Quality Assurance Project Plan (QAPP)
For
Drinking Water Sampling
of Lead in School Drinking Water Outlets

Passaic County Technical Institute

Approvals

School District Representatives:

Supervisor: ~~Sal Antoniello~~ (Print Name) Sal Antoniello (Signature) 4/9/2020 (Date)

Third Party Sampling Firm: Whitman (Name of Firm)

Brett Iwicki (Print Name) _____ (Signature) _____ (Date)

Laboratory: IAL (Name of Laboratory)

Laboratory Manager: _____ (Print Name) _____ (Signature) _____ (Date)

Laboratory QA Officer: _____ (Print Name) _____ (Signature) _____ (Date)

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Third Party Sampling Firm: Whitman
Name of Firm

Brett Iwicki _____ _____ 4/8/2020
Print Name | Signature | Date

Laboratory: IAL
Name of Laboratory

Laboratory Manager: Michael Leftin _____ 5/13/2020
Print Name | Signature | Date

Laboratory QA Officer: Lauren Jenkins _____ 5/13/2020
Print Name | Signature | Date

Individual School Project Officers (Project Officers)

School	Name	Title	Signature	Date
Passaic County Technical Institute	Phone:			
	Phone:			
	Phone:			
	Phone:			
	Phone:			
	Phone:			
	Phone:			
	Phone:			
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Add additional sheets as necessary.

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1. Objective & Goals/Background

Key:

Quality Assurance Project Plan - QAPP
US Environmental Protection Agency - USEPA
School District Lead Water Testing Sampling Plan - Sampling Plan
School District Project Manager - Project Manager
Individual School Project Officer - Project Officer

1.1 Objective and Goals

A Quality Assurance Project Plan (QAPP) is a document that describes the planning, implementation and evaluation steps involved in the acquisition of data that will be used to arrive at a specific goal. The overall objective for this QAPP is to determine the lead concentration at drinking water outlets within the District's schools so that corrective action(s) may be implemented at those drinking water outlets identified as exceeding the US Environmental Protection Agency (USEPA) drinking water lead action level of 15 micrograms per liter (µg/L).

> *For the purposes of compliance, any concentration greater than 15 µg/L (as defined as greater than or equal to 15.5 µg/L) is considered to exceed the lead action level.*

The lead sampling will consist of the collection of an initial first draw sample according to this QAPP and the *School District Lead Water Testing Sampling Plan* (Sampling Plan). The drinking water outlets can be faucets used for drinking and/or food preparation, drinking water fountains (or bubblers), water coolers and ice machines (see Sampling Plan for details).

Follow-up sampling will also be covered within this QAPP and the Sampling Plan. It may be necessary to collect follow-up flush samples at selected drinking water outlets after flushing those outlets (allowing the water to flow) for 30 seconds. (An exception to the 30 second follow-up flushed sample is for a water cooler, which requires a 15-minute follow-up flushing timeframe).

Only cold water samples should be collected for lead sampling. If warm water is collected for lead sampling, document that the same is not cold on the field log book and the chain of custody and document the justification for not collecting a cold water sample. For example, the faucet only produces warm water and it is used for drinking and/or food preparation.

The analytical results and field data will be used by the School District Project Manager (Project Manager) and the District (See Section 2.2) to determine whether drinking water distributed from drinking water outlets such as water fountains (bubblers), water coolers,

faucets, and food preparation areas have concentrations of lead that exceed 15 µg/L. If an initial first draw or follow-up flush cold water sample is found to contain lead at a concentration greater than 15 µg/L, the Project Manager will instruct the Individual School Project Officer (Project Officer) (See Section 2.3) to isolate the source of drinking water by turning off the device or providing a barrier to the consumption of the water (tape and bag) until appropriate remediation is determined.

1.2 Background

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

Starting in April 1994 the USEPA began issuing guidance documents to assist municipalities in meeting the requirements of the Lead Contamination and Control Act (LCCA). In 2005, USEPA replaced one of those documents, *Lead in Drinking Water in Schools and Non-Residential Buildings* (EPA 812-B-94-002) with *3Ts for Reducing Lead in Drinking Water in Schools (EPA 816-B-05-008).* This 2005 document was developed primarily for school officials involved in the implementation of programs and policies aimed at to reducing children's exposure to lead in drinking water in schools. (This document was later reissued in 2006 to include several additions and corrections.) This QAPP, while primarily developed based on the USEPA 3Ts document, differs from the 3Ts document on several issues. This QAPP's requirements take precedence.

2. Project/Task Organization

Key:

School District Program Manager - Program Manager
School District Project Manager - Project Manager
Individual School Project Officer - Project Officer
Laboratory Report & Data Package - LRDP
Laboratory Quality Assurance Officer - LQAO

2.1 School District Program Manager (Program Manager)

The Program Manager is the overall authority in the execution of the District's lead sampling program. He/she is responsible for the initial notification to the District of the sampling program, obtaining funds for sampling, assigning the Project Manager, requesting/enlisting the assistance from other District departments if needed, approving the District's QAPP(s), approving the Final Report for each school and coordinating with

other District officials to make the results of the testing available to the public.

2.2 School District Project Manager (Project Manager)

The Project Manager reports to the Program Manager. The Project Manager is responsible for overseeing the execution of lead sampling at each of the district's schools. This involves the prioritization of schools to be sampled and adherence with the District's Sampling Plan and QAPP. He/she serves as the liaison between the School District, State agencies, local Health Departments, laboratories and public water systems (if applicable).

The Project Manager's responsibilities include:

- Preparing the District's QAPP
- Managing the Sampling Plan and QAPP
- Oversight of Project Officers to ensure that they adhere to the Sampling Plan procedures and the QAPP
- Purchasing of equipment needed for lead sampling
- Coordination with Laboratories certified by the NJDEP Office of Quality Assurance for analysis of lead in drinking water
- Coordination with Project Officers to establish sampling schedules
- Ensuring properly signed QAPPs are in place prior to initiation of sampling
- Verifying that officials from each school are aware when sampling is scheduled and the expected duration
- Review of the School Field Sampling Summary Reports prepared by Project Officers
- Review of Laboratory Report & Data Package (LRDP) received from Laboratory
- Review of Final Project Reports prepared by Project Officers
- Identifying limitations in the use of any laboratory data due to information provided in the accompanying School Field Sampling Summary Report
- Maintenance of the original signed QAPP(s)
- Maintenance of documents, reports and records listed in Section 14 of the QAPP
    - LRDP
    - Copy of Field Sampling Summary Report with copies of field log books (defined in Section 2.3 of this QAPP), field Walk-Through reports including Attachments B, C, D, E, and F of the Sampling Plan, chains of custody and flush tags
    - Copy of Final Project Report
- Maintenance of other relevant records such as:
    - Purchase orders for analytical costs (copies)
    - Agreement/contract with Laboratory that includes sampling, analysis,

reporting and payment details
- Receipts and invoices (originals or copies)

2.3 Individual School Project Officer(s) (Project Officer)

The Project Officer's responsibilities include:

- General project oversight for assigned school(s)
- Generating a field log book for each assigned school. Document field activities including any changes to procedures outlined in the Sampling Plan or QAPP
- Ensuring proper completion of the Plumbing Profile for assigned school(s) - See Attachment B of the Sampling Plan
- Oversight of completion of the following reports found in the Sampling Plan which require sign-off by Project Officer:
    - Drinking Water Outlet Inventory (Sampling Plan Attachment C)
    - Filter Inventory Report (Sampling Plan Attachment D)
    - Flushing Log (Sampling Plan Attachment E)
    - Pre-Sampling Water Use Certification (Sampling Plan Attachment F).
- Preparation of labels for drinking water outlets to be sampled
- Preparation for Walk-Through including acquisition of School Floor Plan
- Participation in school Walk-Through
- Ensuring proper completion of Walk-Through documentation including identification of all drinking water outlets on Floor Plan and Drinking Water Outlet Inventory using the coding detailed in the Sampling Plan (Attachment C of Sampling Plan)
- Supervision of field activities such as flushing (if required) and locking school prior to sampling, and sample collection
- Identification of drinking water outlets to be flushed and attach flush tag
- Ensuring that Field Sampling Team has all relevant sampling supplies including sampling bottles, labels, proper reagent water and chains of custody prior to collection of samples
- Ensuring that all drinking water outlets to be sampled prior to sampling event are labeled
- Ensuring that any drinking water outlets deviating from normal usage had been flushed
- Removal of flush tags from drinking water outlet(s) once sampling is completed
- Ensuring that water remains motionless for a minimum of eight hours (last to leave the school) prior to sampling event by following procedures in Section 8 of the School District Lead Drinking Water Testing Sampling Plan (Appendix A)
- Verifying that the Sampling Plan was followed prior to initiating sampling by completing the Pre-Sampling Water Use Certification (Attachment F in Sampling Plan)
- Supervision of sampling event
- Documentation of issues during sampling event in field log book

- Preparation of Field Walk-Through Report, School Field Sampling Summary Report and Final Project Report for assigned school(s)
- Maintenance of field log books for each school
- Prepare samples for shipment and delivery to laboratory per certified laboratory instructions
- Ensuring that samples are delivered to laboratory within the time period specified by the certified laboratory
- Ensuring that the sampling results are received from the Laboratory within the agreed timeframe

2.4 Laboratory Manager

The Laboratory Manager is responsible for:

- Ensuring that the Laboratory is certified by the NJDEP Office of Quality Assurance for analysis of lead in drinking water
- Ensuring that the analytical requirements of the QAPP are followed
- Ensuring that sample collection requirements were followed if the Field Sampler is employed by the Laboratory
- Overseeing the laboratory analyses performed in the Laboratory
- Ensuring that the LQAO meets their requirements within the QAPP
- Providing the LRDP to the Project Manager and Project Officer within the agreed timeframe
- Immediately notifying the Project Officer if lead is detected over the reporting limit in the field reagent blank

2.5 Laboratory's Quality Assurance Officer (LQAO)

The LQAO is responsible for reviewing the QAPP and resolving any Quality Control (QC) and Quality Assurance (QA) issues that may arise during the project. The LQAO should not be conducting the actual measurement operations for the given analytical batch but rather have experience and knowledge of the analytical processes employed. Issues that may compromise the analysis of the samples must be immediately communicated to the Laboratory Manager, Project Manager and Project Officer. Any result reported not meeting the acceptance criteria for the method must be indicated as such and therefore considered "qualified" data. The symbols used for any qualified data must be explained in the Laboratory Report or within the LRDP.

2.6 Field Sampler or Field Sampling Team

The Field Sampler or Field Sampling Team, whether affiliated with the District, NJ certified laboratory, and/or Environmental Consulting Firm, is responsible for ensuring that field activities are conducted in accordance with this QAPP and the Sampling Plan.

3. Special Training Needs/Certification

Sampling will be performed by the District, a certified Laboratory, or an Environmental Consulting Firm-designated Sampling Team staff. Staff performing the sample collection will be properly trained in sampling techniques.

Laboratory personnel designated to analyze the samples will have successfully completed required demonstrations of capability for the methods used. The Laboratory must be a drinking water laboratory certified by New Jersey for the analysis of lead using USEPA drinking water methods. These methods are listed in Section 8.1 of this QAPP.

Assessments of laboratory capability are conducted on a biennial basis by the NJDEP Office of Quality Assurance. The Laboratory Manager has responsibility for correction of all deficiencies in their laboratory.

4. Project Description

Drinking water samples will be collected from drinking water outlets including water fountains (bubblers), food preparation outlets (located in the cafeteria, kitchen, and home economics classrooms) and other outlets where there is the possibility of drinking the water such as in the special education classrooms, the medical office, the teachers' lounge, and ice machines. Concession stands and outside water fountains (such as in playgrounds and athletic fields) shall also be sampled. The custodian sink faucet may be sampled if used for filling large water coolers to provide water at school events. Outside hose spigots are not appropriate sampling locations for the purpose of this QAPP. The Sampling Plan provides more detail on appropriate sampling locations.

The Field Sampler or Team will conduct an initial first draw sample collection in addition to, as appropriate, a follow-up flush sample collection at the drinking water outlets specified in the Sampling Plan. The Sampling Team will consist of the Project Officer and the Field Sampler. The NJ Certified Laboratory specified in the QAPP will perform the analysis for lead.

5. Lead Data Quality Objectives and Criteria for Measurement

Key:

Quality Control - QC
Field Reagent Blank - FRB

5.1 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 as a requirement of this QAPP. This is to access precision where the relative percent difference must be less than or equal to 20%.

5.2 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. In order to identify any bias due to contamination of the water sample from lead sources present in the sampling environment, a field reagent blank (FRB) must be collected at each school building being sampled. While the collection of a FRB is not required in any of the approved analytical methods for analysis of lead, it is required with this QAPP.

The information provided by the FRB can be used to determine whether the field or sample transporting procedures and environmental effects have contributed to contamination of the sample. Lead is found in ambient soil and dust due to past use of leaded gasoline, paint and mortar. The presence of lead in the FRB would most likely be due to these types of background contamination.

5.3 Representativeness

The sampling effort is designed to identify all drinking water outlets in a school, where there is a potential for water consumption that may require corrective action due to first draw and/or follow-up flushed sample results that exceed 15 µg/L of lead (as defined as greater than or equal to 15.5 µg/L). Drinking water fountains (bubblers), water coolers, food preparation outlets and other potential consumption outlets, such as those in the special education classrooms, the medical office and teachers' lounge are to be sampled.

5.4 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 approved analytical methods for lead analysis in drinking water listed in Section 8.1 of this QAPP are referenced in the federal Safe Drinking Water Regulations at 40 CFR141.86 and 40 CFR 141 Appendix A to Subpart C. Use of these methods allows for the comparison of data to USEPA's drinking water lead action level of lead concentrations greater than 15 µg/L.

Initial first draw and the follow-up flush samples analytical results from the same drinking water outlets will be compared to assist in determining the source of lead contamination. Appropriate corrective measures must then be taken by the District.

5.5 Completeness

In order to satisfy the objective of the project, samples will be collected from drinking water outlets according to the Sampling Plan attached to this QAPP.

One hundred percent (100%) of collected initial first draw samples will be analyzed and reported. If Option 1 of the Sample Collection Method Protocol is used (See Section 7.2), 100% of the follow-up flush samples will be analyzed and reported.

5.6 Sensitivity

The Laboratory must use a reporting limit (RL) less than or equal to 2 µg/L 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 µg/L) from 40 CFR141 Subpart I of the National Primary Drinking Water Contaminant Regulations. The reporting limit of 2 µg/L, required in this QAPP, is achievable with any of the approved USEPA methods listed in Section 8.1 of this QAPP.

6. Secondary Data

Any previous lead data collected at the school would be considered secondary data.

7. Field Monitoring Requirements

Key:

Field Reagent Blank - FRB
Chain of Custody - COC

Sampling may take place either in the morning hours before the schools are open and accessible to the staff and students or on weekends when school activities are not scheduled. This will minimize the potential for people in the building to use water prior to or during the sampling event. While sampling is underway prohibit any persons other than the Sampling Team to enter the building in order to ensure that toilets or water outlets are not being used.

> **NOTE:** If it is determined that the stagnation period of 8 to 48 hours had been compromised, the sampling event must be postponed and rescheduled.

7.1 Monitoring Process Design

The monitoring or sampling design is detailed in the Sampling Plan (Appendix A). Although the Sampling Plan and QAPP are based in part on the 3T's Guidance for

Reducing Lead in Drinking Water in Schools: *Revised Technical Guidance, December 2005; Errata to 3Ts, October 2006*, this QAPP and Sampling Plan take precedence over the EPA 3Ts document.

7.2 Monitoring Methods

Equipment and supplies that will be needed to perform the sample collection are ASTM Type I reagent-grade water for the field reagent blank (FRB), powder-free latex (preferably non-colored) or nitrile disposable gloves, pre-cleaned, plastic, wide-mouth 250 mL single use rigid sample containers, chain of custody (COC) forms, indelible ink/marker, waterproof sample labels, a timing device and at least one cooler for each school's water samples. An example of a COC is found in Appendix B. The Laboratory's COC may be used provided that all required information is included. Documentation associated with the pre-cleaned sample bottles must be maintained by the Laboratory and made available upon request.

The samples must be preserved with concentrated nitric acid to a pH of less than 2 Standard Units (S.U.). The concentrated nitric acid may be added to the water samples after receipt at the Laboratory or the Laboratory may elect to add the preservative to the empty sample bottles prior to the sampling event. The pH must be measured and recorded upon receipt at the laboratory and must include date and time of measurement. Preservation status of the samples must be annotated on the COC and must indicate whether preservative was added prior to sample collection, during sample collection or after receipt at the laboratory.

> **NOTE:** All initial first draw samples and follow up flush samples must be acidified to a **pH of less than 2 S.U.** within 14 days of sample collection. If the samples had not been preserved with concentrated nitric acid to a pH of less than 2 within 14 days of sample collection, the analysis of the samples must not proceed. The Laboratory Manager must notify the Project Officer and Project Manager immediately if the samples cannot be analyzed.

Safety glasses should be worn if nitric acid (preservative) has been added to the sample bottles prior to sample collection.

Each school will have a separate sample cooler which will contain the FRB and the other water samples collected in the school. Samples will be transported by the Sampling Team, Laboratory, or appropriate representative of the Laboratory.

Collection of drinking water samples for lead analysis is conducted as a two-step process in order to identify the source of any lead contamination. The first step is collection of an initial first draw and the second step is the collection of a follow-up flush sample. As explained in detail in the Sampling Plan there are two Sample Collection Method protocols from which the District may follow:

> **Option 1**- Sample Collection for First Draw and Follow-up Flush Sampling

conducted on Different Days

Option 2- Sample Collection for First Draw and Follow-up Flush Sampling Conducted on Same Day

The Sampling Plan describes each option in detail.

NOTE: If a District uses Option 2, the District may request that the Laboratory analyze the initial first draw samples first and hold the analysis of the follow-up flush samples until the results of the initial first draw samples are obtained. The District may instruct the Laboratory to analyze only those follow-up flush samples collected at locations where the initial first draw sample results exceed 15 µg/L or a lower threshold specified by the District. For example, the District may request analysis of all follow-up flush samples where the initial first draw results are 10 µg/L or higher.

A District must determine if a Laboratory can accommodate this additional step of prioritizing the analysis of initial first draw samples. It is recommended that the Laboratory Manager initial this paragraph if prioritizing the analysis of the initial first draw samples is agreed upon by both District and Laboratory.

7.3 Field Quality Control

The samples must be collected in unused, pre-cleaned 250 mL, rigid, wide-mouth plastic bottles. Sample containers are not to be reused. Documentation associated with the pre-cleaned sample bottles must be maintained by the Laboratory and made available upon request.

A FRB must be collected for each school building if the school consists of more than one building being tested for lead. Prior to the sampling event, the Sampler must obtain at least 250 mL of ASTM Type I reagent-grade water for each school building being sampled during the sampling event. The ASTM Type I reagent grade water is usually provided by the Laboratory. In the school building and preferably prior to the first sample collected, the ASTM Type I reagent-grade water will be transferred into a 250 mL pre-cleaned single use plastic sample bottle which will be identified and labeled as the FRB sample for the school building being sampled.

8. Analytical Requirements

Key:

Laboratory Report & Data Package - LRDP
Quality Control - QC

8.1 Analytical Methods

The Laboratory must use one of the USEPA approved drinking water methods listed in the table below for the analysis of lead. Any of these methods can be used provided that the Laboratory is certified to analyze lead using one of these methods. They must be capable of reporting lead to a reporting limit of less than or equal to 2 µg/L.

For the purposes of this QAPP, the Table below summarizes the main analytical requirements follows:

Analyte	Analytical Method	Sample Matrix	Lead Action Level	Reporting Level
Lead (Pb)	USEPA Method 200.8 USEPA Method 200.9 USEPA Method 200.5 SM 3113B ASTM D3559-D	Drinking Water	Greater than 15 µg/L (15.5 µg/L and above) initial first draw sample	2 µg/L (ppb)

Once samples are acidified with concentrated nitric acid to a pH of less than 2 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.

The turbidity of samples must also be measured and recorded regardless of the analytical method being used for lead analysis. If the turbidity of the sample is greater than 1 NTU, the sample must be digested prior to analysis. Samples digested prior to analysis must be indicated in the Microsoft Excel spreadsheet required with the Lead Laboratory Report & Data Package (LRDP). The turbidity measurements must be provided to the District upon request.

If a sample result exceeds 90% of the linear dynamic range, the sample must be diluted and re-analyzed. The dilution factor must be included on the Microsoft Excel Spreadsheet of the LRDP for those samples requiring dilution.

8.2 Analytical Quality Control

The approved analytical methods found in Section 8.1 include protocols for the analysis of Quality Control Samples (QCS) with each analytical batch of samples, generally defined as a maximum of twenty samples. All QCS results must be assessed and evaluated on an on-going basis. Acceptance criteria are those specified within the analytical method used.

Specific information regarding acceptance criteria and corrective actions is documented in the Laboratory's Standard Operating Procedure (SOP) for the approved drinking water method(s) used for the lead analysis of the drinking water samples. Laboratories may elect

to develop an SOP specific for the analysis of lead in drinking water for samples collected in New Jersey schools that contains the requirements of this QAPP.

If any sample result(s) is qualified, this must be clearly indicated on the Laboratory Report and included in the LRDP. The Project Manager must be consulted in order to determine how to address the qualified results.

9. Sample Handling and Custody Requirements

Standard USEPA Chain of Custody (COC) procedures will be followed according to the information provided in the District's Sampling Plan (Appendix B). The COC form (Appendix B or laboratory equivalent) is to be used for this project.

Samples will be transported by Laboratory or Samplers or appropriate representative to the Laboratory.

Analyte	Sample Volume	Container	Preservation (Note1)	Holding Time
Lead (Pb)	250 mL	unused 250 mL rigid plastic wide-mouth – pre-cleaned	Reagent Grade Concentrated Nitric Acid (HNO_3) pH < 2	6 months

Note 1. Sample preservation can be performed at the Laboratory upon receipt. Any water sample not acidified with concentrated nitric acid to a pH of 2 S.U. within 14 days of sample collection must not be analyzed.

9.1 Sample Archive/Disposal

The samples received by the Laboratory for each school, including any digestates, will be eligible for disposal at a minimum of 30 days unless otherwise directed by the District after the final report has been distributed. Samples including any digestates will not be archived unless a written request is provided to the Laboratory.

10. Instrument/Equipment Requirements

10.1 Instrument/Equipment Testing, Inspection and Maintenance

All laboratory equipment will be tested, calibrated, and maintained in accordance with existing SOPs approved by the Laboratory.

There are no field instruments anticipated for this project.

10.2 Instrument/Equipment Calibration and Frequency

The USEPA approved analytical methods for lead listed in the National Primary Drinking Water Contaminant Regulations at 40 CFR 141.23 and Appendix A to Subpart C require that the instrument calibration be performed on a daily basis.

10.3 Inspection/Acceptance of Supplies and Consumables

Sample containers are pre-cleaned, plastic, wide-mouth 250 mL single use rigid sample containers. Sample containers are not to be reused. Documentation for the pre-cleaned sample bottles must be available upon request. Sample gloves are to be powder-free latex (preferably non-colored) or nitrile disposable gloves.

11. Data Management

Key:
Field Reagent Blank - FRB
Laboratory Report & Data Package - LRDP

The Laboratory will immediately notify the Project Manager and Project Officer of any validated laboratory result that exceeds the action level for lead in drinking water of 15 µg/L (defined as greater than or equal to 15.5 µg/L) and a FRB with a lead result greater than the RL. The Laboratory will provide the analytical results in micrograms per liter (µg/L) or ppb (parts per billion) and to at least three (3) significant figures (i.e.19.6 µg/L or 204 µg/L).

The Laboratory will provide a final electronic copy of the Lead Laboratory Report & Data Package (LRDP) for each school that will consist of: 1) cover sheet with the school name and the laboratory report which includes the analytical results with a description of all qualifiers referenced in the laboratory reports in PDF format, 2) the chain of custody in PDF format and 3) a Microsoft Excel spreadsheet that includes the information outlined in the Microsoft Excel spreadsheet template provided in Appendix C. Information required in each field of the spreadsheet includes, but is not limited to, the Field ID (Sample Location ID Code), the Laboratory Sample ID, the Laboratory Name and NJ Laboratory Certification ID number, whether the sample was flushed, the date and time of collection and analysis, the analytical method, the analytical result in µg/L or ppb, the reporting limit in µg/L or ppb, and whether the sample was diluted or digested and any other qualifiers.

The LRDP must include explanations of any procedural deviations or anomalies associated with the sample handling and analysis of the project. This report will be completed within the timeframe indicated in the contract.

12. Assessments/Oversight

Formal field audits by QA personnel may be conducted for this project. However, identification of problems related to technical performance will be the responsibility of the staff working on this project.

The Project Officer(s) 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 documented in the field log book and evaluated to determine if there will be any impact to the data. This information must be included in the Final Project Report.

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

13. Data Review, Verification, Validation, and Usability

Key:

Laboratory Quality Assurance Officer - LQAO
Laboratory Report & Data Package - LRDP

13.1 Data Review, Verification and Validation

Data review of all laboratory generated data is performed by the Laboratory Quality Assurance Officer (LQAO). It is the responsibility of the LQAO to ensure that all data generated are correct and of known and documented quality. Once the review is completed, the LQAO 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 Project Officer will evaluate the analytical results by referencing the School Field Sampling Summary Reports in order to determine if any field observations may have contributed to lower or higher analytical results.

The Project Officer and Project Manager will review the Laboratory Report & Data Package (LRDP) and identify any limitations on the use of the data and include these limitations in the Final Project Report. Any limitations on the use of data will be included in the Final Project Report.

13.2 Reconciliation with User Requirements

Providing that the Field Sampling Summary Report and LRDR Package of this QAPP are satisfied, the data will be useable for the purpose intended and no further assessment is required. If any data are determined to be unusable by the Project Manager, re-sampling

may be required.

14. Reporting, Documents and Records

Original documents (X) will be stored as follows:

Document:	Individual School Project Officer	School District Project Manager	School District Program Manager
QAPP	Copy	X	Copy
Field Walk-Through Report	X	Copy	Copy
Field Logbook	X		
Chains of Custody	X	Copy	Copy
Flushing Notification/ Flushing Log Tags/Procedure	X	Copy	Copy
Field Sampling Summary Report	X	Copy	Copy
• Flush Tags	X	Copy	Copy
• Floor Diagrams	X	Copy	Copy
• Plumbing Profile	X	Copy	Copy
• Filter Inventory	X	Copy	Copy
• Drinking Water Outlet Inventory	X	Copy	Copy
• Pre Sampling Water Use Certification	X	Copy	Copy
Laboratory Report & Data Package	X	Copy	Copy
Final Project Report	Copy	X	Copy

Appendix A
School's Lead Drinking Water Testing Sampling Plan

Appendix B: Chain of Custody

Appendix C: Lead Results

Field ID	Flushed Y/N	Laboratory Sample ID	Laboratory Name	Lab Certification ID	Date Sampled	Time Sampled	Analytical Method	Date of Analysis	Time of Analysis HH:MM	Concentration (µg/L)	Reporting Limit (µg/L)	Dilution Factor	Digested (Y/N)	Qualifier
1FH-CAFE2-WF	N	02537-001	IAL	14751	4/9/2020	925	EPA 200.8	4/14/2020	1622	0.941	2	NA	Y	J
1F-CAF2-WF	N	02537-002	IAL	14751	4/9/2020	927	EPA 200.8	4/14/2020	1656	ND	2	NA	Y	
1F-KS-FP	N	02537-003	IAL	14751	4/9/2020	930	EPA 200.8	4/14/2020	1708	ND	2	NA	Y	
1F-KS-2	N	02537-004	IAL	14751	4/9/2020	932	EPA 200.8	4/14/2020	1713	ND	2	NA	Y	
1F-KS-3	N	02537-005	IAL	14751	4/9/2020	934	EPA 200.8	4/14/2020	1717	ND	2	NA	Y	
1F-KS-4	N	02537-006	IAL	14751	4/9/2020	935	EPA 200.8	4/14/2020	1721	1.4	2	NA	Y	J
1F-KS-5	N	02537-007	IAL	14751	4/9/2020	936	EPA 200.8	4/14/2020	1725	5.11	2	NA	Y	
1F-KS-6	N	02537-008	IAL	14751	4/9/2020	938	EPA 200.8	4/14/2020	1730	ND	2	NA	Y	
1FH-H1B-L-WF	N	02537-009	IAL	14751	4/9/2020	940	EPA 200.8	4/14/2020	1734	ND	2	NA	Y	
1FH-BDR-WF	N	02537-010	IAL	14751	4/9/2020	945	EPA 200.8	4/14/2020	1738	3.42	2	NA	Y	
1FH-CAF1-WF	N	02537-012	IAL	14751	4/9/2020	950	EPA 200.8	4/14/2020	1742	ND	2	NA	Y	
1FO-CAF1-WF	N	02537-013	IAL	14751	4/9/2020	951	EPA 200.8	4/14/2020	1820	ND	2	NA	Y	
B1F-GBR-WF	N	02537-014	IAL	14751	4/9/2020	953	EPA 200.8	4/14/2020	1825	ND	2	NA	Y	
B1F-BBR-WF	N	02537-015	IAL	14751	4/9/2020	955	EPA 200.8	4/14/2020	1829	ND	2	NA	Y	
1F-HVAC-WF	N	02537-016	IAL	14751	4/9/2020	958	EPA 200.8	4/14/2020	1833	ND	2	NA	Y	
1F-MS-S	N	02537-017	IAL	14751	4/9/2020	1001	EPA 200.8	4/14/2020	1837	ND	2	NA	Y	
2F-ENT-WF-FILT	N	02537-018	IAL	14751	4/9/2020	1010	EPA 200.8	4/14/2020	1850	ND	2	NA	Y	
2F-G0-WF	N	02537-019	IAL	14751	4/9/2020	1012	EPA 200.8	4/14/2020	1854	ND	2	NA	Y	
2F-C205-WF	N	02537-020	IAL	14751	4/9/2020	1015	EPA 200.8	4/14/2020	1859	7.2	2	NA	Y	
2F-CAF-WF-FILT	N	02537-021	IAL	14751	4/9/2020	1022	EPA 200.8	4/14/2020	1916	ND	2	NA	Y	
2F-KS-1	N	02537-022	IAL	14751	4/9/2020	1020	EPA 200.8	4/14/2020	1958	3	2	NA	Y	
2F-KS-2	N	02537-023	IAL	14751	4/9/2020	1024	EPA 200.8	4/14/2020	2002	0.806	2	NA	Y	J
2F-B207-KS	N	02537-024	IAL	14751	4/9/2020	1026	EPA 200.8	4/14/2020	2006	ND	2	NA	Y	
2F-C200-WF	N	02537-025	IAL	14751	4/9/2020	1030	EPA 200.8	4/14/2020	2010	ND	2	NA	Y	
2F-D203-WF	N	02537-026	IAL	14751	4/9/2020	1032	EPA 200.8	4/14/2020	2015	ND	2	NA	Y	
2F-H33-WF	N	02537-027	IAL	14751	4/9/2020	1035	EPA 200.8	4/14/2020	2019	ND	2	NA	Y	
2F-H19-WF	N	02537-028	IAL	14751	4/9/2020	1038	EPA 200.8	4/14/2020	2032	ND	2	NA	Y	
1F-F108-WF	N	02537-029	IAL	14751	4/9/2020	1042	EPA 200.8	4/14/2020	2036	ND	2	NA	Y	
2F-F207-WF	N	02537-030	IAL	14751	4/9/2020	1047	EPA 200.8	4/14/2020	2040	0.832	2	NA	Y	J
2F-M0-L-WF	N	02537-031	IAL	14751	4/9/2020	1051	EPA 200.8	4/14/2020	2044	ND	2	NA	Y	
2F-M0-R-WF	N	02537-032	IAL	14751	4/9/2020	1053	EPA 200.8	4/14/2020	2122	ND	2	NA	Y	
1F-S3-L-WF	N	02537-033	IAL	14751	4/9/2020	1102	EPA 200.8	4/14/2020	2127	ND	2	NA	Y	
1F-S3-R-WF	N	02537-034	IAL	14751	4/9/2020	1100	EPA 200.8	4/14/2020	2131	ND	2	NA	Y	
1F-N0-L-WF	N	02537-035	IAL	14751	4/9/2020	1103	EPA 200.8	4/14/2020	2135	ND	2	NA	Y	
1F-N0-R-WF	N	02537-036	IAL	14751	4/9/2020	1105	EPA 200.8	4/14/2020	2139	ND	2	NA	Y	
1F-STEMBR-L-WF	N	02537-037	IAL	14751	4/9/2020	1109	EPA 200.8	4/14/2020	2144	ND	2	NA	Y	
1F-STEMBR-R-WF	N	02537-038	IAL	14751	4/9/2020	1111	EPA 200.8	4/14/2020	2148	ND	2	NA	Y	
2F-STEMBR-L-WF	N	02537-039	IAL	14751	4/9/2020	1115	EPA 200.8	4/14/2020	2152	ND	2	NA	Y	
2F-STEMBR-R-WF	N	02537-040	IAL	14751	4/9/2020	1117	EPA 200.8	4/14/2020	2156	ND	2	NA	Y	
STEM-KS1	N	02537-041	IAL	14751	4/9/2020	1120	EPA 200.8	4/14/2020	2312	ND	2	NA	Y	
STEM-KS2	N	02537-042	IAL	14751	4/9/2020	1122	EPA 200.8	4/14/2020	2346	ND	2	NA	Y	
STEM-KS3	N	02537-043	IAL	14751	4/9/2020	1124	EPA 200.8	4/14/2020	2359	ND	2	NA	Y	
STEM-KS4	N	02537-044	IAL	14751	4/9/2020	1126	EPA 200.8	4/15/2020	0003	0.876	2	NA	Y	J
STEM-KS5	N	02537-045	IAL	14751	4/9/2020	1128	EPA 200.8	4/15/2020	0007	2.2	2	NA	Y	
3F-STEMBR-L-WF	N	02537-046	IAL	14751	4/9/2020	1130	EPA 200.8	4/15/2020	0012	ND	2	NA	Y	
3F-STEMBR-R-WF	N	02537-047	IAL	14751	4/9/2020	1132	EPA 200.8	4/15/2020	0016	ND	2	NA	Y	
HX-AUTO-WF	N	02537-048	IAL	14751	4/9/2020	1134	EPA 200.8	4/15/2020	0020	ND	2	NA	Y	
HHX-H107-WF	N	02537-049	IAL	14751	4/9/2020	1135	EPA 200.8	4/15/2020	0024	ND	2	NA	Y	
HX-AB-WF1	N	02537-050	IAL	14751	4/9/2020	1137	EPA 200.8	4/15/2020	0029	ND	2	NA	Y	
HX-AB-WF2	N	02537-051	IAL	14751	4/9/2020	1140	EPA 200.8	4/15/2020	0033	1.12	2	NA	Y	J
TRB-WF	N	02537-052	IAL	14751	4/9/2020	1148	EPA 200.8	4/15/2020	111	ND	2	NA	Y	
RIF-N122-WF	N	02537-053	IAL	14751	4/9/2020	1150	EPA 200.8	4/15/2020	115	1.28	2	NA	Y	J
R1F-KS1	N	02537-054	IAL	14751	4/9/2020	1152	EPA 200.8	4/15/2020	119	ND	2	NA	Y	
R1F-KS2	N	02537-055	IAL	14751	4/9/2020	1154	EPA 200.8	4/15/2020	124	ND	2	NA	Y	
R1F-KS3	N	02537-056	IAL	14751	4/9/2020	1156	EPA 200.8	4/15/2020	128	2.98	2	NA	Y	
1RFH-ENT-WF	N	02537-057	IAL	14751	4/9/2020	1158	EPA 200.8	4/15/2020	141	ND	2	NA	Y	
R2F-ENT-WF	N	02537-058	IAL	14751	4/9/2020	1200	EPA 200.8	4/15/2020	145	5.43	2	NA	Y	
AC1-H-HOSE	N	02537-059	IAL	14751	4/9/2020	1215	EPA 200.8	4/15/2020	149	0.789	2	NA	Y	J
AC1-H-SINK	N	02537-060	IAL	14751	4/9/2020	1217	EPA 200.8	4/15/2020	153	ND	2	NA	Y	
AC1FH-OFF-LWF	N	02537-061	IAL	14751	4/9/2020	1219	EPA 200.8	4/15/2020	210	ND	2	NA	Y	
AC1FH-OFF-RWF	N	02537-062	IAL	14751	4/9/2020	1221	EPA 200.8	4/15/2020	253	ND	2	NA	Y	
AC2FH-LWF	N	02537-063	IAL	14751	4/9/2020	1223	EPA 200.8	4/15/2020	257	ND	2	NA	Y	
AC2FH-RWF	N	02537-064	IAL	14751	4/9/2020	1225	EPA 200.8	4/15/2020	301	ND	2	NA	Y	
AC-OUT-HOSE	N	02537-065	IAL	14751	4/9/2020	1230	EPA 200.8	4/15/2020	305	40.2	2	NA	Y	
ACFH-SINK	N	02537-066	IAL	14751	4/9/2020	1235	EPA 200.8	4/15/2020	310	4.1	2	NA	Y	
ACFH-HOSE	N	02537-067	IAL	14751	4/9/2020	1240	EPA 200.8	4/15/2020	322	47.2	2	NA	Y	
FB	N	02537-068	IAL	14751	4/9/2020	915	EPA 200.8	4/15/2020	326	ND	2	NA	Y	
AC-OUT-HOSE-FLUSH	N	02812-001	IAL	14751	4/23/2020	915	EPA 200.8	4/29/2020	750	ND	2	NA	Y	
ACFH-HOSE-FLUSH	N	02812-002	IAL	14751	4/23/2020	920	EPA 200.8	4/29/2020	828	ND	2	NA	Y	
ACFH-WF	N	02812-003	IAL	14751	4/23/2020	925	EPA 200.8	4/29/2020	832	1.70	2	NA	Y	J