTUS PWS 3
4	**Collector Name:**	John Doe
5	**Date LSLI Submitted:**	10/15/2024
6	**Total # of Full Replacements Since Last Inventory Submission?**	25
7	**Total # of customer refusals?**	10

Inventory_Instructions | MO_LSLI | **Inventory Data Submission** | Printout | View_Only_Example_Tables

Data collected by: _____ Date: _____ Title: _____

WATER SYSTEM ID NUMBER	SYSTEM SPECIFIC ID	WATER SYSTEM COMMON NAME	SERVICE ADDRESS	ZIPCODE

WATER MAIN MATERIAL	CONNECTOR OR GOOSENECK MATERIAL	WAS LEAD EVER UPSTREAM OF THIS SERVICE?	PWS-OWNED SERVICE LINE MATERIAL	WAS PWS-OWNED SERVICE LINE EVER LEAD?	PWS-OWNED SERVICE LINE SIZE		YEAR PWS-OWNED SERVICE LINE INSTALLED	Comments
PVC	Lead	Yes	Lead	Yes	3/8"	3"		
DIP	Copper	No	Copper	No	1/2"	4"		
CIP	Polyethylene	Unknown	Galvanized	Unknown	5/8"	6"		
Leaded Joint CIP	Other-Non-Lead		PVC		3/4"	8"		
HDPE	Unknown		HDPE		1"	10"		
PEX			PEX		1-1/4"	12"		
Asbestos-Cement			Asbestos-Cement		1-1/2"	14"		
Other			Other-Non-Lead		1-3/4"	16"		
			Unknown		2"			

CUSTOMER-OWNED SERVICE LINE MATERIAL	CUSTOMER-OWNED SERVICE LINE SIZE		YEAR CUSTOMER-OWNED SERVICE LINE INSTALLED	BUILDING TYPE	POINT-OF-ENTRY OR POINT-OF-USE TREATEMENT PRESENT?	STRUCTURE - PRIMARY PLUMBING MATERIAL	YEAR STRUCTURE PLUMBING INSTALLED
Lead	3/8"	3"		Single Family	Yes	Lead	
Copper	1/2"	4"		Multi Family	No	Copper	
Galvanized	5/8"	6"		School/Childcare	Unknown	Copper Pipe with Lead Solder	
PVC	3/4"	8"		Business		Galvanized Steel	
HDPE	1"	10"		Hospital/Medical Care Facility		PVC	
PEX	1-1/4"	12"		Nursing Home		HDPE	
Asbestos-Cement	1-1/2"	14"				PEX	
Other-Non-Lead	1-3/4"	16"				Other Non-Lead	
Unknown	2"					Unknown	

YEAR (RANGE) STRUCTURE PLUMBING MATERIAL INSTALLED	THIS LOCATION WILL BE USED FOR LEAD AND COPPER SAMPLE SITE PLAN?	SOURCE 1: PWS SERVICE LINE ID METHOD OR INFORMATION USED (If multiple methods used--mark multiple options below)		SOURCE 2: CUSTOMER SERVICE LINE ID METHOD OR INFORMATION USED (If multiple methods used--mark multiple options below)	
Before 1989	Yes	1 = Visual Inspection	9 = Water Quality Sampling - Targeted	1 = Visual Inspection	9 = Water Quality Sampling - Targeted
Between 1989 and 1-4-2014	No	2 = Customer Inspection	10 = Water Quality Sampling – Flushed	2 = Customer Inspection	10 = Water Quality Sampling - Flushed
After 1-4-2014	Unknown	3 = Curb Box – External	11 = Water Quality Sample – Sequential	3 = Curb Box - External	11 = Water Quality Sample - Sequential
Unknown		4 = Curb Box - Internal	12 = Water Quality Sample - Other	4 = Curb Box - Internal	12 = Water Quality Sample - Other
		5 = Mechanical Excavation	13 = Predictive Modeling (Not ID method)	5 = Mechanical Excavation	13 = Predictive Modeling (Not ID method)
		6 = Vacuum Excavation	14 = Other	6 = Vacuum Excavation	14 = Other
		7 = Paper Records		7 = Paper Records	
		8 = Digital/Database		8 = Digital/Database	

History of "Blood Lead Level" safety threshold for Lead (Pb):

- Before 2012, "Blood Lead Level" (BLL) of concern was 10 ug/dL for children
- In 2012, "Blood Lead Reference Value" (BLRV) of 5 ug/dL or above is considered "elevated." The 97.5 percentile represents upper 2.5% from 2007-2010 population data
- In 2021, "Blood Lead Reference Value" (BLRV) was lowered to 3.5 ug/dL https://www.cdc.gov/nceh/lead/data/blood-lead-reference-value.htm
- LCRR Jan 15, 2021 says: "The median concentration of lead in the blood of children ages 1 to 5 years old dropped from 15 ug/dL in 1976-1980 to 0.7 ug/dL in 2015-2016, a decrease of 95% (USEPA, 2019a)."
- For adults, Blood Lead Level of 40 ug/dL needs treatment
- EPA's ideal MCL Goal = 0% Lead in drinking water
- Lead is "Chronic" contaminant, but treated as "Acute" for Public Education following ALE

LCR Risk Tiers (currently compliant 1992 LCR "old rule")

Tier 1 Single family or NTNCWS: LSL or Cu w/Lead Solder after 1982

Tier 2 Multi family: LSL or Copper (Cu) with Lead Solder after 1982

Tier 3 Single family or NTNCWS: Cu w/Lead Solder before 1983

Tier F-1 Single, Multi, or NTNCWS that has Non-Lead service line & indoor plumbing

Tier F-2 Single, Multi, or NTNCWS that has water softener or POE/POU treatment. "Point of Entry" = softener, "Point of Use" = filter on sink?

Only use Tier F-1 & F-2 sites if no alternative lower tier is available!

NOTE: Risk tier categories will likely change when new rule set comes!
We must use LCR tiers—until either LCRR or LCRI reaches compliance.

Questions?