We work with others to protect the health of the people of Washington State by ensuring safe and reliable drinking water.

# LEAD COMPONENT SURVEY

Washington State Department of Health
Office of Drinking Water

## Summary

Washington's Experience:

- Non-regulatory approach can be successful.
- The Governor's 2016 Lead Directive gave us entry.
- Our survey revealed elimination of LSLs and LSCs within our state is within reach.
- Our large water systems have the capacity and interest to pursue elimination of LSLs and LSCs.



LSLs = lead service lines
LSCs = lead service connections, or connectors, such as lead goosenecks

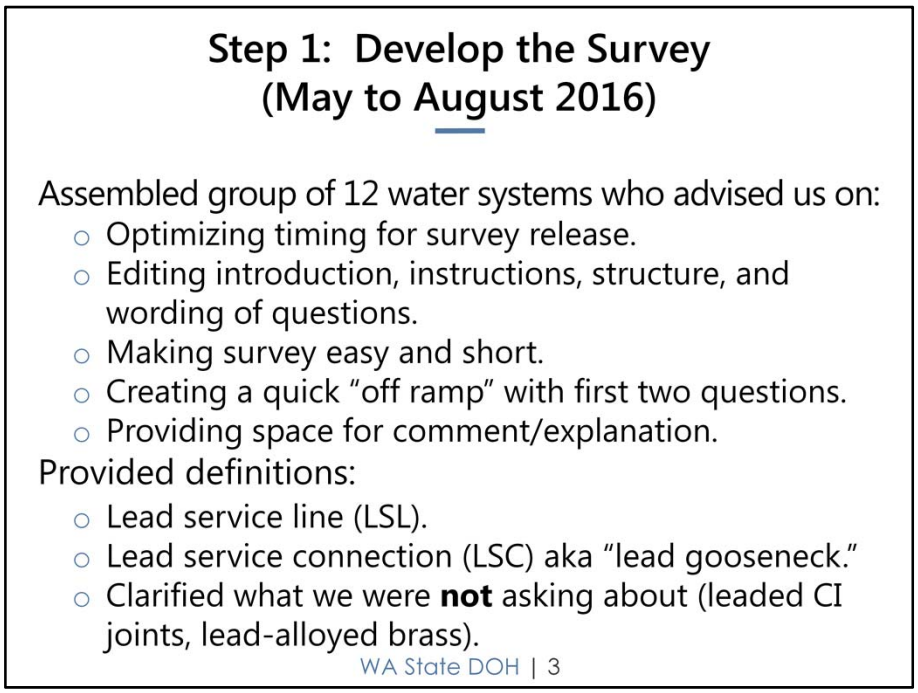
## Governor's Directive 16-06

Signed May 2, 2016, directing **state agencies** to:

- Address lead exposure in schools, child care settings, and rental properties.
- Improve state's blood lead monitoring program.
- Work with each water system to identify all lead service lines and lead components within two years.
- Work with stakeholders to develop policy and budgetary proposals with goal of removing all lead service lines and lead service components in water systems within 15 years.



Focus on 3rd and 4th bullets. This part of the Directive gave us entry with water systems.




"Off ramp":

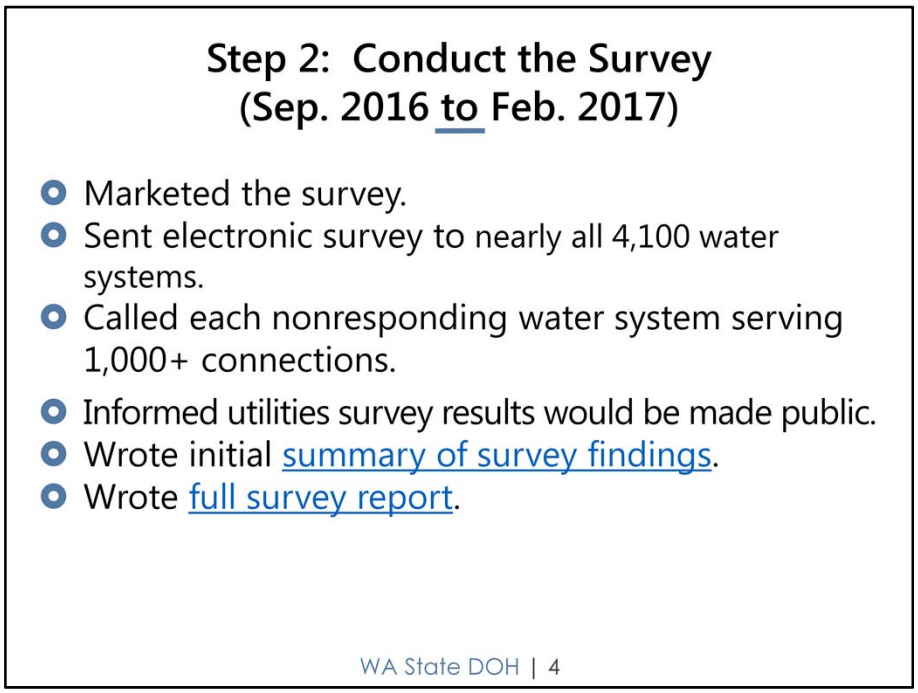
Question: **Do your records indicate any service lines installed before 1945 are still in service?**
Question: **Do you have any reason to believe lead service lines or other lead components were installed in your system after 1945?**

Possible answers include: "Yes", "No", and "Insufficient Records".

If the respondent answered "No" to both of these questions, then the survey was considered complete.

Total of 12 questions, plus opportunity for free response.

The actual survey sent to water systems is available upon request. Please contact Scott Torpie, Washington Department of Health, at scott.torpie@doh.wa.gov




Survey sent to about 94% of our 4,100 community, NTNC, and TNC systems.

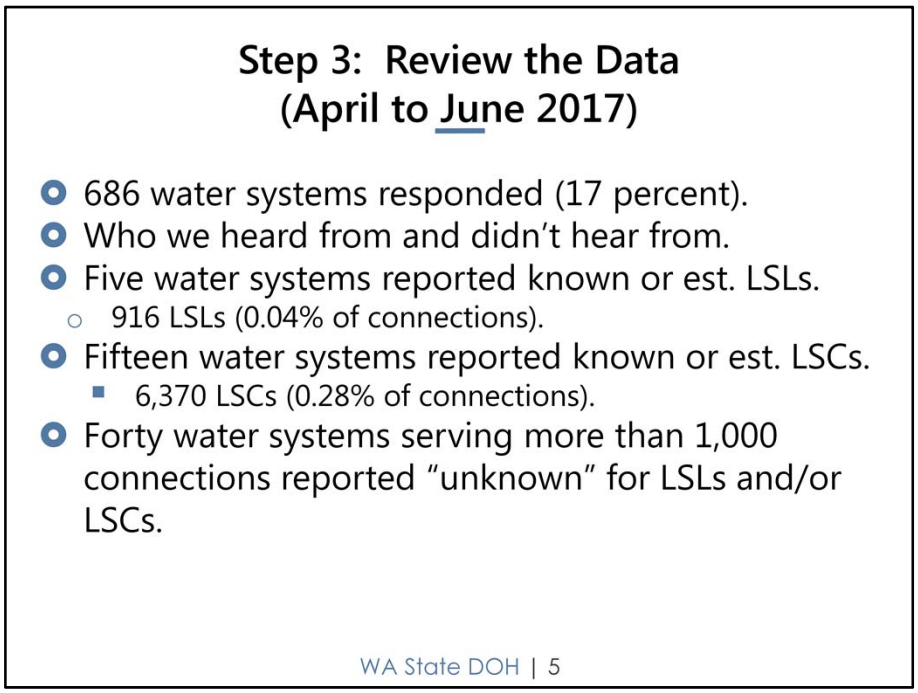
Marketing:

Published article in our quarterly publication *H2Ops*, sent to all water systems.
Emailed notice to all water systems about upcoming survey.

Extended original deadline to complete the survey:

Initial request to respond by December 1; later extended to December 16.
January and February 2017 reopened survey to capture large systems who had not responded.

We named utilities and published their responses.




Summarize what we heard and didn't hear in survey responses:

- Did hear from 246 out of 252 systems serving > 1,000 connections. These respondents serve 2.2M connections (88% of statewide total)
- Did hear from 446 out of 3,721 systems serving <1,000 connections. These respondents serve 60,000 connections (2.4% of statewide total)

- Did not hear from 6 out of 252 systems serving >1,000 connections. These non-respondents serve 34,000 customers (1.4% of statewide total). Three of the six are military bases.
- Did not hear from 3,275 out of 3,721 systems (includes all community and NCWS) serving <1,000 connections. These non-respondents serve 211,000 connections (8.4% of statewide total).

**Extrapolating what we heard to what we didn't hear from water systems:**

Large Systems (>1,000 connections)

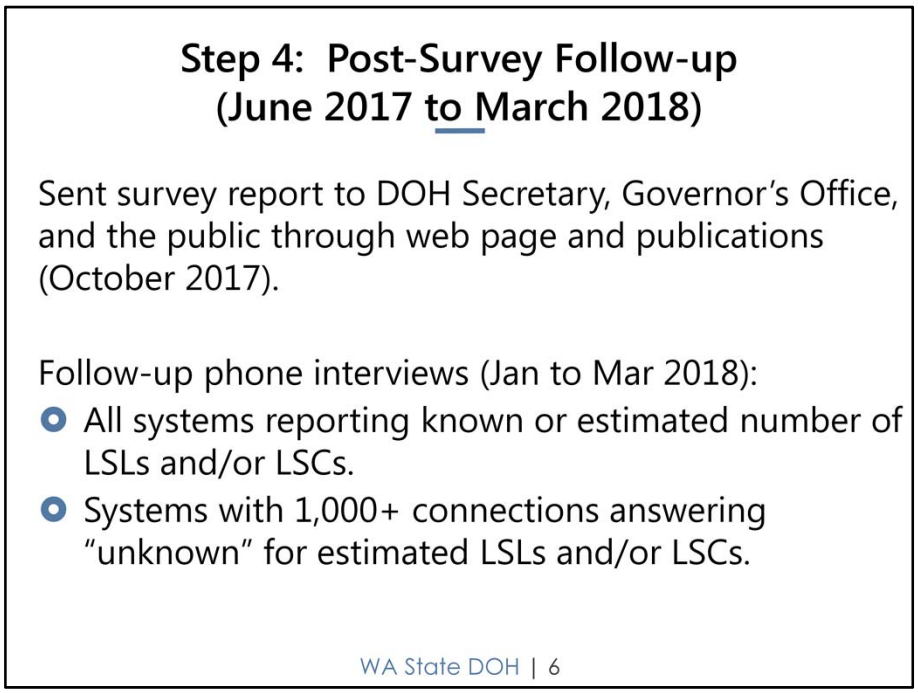
- Apply LSL rate of 0.04% to 34,000 connections = 14 additional LSLs
- Apply LSC rate of 0.28% to 34,000 connections = 78 additional LSCs

Small Systems (<1,000 connections)

We only heard from 12% of small systems (<1,000 connections), serving 22% of total connections served by small systems.

Our data system can date the origination of a water system, beginning with 1970. All systems that originated before 1970 were given an origination date of "1970". We assume no lead components were used on any water system after 1970.

- 190 out of 446 small system respondents have an origination date of 1970. Applying what we heard from these 190 systems to the 969 systems with a 1970 origination date that did not respond:
  - Add zero LSLs to statewide total
  - Add 87 LSCs to statewide total



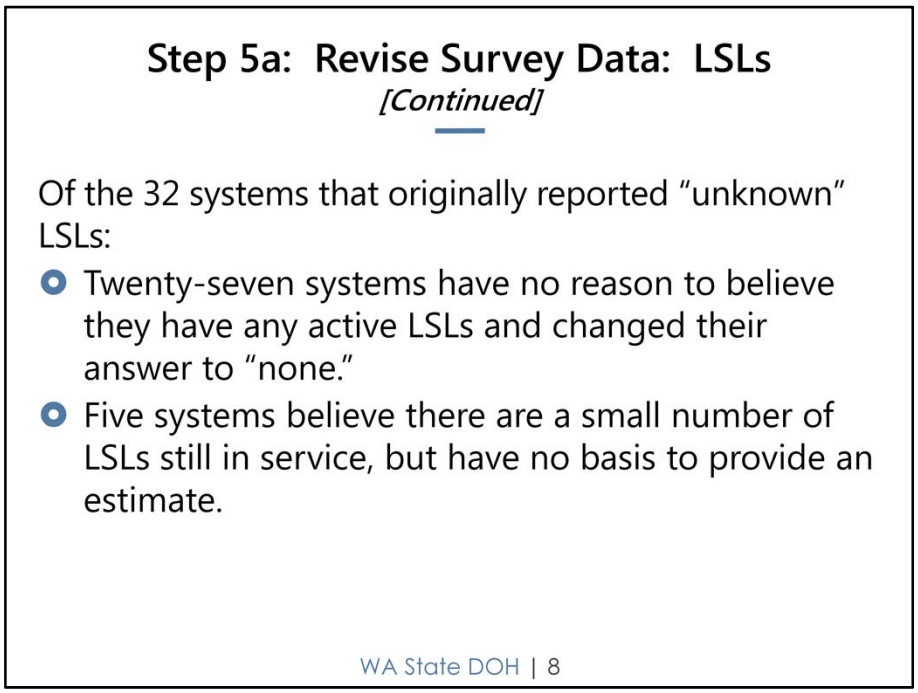

Phone interview intention:

- Check basis for LSL/LSC estimate and system's level of confidence.
- Seek greater clarity on extent and confidence of "unknown."
- Get feedback on assistance options (funding, record review).
- Better understand system's resource limitations and current plans for lead identification and removal.
- Test attractiveness of proposed SRF funding terms.

## Step 5: Revise Survey Data: LSLs (April to June 2018)

Of the five systems that originally reported LSL estimates:

- Three revised their original estimate to zero LSLs.
- One completed replacement of all known LSLs.
- One considers the original estimate of 300 LSLs still valid.
- LSL estimates constitute 0.01% of survey respondent service connections.




The question we asked: "How many lead service lines do you estimate remain in use?"

The wording could be seen as a leading question, with a presumption of LSLs. Many responded "unknown", only to admit later that they really have no reason to believe they have any LSLs.

Example information gathered during phone interviews:

- A system with 5,000 service connections originally reported "unknown" for LSLs and LSCs. Spoke with PWD. The City misinterpreted the questions to include material on the customer's side of the meter. The City was first incorporated in 1955, and the first well, reservoir, and water main was installed in 1957. PWD's crew has never seen a LSL or LSC. City changed "unknown" LSLs and LSCs to "none".

- A system with 3,300 service connections originally reported "unknown" LSLs: Spoke with PWD and City Administrator. PWD has been working on the water system for 45 years. Subordinate completed the survey in 2016. The City has no water main, even in the oldest part of town, older than from the mid-1980's. With every WM replacement, the service line has been replaced to the property line. The old section of town once had LGNs, but not anymore. The town never had any LSLs. City changed "unknown" to

"none" for LSLs.

- A system with 11,500 service connections originally reported "unknown" LSLs. Spoke with Maint. Sup (35 years with the City) and PWD (20 years with the City). They have never seen a LSL in all the water main replacements and thousands of service line replacements they've performed over the last 3 decades. But they admitted they could not be 100% certain since their records <1945 are not complete. The records they do have don't indicate any history of LSL installation. City changed "unknown" to "none" for LSLs.

- A system with 1,500 service connections originally reported "unknown" for LSLs and LSCs. Spoke with PWS who's been with the City for 22 years. He's seen a lot of old pipe replaced, and has never seen a LSC or LSL. The only lead he knows of is an old cast iron main with leaded joints. GI service lines attached to water mains that have been replaced have all been attached with a swivel joint, not a LSC. PWD cannot say with certainty there are no LSCs or LSLs because service line records do not exist. But he doesn't think there are any, or if so, "maybe just a few". Maintained "unknown" answer for LSLs and LSCs.

## Step 5b: Revise Survey Data: LSCs

Of the 15 systems that originally reported LSC estimates:

- Estimates changed based on work they've done over the past 12 months. Total estimated is about 5,000 LSCs.
- LSC estimates constitute 0.21% of survey respondent service connections.
- All but one system is interested in funding support to replace their lead goosenecks and the old water mains attached to them.

## Step 5b: Revise Survey Data: LSCs

*[Continued]*

Of the 30 systems that originally reported "unknown" LSCs:

- Eighteen systems have no reason to believe they have any active LSLs.
- Twelve systems believe LSCs are or might be still in service but cannot estimate or quantify number.
- Published update to the summary of survey findings.

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The question we asked: "Of the GI service lines installed before 1945 still in use, how many do you estimate connect to the water main by a lead gooseneck or other lead component?"

Example responses to phone interview:

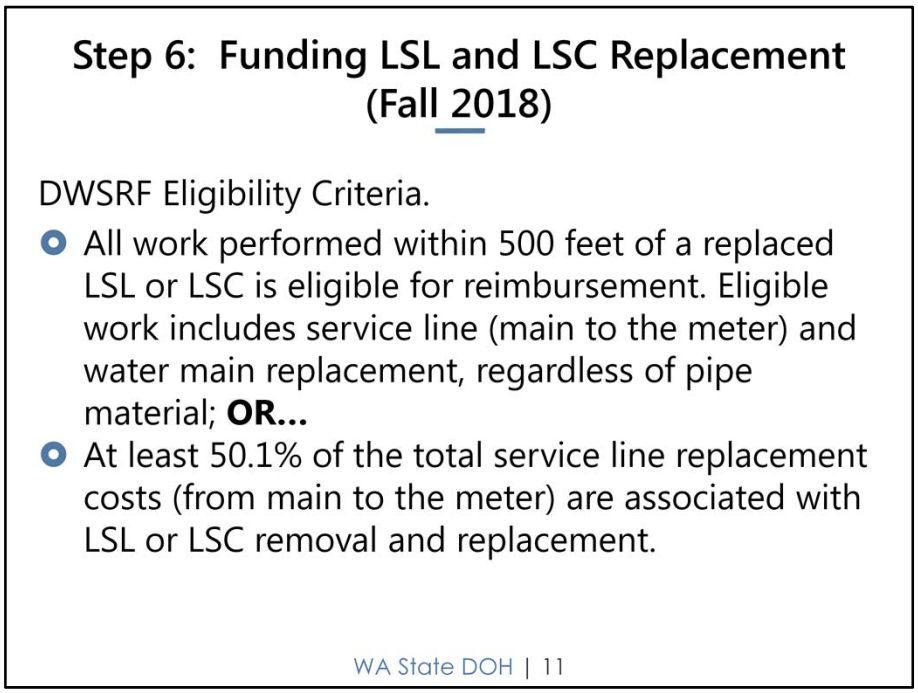
- A system with 32,000 service connections originally reported "unknown" for LSCs. Spoke with the lead operator. City used GIS and County records to make map based on age of homes and water lines. Central Core area of town identified as possible area. Checked out with potholing. Found copper and poly service lines only. City changed "unknown" LSCs to "none".

- A system with 10,500 service connections originally reported 295 LSCs. Spoke with Supt. He reviewed city records and identified 295 services with recorded LSCs. After responding to the survey he potholed 4 of these on a single main. Only one in four had a LSC. Based on this, he estimates the number of LSCs is about half of his original estimate.

- A system serving 140,000 service connections. Their records indicate 1,200 services remain that may have LSCs. They potholed 300 of these services, found 150 with

galvanized services. Replaced each of the 150 service lines and found 75 had a LSC. Extrapolating to the remaining 900 connections, the City changed their estimate from 1,200 to 300 LSCs.

- A system with 25,000 service connections originally report unknown LSCs. Spoke with lead operator. He went to the County office and found records of the developed properties as of 1945: 244 commercial and 907 residential. He then linked records of service line replacement over the last 10 years (records associated with CCC device installation, which involved replacing the service line back to the main) among these 1,151 connections, and eliminated them from potential LSC services. After that, visually inspect the remaining (from the original 1,151) service meter boxes for type of pipe entering the meter box. If GI then include them on the list of at-risk. If copper, then it's known that the service was replaced at some point since the 1940's. At risk services will be addressed as part of routine O&M. Last year he went to the old part of town, in a 3-block area, and potholed 60 service connections, expecting to find LGNs. He found zero LGNs. All the potholes were on cast iron mains. This suggests to him that there aren't too many LGNs in his system. Maintained "unknown" answer for LSCs.




Systems we surveyed by phone and expressed interest in DWSRF funding are automatically considered eligible.

We will accept loan applications for the 2018 construction loan cycle from October 1 to November 30, 2018.

$20 million in DWSRF loan funds are available in next cycle.

## What We Learned

- Washington's large utilities don't have many active LSLs. Small utilities have few, if any.
- Gov's Directive and survey gave us entry to communicate with large utilities.
- Despite no state authority to require lead identification and removal, large utilities are committed to doing so.
- Surveys need follow up.
- Uncertainty has to be acceptable.

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Documentation:

DOH 331-587 (summary of findings) at https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-587.pdf – June 2017

DOH 331-599 (report) at https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-599.pdf – October 2017

DOH 331-598 (fact sheet update) at https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-598.pdf – July 2018

Utilities very open to discussing what they know, what they've done/are doing about lead because lead is in the public conscience:

- News about Flint, Michigan reached into their communities and they had to respond to questions about lead long before our survey.
- Flint's experience drove schools around the state to sample for lead, resulting in extensive local and state news reports of excess lead in drinking water.

## Conclusions

- Governor's Initiative drove the survey.
- Utilities doing much more than we knew.
- Operators want to affect positive change in their community.
- Large utilities cooperated and were forthcoming.
- Survey supported and, in some cases, trigged action.
- The only help utilities need is money.
- The survey helped align our loan program with utility needs.