CA Division of Drinking Water LCRR and LSL Inventory

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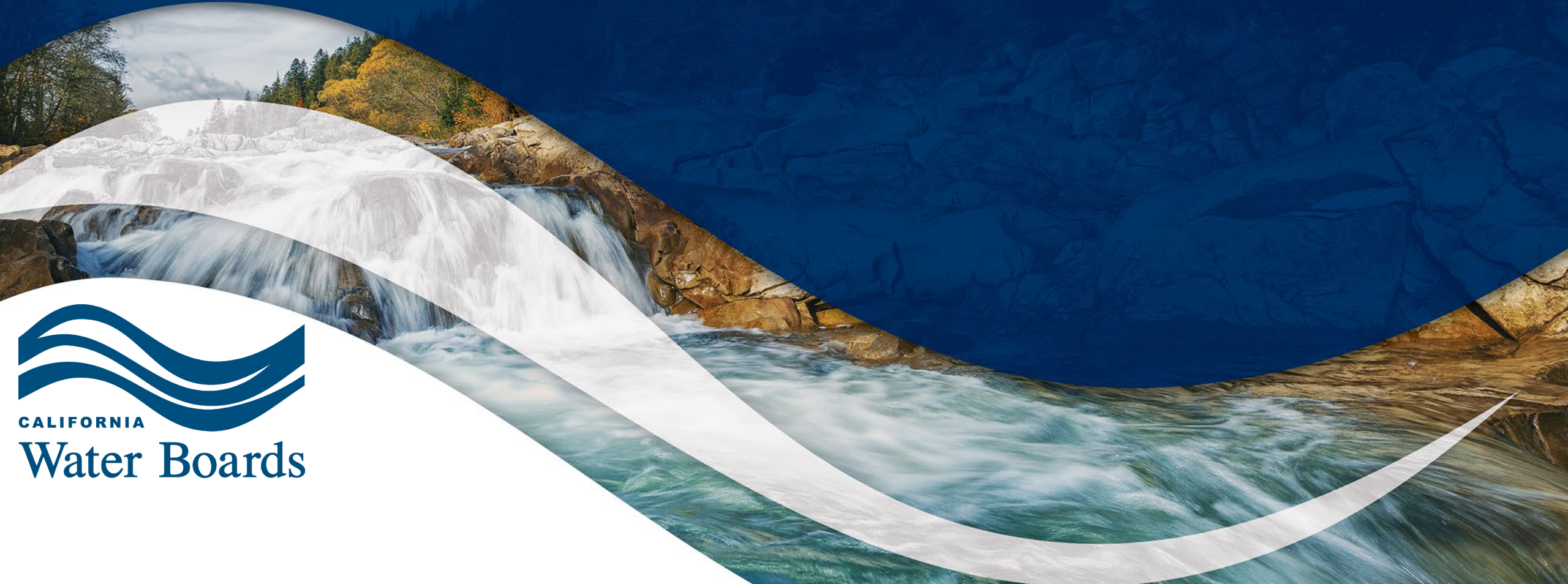
Lead Service Line Inventory: Records Review

- The LCRR inventory requirement <u>directs water systems</u> to undergo a record review for including:
  - All construction and plumbing codes *(UPC – International Association of Plumbing & Mechanical Officials (IAPMO) Vice President provided history on the inclusion of lead in the UPC)*
  - Permits, and inspections and records, and other documentation which indicates the service line materials used to connect structures to the distribution
  - Distribution system maps and drawings, service connection records, meter installation records, historical capital improvement or master plans, and SOPs

LCRR: Labeling Service Lines

(Label lines as actual material where available, copper, plastic, etc.)

- "Lead" where the service line is made of lead. A lead connector that is 2 feet in length or less is not a lead service line.

- Galvanized Requiring Replacement" (GRR) 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.

- Note from the LCRR definitions above: A galvanized line that is connected downstream of a lead gooseneck, pigtail, fitting, or connection is not considered a GRR and does not require replacement

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LCRR: Labeling Service Lines (Cont.)

(Label lines as actual material where available, copper, plastic, etc.)

- "Non-lead" where the service line is determined through an evidence-based record, method, or technique not to be lead or galvanized requiring replacement. Sampling for lead and copper in the LCRR in non-lead systems requires additional knowledge of service line material. DDW encourages the water system to classify the actual material of the service line (i.e., plastic or copper) as often as possible as an alternative to classifying it as Non-lead.

- "Lead Status Unknown" where the service line material is not known to be lead, galvanized requiring replacement, or a non-lead service line, such as where there is no documented evidence supporting material classification.

NOTE: Unknowns are treated as Lead in most of the LCRR!

Which Service Lines to Include in Inventory?

- All service lines connecting the water main to the interior plumbing in a building, regardless of ownership status. Include service lines:
  - Connecting the water main, regardless of actual or intended use (i.e., non-potable applications, such as fire suppression)
  - Connected to vacant of abandoned buildings, even if they are unoccupied and water service is off
  - Connecting multiple units or buildings on a property
  - Connecting well to a single building (e.g., CWS or NTNCWS that do not have extensive distribution system)

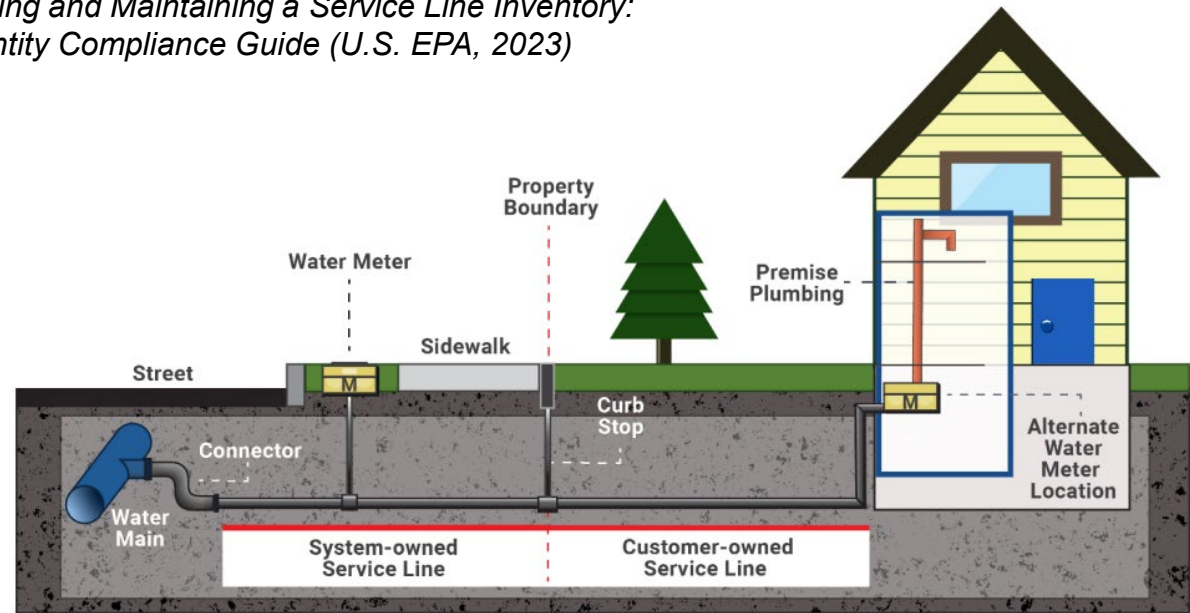*Developing and Maintaining a Service Line Inventory: Small Entity Compliance Guide (U.S. EPA, 2023)*

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CWS Examples
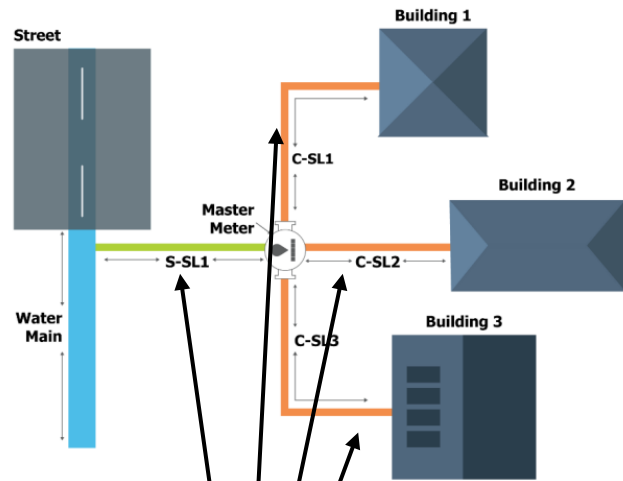
KEY

C=Customer-owned

S=System-owned

SL=Service Line

Customer-owned Service line=

System-owned Service line=

Meter

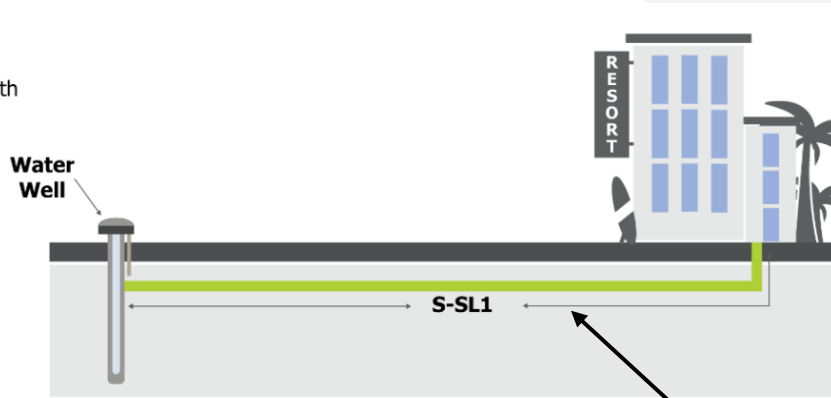*Developing and Maintaining a Service Line Inventory: Small Entity Compliance Guide (U.S. EPA, 2023)*

Include in inventory

Guidance for Developing and Maintaining a Service Line Inventory (U.S. EPA, 2022)
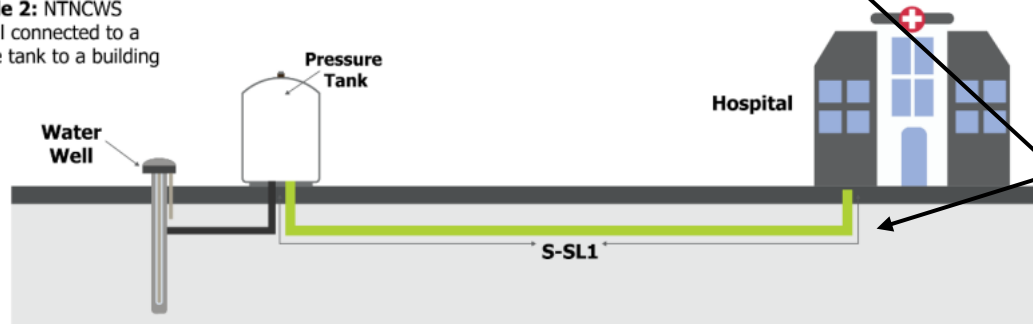
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NTNCWS Examples

Inventory all piping from source to building

Example 1: NTNCWS with well pumped directly to a building

Water Well

S-SL1

Example 2: NTNCWS with well connected to a pressure tank to a building

Water Well

Pressure Tank

Hospital

S-SL1

Example 3: NTNCWS with well connected to a building connected to another building

Water Well

RESORT

Concession Stand

SCHOOL

S-SL1

S-SL2
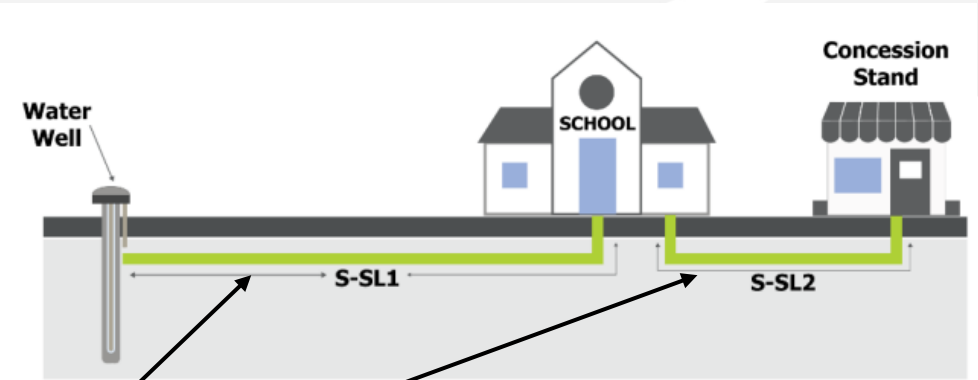
Include in inventory

KEY

NTNCWS=Non-transient non-community water system

S=System-owned

SL=Service Line

System-owned Service line=

Meter

Pressure Tank

Well

Developing and Maintaining a Service Line Inventory: Small Entity Compliance Guide (U.S. EPA, 2023)

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Inventory Methods (Mainly Private Side)

- Methods approved by DDW to use
  - **Physical visual inspection**
  - **Dating (1/1/1986: HSC 300.6 Banned Lead)**
  - **Pipe diameter (4 inches or greater – Non-lead)**
- Methods approved on case-by-case basis
  - Water quality sampling (Not used without a demo study)
  - Statistical Verification, Predictive models/Machine Learning
  - Interpolation
  - Interviews (Not to be used alone but <u>needed</u> for predictive/statistical models)
  - Other/Emerging methods
- NTNC – Inventory all piping from source to building

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Using Methods Approved Case-by-Case

- If using any of the methods approved on a case-by-case basis (e.g., interpolation or statistical verification):
  - Provide to DDW/LPA staff (or LCRR Unit when available) a detailed description of the method(s) to be used and a project workplan
  - Workplans will be documented
  - Workplan will need to be approved by email or letter in writing before using it to document inventory

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Starting the Private Side Inventory

- Water systems need to determine all <u>knowns</u> first by using
  - Dating (1/1/1986: HSC 300.6 or other Municipal Code)
  - Pipe diameter (4 inches or greater – Non-lead)
  - Any other records that identify the service line material
- **<u>Start early</u>** to allow for additional work that may be needed based on the information that is discovered

Field Verification

- Systems with **little to no records or information** (i.e., year constructed) on the private side
  - Need to physically verify sufficient number of unknowns
  - Make sure service line of oldest homes are physically verified

- How many points on a service line to verify?
  - Case-by-case determination by area inspected. **On private side, a water system is not required to do a 2-point verification. Water system needs to determine use of tails on meters during water system history.**

Example Physical Inspection at Meter

Verification Strategies Based on System Size

- **Interpolation**
  - Best for small systems < 1500 service connection (sc)
  - Medium size systems with large homogenous areas

- **Stratified Random Sampling**
  - Medium to large systems – (see 2 examples in following slides)
  - 1500 sc to 10,000 sc unknowns
  - > 10,000 sc or more unknowns
  - At this time, the only statistical verification and minimum sample size calculation accepted is the 95% confidence level (with +/-5% margin of error and 50% sample proportion) approach. Examples are Oregon and Michigan.

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Water Systems Recommendations

- Items to consider (history of lead in CA)
  - 1950 to 1986, very little to no lead was used on private property
  - 1900 to 1950, splitting system up by decades depending on how many building fit in each decade would be important.
  - Prior to 1900, lead likely to be found.
- Water system will need to provide a project plan
  - Record all physical verifications
  - Record statistical verification where appropriate
  - Any lead found, increase physical investigation, new project plan needed
  - Retain records for audits
  - Provide a knowledge based signed declaration of non-lead along with completion of the project plan

Interpolation
(Recommended for SWS < 1500 service connections)

- Can be used when investigating unknown material service lines in homogenous communities
- **2 or more factors** that distinguish one area from another
  - Community age/construction year
  - Location
  - Contractor – list of materials?
- How many visual/physical samples are required (case by case)
  - 20 percent of total service lines in each specific area to start
  - Water system will need to adjust based on what they find and document
  - Minimum of 5 percent in each specific area is needed
- Randomized sample set

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Stratified Random Sampling (Recommended for 1500 to 10,000 sc)

- **<mark>Example:</mark>** system with 4000 *unknown* sc:
  - 20% was built in 1800s,
  - 60% built between 1900 and 1950,
  - 20% built between 1950 to 1986

- Using the statical verification approach for 4000 sc, <u>minimum</u> field verification of 351 service lines randomly selected would be needed <u>for this example</u>. Randomly sample from each strata to ensure selection is representative across the different time periods.
  - 70 sc (20%) for 1800s,
  - 211 sc (60%) for 1900 to 1950s, and
  - 70 sc (20%) for 1950 to 1986

Stratified Random Sampling (Recommended for 10,000 and greater)

- Example: First, group/stratify by decades, then calculate minimum number to verify using the 95% confidence with +/- 5% margin of error and 50% sample proportion for each group.

- System with 30,000 unknown sc; minimum to verify 1,445

		Connections Per Group		Number to Physically Verify
1850-1900s	10%		3,000	341
1900s-1920s	20%	x 30,000 connections	6,000	362
1920s-1950s	40%		12,000	373
1950s-1986	30%		9,000	369

95% Conf. +/-5% MOE.

Total 1,445 connections

This is an example. Stratify according to your system's characteristics, lead risk, or other factors. See next slide.

- If decade group has < 1500 sc, can verify minimum 20% for that group.
- For the higher risk decades (e.g., WWII era), additional physical investigations may be warranted.

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Stratified Random Sampling (Recommended for 10,000 and greater)

December 2023 Update:

- Decade breakdown on previous slide is an **example**

- Review available information and stratify according to your water system's characteristics, historical use of lead (as applicable)/lead risk, or other factors before calculating number of verifications

- Note that lead was installed during the WWII era (1940s), so consider adding more verifications to target those years (create a separate "bin")

- Additional verifications may be warranted for higher risk years

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Reminder to Water Systems

- <u>Unknowns</u> are assumed to be lead until the material is determined
  - System must provide annual notification to individual customer, lead warning
  - All lead and unknown service lines <u>following a disturbance</u> must provide the customer with a lead warning notification, flushing instructions and 6 months of supply of ANSI approved a reducing pitcher filter or POU device.
    - **Disturbances include any work at a service line or turning a valve on and off.**
  - LCRR Inventories are due <u>October 16, 2024</u>

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Funding Available

- U.S. EPA will provide funding to states to help pay for utility service line inventory development and replacement of lead service lines. U.S. EPA funding will go to the State Water Board.
- Drinking Water State Revolving Fund
- Technical Assistance Providers will be available. Lookout for an email from the SWRCB.
- Email: DrinkingWaterSRF@waterboards.ca.gov

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Inventory Reminder

If you have not already, start working on inventory!

Due October 16, 2024

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Thank you for your attention.

Questions?

ddw-lslreports@waterboards.ca.gov