Revised Lead and Copper Rule, Lead Service Line Inventory, and Lead Service Line Replacement Plan

Quality Assurance Project Plan

This document contains an introduction to and the methods by which the El Dorado Irrigation District will fulfill the requirements of the Revised Lead and Copper Rule, the Lead Service Line Inventory, and the Lead Service Line Replacement Plan

El Dorado Irrigation District

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1: Introduction

The Safe Water Drinking Act was amended in 1986 prohibiting the use of material that did not meet the new lead free definition for plumbing in public water systems. This was followed by the Lead and Copper Rule (40 CFR part 80, subpart B) in 1991 to regulate lead levels in drinking water, and the Lead and Copper Rule Revision (86 FR 4198) on January 16, 2021. To meet the requirements of the Lead and Copper Rule Revisions (LCRR) the El Dorado Irrigation District (EID or District) has developed and implemented a series of quality assurance standards and practices. These policies, procedures, specifications, or documents have been enacted in order to provide the highest quality data in its completion of the Lead Service Line (LSL) Inventory, LSL Replacement Plan, and subsequent updates to the District's Lead and Copper Rule policies and procedures. This Quality Assurance Project Plan (QAPP) describes the requirements, controls, roles and responsibilities for implementation of quality assurance principals specified in applicable regulation, codes, standards and data management practices. This will be accomplished in accordance with the applicable portions of Part 141 Subpart I of Title 40 of the Code of Federal Regulations, and appropriate EPA guidance documents, and industry association guidance documents (see Appendix E).

The June 19, 1986 amendment to the 1974 Safe Water Drinking Act prohibited the use of pipes, solder, or flux that were not lead free in public water systems or plumbing facilities providing water for human consumption. This was proceeded by California Senate Bill 164 (SB164) signed into law on September 28, 1985 with an effective date of January 1, 1986 which added section 300.6 to the Health and Safety Code stating in part *"(a) solders containing more than 0.20 percent lead shall not be used in making joint and fittings in any private or public potable water supply system or any water users piping. (c) On and after January 1, 1986 lead pipe shall not be used in the construction of private or public potable water supply systems."*

The Environmental Protection Agency's (EPA) lead drinking water rules are a critical part of reducing the lead exposure for consumers utilizing tap water in the United States. Lead poses serious health risks to both children and adults. Because lead in drinking water primarily results from leaching of lead from plumbing in homes and from lead service lines in the distribution system, a major component of the LCRR is the LSL Inventory. This inventory must include all service lines connected to the water system's distribution system, regardless of ownership or use. If the service line ownership is shared, the inventory will include both the portion of the service line owned by the District and the portion owned by the customer. EID's assertion that it has never used lead service lines in any of its three drinking water systems is supported by a thorough post-1965 drawings review and on multiple interviews with long term staff (see Appendix C for an exemplar of the questionnaire used). The LSL Inventory is due to be completed and submitted to the state of California, the primacy agency for this program, through the State Water Resource Control Board Division of Drinking Water (DDW) no later than October 16, 2024.

Data from the LSL inventory will be used by the District in updating its LCRR sampling plan to include sites that are of highest risk for lead. The LSL Inventory will also guide the District if a lead service line replacement program is required. The District will post a link to a map of the

results of the LSL inventory on its website and in the Annual Consumer Confidence Report so that the information is available to customers.

The importance of quality assurance is recognized by District management and is a vital component of the District's LSL Inventory, LSL Replacement Plan and LCRR tap monitoring plan. The District has an existing laboratory Quality Assurance/Quality Control (QA/QC) program that was used in creation of this plan. The primary commitment of the QA/QC program is to implement applicable program activities and requirements while committing time and resources to ensure data is as precise, accurate, and complete as required by the data quality objectives of the specified requirement.

Quality assurance is the cornerstone through which the District formulates planning, assessment, and ongoing improvement efforts. Quality assurance of field inspections and data review impacts the quality of data and quality of the final inventory, as well as the establishment of methods and techniques to monitor the performance of these activities. In addition, quality assurance is composed of those activities performed on a routine basis to gain an independent assessment of data integrity.

This QAPP will define the basis and rational used by the District in identifying and locating LSLs if they were installed in the distribution system. The QAPP provides a decision matrix for the District to thoroughly evaluate service line materials used throughout the distribution system. It lays out data conflict resolution, staff training programs, data storage, data management requirements, and ongoing inventory management.

2: Purpose and Objectives

The LCRR, LSL Inventory and LSL Replacement Plan QAPP is the document that ensures all data submitted to the end user is of the highest quality. The QAPP works in conjunction with the District's QA/QC Manual, specific District Standard Operating Procedures (SOPs), and specific workflow guides.

The data that is produced must be scientifically valid, defensible, comparable, and of known precision and accuracy. The objective is to provide data of a known and documented quality in order to meet LCRR, LSL Inventory, and LSL Replacement Plan requirements.

3: Roles and Responsibilities

The following section presents descriptions of the roles and responsibilities of various District staff who will generate the LSL Inventory.

Business Systems Analyst – Manages IPS, the District's computerized maintenance management system (CMMS) program database, and assists in data workflow processes. Manages data exchange between ArcGIS and IPS, generation of IPS reports, and provides general assistance where needed.

Chemist - Generates and promulgates the lead pipe identification training program. Formulates and conducts the school and daycare facility sampling plan. Provides technical assistance on the development, structure, and writing of the QAPP. Reviews technical documents, federal and

state regulations, along with guidance and training material related to implementing the LCRR and completing the service line material inventory requirement.

Drinking Water Operations and Maintenance (O&M) Manager – Primary liaison with EID's executive management team explaining the regulation, requirements, resource needs and providing project updates. Also responsible to obtain approval for funding requests related to consulting services, outside field inspection services and physical equipment identified to complete any field inspections. Helps gather information and provide technical input on District practices and procedures. Aids in review of technical documents, District procedures, and historical records. Provides input on current and past District practices related to water service line installation and replacement. Provides technical input on data provided through GIS records related to service line material.

Drinking Water O&M Supervisor – Provides general assistance. Aids in gathering information and helps direct staff on field verification. Aids in review of technical documents, District procedures, and historical records. Provides input on current and past District practices related to water service line installation and replacement. Provide technical input on data provided through GIS records related to service line material.

Environmental Compliance Inspector – Helps facilitate data collection and data management. Works with ArcGIS/IPS (Hansen) staff to sort and review data. Provides general assistance where needed. Performs QA/QC on field inspector submitted data.

Environmental Compliance Supervisor – Serves as a project lead. Assembles key personnel to develop and implement a strategy to complete the service line material inventory requirement. Prepares funding requests, prepares request for proposals for additional technical or field inspection services. Implements the current and future lead and copper regulations. Oversees staff implementing the tap monitoring requirements and prepares final reports related to the LCRR.

Field Inspector (Either District staff or a District hired contractor) – Performs onsite field inspections. Includes exposing a portion of utility and customer service lines, identifying service line material, documenting results, and capturing photographic evidence of service line material.

GIS Analyst – Manages ArcGIS database and service line inventory tools. Helps facilitate the updating of attributes (such as material type, size, etc.) for both the utility and customer owned service lines. Develops field tools to input data collected in the field into ArcGIS. Generates reports and maps related to information in ArcGIS and or the inventory tool. Provides general assistance where needed.

Lead Field Inspector – Oversees onsite field inspections, verifies field documentation for accuracy, and manages inspection schedule. Assists in verification of service line materials while overseeing inventory workflow.

4: Lead Service Line Identification, Classification, and Verification

The LCRR requires each water system to prepare a LSL Inventory report for submission to its state primacy agency by the October 16, 2024 deadline. LSL Inventory report requirements

stipulate each service line to be categorized into one of the following four categories: Lead, Galvanized Requiring Replacement, Non-Lead, or Lead Status Unknown. The District owns and operates three water systems: the Main Water System, the Outingdale Water System and the Strawberry Water System. A separate final report for each water system shall be issued to the DDW by the October 16, 2024 deadline.

The EPA has provided four pre-approved methods for service line material determination in their guidance document related to the regulation:

- Available records
- Installation date
- Physical inspection
- Pipe diameter

If the service line was installed after the California lead ban of January 1, 1986, those service lines can be categorized as non-lead without additional inspection. Service lines 4 inches or greater can also be categorized as non-lead because historical nationwide data indicates lead was never used in pipes of this size.

Other methods to use for service line material identification, as referenced in EPA guidance material, are home tap water sampling, predictive modeling, interviews, and interpolation. These methods require DDW approval.

The following outlines the District's strategy and approach to determine and report the material of service lines in order to complete the required LSL Inventory Report. The District will use, whenever it is practicable, a two part verification system as identified in Table 1 to identify the material, and determine the final classification per Table 2 of District and customer owned service lines. If a service line material is identified through an onsite inspection no further verification is required. If a date or geographical location is used as the first part of the verification process to determine the status of a group of service lines, then an additional step may be required. This additional step will be determined by the District and may include a statistical or numerical analysis of onsite inspections of the subgroup, or other methods developed by the District and approved by the DDW. On-site field inspections will be a single point inspection at the meter box in accordance with the Material Identification SOP (Appendix A). Any lines that have a diameter of 4 inches or greater is determined to be non-lead since industry records indicates lead was not used in pipelines of this size.

Customer Side

The District will classify customer service lines into the following six categories:

- **Category I**: **District's small water systems (Outingdale and Strawberry water systems)**
  The District will conduct onsite field inspections of all service lines in both of the District's small water systems due to their size.

- **Category II**: **Service lines with a structure build date of January 1, 1988 or later**
  The District will use El Dorado County building records, and/or as-built plans to identify the structure build date. When these records are incomplete, staff will assess by means of

the most current available aerial images and meter consumption records to determine if a structure is present. If no structure is present, then any future structure build date would be after January 1, 1988 and be classified as non-lead. If a structure is present, and the District cannot determine the build date, the service line will be placed in Category VI. All service lines in Category II are classified as non-lead based on structure build date.

- **Category III**: **Service lines with a structure build date after December 31, 1985 and prior to January 1, 1988**
  District staff will review El Dorado County building records, and/or as-built plan sets to identify these locations. This category was generated at the beginning of the District's formation of this QAPP to provide a more detailed look at this timeframe. Based on further information and guidance that has been promulgated since the categories were initially created (See Appendix E) this category will be treated the same as category II. All lines in this category are classified as non-lead based on install date.

- **Category IV**: **Service lines with a structure build date prior to January 1, 1951**
  District staff will review available El Dorado County building records to identify these locations. All Category IV customer service lines shall be inspected by onsite field inspection.[1,2]

- **Category V**: **Service lines with a structure build date from January 1, 1951 through December 31, 1985**
  District staff will review available El Dorado County building records to identify these locations. Based on the limited number of material suppliers and builders in the District's service area, the District asserts that there should be a high commonality in materials and building practices used in construction during the following five-year blocks of the 35-year period:

  - 1951-1955
  - 1956-1960
  - 1961-1965
  - 1966-1970
  - 1971-1975
  - 1976-1980

  These blocks will be subject to a statistical analysis based on the results of onsite field inspections. The District/Contractor will physically inspect a sufficient number of locations in each five-year block in order to prepare a statistical analysis of the service line material that will meet or exceed a 95% confidence level. If any lead service lines are found within a five-year block, staff will then conduct onsite field inspections to verify the material for all of the service lines within that five-year block. The District asserts that it has never used lead service lines on the District side of the water meter and

[1] *"Most lead service lines were installed prior to 1950" (*DDW, Frequently Asked Questions: Lead and Copper Rule Revisions (LCRR) Lead Service Line Inventory (LSL) Inventory pg. 9. *"Lead service lines were installed primarily during the late 1800s through the 1940s."* https://www.epa.gov/sciencematters/epa-researchers-share-approaches-identify-lead-service-lines

[2] District water was delivered via a ditch method prior to the District's distribution retrofit in the early 1960's. The previous delivery was replaced with a pressurized water conveyance including new service lines and meters at that time. However, the District cannot produce records of replacement for this time period, and thus the District is using the most conservative approach of structure build date in order to comply with the LSL Inventory requirements.

thus any galvanized service lines shall be designated as the identified material or non-lead. If the results of the onsite survey show that no lead service lines were located in an individual five-year block, then all of service lines in that designated five-year block will be reported as the identified material or non-lead.

- **Category VI: Water meter accounts with no structure build date**
  If District records indicate the presence of a water meter, but there is no recorded structure build date or structure value in available records, staff will review aerial imagery (i.e., GIS, Google maps, etc.) and meter consumption records. If the review determines there has been no flow through the meter, and aerial images indicate there is no structure on the parcel associated with the meter, then it shall be assumed that no customer service line was ever installed. Any future customer service line installation would be constructed post-1988 for the purposes of this categorization and therefore the location will assigned to Category II. If flow is recorded or a structure is observed in the overhead imagery then an onsite inspection shall be conducted.

The following table (Table 1) is a summary of the approach that the District will use in determining the material identification status of customer service lines. Table 1 outlines various verification procedures and how the District will categorize service lines based on customer structure build dates.

Table 1. Summary of Service Line Categories and Methods of Material Verification

CATEGORY	STRUCTURE BUILD DATE	VERIFICATION METHOD #1 (VM 1)	VERIFICATION METHOD #2 (VM 2)	RESULTS
I	N/A	Onsite inspection of all small water system service lines	N/A	Material identified in onsite inspection shall be reported.
II	Jan 1, 1988 – Present	Structure Build Date	Onsite inspection exceeds 95% confidence level for non-lead	Based on Structure Build Date all service lines are non-lead. Lines shall be reported as identified material or as non-lead.
III	Jan 1,1986 – Dec 31, 1987	Structure Build Date	Onsite inspection exceeds 95% confidence level for non-lead	Based on Structure Build Date all service lines are non-lead. Lines shall be reported as identified material or as non-lead.
IV	Dec 31, 1950 and older	Onsite inspection	N/A	All service lines are to be inspected and listed as material identified during onsite inspection.
V	Jan 1, 1951 - Dec 31, 1985	Structure build date within a designated block group	Onsite inspection exceeds 95% confidence level for non-lead for each designated block group	If the number of onsite field inspections required to meet the sample requirements of the statistical analysis are identified as non-lead then all service lines in the designated block group shall be reported as either non-lead or the identified material. If any onsite inspections result identifies a lead service line then all locations shall be surveyed within that designated 5-year block group and listed as material identified during onsite inspection.
VI	Not Available	Onsite inspection	N/A	All service lines not adjusted to other Categories are to be inspected and listed as material identified during onsite inspection.

District Side

California required public water systems to prepare a material inventory of the publicly (Utility/District) owned service lines by July 1, 2018. The District prepared that inventory and did not identify any lead service lines. District staff for the purpose of the LSL Inventory is utilizing the *Large Water Systems 2019 Annual Report To The Drinking Water Program For Year Ending December 31, 2019, Section 18* or the *Small Water Systems 2019 Annual Report To The Drinking Water Program For Year Ending December 31, 2019, Section 17* as applicable to identify the material, and determine the final status per Table 2 of District owned service lines. All District service lines are considered non-lead and no lead fittings (goosenecks, pigtail, connectors, or swivels) connected to non-lead pipes were identified. District assets shall, if possible, be inspected in conjunction with the customer side onsite field inspection and as part of the District's ongoing maintenance and inspection program. Data on all service lines inspected shall be entered into the District's asset monitoring database (staff will enter the date of the inspection, the service line material, and any other applicable data). District assets that do not have a service line material listed in ArcGIS prior to the initiation of the current LSL inventory will be inspected by a field inspector. Any lines that have a diameter of 4 inches or greater are determined to be non-lead because historical nationwide data indicates lead was never used in pipes of this size.

Onsite Inspection Personnel

In order to complete onsite field inspections the District will use District staff and/or contractor staff.

If District staff are utilized they will be required to follow the procedures outlined in the QAPP along with all rules, regulations, standards, and laws as cited in the EID employee handbook or other applicable documents. QA/QC procedures and guidelines will be promulgated in the service line material identification SOP, workflows, training documents, and section 9 of this QAPP.

If contractor staff are utilized they will be required to follow all contractor employment requirements in addition to the material identification SOP, workflows, training documents, and the QA/QC procedures of Section 9 of this QAPP.

Any contractor that provides onsite physical service line inspections for the District must possess the minimum qualifications presented in Appendix D:

Table 2 is a summary of the classification system that will be used to categorize the service line materials on both the District and the customer side of the meter.

Table 2. Summary of LCRR Service Line Classifications

District Owned Service Line	Customer Owned Service Line	Classification of 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 system is able to demonstrate it was 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

5: On Site Field Identification Standard Operating Procedure

The Standard Operating Procedure (SOP) for onsite meter box field inspections is found in Appendix A.

6: Data Management Procedures

The two main components for the LSL Inventory and LSL Replacement Program data storage, processing, and utilization are ArcGIS and Hansen/IPS. Data may be entered into either system by data upload or by mobile platform. Hansen/IPS data integrity and structure shall be managed by the Business System Analyst. ArcGIS data integrity and structure shall be managed by the GIS Analyst. The ArcGIS map shall be made available to the public within 30 days after the submission of the LSL Inventory to DDW, and considerations for public accessibility will be made (i.e. access to the visually impaired, or non-primary English speaker).

ArcGIS, (an ESRI product), is the main tool for the District to determine and display the status of all District and customer lines. This tool allows for the sorting and tracking of individual service lines. ArcGIS allows for precise mapping of each service line, allowing a visual representation that can assist in determining spatial anomalies or inconsistencies. ArcGIS also permits the District to track the percentage of lead or non-lead service lines currently in the system and to apply various parameter filters in order to aid the lead service line identification and verification criteria determination. The ESRI Field Maps mobile application will be the primary data entry point by District/Contractor staff during the period of the LSL Inventory.

IPS is the replacement for the District's previous maintenance tracking software program, Hansen. IPS is currently being on boarded concurrent with the District's formulation and promulgation of the LSL Inventory and LSL Replacement Plan programs. Once IPS is fully on boarded and integrated, it will be the primary residence location and alternate data entry point for the LSL Inventory program and any needed updates to the District's Lead and Copper Rule program. After the October 16, 2024 LSL Inventory deadline, inspections of service lines in the District's ongoing maintenance program will be entered into IPS. ArcGIS will be the primary data residence until such time as IPS is deemed ready to act as the primary.

It is expected that data entered into Hansen/IPS or ArcGIS will be interchangeable and this data flow will allow greater flexibility and better data quality to the program. Since data can be entered into either of these systems from mobile platforms, data from field operations can be directly input into the databases decreasing entry errors and updating the system in real time.

7: Data Validation Procedures

By use of the ArcGIS program each individual parameter to be assessed can be separately filtered for closer examination. It is the District's objective to eliminate, correct, or update any and all artifact, null, or inconsistent data found while determining the status of each data value. Data may be validated by several means including but not limited to the following:

- Onsite field inspection.
- Customer service line install date generated from county records or District records.

- Utility service line install date generated from District records.
- Onsite field inspections of randomly selected customer service lines sufficient to meet or exceed a 95% confidence level with a 5% confidence interval that service lines are non-lead. As conducting an onsite field inspection for every unknown customer service line in the District would be financially onerous to the District and disruptive to the customer, the District will use statistical analysis as the method of verification. If the statistical analysis fails to meet its requirements the District will form a task group to investigate the issue and determine further actions.
- Observations of District operations staff by means of a questionnaire (an exemplar of the questionnaire is found in Appendix C).

In order to establish an operating inventory list to be processed into categories, the data used to establish that list will be locked and the date noted. Any new data entered into either ArcGIS or Hansen IPS shall not affect the values used to calculate the statistical values and used for this inventory.

8: Data Recordkeeping Procedures

All data that is stored in the Hansen/IPS maintenance tracking software is located on the District's Doc Locator secure server. The Doc Locator server is managed by District personnel and subject to the document Records Retention Schedule as published and amended by the District. Data stored in ArcGIS is hosted in EID's organizational account in ESRI's online environment that requires credentialed access limited to EID's GIS analyst. Reports and documents associated with the LSL Inventory and LSL Replacement Plan are to be considered engineering report documents for the purpose of records retention.

9: Quality Assurance and Quality Control Requirement

Any District staff conducting on site field verifications shall have undergone training on the identification of pipe material prior to the initial site visit. If field instruments are used, those instruments shall be calibrated prior to use in accordance with manufacturer specifications and applicable SOPs. If any instrument fails to meet calibration or check standard requirements the test will not be conducted until the issue is resolved, or an alternate instrument that meets the above requirements shall be used.

Prior to any District staff initiating any service line field inspections they shall have completed the District's LSL Material Identification training module. Staff shall have also read and understood the Material Identification SOP, applicable workflows, and/or any associated operating manuals.

On site field inspections shall be subject to random spot checks by designated District staff in order to ensure compliance with SOPs, workflows, and/or operating manuals. If errors are found during any review then the staff procedures shall be corrected. If errors in work methods are deemed severe enough then the inspector may be required to undergo the training module again or other disciplinary action as prescribed by the Water Operations and Maintenance Manager or

their designee, in accordance with the EID employee handbook or other documents that are applicable.

A review of the onsite field inspections data uploads shall be conducted, at least weekly, in order to verify that data is being uploaded to the databases in the correct manner. The reviewer shall complete and sign the review sheet (see Appendix B) and scan the results to the Doc Locator review sheet repository. If any field data entered fails to meet any of the requirements of the review sheet, field inspectors may be ordered to return to the site in order to update information, correct misidentified photographs, or repeat the entire inspection. Inspectors that receive repeated corrective actions from the reviewers may be required to undergo the training module again or other disciplinary action as prescribed by the Water Operations and Maintenance Manager or their designee, in accordance with the EID employee handbook or other documents that are applicable.

10: Corrective Actions

The District does not intend to conduct any lead sampling. However, if the District is required to conduct lead sampling due to the presence of a lead service line, then any lead tap sampling, or other applicable analytical sampling, that results in data that fails to meet laboratory QA/QC requirements, or data where the measurements system is not performing within its normal analytical performance specifications, shall be investigated and a cause determined. The process of corrective actions for laboratory data is outlined in the District's QA/QC manual. If the corrective action is conducted by a contract laboratory then a summary of the corrective action shall be generated. A log of out of control conditions should be kept in order trend their occurrences.

If any of the statistical or random sampling procedures fails to meet specified objectives of a 95% confidence value and a 5% confidence interval, then it shall be referred to a District task group formed to investigate the root causes of the failure. The root cause investigation shall document the service lines affected, the cause of the failure (if it can be determined), and resolution of the issue. A root cause determination shall only be required if a stated material is found to be lead. A root cause determination shall not be required if the stated material is found to be another non-lead material. A summary of root cause analysis shall be included in the final report.

11: Personnel Training

Personnel are trained for field analysis in accordance the District's QA/QC manual, the LSL Inventory Material Identification SOP, training module, workflows and/or operation manuals.

Personnel shall be trained for pipe material identification prior to conducting onsite verification in accordance with SOPs. Training documents and records shall be retained on the District's Doc Locator isolated server system.

12: Inventory Report Submission

The initial inventory of service lines shall be submitted to DDW by October 16, 2024 in accordance with 40 CFR §141.84(a) and 40 CFR §141.90(e). In addition, if the District has inventoried a lead service line, a galvanized requiring replacement line, or a lead status unknown line in its distribution system that is still in service at the time of the report submission, the District must submit a lead service line replacement plan by October 16, 2024.

The inventory must include the following information:

- All service lines connected to the public water distributions system regardless of ownerships status.
- The system must review the following sources of information, as well as any other approved by the state of California for this purpose:
    - All construction and plumbing codes, permits, and existing records or other documentation which indicate the service line material.
    - All water system records, including distribution systems maps and drawings, historical records on each service connection, meter installation records, historical capital improvement or master plans, and standard operating procedures.
    - All inspections and records of the distribution system that indicate the material composition of the service connections.
    - Any resource, information, or identification method provided or required to assess service line materials.
- Each service line must be identified as either Lead, Galvanized Requiring Replacement, Non-Lead, or Lead Status Unknown.

The initial inventory report shall include at a minimum a summary table of the number of total service lines, Lead, Galvanized Requiring Replacement, Non-Lead, or Lead Status Unknown lines, and a link to the District's ArcGIS inventory map. The District shall submit separate reports for its Main System, Outingdale System, and Strawberry System. An updated version of the inventory shall be submitted to the State in accordance with the District's tap sampling monitoring period schedule as required in 40 CFR §141.90(e)(3). Once a system has demonstrated that it has no lead, galvanized requiring replacement, or lead status unknown service lines, it is no longer required to submit inventory updates. If subsequently a line requiring replacement is found in the distribution system, the District shall notify the State within 30 days and prepare an updated inventory in accordance with 40 CFR §141.84(a).

13: Developing and Updating the Inventory and Customer Notification

The Lead Service Line Inventory is a living document that should be continuously added to and improved over time until the status of all current service lines has been resolved. The initial service line inventory shall be updated and resubmitted within 30 days of the end of the District's tap sampling period, until such time as the District has demonstrated that it has no Lead, Galvanized Requiring Replacement, or Lead Status Unknown lines in its inventory. The ArcGIS LSL Inventory map made available to the public shall be updated at least as frequently as the District's tap sample monitoring periodicity. If the District declares that its system is Lead,

Galvanized Requiring Replacement, and Lead Status Unknown free and subsequently discovers a lead or galvanized requiring replacement line, an updated inventory must be submitted to DDW on a timeline set by the State of California. The LCRR requires the District to include a statement in the annual Consumer Confidence Report that the District has prepared a service line inventory and instructions on how to access the inventory. The 2023 CCR shall have a link to the ArcGIS web map and a date when the webpage is expected to go live to the public. Within 30 days of the submission of the LSL Inventory, the EID homepage will have a link to the ArcGIS LSL Inventory map.

In the unforeseen event that lead gooseneck, swivel, pigtails, or connectors owned by the District are encountered during the course of planned or unplanned system infrastructure work, it will be replaced at that time. If any lead gooseneck, swivel, pigtails, or connectors owned by the customer are encountered during the course of planned or unplanned system infrastructure work the District must offer to replace it, but the District will not bear the costs of the parts as specified by regulation. It should be noted that the replacement of any lead gooseneck, swivel, pigtails, or connectors does not count towards meeting the goals of the lead service line replacement program (if instituted). If a gooseneck, swivel, pigtail, or connector is connected to an unknown line, the service line material shall be identified prior to any operations. If the replaced gooseneck, swivel, pigtail, or connector is connected to a lead or a galvanized requiring replacement service line, prior to it being placed back in operation, the District shall provide the person served by the water system at service connection with information about the potential for elevated lead levels[3] and as a result of the disturbance must also be provided a pitcher filter, or point-of-use device certified by an American National Standards Institute accredited certifier to reduce lead, instructions to use the filter, and six months of filter replacement cartridges.[4]

Upon completion (not submission) of the initial Lead Service Line Inventory, the District has 30 days to notify customers served by a lead, galvanized requiring replacement, or lead status unknown service line. A repeat notification shall be sent on an annual basis until the entire service connection is no longer a lead, galvanized requiring replacement, or lead status unknown service line. If a new customer is served by a lead, galvanized requiring replacement, or lead status unknown service line they shall be notified at the time of service initiation.[5]

The customer notification shall include the following:

- For a lead line – the notice must include a statement that the service line is lead, an explanation of health effects, and steps to take to reduce exposure. If the line is customer owned, programs and financial support for replacing the line, and a statement that the District is required to replace its portion of the line when the customer replaces their portion of the line shall be included.
- For a galvanized requiring replacement line – the notice must include a statement that the service line is galvanized requiring replacement, an explanation of health effects, and steps to take to reduce exposure. Programs and financial support for replacing the line shall be included in the notice.

[3] Public education material shall meet the requirements of 40 CFR 141.85(a).
[4] Per 40 CFR §141.85(f)(2)
[5] Per the public education and supplemental monitoring and mitigation requirements of 40 CFR §141.85 (e).

- For lead status unknown lines – the notice must include a statement that the service line material is unknown, but may be lead. An explanation of health effects, and steps to take to reduce exposure. If the line is customer owned information about opportunities to verify the service line material shall be included.

If the District causes a disturbance to a lead, galvanized requiring replacement, or lead status unknown service line that results in the water of an individual service line being shut off or bypassed (i.e. operating a valve on a service line) without replacement of the line the customer shall be notified of the following:

- The District must provide the customer information about the potential for elevated lead levels in drinking water[6] as a result of the disturbance as well as instructions for a flushing procedure. This must be completed prior to returning the line to service. If the service line is surveyed and found to be non-lead prior to restoration of service then no notification is required.

If the District causes a disturbance of a lead, galvanized requiring replacement, or lead status unknown service line due to the replacement of a water meter, meter setter, gooseneck, pigtail, or connector, the customer shall be notified and supplied with the following:

- The District must provide the customer information about the potential for elevated lead levels in drinking water[5] as a result of the disturbance, and provide a pitcher filter or point of use device certified by ANSI to reduce lead, instructions on use, and six months of filters. This must be completed prior to returning the line to service. If the service line is surveyed and found to be non-lead prior to restoration of service then no notification or filter is required.

The District is aware that water systems that serve communities with a large proportion of non-English speaking customers public education materials must be made available in the appropriate language or contain a telephone number to obtain a translation or request assistance in the appropriate language. California government code §7296.2 defines a "substantial number of non-English speaking people" as member of a group who either do not speak, or who are unable to effectively communicate in English because it is not their native language, and who comprise 5 percent or more of the people served by the statewide or any local office or facility of a state agency. In El Dorado County, 88.28% of residents speak only English, while 11.72% speak other languages. The non-English language spoken by the largest group is Spanish, which is spoken by 5.87% of the population. The District will be providing Spanish language translations of appropriate documents or access to a translation service.

14: Lead Service Line Replacement Protocols and Timeline

The following section presents a description of LSL Replacement Protocols, Timeline and Triggers. The District understands that EPA intends to publish a proposed LCR Improvements Rule in September 2023 and publish the final LCR Improvements Rule by the October 16, 2024 LSL Inventory deadline. The District recognizes that some of the requirements presented in this

[6] Public education material shall meet the requirements of 40 CFR §141.85(a)

section may in fact be modified by the LCR Improvements Rule. If that is the case, the District will revise this QAPP to reflect EPA's updated LCRR.

If upon completion of the Initial LSL Inventory any lines are classified as lead, galvanized requiring replacement, or lead status unknown, the District shall initiate a LSL Replacement Plan. The Lead Service Line Replacement Plan is due to the State by October 16, 2024. The number of service lines requiring replacement must be updated annually to subtract the number of lead status unknown service lines that were discovered to be non-lead and to add the number of non-lead service lines that were discovered to be lead or galvanized requiring replacement. The verification of a lead status unknown service line as non-lead in the inventory does not count as a service line replacement.

The Lead Service Line Replacement Plan must include a description of each of the following components:[7]

- A strategy of determining the composition of the lead status unknown service lines in its inventory.
- A procedure for conducting full lead service line replacement.
- A strategy for informing customers prior to a full or partial lead service line replacement.
- A lead service line replacement goal rate recommended by the system in the event of a lead trigger level exceedance.
- A procedure for customers to flush service lines and premise plumbing of particulate lead.
- A funding strategy for conducting lead service line replacements which considers ways to accommodate customers that are unable to pay to replace the portion they own.

Operating procedures for replacing lead goosenecks, swivel, pigtails, or connectors shall include the following requirements:[8]

- The District must replace any lead gooseneck, swivel pigtail, or connector it owns when encountered during planned or unplanned water system infrastructure work.
- The District must offer to replace a customer-owned lead gooseneck, swivel, pigtail, or connector; however, the water system is not required to bear the cost of replacement of the customer-owned parts. The District is not required to replace a customer owned lead gooseneck, swivel, pigtail, or connector if the customer objects to its replacement.
- The replacement of a lead gooseneck, swivel, pigtail, or connector does not count for the purposes of a lead service line replacement.
- Upon replacement of any gooseneck, swivel, pigtail, or connector that is attached to a lead service line follow the notification and mitigation procedure in section 13 above.

Requirements for conducting partial lead service line replacement shall include the following:

- If in the course of planned infrastructure work the District plans to replace only a District owned lead service line (and the customer owned service line is non-lead), it must provide at least a 45 day notification to any owner, owner agent, or non-owner resident

[7] Per 40 CFR §141.84 (b)
[8] Per 40 CFR §141.84 (c)

served by the line. If the service line is designated as lead status unknown and an onsite survey is conducted prior to initiation of work, and the service line is re-designated as non-lead, the following notification procedures are not required.

- The District must provide the customer information about the potential for elevated lead levels in drinking water [9] as a result of the disturbance, and provide a pitcher filter or point of use device certified by ANSI to reduce lead, instructions on use, and six months of filters. This must be completed prior to returning the line to service.
- The District shall offer to collect a follow up tap sample between three and six months after completion of the service line replacement.

If the District replaces a portion of a lead service line due to an emergency, the same procedures as above (with the exception of 45 day notification) shall be met.

Any District lead service line replacement initiated due to a customer service line replacement shall be conducted within 45 days of notification to the District. If the service line is not replaced within the time frame, the District shall notify the State within 30 days in order to request an extension of up to 180 days from the date of initiation.

If the District learns of or becomes aware of any customer lead service line replacement that has occurred in the previous 6 months, the District has 45 days from the date it became aware to replace its portion of the service line following the procedures noted above. The District shall supply the necessary notification and risk mitigation information within 24 hours of becoming aware of the customer line replacement.

If the District learns of or becomes aware of any customer lead service line replacement that has occurred more than six months in the past, the District is not required to complete the lead service line replacement of the District owned line. However, the District owned portion must still be included in the calculation of a lead service line replacement rate.

Requirements for conducting full lead service line replacement shall be the following:

- If the District replaces a full lead service line it shall provide notice to the owner, owner's agent, or non-owner resident within 24 hours of completion. The District is not required to bear the cost of the customer's portion of the service line. If the service line is designated as lead status unknown and an onsite survey is conducted prior to initiation of work, and the service line is re-designated as non-lead, the following notification procedures are not required.
- The District shall provide information about service line flushing prior to the restoration of service.
- The District must provide the customer information about the potential for elevated lead levels in drinking water [10] as a result of the disturbance, and provide a pitcher filter or point of use device certified by ANSI to reduce lead, instructions on use, and six months of filters. This must be completed prior to returning the line to service.
- The District shall offer to collect a follow up tap sample between three and six months after completion of the service line replacement.

[9] Public education material shall meet the requirements of 40 CFR 141.85(a)
[10] Public education material shall meet the requirements of 40 CFR 141.85(a)

Routine sampling monitoring triggers that would require acceleration of the LSL replacement plan:

If tap samples whose 90th percentile are above the lead trigger level (10 µg/L) but are below the action level of 15 µg/L the District shall conduct goal-based full lead service line replacement at a rate approved by the state and in concurrence with the following:

- The District shall calculate the number of full lead service line replacements it must conduct annually in accordance with 40 CFR 141.84 (a)(7).
- Any lead service line replacement shall be conducted in accordance with those stipulations noted above.
- Only full lead service line replacements count towards the District's annual replacement goal. Partial service line replacement does not count towards the goal.
- The District shall provide any customer served by a lead, galvanized requiring replacement, or lead status unknown service line with information regarding the District's lead service line replacement program and opportunities for replacement of the lead service line. This notification shall be sent within 30 days of the end of the tap sampling period in which the trigger level exceedance occurred. The notice shall be sent by mail or any other method approved by the State of California for this purpose.

If the tap sample results 90th percentile exceed the trigger limit and the District fails to meet its service line replacement goals it must annually conduct, until sampling shows the 90th percentile for lead is at or below the trigger level, at least one of the following:

- Certified mail to customers with a lead or galvanized requiring replacement service line with information concerning the District's replacement goals and opportunities for line replacement.
- Conduct a townhall meeting
- Participate in a community event to provide information concerning the District's replacement goals and opportunities for line replacement.
- Contact customers via phone, text message, email, or door hanger.
- Any other method approved by the state of California for this purpose.

If the District fails to meet its lead service line replacement goals after the first year following a trigger level exceedance, it shall conduct one of the options presented above as well as two of the following:

- Conduct a social media campaign.
- Conduct outreach via newspaper, television, or radio.
- Contact organizations representing plumbers and contractors by mail to provide information about lead in drinking water including health effects, sources of lead, and the importance of using lead free plumbing materials.
- Visit targeted customers in order to discuss the lead service line replacement program, and opportunities for replacement.

The District may cease outreach activities when tap sampling shows that the 90th percentile is at or below the trigger level for two consecutive tap sampling monitoring periods.

15: Revision History

LSL QAPP Revision History			
Version	Date Approved	Author	Revision Notes
1.0	N/A	John Peterson	Initial Draft
1.1	4/24/23	John Peterson	Final document to be submitted to DDW

16: Certification Statement

Adherence to the LCRR Inventory and LSL Replacement QAPP will ensure that the highest quality data is submitted to all governing bodies.

Nicole Graham

Environmental Compliance Supervisor

Patrick Wilson

Drinking Water Operations Manager

Dan Corcoran

Operations Director

Brian Mueller

Engineering Director

Appendix A

Service Line Material Identification

Standard Operating Procedure

Lead Service Line Inventory Standard Operating Procedures **Service Line Material Identification**		SOP No.: LSL-001
		Board Policy #/ Admin. Regulation #: BP 0010 & BP 5010
		Effective Date: May 01, 2023
Supervisor Approval: Name: Nicole Graham Environmental Compliance Supervisor	Manager Approval: Name: Patrick Wilson Drinking Water Operations Manager	Revision Date:

Section 1. Purpose

This Standard Operating Procedure (SOP) is designed to assist personnel in the field in identifying service line material composition. This is in furtherance of the EPA promulgated Lead Service Line (LSL) Inventory program. Per the EPA's direction all service lines, both District owned and Customer owned, are to be identified and reported to the state of California by October 16, 2024. In addition the District program of service line material inspection and reporting that will be ongoing until the District is certified as lead free.

Section 2. Objective

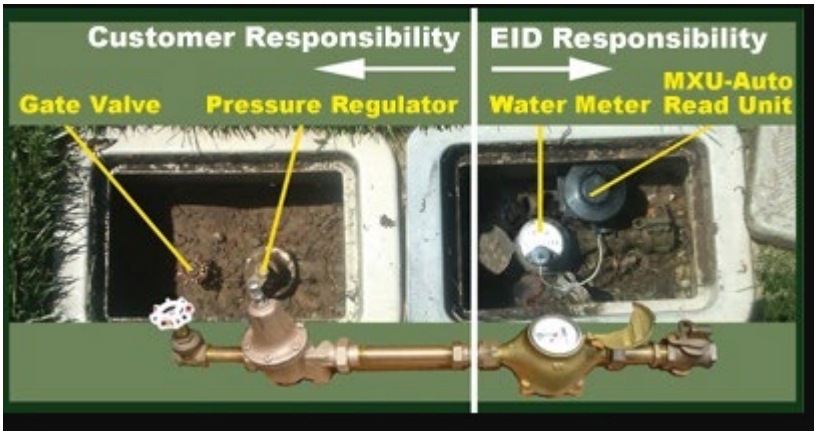
The objective is to prepare a thorough and accurate LSL Inventory. The information in the LSL Inventory will be critical in future updates of the District's Lead and Copper Rule sampling program per EPA regulations.

Section 3. List of Material (this list is not to be considered exclusive and is subject to revision)

1. LSL Inventory Form or LSL Inventory tablet application for recording data
2. Tool for opening meter boxes
3. Strong magnet
4. Trowel or other tool for breaking up compacted dirt/debris in boxes
5. Portable Vacuum (if available)
6. Material identification placards
7. Service Line Material SOP
8. Employee/Contractor ID badge
9. Gloves
10. Flashlight
11. Bucket for spoil removal
12. Hydrovac (if available)
13. Knee pads / cushions
14. Customer information materials

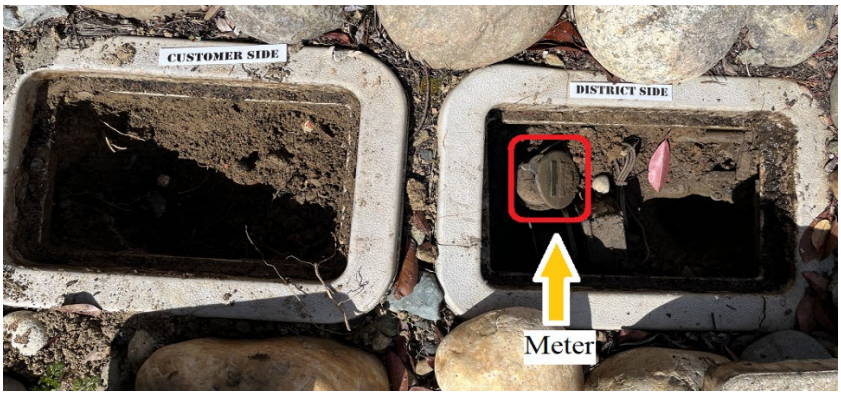
15. Wet weather garments
16. Hearing and eye protection

Section 4. Procedure (for meters with 2 boxes) this procedure is to be used in conjunction with the Field Investigation of Service Lines: Lead and Copper Lead Service Line Inventory workflow procedure.



1. Upon arrival at the location of the onsite inspection for two box installation
    a. Locate meter, verify the box is drinking water and not recycled water at locations where the District provides both services.
    b. Using tablet or camera take photo of the meter box prior to starting inspection. If possible include the residence in the picture for later reference.

    c. Use tool to open the Customer side box and the District side box.



d. Check for any animals or dangerous conditions. If any exist, stop get to a safe area and record in the application notes section what the danger was. Notify supervisor of the dangerous condition and proceed to the next meter.

e. Verify meter number matches the meter box to be surveyed if possible. The meter number may be on the lid to the meter or the body of the meter.

f. If the meter number cannot be identified, verify the MXU number on the radio unit (if applicable).

g. Using tablet or camera take photo of meter ID number or radio unit MXU number.

h. If dirt and/or debris is in the box obstructing view of the service line material, carefully remove dirt/debris. Use trowel to break up or remove dirt/debris and collect in bucket for removal. Use vacuum if available, to remove dirt/debris. Use hydrovac system if available along with associated personal protective equipment. Use caution in removal of foreign material so that you do not cause damage to meter equipment or service lines. Use diagram #1 (below) to determine the type of material.

Diagram #1

Types of Water Service Lines

Lead – a dull silvery-gray metal that is easily scratched. Strong magnets will not stick to lead pipes.

Plastic – black, blue, or white in color. A strong magnet will not stick to a plastic pipe.

Galvanized – a dull silver-gray metal that is not easily scratched. A strong magnet will stick to galvanized pipes.

Copper – The color of a penny or green. A strong magnet will not stick to copper pipes.

Rolled Copper – Same as **Copper** but has a sleeve made of polyethylene that is usually colored blue

2. Customer Side
   a. Continue to remove dirt/debris until the service line material on the customer side of the gate valve can be clearly seen. Ensure that you are looking at the service line and not the coupling.
   b. Staff can conduct a scratch test, tap test, or use a magnet to help determine the service line material.

c. Use caution in attempting to scratch any service lines. DO NOT scratch hard enough to damage the service line and possibly cause a leak.

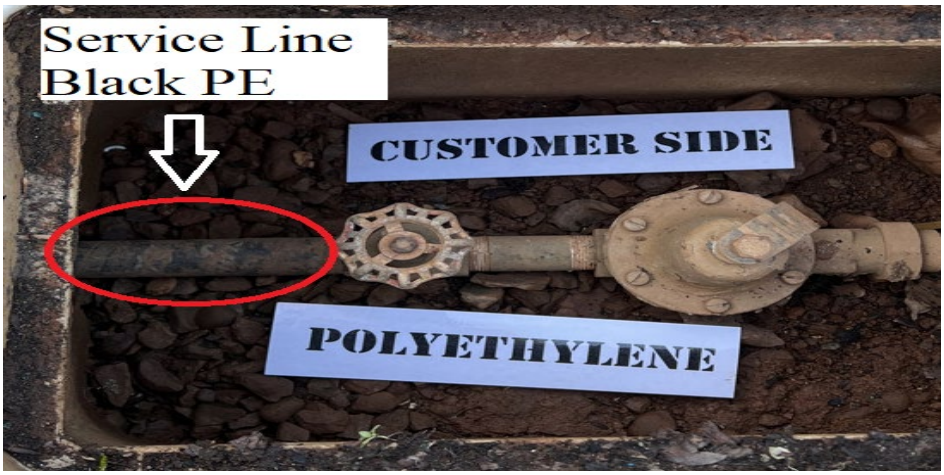
d. Record the following data on the App on the tablet:

   i. Customer side material using dropdown menu. If already listed and surveyed material is the same go to next step.

   ii. Customer side line diameter using drop down menu. If already listed and surveyed diameter is the same go to next step.

   iii. Customer Side Verified using drop down menu.

e. Lay out ID cards and using tablet or camera take photo of the customer side of the meter.



3. District Side

a. Continue to remove dirt/debris until the service line material on the District side of the meter can be clearly seen. If the bottom of the meter box is screened and the District side line is inaccessible proceed to step f.

b. Staff can conduct a scratch test, tap test, or use a magnet to help determine the service line material.

c. Use caution in attempting to scratch any service lines. DO NOT scratch hard enough to damage the service line and possibly cause a leak.

d. Record the following data:

   i. Confirm District side material using dropdown menu. If already listed and survey material is the same go to next step.

ii. Confirm District side line diameter using drop down menu. If already listed and survey diameter is the same go to next step.

iii. Select "District Side Verified" using drop down menu on the App on the tablet.

e. Lay out ID cards and using tablet or camera take photo of District side of the meter.

f. Replace both box covers and clean up area.

g. Using tablet or camera take a post inspection photo. Use same angle as prior to inspection.

Water Service Pipe Identification

	Lead	Galvanized Iron	Copper	Plastic
Outer Appearance	Dull gray, bendable; Often curves may have a "bulb" shape	Dark gray or black; Straight ridged pipe	Copper or green; Straight ridged pipe	Black, blue or white; Straight ridged pipe If purple pipe is found verify water and not recycled water
Threads at Connection	None	Yes	None	Yes
Scratch Test	Shiny Silver	Hard to scratch remains gray	Shines copper colored like a new penny	May leave a grove, no change in color
Magnet Test	Does not stick	Magnet will stick	Does not stick	Does not stick

Description of Scratch Test, Magnet Test and Tapping Test

Step 1:

Locate the water service line.

Step 2:

Carefully use the flat edge of a screwdriver or coin to scratch through any corrosion that may have built up on the outside of the pipe. Use caution so as not to puncture the line. If the line is punctured shut off the water by use of an upstream valve immediately and notify the customer and a supervisor (contractors shall immediately notify District staff in order to assist in operating any system valves).

Step 3:

Using the chart below identify the material of the service line.

Lead Pipes

The Scratch Test -
If the scraped area is shiny and silver the service line is lead.

The Magnet Test -
A magnet will **not** stick to a lead pipe.

The Tapping Test -
Taping a lead pipe with a coin will produce a dull noise

Copper Pipes

The Scratch Test -
If the scraped area is copper like a penny the service line is copper.

The Magnet Test -
A magnet will **not** stick to a copper pipe.

The Tapping Test -
Taping a copper pipe with a coin will produce a metallic ringing noise

Galvanized Pipes

The Scratch Test –
If the scraped area remains a dull gray the service line is galvanized.

The Magnet Test -
A magnet will stick to a galvanized pipe.

The Tapping Test -
Taping a galvanized pipe with a coin will produce a metallic ringing noise

Appendix B

Lead Service Line Inventory QA Check Sheet

_____
Meter ID

Is the Utility Material field complete? ☐ Yes ☐ No

Is the Utility Diameter field complete? ☐ Yes ☐ No

Is there a Utility Verification? ☐ Yes ☐ No ☐ Incomplete

Is there a Utility Verification date? ☐ Yes ☐ No

Is the Customer Material field complete? ☐ Yes ☐ No

Is the Customer Diameter field complete? ☐ Yes ☐ No

Is there a Customer Verification? ☐ Yes ☐ No ☐ Incomplete

Is there a Customer Verification date? ☐ Yes ☐ No

Does the Meter ID# or MXU number listed match the photo?
☐ Yes ☐ No

Does the material in the photo match the listed material ☐ Yes ☐ No

Does the material in the photo match the listed material ☐ Yes ☐ No

_____ _____

Signature Date

Appendix C
Interview Questionnaire

- Interviewer Name
- Interviewee Name
- Current Employee, Retired Employee, or Contractor
- Date
- How long have you been with the District/Company?
- Please describe briefly your duties with the District (and history of your Company with the District).
- Please describe briefly previous related work experience/education related to public drinking water supply.
- Are you familiar with the distinction between the utility-owned side and customer-owned side of a water service line?
- Do you think you would be able to identify a lead service line connected to the water meter either on the utility side or the customer side?
- Do you think you would be able to identify a Galvanized service line connected to the water meter either on the utility side or the customer side?
- Have you ever seen a Lead service line on the District side of any water meter?
    - If yes, approximately how many?
- Have you ever seen a Galvanized service line on the District side of any water meter?
    - If yes, approximately how many?
- Have you ever seen a Lead service lines on the Customer side of any water meter?
    - If yes, approximately how many?
- Have you ever seen a Galvanized service lines on the Customer side of any water meter?
    - If yes, approximately how many?
- Have you ever seen a Lead gooseneck, pigtail, swivel, or connector on any pipe in the District?
    - If yes, approximately how many?
- Approximately what percentage of the District service lines have you seen? If not percentage, what geographic locations have you seen?

- Approximately what percentage of the Customer service lines in the District's service area have you seen? If not percentage, what geographic locations have you seen service lines?
- Is there any area in the District where you have not seen service lines?
- To the best of your knowledge are District customer service lines all the same material from the meter to the entry into the house?
- Did you ever receive any information from other employees or contractors that worked prior to your employment indicating that there was Lead service lines or goosenecks, pigtails, swivels, or connectors anywhere in the District? If yes, please give a brief description.
- Have you ever seen any indication of Lead service lines or goosenecks, pigtails, swivels, or connectors on any District drawing or map. If yes, please give a brief description.
- To the best of your understanding was there ever any Lead materials used by the District in service line construction?
- Have you or anyone that you are aware of ever been notified by a contractor, plumber, or customer about Lead anywhere in the District, either on the District or the Customer side of the meter? If yes, please give a brief description.
- Are all the answers provided during this interview true to the best of your knowledge?

The above statements were documented by _____ on _____

Interviewer Printed Name Date

_____

Interviewer Signature

Appendix D

Contractor Qualifications for Field Inspections

- The contractor shall have been regularly engaged in the business that includes buried pipe material identification for at least three years.
- The contractor shall have an active Class A contractor's license from the Contractor's State License Board at the time of submitting bid proposal to the District.
- The contractor shall possess all permits, licenses, and professional credentials necessary to perform the services outlined in the request for proposal (RFP).
- The contractor shall provide all equipment and personnel necessary to complete the work. Equipment shall include, but is not limited to, that necessary for material identification and data collection mobile devices in order to record all data stipulated in the RFP. The contractor shall also provide any additional safety equipment/gear as deemed necessary by the District prior to the commencement of work.
- The contractor's staff lead shall possess a minimum of five years of pipeline and service maintenance experience.

Any contractor that provides onsite physical service line inspections for the District shall provide the following as a minimum in order to meet the project requirements:

- The contractor shall develop and implement a Project Management Plan (PMP) detailing the manner in which the project will be planned, managed, and executed. The PMP shall specify how the contractor's management team will deliver the required inspection goals and the means by which that data will be delivered to the District. The PMP shall also reflect the means by which the goals and requirements of the QAPP shall be satisfied. The PMP will be updated and necessary, including in order to conform to any updates or revisions in the QAPP, in a timely manner and any changes shall be submitted to the District prior to implementation.
- The contractor shall develop a written QA/QC program in order to detail how the contractor will correctly identify service line material, minimize any damage to District or Customer property, ensure professional interactions with any Customers, and record and manage all data collected. The contractor QA/QC program must meet all of the QA/QC requirements as delineated in the QAPP and the QAPP shall hold preference in any conflicts. The contractor shall submit the QA/QC program to the District for review and comment prior to commencing any work. Data shall be submitted to the District on a minimum biweekly basis for review. If any discrepancies are found the contractor will re-inspect the service lines in question at the contractor's expense. If greater than 3% of the service lines in a given two week period are found to have discrepancies the contractor shall re-inspect all service lines inspected during that period and submit an action plan to prevent reoccurrence of the issue at the contractor's expense.
- The contractor shall develop and supply to the District a material identification training program that will be reviewed and approved by District staff prior to the commencement

of work, and all contract inspectors shall complete the training program prior to commencement of field inspections.

- The contractor shall, upon completion of the PMP, QA/QC program, and training program, provide a kickoff meeting with District staff. The kickoff meeting will review the planned roles and responsibilities, project scope, budget, invoicing, timelines, and program deliverables. The purpose of the kickoff meeting is to harmonize and align contractor and District staff on the goals, objectives, and expectations of all stakeholders and to set forth the milestones and measurements of program success.
- The contractor will conduct at least biweekly teleconference calls with District staff in order to review program progress, resolution of QA/QC issues, timelines, and near term plans and action items. The contractor shall generate a monthly progress report. These reports shall be delivered by the 15th day of the month following the month the report covers. Reports shall be generated monthly for the duration of the project and shall include, but is not limited to, the following:
    - An assessment of the project progress (planned versus actual) in completion of the scope of services as delineated in the RFP including the tasks and deliverables.
    - The number of successfully completed onsite physical inspections and the results of the material identified on both the District and Customer side of the meter. The number of failed inspections and the reason for the failure. The number of inspections completed to date, and a description of any customer interactions including a brief description of the event, date, and time.
    - Action item and decision log whereby the contractor records any project concerns or issues which require resolution by the District and/or the contractor.
- The contractor shall develop and implement an electronic data management system to record, organize, and report all service line information to the District. Prior to initiation of the project the electronic data management system shall be reviewed by the District. The electronic data management plan shall be required to be in a format that is compatible with importation into either the District's ArcGIS or Hansen IPS information systems. The District will require access to the data management system in order to conduct QA/QC review at any time. Any field information shall be uploaded to the contractor data management system within 3 business days of the date of the onsite field inspection. The data management system must meet the requirements of recording and transmitting the results of each field specified by the District in the RFP, in addition to photo management and transmission.
- The contractor shall develop a field inspection procedure that meets or exceeds the requirements as set forth in the EID material identification SOP (Appendix A)
- Only trained field inspectors shall have interaction with customers. Any interaction shall be noted and a brief summary of the interaction shall be recorded and included in that month's report. The District will supply all field inspectors with an informational flyer that will describe the nature and reason for the onsite physical inspections, and contact information for any further questions. Inspectors shall wear a uniform, carry and present identification when questioned, and leave a business card with contact information whenever requested. Any negative interaction with a Customer and the field inspection

team shall note a summary of the interaction and proceed directly to the next inspection site.

- If contractor staff is responsible for any damage to District or Customer properties or assets during the course of their inspections, they shall notify the District immediately. The contractor shall also have on call qualified plumbing staff or a plumbing contractor for emergency repairs. Any repair to Customer properties or assets shall be solely at the contractor's expense and at no cost to the District or Customer. Any repairs conducted shall be subject to District evaluation and completed to the Districts satisfaction. Any damage to District properties or assets shall be repaired by District staff. The contractor shall be financially responsible for any contractor caused damage to District assets or properties.
- At no time shall contractor staff operate any valves in the District's water distribution system without expressed written consent.
- If any lead material is found in the course of the onsite physical inspections the inspection staff shall immediately notify District liaison staff.
- If contractor staff is required to enter a gated community they will coordinate with the District liaison staff for entry and will follow all city, state, federal, and county regulations.
- The contractor shall protect the confidentiality of any and all personal Customer information managed during the course of this project. That information shall include but is not limited to customers address, names, and account numbers. Upon the completion of the project and with District concurrence all customer personal information shall be destroyed.
- Onsite field work will occur only between the hours of 8 AM and 5 PM Monday through Friday. Any work to be conducted on Saturday, Sunday, or any state or federally recognized holiday requires the prior approve from District staff.
- The contractor shall meet any and all requirements delineated in the RFP and any contracts entered into for the purpose of completion of the Lead Service Line Inventory project.

Appendix E

List of References Used to Compile This QAPP

1. Code of Federal Regulations Title 40
2. California Water Boards Fact Sheet – Frequently Asked Questions: Lead and Copper Rule Revisions (LCRR) Lead Service Line (LSL) Inventory
3. EPA Guidance for Developing and Maintaining a Service Line Inventory
4. EPA Service Line Inventory Template
5. Statutes and Amendments to the Codes, California, 1985, 1985-86 Regular Session, Volume 2, 1985 Chapters 526-1203
6. Association of State Drinking Water Administrator's (ASDWA) Lead Service Line Inventory Symposium Sessions 1-8
7. Association of State Drinking Water Administrator's (ASDWA) State Implementation Framework for the Lead Service Line Inventory Requirements under EPA's Lead and Copper Rule Revisions (LCRR)
8. Association of State Drinking Water Administrator's (ASDWA) Blue Conduit white paper "Principles of Data Science for Lead Service Line Inventories and Replacement Programs
9. American Water Works Association Lead Communications Guide and Toolkit
10. American Water Works Association Planning Ahead for Changes in Lead and Copper Rule Sampling webinar
11. American Water Works Association Journal January/February 2022 article "Service Line Material Identification Experiences From North American Water Systems"
12. American Water Works Association California-Nevada Section Annual Fall Conference Session 11 "Pasadena Water and Power Lead Service Line Testing on Customer Property" webinar
13. State Water Resources Control Board Listening Sessions
14. Water Industry Guidance for Completing Inventory Requirements of the Federal Lead and Copper Rule Revisions – multiple California industry partners
15. Developing and Verifying a Water Service Line Inventory – Duffy and Pickering
16. Pasadena Water and Power Lead Service Line Testing on Customer Property webinar