Quality Assurance Project Plan

for

State of Delaware Department of Education

Lead Sampling Program for Schools & Child Care Facilities

Water Infrastructure Improvements for the Nation Act Grant

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Note: This approval action represents EPA's determination that the document(s) under review comply with applicable requirements of the EPA Region 3 Quality Management Plan [https://www.epa.gov/sites/production/files/2020-06/documents/r3qmp-final-r3-signatures-2020.pdf] and other applicable requirements in EPA quality regulations and policies [https://www.epa.gov/quality]. This approval action does **not** represent EPA's verification of the accuracy or completeness of document(s) under review, and is **not** intended to constitute EPA direction of work by contractors, grantees or subgrantees, or other non-EPA parties.

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Revision History

This table shows changes to this controlled document over time. The most recent version is presented in the top row of the table. Previous versions of the document are maintained by Project Manager.

Document Control Number	History/ Changes	Effective Date
000000.0	Original Version	07/29/2019

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List of Abbreviations

3T's - 3Ts for Reducing Lead in Drinking Water in Schools Report
COC – Chain of Custody
DL – Detection limit
DOE – Delaware Department of Education
DPHL – Delaware Department of Health and Social Services Public Health Lab
EDD – Electronic Data Delivery
EPA – United States Environmental Protection Agency
HSP – Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection
LSP – Lead Sampling Program for Schools and Child Care Facilities
ppb – Parts per billion
PPE – Personal Protection Equipment
QA – Quality Assurance
QAPP – Quality Assurance Project Plan
QC – Quality Control
QL – Quantification limit
S.U. – Standard Unit
WIIN - Water Infrastructure Improvements for the Nation Act

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A PROJECT MANAGEMENT

This Quality Assurance Project Plan ("QAPP") has been prepared for Delaware's Lead Sampling Program for Schools and Child Care Facilities ("LSP"). This sampling project adds to Delaware's efforts to safeguard the health of its children by sampling for the presence of lead in drinking water at schools and child care facilities ("Facilities"). This section of the QAPP describes how the project will be managed, organized, and implemented.

A1. Title and Approval Page – See Page 1

A2. Table of Contents – see Pages 4-5

A3. Distribution List

The following individuals in Table 1-1 will receive a copy of this approved Quality Assurance Project Plan (QAPP) and any subsequent revisions. The roles listed in Table 1-1 are detailed in Section A4.

A4. Project Organization

The Delaware Department of Education ("DOE") is the grant recipient and administrator of the Lead Testing in School and Child Care Program Drinking Water Grant Program as authorized by Section 2107 of the Water Infrastructure Improvements for the Nation Act ("WIIN Act"). The participating agency is the U.S. Environmental Protection Agency, Region 3 ("EPA"). The Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection ("HSP") will coordinate laboratory testing, provide technical assistance, and host sampling data in a database.

Each staff member is individually and ultimately responsible for understanding and adhering to the quality procedures and field and sample methods they perform, and for the quality of the data they collect or produce. Lines of authority and communication are shown in the organization chart in Figure 1. The responsibilities of personnel involved in project implementation are enumerated below.

A4.1 DOE Project Sponsor

DOE will be responsible for the implementation of the lead sampling program including the following activities:

- Oversee resource allocation
- Review and approve QAPP and any other relevant grant documentation
- Oversee project and ensure completion
- Report results on DPH's website

A4.2 DOE Project Manager

The Project Manager(s) will:

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- Conduct outreach with potential participants (schools and childcare centers) and stakeholders
- Review and approve QAPP and any other relevant documentation
- Distribute final QAPP
- Reviewing and amending this QAPP as necessary and notifying QAO
- Authorize all changes or deviations in the operation of the project, including management and implementation of any corrective actions
- Issue reports as applicable

A4.3 HSP Program Consultant

HSP will:

- Ensure all project personnel are properly trained and/or have the skills to fulfill assigned project tasks
- Conduct a readiness review prior to any data collection step, including completing any relevant health and safety plans and acquiring collection permits or other permissions as applicable, and ensuring all equipment and supplies are sufficient.
- Oversee participation, data collection, and data analysis tasks, ensuring all protocols and this QAPP are followed during sampling and other project activity
- Provide results to DOE, including preparing a summary of any data quality issues
- Retaining project records according to the FSB Records SOP and applicable Agency policy
- Assist with remediation efforts by assessing lab results and infrastructure data, making remediation recommendations, and supporting the facilities in selecting and implementing remediation strategies
- Coordinate collection of samples if not performed by Facility Partner

A4.4 DPHL Laboratory Partner

DPHL will be responsible for:

- Reading and being familiar with this QAPP and the related standard operating procedure(s) (SOPs) for any activity they perform.
- Ensuring they are properly trained and/or have the skills to fulfill assigned project task
- Identifying and reporting to the Project Manager any emerging/unanticipated problems, data anomalies, or other data issues.
- Annotating the related SOPs for any activity they perform if necessary and permanent changes arise or authoring new SOPs if a gap exists.
- Recording, entering, verifying and validating data as outlined in this QAPP
- Maintaining data and retaining project records in conjunction with the project manager and in accordance with the FSB Records SOP and applicable Agency policy

A4.5 Facility Partner

The Facility Partners consist of the points of contact for the schools (typically the District Buildings and Grounds Supervisor) and the childcare centers. They will be responsible for:

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- Providing information and decision making for the facility during this program
- Obtaining samples when HSP staff is not available for collection, including training for collection procedures, design of a sampling plan, collecting the samples, determining and conducting remediation steps (if any), and communicating findings with stakeholders

A4.6 Quality Assurance Officer

The Quality Assurance Officer (QAO) will be responsible for the following activities:

- Reviewing QAPP
- Working with appropriate QA staff to obtain document control number and finalize document in the system
- Discussing any corrective actions or other quality issues with Project Manager and any relevant staff as applicable

A4.7 Regional Field Quality Manager

The Regional Field Quality Manager will be responsible for the following activities:

- Reviewing QAPP if multiple divisions are involved in project
- Working with QAO to obtain document control number and finalize document in the system

A5. Background/Problem Definition

Lead is a toxic metal that can be harmful to human health when ingested. Young children under the age of six are particularly sensitive to the effects of lead because their bodies are still undergoing development. Lead can enter drinking water if it is present in the source water or by interaction with plumbing materials containing lead (through corrosion). Common sources of lead in drinking water include solder, fluxes, pipes, pipefittings, fixtures, and sediments. It is possible that different drinking water fixtures in a given building could have dissimilar concentrations of lead.

With the funding appropriated under section 1464(d) of the Safe Drinking Water Act, amended by the Water Infrastructure Improvement for the Nation Act ("WIIN") section 2107, the DE DOE plans to sample for the presence of lead in drinking water in school and childcare facilities. This will include the prioritization of facilities serving young children (ages six and under), underserved and low-income communities, and facilities that are older and more likely to contain lead plumbing.

The DOE and HSP are using EPA's 3Ts guidance[1] as a model to: (1) **Communicate** the results and important lead information to the public, parents, and teachers throughout the program; (2) **Train** Facility staff on the risks of lead in drinking water and testing for lead, as well as developing key partnerships to support the program; (3) **Test** using appropriate testing protocols and a certified laboratory; and (4) **Take Action**, including the development of a plan for responding to results of testing conducted and addressing potential elevated lead where necessary.

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A6. Project Task Description

The DOE anticipates available funding will provide sampling at 19 school districts, 22 charter schools, and 452 child care centers (collectively known as "Facilities"). The DOE will prioritize Facilities if they: 1) serve children that have a higher percentage of free/reduced lunches and are under the age of 6; 2) are located in buildings that have known lead components; and 3) by the age of the facility.

Once a Facility has been accepted into the program, the Facility Partner will work with the Program Consultant to create a sampling plan. Facility Partners will coordinate sampling with the Program Consultant or receive a Testing Kit from DPHL containing all the materials they will need to implement their sampling plan.

The Program Consultant or Facility Partner will collect drinking water samples from all drinking water sources, including: water fountains (chilled and non-chilled), food preparation fixtures (located in the cafeteria, kitchen, and home economics classrooms) and other fixtures where children might regularly drink the water. Custodial sinks and outside spigots may be sampled if Facility Partners indicate they are used for drinking water, including filling coolers or other containers used for drinking. The Sampling Protocol (Appendix A-1) provides more detail on appropriate sampling locations.

The Program Consultant or Facility Partner will collect first draw samples at all fixtures. They may also collect 30-second flush samples at drinking water fixtures specified in the Sampling Protocol. The Program Consultant will either perform sampling directly or provide specific guidance for sampling by the Facility Partner. DPHL, which maintains an EPA certification for the analysis of lead using EPA drinking water methods, will perform the analysis for lead. HSP Environmental Scientists will review sample results and coordinate with the Facility Partner on appropriate lead remediation actions, if necessary.

A6.1 Project Schedule

- FY2022 Quarter 2: Continue to work with Delaware Division of Public Health to collect water samples from remaining LEAs. Build link on the department's website, publish available resources to the department' website, and receive funding from federal award agency.
- FY2022 Quarter 3: Communicate with Delaware Division of Public Health on status of water sample collections, review any collected results and begin work on publishing information to the department's website.
- FY2022 Quarter 3 and 4: Continue collect water samples from remaining LEAs and to communicate ~~program and~~ results ~~to LEAs~~ and discuss remediation plans. ~~Continue to receive and research educational information to post to the department's website.~~Update program websites as needed and ~~S~~ send out

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communication to licensed child care centers of program details and notification of water collections expected start date.

- FY2022 Quarter 4: Finalize spending plans and review allocation with Delaware Division of Public Health. Ensure all specified LEAs are tested and results have been received. Continue to support remediation plans for LEA's as needed. Begin testing licensed childcare facilities.
- FY2023 Quarter 1 through 3: Continue testing licensed childcare facilities and report results to the department's website. Communicate program and results to licensed childcare facilities and discuss remediation plans.
- FY2023 Quarter 4: Finalize testing of licensed childcare facilities and ensure all results are reported on the department's website. Continue supporting remediation plans as needed. Finalize spending plans and reports as required.

A7. Quality Objectives and Criteria

This section describes the overall objectives and criteria for measurement for the DOE Lead Sampling Program.

A7.1 Objectives and Project Decisions

The overall objective ~~for the DOE Lead Sampling Program~~of the LSP is to determine the lead concentration at drinking water fixtures within Delaware Facilities. Facility Partners will also gain greater awareness of monitoring for the presence of lead in drinking water at their Facility, and be able to take immediate steps to reduce exposure to lead if necessary.

The LSP will use a drinking water action level of 15 parts per billion ("ppb"), which follows the EPA Lead and Copper Rule. Samples with concentrations of 50% of the action level will be considered for further sampling and evaluation.

Decisions to be made with the data include:

- If a drinking water test returns a result for lead equal to or exceeds 15 ppb, then the HSP Environmental Scientist will direct the Facility Partner to isolate the source of drinking water by turning off the fixture or providing a barrier to the consumption of the water (i.e. tape and bag). The Remediation Technician will then work with the Facility Partner to suggest remediation activities.
- If a drinking water test returns a result for lead equal to 50% of the action level, but less than 15 ppb, the HSP Environmental Scientist will direct the Facility Partner in further sampling and evaluation.
- If a Facility Partner enrolls in the LSP and receives lead sampling data, then they will make the results available to their stakeholders (parents, staff, etc.) and provide information on reducing risks, next steps, etc.

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Sample results will help guide Facility Partners in replacing fixtures, pipes, etc., that may be contributing to lead exposure. Strategies to reduce concentrations of lead in drinking water may include component replacement, point of use filters, flushing programs and other strategies.~~Anticipated outcomes~~

- ~~**Anticipated Decisions**~~

Anticipated outcomes may include:

- Identification and remediation of lead containing fixtures, pipes, etc.
- High-level picture of risk of lead in school drinking water throughout Delaware
- Reduction of risk of lead exposure in schools due to flushing, fixture replacement and other activities.

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A7.2 Action Limits/Levels

This program will follow the action level set by the EPA Lead and Copper Rule of 15 ppb. Remediation actions will be suggested for all fixtures whose sample indicates a result of 15 ppb or greater. Follow up sampling will be conducted for sample results above 50% of the MCL.

Table 1-1 proves the parameter to be sampled (lead) and its associated Project Action Limit ("PAL"). This information demonstrates that the analytical methods selected for this project are capable of providing data with quantification limits ("QLs") which exceed the PAL. In addition, Table 1-1 provides analytical detection limits ("DLs"). Detection Limits are minimum concentrations that can be detected above instrumental background or baseline/signal noise, providing further assurance that the analytical methods are capable of meeting the data needs of the project in terms of sensitivity (see Section 1.7.3.6).

The QL listed is deemed acceptable to meet the project objectives.

A7.3 Performance Criteria

Data generated in this project must be of known and acceptable quality. HSP has identified Data Quality Indicators (DQIs) for lead sampling parameters. Each DQI has unique assessment criteria. The DQIs include: precision, accuracy/bias, representativeness, comparability, completeness, and sensitivity.

For quantitative assessment of laboratory methodology, DPHL's QA manual and analytical SOPs have been reviewed by the LSP project team and the associated laboratory QC (types and frequencies of QC samples and QC acceptance limits) have been determined to be adequate to meet the data quality needs of this project.

The procedures identified throughout this QAPP were chosen to optimize the potential for obtaining samples that reflect the true state of the Facility's water quality, within practical limits. In addition, efforts were made in developing the sampling design to ensure samples would be collected which assess the entirety of the facility's plumbing profile. First draw samples provide data regarding the presence of lead at a specific fixture. Flush samples provide information on the presence of lead in the plumbing
beyond the fixture.

Additionally, sampling plans will be designed to identify all drinking water fixtures in a Facility. Possible sampling locations include: drinking water fountains (bubblers), water coolers, food preparation fixtures and other potential consumption fixtures, such as those in the medical office and teachers' lounge.

A7.3.1 Precision

Precision is a measure of the ability to reproduce analytical results and is usually assessed by analyzing laboratory duplicates and calculating the relative percent difference of the sample results. The lower the relative percent difference the greater the precision of the laboratory procedures. A Quality Control Sample, which is typically required as an initial demonstration of capability and quarterly thereafter, is a check on laboratory and instrument performance. Duplicate Quality Control Samples must be analyzed within the analytical batch by the testing laboratory as a requirement of this QAPP. This is to access precision where the relative percent difference must be within +/- 10%.

A7.3.2 Bias

Bias is a measure of a systematic or inherent error that can occur in the sample collection, sample handling and/or sample analysis processes. Bias which may occur during sample collection and handling includes brushing the sample bottle against the fixture or placing sample container lids on tables, countertops or other surfaces. Facility Partners will receive thorough training regarding appropriate protocols to reduce bias due to contamination of the water sample from lead sources present in the sampling environment. DPHL will use method blanks during sample analysis to quantify bias during the sample analysis process. The protocols in place emphasize reducing environmental contamination to the maximum extent possible.

A7.3.3 Representativeness

Representativeness is the ability of a sample to represent the environmental conditions at the time of collection. This DQI will be met qualitatively, by verifying that documented sample collection and analytical methods (including sample handling and chain-of-custody procedures, sample preservation, and sample holding time protocols) were followed.

A7.3.4 Completeness

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In order to satisfy the objective of the project, samples will be collected from drinking water fixtures according to the Sampling Plans submitted by Facility Partners and approved by the Program Manager.

One hundred percent (100%) of collected, valid initial first draw samples be analyzed and reported. Flush samples will be analyzed if valid initial first draw sample results are above 50% of 15 ppb.

A7.3.5 Comparability

Comparability is the degree to which data can be compared directly to similar studies. This is accomplished by maintaining uniformity with collection procedures, analyses and reporting.

The sampling plan described in this QAPP uses approved analytical methods for lead analysis in drinking water (see Table 2-3). Maintaining uniformity with this plan will allow for statewide comparisons between past and future samples.

Analytical results from the initial first draw and follow-up flush samples at the same drinking water fixture will be compared to assist in determining the source of lead contamination. Upon receiving results, the Remediation Technician will suggest remediation measures, if needed, to the Facility Partner.

A7.3.6 Sensitivity

DPHL must use a reporting limit (RL) less than or equal to 2 ppb for lead in drinking water samples. This RL is lower than the regulatory Practical Quantitation Level ("PQL") for lead of 0.005 mg/L (5 ppb) from 40 CFR141 Subpart I of the National Primary Drinking Water Contaminant Regulations. The reporting limit of 2 ppb, required in this QAPP, is achievable with the EPA approved method listed in Table 2-3 of this QAPP.

See Table 2-4. Quality Control Requirements for Analyses

A8. Special Training/Certification

A8.1 Facility Partners

Facility Partners will receive online training by HSP: 1) Program Overview and Sample Planning, 2) Sample Collection, Results, Communication, and 3) Exceedance Management, Remediations, Communications & Reporting. These trainings will adhere to EPA's 3Ts.

A8.2 Laboratory Personnel

Laboratory personnel from DPHL that are analyzing drinking water samples will have successfully completed required demonstrations of capability for the methods used. DPHL is certified by EPA for the analysis of lead using EPA drinking water methods. These methods are listed in Table 2-3. DPHL certificate can be found in Appendix B-4.

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A9. Documents and Records

This section details the type of records created during the LSP, as well as their delivery and storage.

A.9.1 QAPP preparation and distribution

This QAPP conforms to the format described in the United States Environmental Protection Agency publication *EPA Requirements for Quality Assurance Project Plans* dated March 2001 (QA/R-5). The QAPP shall govern the operation of the project at all times. Each responsible party listed in Table 1-1 shall adhere to the procedural requirements of the QAPP and ensure that subordinate personnel do likewise.

This QAPP shall be reviewed at least annually to ensure that the project will achieve all intended purposes. Project Managers, QA Staff and other applicable personnel in Table 1-1 shall participate in the review of the QAPP. In addition, it is expected that from time to time ongoing and perhaps unexpected changes will need to be made to the project. The Project Manager(s) shall authorize all changes or deviations in the operation of the project. Any significant changes will be noted in the project file and shall be incorporated into an amended QAPP.

The Quality Assurance Officer will document the effective date of all changes made in the QAPP, and distributing new revisions to all individuals listed in Table 1-1 whenever a substantial change is made.

DE DOE will act as the point of contact for all QAPP distributions. DOE will maintain an updated and accurate email contact list and will distribute the amended QAPP to the individuals listed in Section A3.

A9.2 Records and Field Documentation

Records generated during this program include: sampling plans, sampling maps, and preprinted forms (such as labels and chain-of-custody forms). All field activities must be conducted according to the SOPs explained in the Sampling Protocol (Appendix A-1). The Program Success Manager is responsible for always maintaining updated revisions to the SOPs and to distribute updated SOPs to Facility Partners and other program contacts, as needed. All documentation generated by the sampling program will be kept on file by DOE and HSP.

A9.2.1 Sampling Plans

Sampling plans will be used to determine the number and location of samples in order to guide sampling activities. Facility Partners will create sampling plans ~~through~~ in consultation with HSP. At a minimum, the information to be recorded in a sampling plan for each Facility includes:

- Fixture location
- Fixture description

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- Fixture type
- Sample type: initial draw, 30-second flush, or both

A9.2.2 Sampling Maps

Sampling Maps will show the location of each fixture to be sampled. Facility Partners may create these from scratch or may adapt pre-existing maps (fire route/emergency map, etc.). HSP will approve and use these maps when evaluating sampling plans. Approved sampling maps will be stored on HSP's main servers and MS Teams Channel.

These maps will contain the following information:

- Date created
- Facility name and ID
- Fixture locations
- Fixture type
- Sampling route

A9.2.3 Sample Bottle Labels

A pre-filled label will be affixed to each sample bottle shipped from DPHL to the facility to be sampled. The sampling plan is the source for all information contained on the labels. The sample labels will have preassigned, identifiable, and unique numbers. At a minimum, each label will include:

- Facility Name
- Facility ID
- Sample ID
- Fixture ID
- Sample Draw Type
- Fixture Type
- Location ID
- Location Description
- Sampler Name
- Sample Date and Time

A9.2.4 Chain-of-Custody Forms

Facility Partners will fill out Chain-of-Custody ("COC") forms during sampling. DPHL will provide a paper COC form ~~available during sampling~~for use during all sampling events.

All sample shipments will be accompanied by a COC form. The forms will be completed and sent with each shipment of samples to the laboratory. If multiple Testing Kits are sent to the laboratory on a single day, forms will be completed and sent with the samples for each kit. The original form will be included with the samples and sent to the laboratory. Digital copies of the COC will be retained by DPHL.

The COC form will identify the contents of each shipment and maintain the custodial integrity of

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the samples. Procedures for completion and distribution of the COC forms are detailed in the Sampling Protocol (Appendix A-2).

A9.3 Laboratory Documentation and Records

DPHL will keep a sample receiving log and all completed COC forms submitted with the samples collected for this project. They will also keep records of all analyses performed, as well as associated QC information required by their QA/QC Manual (Appendix B-1):

The data generated by the laboratory for each sampling event will be compiled into individual electronic data delivery packages ("EDD"). EDDs will be sent to HSP, who will then upload them to the online data platform. The EDD will include the following information:

- Analysis Date & Time
- Analyte Name
- Below Detection Limit Indicator
- Collected By
- Collected Date & Time
- Sample Location
- Lab Detection Limit
- Lab ID
- Lead Result
- Analysis Method
- Sample ID
- Sample Type
- Unit of Measure

Project team members may request additional information from the laboratory ~~regarding a discussion of~~in the event of problems or unusual events. This may include, but is not limited to, topics such as: receipt of samples in incorrect containers, improperly or incompletely filled out COC forms, receipt and/or analysis of samples after the holding times have expired; summary of QC results exceeding acceptance criteria, etc.

DPHL's QC Manager will review all EDDs before delivery to DOE and HSP to ensure the accurate documentation of any deviations from sample preparation, analysis, and/or QA/QC procedures, highlights of any excursions from the QC acceptance limits, and pertinent sample data.

Information about the documentation to be provided by DPHL is contained in the laboratory's QA Manual (Appendix B-1).

A9.3.1 Storage of project information

All data collected by the LSP will be maintained in an electronic database. The laboratory will send results DE DOE and HSP. HSP will email results to the facilities and upload results to the

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online data platform. All electronic data will be backed-up through state IT servers and cloud based technology.

A9.4 Technical Review and Evaluation

Remediation Technicians will conduct a technical review for all fixtures where the sample results equal or exceed the 15 ppb action level. This technical review does not have a specific format but will be handled in a way that best meets the needs of the Facility. Further consultation and sampling will be conducted where the sample results are below the 15 ppb action level yet above 50% of 15 ppb.

A9.5 Quarterly and/or Final Reports

The grant funding the LSP requires quarterly and annual reports to the US EPA Regional Project Officer. The DOE will provide the reporting deliverables as outlined in the grant.

B DATA GENERATION AND ACQUISITION

B1. Experimental Design

All sample design will follow SOPs listed in the Sample Protocol (Appendix A-1). If an SOP is updated or revised, the updated or revised SOP will be used for the subsequent sampling event(s). The DOE will document any revisions or updates or both to the SOPs in an amendment to the QAPP.

Before conducting sampling, each Facility Partner will create a sampling plan and sampling map detailing each source of drinking water in the Facility. The plan will be used for sampling by either the Facility Partner or HSP Sampler. Drinking water sources may include water fountains (bubblers), water coolers, kitchen sinks and kettles, outside spigots, and others.

Once samples are collected, the sample collector ~~Facility Partner~~ will repackage the samples in the Testing Kit. Then, the laboratory courier will collect the samples from the Facility Partner and return to the lab for analysis. DPHL will report sample results to HSP, DOE, and the Facility Partner.

After receiving the lead test results, the HSP Environmental Scientist will review the results with the Facility Partner. If lead sampling results are equal to or greater than the 15 ppb action level, the Environmental Scientist will suggest remediation actions the Facility Partner can take to abate drinking water lead exposure. HSP will make the sampling results available to the public. The Facility Partner will also report whether they implemented any remediation actions to the DE DOE and HSP.

Follow-up testing will be available to determine the results of remediation efforts. All follow-up testing will occur similarly as described above.

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B2. Sampling Methods

B2.1 Drinking Water Sampling

All samples will be collected using the SOPs included in the Sampling Protocol (Appendix A-1). If an SOP is updated or revised, the amended SOP will be used for the subsequent sampling event(s). Any revisions/updates to SOPs will be documented in an amendment to the QAPP.

Before sampling begins, the Facility Partner must verify water at the Facility had been stagnant between 8 – 18 hours prior to sampling. The Facility Partner or Program Consultant will collect drinking water samples in pre-cleaned rigid plastic 32 oz. bottles. ~~Facility Partners will always collect water~~ Water samples will always be collected at a medium rate of speed and only at a cold temperature.

The Facility Partner or Program Consultant performing sampling will verify the bottle label matches the location of the fixture on the sampling map and the fixture description on the sample collection form before collecting water in the sample bottle. Contacts will begin sampling at the drinking water fixture closest to where water enters the Facility ("entry point"). Sampling will then proceed towards the drinking water fixture furthest from the entry point. In multistory facilities, sampling will proceed from the lowest floor to the highest.

Once all samples have been collected, the Facility Partner or Program Consultant will place the filled sample bottles back into the Testing Kit for DPHL courier pick up.

B2.2 Health and Safety

Facility Partners are encouraged to follow the health and safety guidelines laid out by their districts or managers inclusive of PPE measures.

B2.3 Field Variances

As conditions at each Facility vary, it may become necessary to implement minor modifications to the sampling procedures and protocols described in this QAPP. If or when this is necessary, the Facility Partner will notify the Program Consultant to obtain verbal or written approval prior to implementing any changes. The Program Consultant will note this approval in the sampling plan and communicate this update to the Project Manager.

B2.4 Disposal of Residual Materials

Various types of potentially contaminated wastes will be generated in the process of collecting water samples for this project. These contaminated wastes may include:

- Used PPE,
- Disposable sampling bottles/containers or equipment
- Excess water collected for sample container filling

The above will be disposed as follows:

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- Used personal protective equipment (PPE) and disposable containers/equipment will placed in a municipal refuse dumpster. Any used PPE and disposable containers or equipment (even if it appears to be reusable) will be rendered inoperable before disposal in the refuse dumpster.
- Excess water collected for sample container filling will be poured down a drain.
- Permission will be requested from Facility Partner if any on-site refuse containers are used for disposal.

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B2.5 Quality Assurance for Sampling

Documentation of deviations from this QAPP or applicable SOPs is the responsibility of the Facility Partner or Program Consultant performing sampling. The Facility Partner will record deviations noted during sample collection, preapproved by the Program Consultant (see section B2.3).

B3 Sample Handling and Custody

This section describes the sample handling and custody procedures from sample collection through transport and laboratory analysis. It also includes procedures for the ultimate disposal of the samples.

B3.1 Sample Container and Preservatives

The Program Success Manager will utilize the Sampling Plan to determine the number of sampling bottles needed at a particular Facility. DPHL will source the correct number and type of sample bottles and deliver them to the facility in a Testing Kit. The sample bottles will be pre-cleaned and require no washing or rinsing by Facility Partner or Program Consultant prior to sample collection.

B3.2 Sample Packaging and Shipping

All sample bottles will arrive and leave from the Facility in the Testing Kit provided by DPHL. Once the Facility Partner or Program Consultant finishes sampling, they will seal the sample bottles in the Testing Kit and a DPHL courier will pick up the samples and transport them back to the laboratory.

B3.3 Sample Custody

The Facility Partner or Program consultant who performs the sampling is responsible for custody of the samples from when they have been collected until they have been shipped to the laboratory. (Note: As few people as possible ~~will~~ should handle the samples to ensure sample custody integrity.) The Facility Partner must complete the COC form (see Appendix A-2) in the field.

Once at the laboratory, laboratory personnel are then responsible for the care and custody of samples. DPHL will track sample custody through their Facility using a separate sample tracking form, as discussed in the laboratory's QA Manual included in Appendix B-1.

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~~One~~ An individual has custody of a sample if:

-The sample is in the ~~sampler's~~ individual's physical possession
-The sample has been in the ~~sampler's~~ individual's physical possession and is within sight of the sampler
-The sample is in a secure/designated area, and/or
-The sample has been in the ~~sampler's~~ individual's possession and has been locked up

B3.4 Sample Disposal

Following sample analysis, the laboratory will store the unused portions until results are reviewed and released in the Laboratory Information Management System, and final reports are sent to DOE. At that time, the laboratory will properly dispose of all the samples. Sample disposal procedures at the laboratory are discussed in the laboratory's QA Manual included in Appendix B-1.

B4. Analytical Methods

DPHL must use the EPA approved drinking water method EPA 200.8 for the analysis of lead. The laboratory must be capable of reporting lead to a reporting limit of less than or equal to 2 ppb.

Once samples are acidified with concentrated nitric acid to a pH of less than 2 Standard Unit ("S.U."), the samples must sit for 16 hours, after which the pH measurement is repeated. The pH must be less than 2 S.U. before proceeding with the analysis. If a sample result exceeds 90% of the linear dynamic range, the sample must be diluted and re-analyzed.

The laboratory will summarize the data and deliver it in the EDD format requested by HSP and DE DOE within fourteen (14) business days after receiving samples.

B5. Quality Control Requirements

This section identifies the QC checks that are in place for the sample collection, field measurement, and laboratory analysis activities that will be used to access the quality of the data generated from this project.

See Table 2-4: Quality Control Requirements for Analyses

B5.1 Laboratory Analysis Quality Control

QC is the responsibility of the personnel and QA/QC department of DPHL. The laboratory's Quality Assurance Manual details the QA/QC procedures it follows (see Appendix B-1). The following elements are part of standard laboratory quality control practices:

- Analysis of laboratory control samples
- Instrument calibration (including initial calibration, calibration blanks, and calibration verification)
- Analysis of matrix spikes

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- Analysis of duplicates

The data quality objectives for DPHL (including frequency, QC acceptance limits, and corrective actions if the acceptance limits are exceeded) are detailed in their QA Manual (as in Appendix B-1) or in this QAPP. The laboratory must document any excursions from these objectives and report them to the Program Success Manager.

The DE HSP has reviewed the laboratory's control limits and corrective action procedures and feels that these will satisfactorily meet the state's project data quality needs. A summary of this information is included in Table 2-4. These include laboratory control samples, matrix spikes, and laboratory
duplicates.

Laboratory Fortified Blank (LFB) – An aliquot of reagent water to which known quantities of the method analyte is added in the laboratory. The LFB is analyzed exactly like a sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate and precise measurements at the required method detection limit.

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One LFB is analyzed per sample batch. Acceptance criteria (control limits) for the ~~LCS~~ LFB are defined by the laboratory and summarized in Table 2-4. In general, the LFB acceptance criteria recovery range is 85 to 115 percent of the known amount of the spiked analytical parameter. Corrective action, consisting of a rerunning of all samples in the affected batch, will be performed if LCS recoveries fall outside of control limits. The laboratory will document such problems in their data report.

Laboratory Fortified Matrix (LFM1) – An aliquot of an environmental sample to which known quantities of the method analytes are added in the laboratory. The LFM1 is analyzed exactly like a sample, and its purpose is to determine whether the sample matrix contributes bias to the analytical results. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and the measured values in the LFM corrected for background concentrations.

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1. **LFM2** – A duplicate of LFM1. The LFM2 is analyzed exactly like a sample, and its purpose is to determine whether the sample matrix contributes bias to the analytical results. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and the measured values in the LFM corrected for background concentrations.

One LFM1 and LFM2 are- analyzed per sample batch. LFM1 and LFM2 acceptance criteria are defined by the laboratory and summarized in Table 2-4. In general, the LFM acceptance criteria recovery range is of 70 to 130 percent of the known amount of the spiked analytical parameter. If the MS (or LFM) exceeds control limits, the sample is diluted and then spiked again for reanalysis.

Laboratory Duplicates - A laboratory duplicate is a laboratory-generated split sample used to document the precision of the analytical method. Results are expressed as relative percent difference between the laboratory duplicate pair.

One laboratory duplicate will be run for each laboratory batch or every 10 samples, whichever is more frequent. Acceptance criteria (control limits) for laboratory duplicates are specified in the laboratory QA Manual and SOPs and are summarized in Table 2-4. If laboratory duplicates exceed criteria, the corrective action will be to repeat the analyses. If results remain unacceptable, the sample will be diluted and reanalyzed. The Laboratory Fortified Matrix 2 (LFM2) serves as the duplicate for each run and must be within +/-10% of the LFM1.

Specific information regarding acceptance criteria and corrective actions is documented in the Laboratory's SOPs for the approved drinking water method(s) used for the lead analysis of the drinking water samples.

If any sample result(s) is qualified, this must be clearly indicated on the Electronic Data Deliverable ("EDD"). The Project Success Manager must be consulted in order to determine how to address the qualified results.

B6. Instrument/Equipment Testing, Inspection, and Maintenance

B6.1 Field measurement Instruments/Equipment

No field instruments are anticipated for this project.

B6.2 Laboratory Analysis Instruments/Equipment (Off-Site)

Inspection and maintenance of laboratory equipment is the responsibility of DPHL. All laboratory equipment will be tested, calibrated, and maintained in accordance with existing SOPs approved by the laboratory and described in their QA manual (Appendix B-1).

B7. Instrument/Equipment Calibration and Frequency

B7.1 Laboratory Analysis Instruments/Equipment

Laboratory instruments will be calibrated according to the appropriate analytical methods. The EPA approved analytical methods for lead listed in the National Primary Drinking Water Contaminant Regulations at 40 CFR 141.23 and Appendix A require that the instrument calibration be performed on a daily basis.

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B8. Inspection/Acceptance Requirements for Supplies and Consumables

B8.1 Field Sampling Supplies and Consumables

DPHL will ship Testing Kits to the Facilities before the day of sampling. Testing Kits contain: Shipping container: Cardboard box holding up to 30 sample bottles. Box is organized with individual compartments for each sample bottle. Provides sequenced manner for sample collection.

Sample Bottle: Sampling bottles are unpreserved, certified ~~250 ml~~ 32 oz. wide-mouth plastic bottles. Facility Partners will inspect bottles for cracks, dents, or other damage. DPHL will replace any damaged bottles.

Bottle Label: Includes the following information:

- Facility Name
- Facility ID
- Sample ID
- Sample Draw Type
- Fixture Type
- Location Description

Sampling Instructions: Describes steps to collect samples. See Appendix A-1.

Paper Chain of Custody form (Appendix A-2) includes:

- Facility Name, Facility ID, Building Name
- Sample Collector Name, Phone Number, Email Address, Signature
- Date and Time Water Last Used
- Sample Collection Date
- Sample ID, Fixture Code, Sample Type, Location Description, Fixture type, Time Sample Collected, Notes

B8.2 Laboratory Analyses (Off-Site) Supplies and Consumables

The laboratory's requirements for supplies and consumables are described in their QA Manual, which is provided in Appendix B-1.

B9. Data Acquisition Requirements (Non-Direct Measurements)

Facility Partners may choose to use preexisting Facility maps to create sampling maps.

B10. Data Management

All data collected by the LSP will be maintained in electronic format. The laboratory will send results to HSP and DOE. HSP will email results to the facilities and upload results to the online data platform.

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C ASSESSMENT AND OVERSIGHT

This section describes how activities will be checked to ensure that they are completed correctly and according to procedures outlined in this QA Project Plan.

C1. Assessments/Oversight and Response Actions

The Project Manager and Program Success Manager will assess any problem that arises in the field. If necessary, modifications to technical procedures may be considered. Any changes in technical procedures will be reported by the Facility Partner to the Project Manager and evaluated to determine if there will be any impact to the data.

Laboratory personnel will perform self-audits and institute corrective actions in accordance with their respective written procedures.

C2. Reports to Management

The Program Success Manager will provide biweekly program management updates to the Project Manager and Project Sponsor. At a minimum, the Program Success Manager will provide a verbal report on:

- The number of facilities enrolled in each step of the program
- The total number of samples completed
- Program implementation successes and challenges
- Other issues, as deemed necessary by the Project Manager or Project Sponsor

Additional, less formal internal reports may take place throughout the program.

D DATA REVIEW AND USABILITY

This section describes the criteria and procedures for reviewing and interpreting the project's data.

D1. Data Review, Verification, and Validation Requirements

Setting data review, verification, and validation requirements helps to ensure that project data are evaluated in an objective and consistent manner. For the current project, such requirements have been defined for information gathered and documented as part of field sampling activities, as well as for data generated by the off-site laboratory.

D1.1 Field Sampling Data

Any information collected or generated during sample collection is considered field data. This includes sampling plans, sampling maps, photographs, chain of custody forms, and any other documented information created during field sampling.

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Following field sampling, the Program Success Manager will conduct a technical review of the field data to ensure that all information is complete and was collected in accordance with the Sampling Protocol SOPs (Appendix A-1).

D1.2 Laboratory Data

DPHL is responsible for their own internal data review and verification before submitting the associated data results package to HSP and DOE. The details of the laboratory's review are discussed in the QA Manual (Appendix B-1).

If the laboratory "flags" any sample results based on poor or dubious data quality, the Program Success Manager will coordinate resampling of that sample. The Program Success Manager will also evaluate whether trends of flagged data develop which could be traced back to incorrect field sampling techniques. The Program Success Manager will have the authority to suggest new training techniques for the Facility Partners in order to improve sample collection. Any changes will be incorporated into the Sampling Protocol (Appendix A-1) and this QAPP, as necessary.

D2. Verification and Validation Methods

Defining the data verification and validation methods helps to ensure that project data are evaluated in an objective and consistent manner.

D2.1 Field Data

The Program Success Manager will review field data in accordance with the discussion provided in section D1.1.

D2.2 Laboratory Data

Data review of all laboratory-generated data is performed by the Laboratory ~~QA~~ Manager. It is the responsibility of the QA Manager to ensure that 10% of all data generated monthly are correct and of known and documented quality. Once the review is completed, the QA Manager will sign and date the appropriate QA/QC checklist according to the Laboratory's SOP utilized for the analysis for lead in the drinking water samples.

The Program Success Manager and Facility Partner will review the EDD report and identify any limitations on the use of the data. Any limitations on the use of data will be noted.

D3. Reconciliation with User Requirements

The purpose of the Lead Sampling Program for Schools and Child Care Facilities is to assess the presence of lead in drinking water at Delaware Facilities. Data collected must fulfill the requirements of this QAPP to be useful for the overall program. This section describes the steps to be taken to ensure data usability (after all the data have been assembled, reviewed, verified, and validated) prior to providing any remediation suggestions.

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Once all the data from the field and laboratory have been evaluated (as described in Sections D.1 and D.2), the Program Success Manager will make an overall assessment concerning the final usability of the data in meeting the project's needs. The initial steps of this assessment will include, but not necessarily be limited to:

- Review of deviations from the QAPP or associated SOPs
- Review for completeness of EDD
- Evaluation of result accuracy given known context (does the data make sense or are their unexpected outliers)

Additionally, the Program Success Manager and Project Manager will regularly assess the effectiveness of the sampling program and data collection. Sampling SOPs, trainings, and assessments will be modified as needed to reflect the changing needs and project objectives of the LSP. This QAPP will be revised and amended or both accordingly.

E References

3Ts for Reducing Lead in Drinking Water Toolkit. Environmental Protection Agency.
[HYPERLINK "https://www.epa.gov/ground-water-and-drinking-water/3ts-reducing-lead-drinking-water-toolkit"]

FIGURES:

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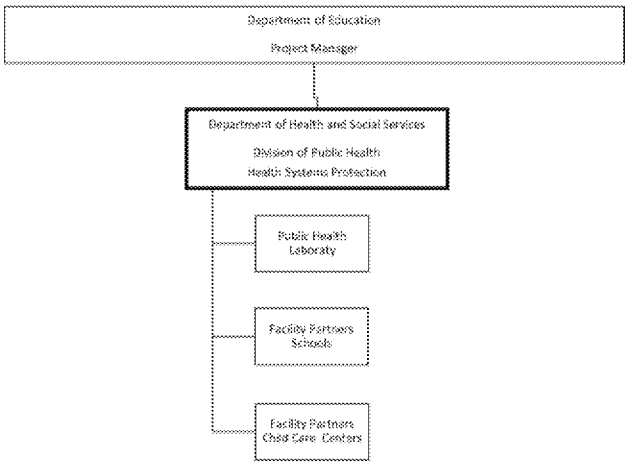
Figure 1-1. Organization Chart



TABLES:

Table 1-1. Distribution List and Project Roles

Name	Project Role or Position	Organizational Affiliation	Contact Information
~~Laura Horsey~~Jamie Mack	Project Manager	Delaware Department of Education, Capital Projects Management	302-857-3364 [HYPERLINK "mailto:Laura.horsey@doe.k12.de.us"][HYPERLINK "mailto:Laura.horsey@doe.k12.de.us"]
Rena Tucker	Federal Funds Manager	Delaware Department of Education, Federal Funds & Cost Recovery	302-735-4047 [HYPERLINK "mailto:Rena.tucker@doe.k12.de.us"]
Jennifer Carlson	Director of Finance	Delaware Department of Education	302-735-4041 [HYPERLINK "mailto:Jennifer.Carlson@doe.k12.de.us"]
Elizabeth Timm	Director of Office of Child Care Licensing	Delaware Department of Education	302-892-5800 [HYPERLINK "mailto:Elizabeth.Timm@doe.k12.de.us"]

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Clover Carlisle	Analytical Chemist IV/Laboratory Manager	Delaware Department of Health and Social Services, Division of Public Health, Public Health Laboratory	302-802-5000 [HYPERLINK "mailto:Clover.carlisle@delaware.gov"]
Nikia Green	Analytical Chemist III (2022 moved to new position LMI)	Delaware Department of Health and Social Services, Division of Public Health, Public Health Laboratory	302-802-5000 [HYPERLINK "mailto:Nikia.green@delaware.gov"]
Joshua Graham	Analytical Chemist III (taken over Nikia's previous position)	Delaware Department of Health and Social Services, Division of Public Health, Public Health Laboratory	302-802-5000 [HYPERLINK "mailto:Joshua.graham@delaware.gov"]
~~Jamie Mack~~Heather Warren	Chief	Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protections	302-744-4832 [HYPERLINK "mailto:Jamie.Mack@delaware.gov"][HYPERLINK "mailto:Jamie.Mack@delaware.gov"]
James Hanes	Environmental Scientist IV	Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protections	302-744-4824 [HYPERLINK "mailto:James.Hanes@delaware.gov"]
Stephen Mann	Public Health Treatment Program Administrator	Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protections	302-741-8589 [HYPERLINK "mailto:Stephen.mann@delaware.gov"]
Ruby Stanmyer	Drinking Water Project Officer	US EPA Region 3, Water Division	215-814-2142 [HYPERLINK "mailto:Stanmyer.ruby@epa.gov"]
Elizabeth Gaige	Quality Assurance Manager	EPA	[HYPERLINK "mailto:Gaige.Elizabeth@epa.gov"]

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Table 2-2 Schedule of Major Project Tasks
The project's major tasks and timetable are outlined in the table below.

Table 2-2: Schedule of Major Project Tasks

	Month											
Activity	**Sept. 2019**	**Oct. 2019**	**Nov. 2019**	**Dec. 2019**	**Jan. 2020**	**Feb. 2020**	**Mar. 2020**	**Apr. 2020**	**May 2020**	**June 2020**	**July 2020**	**Aug. 2020**
Planning	x	x	x									
Readiness Review												
Equipment Testing/Prep			x									
Phase 1 Sampling				x	x							
Sample Processing												
Data Analysis										x	x	
Draft Report											x	
Finalize Report												x

Commented [HL1]: 2022? Update to quarters? Phase 1 sampling schools, phase 2 child care centers?

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Table 2-3 Scope of Method

PROGRAM	Drinking water as per SDWA
METHOD	EPA200.8 Revision 5.4
PRESERVATION	pH < 2 with nitric acid added in the laboratory
CONTAINER	32 oz. plastic bottle
SAMPLE VOLUME	32 oz.

Table 2-4 Quality Control Requirements for Analytes

A/S Position	***Cal/Sample/QC***	***Concentration (ppb)***	***QC Pass Criteria***
314	Conditioning Blank	0	NA
315	Conditioning Blank	0	NA
316	Conditioning Blank	0	NA
301	Calibration BLK	0	Initial BLK for curve.
302	Calibrator 5	5	For all reportable analytes: $R^2 \geq 0.995$
303	Calibrator 10	10	
304	Calibrator 20	20	
305	Calibrator 50	50	
306	Calibrator 100	100	
307	Calibrator 200	200	
308	CCC*	20	% Recovery: ±10% (18.0-22.0 ppb)

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309	LRB[γ]	0	10% or more of the analyte level determined for a sample or is 2.2 times the analyte MDL, whichever is greater
359	BLK*	0	10% or more of the analyte level determined for a sample or is 2.2 times the analyte MDL, whichever is greater
310	MRL1	0.5	% Recovery: ±50% (0.25-0.75ppb) for applicable analytes
311	MRL2	10	% Recovery: ±50% (5.0-15.0 ppb) for applicable analytes
312	LFB	20	% Recovery: ±15% (17.0-23.0 ppb)
313	QCS	20	% Recovery: ±10% (18.0-22.0 ppb)
301	CAL BLK	0	Ran as a Sample
Beginning at 317**	Samples	Dilute if concentration ≥90% of highest calibrator	
	LFM1[β]	+20[α]	Percent Recovery: 70-130%
	LFM2[β] (Laboratory Duplicate)	+20[α]	Percent Recovery: 70-130% and within 10% of LFM1
All Samples & QCs must have IS response of 60-125% as initial calibration blank.			

* Must be analyzed after every 10 samples & at the end of a batch. Final CCC must pass within +/-15%
** For batches with filtered samples, the Filtered LFB will be in position 317 and the Filtered LRB will be in position 318. Samples will begin at 319.
[α] Volume of analyte stock added
[β] LFM1 & LFM2 must be analyzed at least once per 10 samples
[γ] LRB must be analyzed once per 20 samples.

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APPENDICES

APPENDIX A. Field Documentation

A-1 Sampling Design and Collection Protocol

Protocol for Collecting Water Samples

1. Choose your sampling points no later than one day before you sample.
   - The ideal sampling points are frequently used taps within the building (especially cafeteria sinks, kitchen sinks, nurses' offices, and lounge/breakroom sinks) that could theoretically be used for drinking. Bathroom and classroom sinks are acceptable if they are frequently used. Do not sample from water fountains, faucets with filters, or janitorial closets.
   - If there are multiple partitions to your school that were built and/or renovated in different years, be sure to sample from each one.

2. The day before sampling, run the cold water at each sampling point for between five and seven minutes. Then turn the water off. Leave the sinks unused overnight.
   - Ensure that the sampling points are not utilized between the time you flush them and the time that you take the sample. Each point must remain unused for at least 6 hours before sampling. It may be helpful to place a "Do Not Use" sign on each tap.

3. The day of sampling, place a bottle underneath each tap and collect all of the water that comes out until each bottle is full; do not allow any water to run before sampling, and do not allow any water to run over the side of the bottle.
   - On the bottle label where it says "Note," write the sample location (ex: "Room 123 Sink") using permanent marker.
   - On the other bottle label, write your name, the name of the school, and the date and time of sample using permanent maker.
   - For sinks with both hot and cold knobs, use only cold water.

4. Once all samples are taken, store them in a location (ideally behind locked doors) where nobody will tamper or bother with them. They expire 14 days from sampling. Email Tommy.Stepnay@delaware.gov as soon as samples are completed. A DPHL Water Collector will return to collect the samples from you within the next few business days.

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A-2 Chain-of-Custody Documentation and Field Data Forms

Blank Field Data Form

WATER ANALYSIS – DEPT. OF EDUCATION SPECIAL WATER ANALYSIS

Barcode Number:

Collection Date: _____

Collection Time (24-hr): _____

Collector's Name: _____

SAMPLE TYPE:

☐ Special ☐ _____

Facility Name: _____

Sample Pt: _____

_____

Remarks: _____

ANALYTE GROUP:

☐ LEAD (TRACE METALS)

DOE Contact: Rena Tucker

Email: Rena.Tucker@doe.k12.de.us

Laboratory Comments: _____

_____

Blank Chain-of Custody Form

DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

CHAIN OF CUSTODY

Office of Drinking Water
43 S. Dupont Hwy.
Dover, DE 19901
302-741-8630; Fax: 302-741-8631

Delaware Public Health Laboratory
30 Sunnyside Road
Smyrna, DE 19977
302-223-1520; Fax: 302-653-2877

Sample ID / Barcode Number																	Water System Name / Submitting Organization:
	Preservative		NaS_2O_3	None	None	None	None	None	None	HCl & ascorbic	NaS_2O_3	NH_4Cl	NaOH				
	Container Type		clr plastic	clr plastic	clr plastic	clr plastic	clr plastic	clr plastic	clr plastic	clr glass	amber	amber	amber				
	Container Volume		100mL	12 oz	12 oz	32 oz	12 oz	32 oz	32 oz	40mL	40mL	60mL	1 Liter				
	Required # of Containers		1	1	1	1	1	1	1	3	8	4	1				
	Analysis Requested		Microbial	Anions	Routine Chemistry (both containers req'd)		Full Chemistry (both containers required)		Trace Metals (Pb, Hg)	VOC/TTHM	Pesticides	HAA5	Cyanide	Clinical	Other		
Sample ID / Barcode Number	Sample Date	Sample Time	Number of containers for one sample site														Sample Description
	Total # of containers =																

Transfer Record	Print Name	Signature	Date Transferred	Time (military)	Temp Chk (°C)	Sealed (✓)	Organization	Special Requests / Comments:
Sampled by:								
Relinquished by:								
Received by:								
Relinquished by:								
Received by:								
Relinquished by:								
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APPENDIX B. Laboratory Documentation

B-1. DPHL QA Manual

Attached at the end of this document

B-2. DPHL EPA 200.8 SOP

Attached at the end of this document

B-3 Data Report Format

Attached at the end of this document

B-4 DPHL Certification List and Certificate

Attached at the end of this document

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