

POINT PLEASANT BOROUGH SCHOOLS
Home of the Panthers



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

Point Pleasant Borough Schools
2100 Panther Path
Point Pleasant, NJ 08742

February 2017

Individual School Project Officers (ISPO)

Point Pleasant High School				
Name of ISPO	Title	Phone #	Signature	Date
Robert Sahlberg	Plumber	732-300-4874		

Point Pleasant Middle School				
Name of ISPO	Title	Phone #	Signature	Date
Robert Sahlberg	Plumber	732-300-4874		

Ocean Road Elementary School				
Name of ISPO	Title	Phone #	Signature	Date
Robert Sahlberg	Plumber	732-300-4874		

Nellie Bennett Elementary School				
Name of ISPO	Title	Phone #	Signature	Date
Robert Sahlberg	Plumber	732-300-4874		

Miscellaneous: Administration Building; Transportation Office; Snack Stand				
Name of ISPO	Title	Phone #	Signature	Date
Robert Sahlberg	Plumber	732-300-4874		

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1. Objective & Goals/Background

1.1 Objective and Goals

A Quality Assurance Project Plan is a document that describes the planning, implementation and evaluation steps involved in the acquisition of data to be used to arrive at a specific goal. The overall objective for this QAPP is to determine the lead concentration at drinking water outlets throughout the Point Pleasant Borough schools so that corrective actions may be implemented at any drinking water outlets found to exceed the US Environmental Protection Agency (USEPA) drinking water lead Action Level of 15 micrograms per liter ($\mu\text{g/L}$). For the purposes of compliance, any concentration greater than 15 $\mu\text{g/L}$ (as defined as greater than or equal to 15.5 $\mu\text{g/L}$) is considered to exceed the lead Action Level.

Drinking water outlets include faucets, ice machines, water fountains/bubblers, and water coolers in classrooms, restroom, kitchens, food preparation areas, snack stands, and athletic fields.

The testing of drinking water outlets will be conducted in accordance with this QAPP and the Point Pleasant Borough Schools Lead Water Testing Sampling Plan (a.k.a. the Sampling Plan).

The field data and analytical results will be used by the Project Team to determine whether drinking water outlets have concentrations of lead that exceed the Action Level. If a water sample is found to contain lead at a concentration greater than 15 $\mu\text{g/L}$, then the Project Manager will instruct the Individual School Project Officer (ISPO) to isolate the source of drinking water by turning off the outlet or providing a physical barrier to prevent consumption of the water until an appropriate remedial action 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 by being present in the source water or by the interaction of water with plumbing components that contain lead (i.e. corrosion/leaching). Common sources of lead in plumbing components include: solder, fluxes, pipes, pipe fittings, fixtures, and sediments. It is possible that different drinking water outlets within the same building could have dissimilar concentrations of lead.

In April 1994, USEPA prepared two guidance documents to assist municipalities in meeting the requirements of the Lead Contamination and Control Act (LCCA): *Lead in Drinking Water in Schools and Non-Residential Buildings* (EPA 812-B-94-002) and *Sampling for Lead in Drinking Water in Nursery Schools and Day Care Facilities* (EPA 812-B-94-003). In December 2005, amended October 2006, EPA issued the revised technical guidance document *3Ts for Reducing Lead in Drinking Water in Schools* (EPA 816-B-05-008) which replaced the *Lead in Drinking Water in Schools and Non-Residential Buildings* (EPA 812-B-94-002). The 3Ts Revised Technical Guidance document is meant to assist school officials in implementing programs and policies to reduce children's exposure to lead in drinking water in schools.



2. Project/Task Organization

2.1 List of Names

The names of the individuals fulfilling these roles is included at the beginning of this QAPP of the Approvals page.

2.2 Program Manager

The Point Pleasant Borough Schools Program Manager is the overall authority in the execution of the District's lead sampling project. He/she is responsible for the initial notification to the District of the testing program, obtaining funds for testing, assigning the Project Manager, requesting/enlisting the assistance from other District departments if needed, approving the District's QAPP, approving the Final Report for each school, and coordinating with other District officials to make the results of the testing available to the public. The Project Manager reports to the Program Manager.

2.3 Project Manager

The Project Manager is responsible for overseeing the execution of lead sampling at each of the District's schools/facilities. This involves the prioritization of schools to be sampled, and adherence with the 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). He/she reports to the Program Manager.

The Project Manager's responsibilities include:

- Prepare the QAPP
- Manage the Sampling Plan and QAPP.
- Oversee Individual School Project Officers to ensure that they adhere to the Sampling Plan procedures and the QAPP.
- Purchase of equipment needed for district lead sampling, as applicable
- Coordinate with New Jersey laboratories certified for lead in drinking water
- Coordinate with Project Officers to establish sampling schedules
- Ensure properly signed QAPP is in place prior to initiation of sampling
- Verify that officials from each school are aware when sampling is scheduled and the expected duration
- Review of the Field Sampling Summary Reports prepared by Project Officers
- Review of Laboratory Data Reports (LDR) from Laboratory Managers
- Review of Final Project Reports prepared by Project Officers and identify limitations in the use of any laboratory data due to information provided in the accompanying Field Sampling Summary Report
- Maintain the original signed QAPP(s)
- Maintain documents, reports and records listed in Section 14 of the QAPP
 - Laboratory Data Reports (LDR)
 - Copy of Field Sampling Summary Report with copies of field logbooks, 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
- Maintain other relevant records such as:
 - Purchase orders for analytical costs (copy).
 - Agreement with laboratory to sample/analyze/report with details for payment
 - Receipts (originals or copies)

2.4 Individual School Project Officer (ISPO)

An Individual School Sampling Project Officer (Project Officer) is assigned for each school. A Project Officer is someone who is familiar with the school building layout and plumbing system. The Individual School Project Officer's responsibilities include:

- General project oversight for assigned school(s).
- Generate field log book for each assigned school and document field activities including any changes to procedures outlined in the Sampling Plan or QAPP
- Ensure proper completion of the Plumbing Profile for assigned school(s) - See Attachment B of the Sampling Plan.
- Oversee 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).
- Prepare labels for drinking water outlets to be sampled
- Prepare for Walk-Thru including acquisition of School Floor Plan
- Attend school Walk-Thru
- Ensure proper completion of Walk-Thru documentation including identification of drinking water outlets on Floor Plan, and Sampling Location Inventory with coding according to the Sampling Plan (Attachment C of Sampling Plan).
- Supervise field activities such as Walk-Thru, flushing (if required), locking school prior to sampling, and sample collection
- Identify drinking water outlets to be flushed and attach flush tag
- Ensure 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
- Ensure that all drinking water outlets to be sampled prior to sampling event are labeled
- Ensure that any low-use drinking water outlets identified for sampling had been flushed
- Remove flush tags from drinking water outlet once sampling is completed
- Responsible for ensuring 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 Sampling Plan
- Verify that the Sampling Plan was followed prior to initiating sampling by completing the Pre-Sampling Water Use Certification (Attachment F in Sampling Plan)
- Supervise sampling event



- Document issues during sampling event in field log book
- Prepare Field Walk-Thru Report, School Field Sampling Summary Report and Final Project Report for assigned school
- Maintain field log books for each school
- Prepare samples for shipment and delivery to laboratory per certified laboratory instructions
- Ensure that samples are delivered to laboratory within the time period specified by the certified laboratory

2.5 Laboratory Manager

The Laboratory Manager is responsible for:

- Supervising laboratory analyses to be performed in the Laboratory. This includes oversight of all QA requirements in the laboratory, data review, and qualification of the data.
- Providing the Laboratory Data Report Package to the Project Manager and Project Officer.

2.6 Laboratory's Quality Assurance Officer (LQAO)

The Laboratory's Quality Assurance Officer (LQAO) is responsible for reviewing the QAPP and resolving any QA issues that may arise during the project.

2.7 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 a third-party Environmental Consulting Firm, approved and designated by the District. The personnel of the Consulting Firm performing the sample collection will be properly trained in sampling techniques and will be familiar with the District's QAPP and Sampling Plan. The name of the Consulting firm and its key personnel are listed in the Approvals section at the beginning of this QAPP.

The District will utilize a third-party laboratory for all sample analysis. The laboratory personnel will have successfully completed required demonstrations of capability for the methods used. The laboratory will be certified by New Jersey for the analysis and reporting of lead using USEPA drinking water methods which are listed in Section 8.

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



4. Project/Task 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 classrooms, the medical office, the teachers' lounge, and ice machines. Concession stands and outside water fountains (such as in playgrounds and athletic fields) may also be considered for sampling. The custodian sink faucet may also be considered for sampling if it is 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 Sampling Team will conduct first draw (initial) sample collection and, when appropriate, follow-up flushed sample collection. The Sampling Team will consist of the District personnel and the District's Environmental Consulting Firm. The NJ Certified Laboratory specified in the QAPP will perform the analysis for lead.

5. Lead Data Quality Objectives and Criteria for Measurement

5.1 Precision

The NJ Certified Laboratory will perform replicate analysis of the Laboratory Control Standard (LCS) for every set of individual school samples to assess method precision. This is not a requirement of any of the USEPA approved methods for lead analysis. The acceptance criterion for replicate analysis is a maximum of 20 percent (%) Relative Percent Difference (RPD). In addition to the LCS data, a duplicate laboratory fortified blank (LFB) or a matrix spike and a matrix spike duplicate (MS/MSD) will also provide precision information.

5.2 Bias

As part of the analytical methodology, the NJ Certified Laboratory will perform analysis of laboratory fortified blanks (LFB) to assess accuracy/bias. The acceptance criterion for accuracy is for the results to be within plus or minus 15% recovery of the known value.

A field reagent blank (FRB) must be collected for each school. The FRB is normally only a requirement for USEPA Method 200.8, however the collection of a FRB is required with any of the other approved lead methods for this sampling event. The information provided by the results is used to determine whether the field or sample transporting procedures and environmental effects have contributed to contamination of the sample.

If any sample result(s) are qualified, this must be clearly indicated on the report and all final reports such as the field summary report. The Project Manager must be consulted to determine how to deal with the qualified results.



5.3 Representativeness

The sampling effort is designed to identify all drinking water outlets, within a school, where there is a potential for water consumption such as at water fountains (bubblers) 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 or greater). Food preparation outlets and other potential ingestion outlets such as education classrooms, the medical office and bathroom sinks are to be considered for sampling.

5.4 Comparability

The analytical methods for lead analysis in drinking water are found 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 action level for lead of greater than 15 µg/L.

Analytical results from the first draw (initial) and the follow-up flushed samples 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 established in this QAPP.

One hundred percent (100%) of collected and verified samples will be analyzed and reported.

5.6 Sensitivity

The Laboratory's Reporting Limit (RL) for the determination of lead in drinking water samples must be no higher than 2 µg/L which is lower than the regulatory Practical Quantitation Level for lead of 5 µg/L. The Practical Quantitation Level for Lead is stated in the National Primary Drinking Water Contaminant Regulations 40 CFR141 Subpart I. The required reporting limit of 2 µg/L for this QAPP is achievable with any of the approved USEPA methods listed in 11.1.

6. Secondary Data

Secondary data for the District would be any historical lead data, if any.



7. Field Monitoring Requirements

Sampling may occur in the morning hours before schools are open or on weekdays or weekends when no school activities are expected. This will minimize the potential for people in the building to use water during the sampling survey. While sampling is underway it is advisable to prohibit any persons other than the Sampling Team to enter the building in order to ensure that no toilets or water outlets are being used.

7.1 Monitoring Process Design

The sampling design, described in detail in the Sampling Plan (Appendix B), is based in part upon the 3T's Guidance for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance, December 2005; Errata to 3Ts, October 2006 (see Appendix A).

7.2 Monitoring Methods

Equipment and supplies used to perform the sampling will include ASTM Type I reagent-grade water for the field reagent blank (FRB), latex non-colored gloves, pre-cleaned HDPE wide-mouth 250 mL single use rigid sample containers, a chain of custody form, and an indelible ink/marker.

Nitric acid, for sampling preservation, will be added to the collection bottles prior to the collection of the samples.

Each school will have a separate sample cooler or box which will contain the field reagent blank (FRB) and the other samples collected. Samples will be transported by the Sampling Team to the Laboratory.

7.3 Field Quality Control

The analytical results obtained from the FRB will determine whether field or sample transportation procedures are a cause of sample contamination.

Prior to the sampling event, the Sampling Team will collect a 250 mL ASTM Type I reagent-grade water from the Laboratory which will be used for the FRB. Prior to the first sample collected at a school, the ASTM Type I reagent-grade water will be transferred into a sample container which will be identified as the FRB sample.

The ASTM Type I reagent-grade water will be supplied by the Laboratory. The 250 mL sample containers will be purchased pre-cleaned. Sample containers will not be reused.



8. Analytical Requirements

8.1 Analytical Methods

The School District 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 and report lead by that method and that the Laboratory has a reporting limit no greater than 2 µg/L.

For the purposes of the School District's QAPP, the analytical performance information is as follows:

Analyte	Analytical Method	Sample Matrix	Recommended Guidance 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) first draw (initial) sample	2.0 µg/L

The pH of all samples must be checked at the time of receipt at the Laboratory. If the pH is not less than 2, the pH must be adjusted with the addition of nitric acid. Samples that require the addition of nitric acid must sit for 16 hours prior to digestion (if applicable) or analysis. The pH of each sample must be documented.

The turbidity of each sample must also be checked at the time of receipt at the Laboratory. If the turbidity of the sample is greater than 1 NTU, the sample must be digested prior to analysis. The turbidity of each sample must be documented and those samples digested must be recorded by the Laboratory.

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 in the Laboratory report for each sample that is diluted.

8.2 Analytical Quality Control

The USEPA has established protocols for the analysis of Quality Control (QC) samples with each analytical batch of samples, generally defined as a maximum of twenty samples. All QC results must be assessed and evaluated on an on-going basis and QC acceptance criteria must be used to determine the validity of the data.

For analytical testing, the laboratory includes positive control samples [Laboratory Control Sample (LCS) or Analytical Quality Control (AQC)] to evaluate the total analytical system. Negative control samples (Method Blanks) are used to assess the preparation batch for possible contamination during the preparation and processing steps. A blank is considered contaminated with any result at or above the analyte reporting limit. Specific control samples (Matrix Spikes) are used to indicate the effect of the sample matrix and replicates (matrix



spike, LCS replicate) are performed to assess the precision of the results generated.

Specific information regarding acceptance criteria and corrective actions is documented in the Laboratory's Standard Operating Procedures (SOP) for any of the analytical methods listed in the table above.

9. Sample Handling and Custody Requirements

All samples are aqueous and will be collected and labeled by the laboratory. 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 found in Appendix C or an equivalent will be used for this project.

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

Analyte	Sample Volume	Container	Preservation ¹	Holding Time
Lead (Pb)	250 mL	Unused, clean, 250 mL rigid plastic wide-mouth	Reagent Grade Nitric Acid (HNO ₃) pH < 2	6 months

¹Sample preservation will be conducted either in the field

9.1 Sample Archive/Disposal

The samples received by the Laboratory for each school/facility, including any digestates, will be eligible for disposal at a minimum 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 Testing, Inspection, Maintenance & Calibration 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

250 mL sample containers are purchased pre-cleaned. Sample containers are not to be reused. Sample gloves are to be disposable, non-colored and not reused.

11. Data Management

The Laboratory will immediately notify the Project Manager and Project Officer upon receipt of any validated laboratory results that exceed the action level for lead in drinking water that is greater than 15 µg/L (as defined as greater than or equal to 15.5 µg/L). For all results, the Laboratory will provide the result in micrograms per liter (µg/L) and to at least three (3) significant figures (i.e. 19.6 µg/L or 20.4 µg/L).

The Laboratory will provide a final electronic copy of the Lead Data Report Package (LDR) for each school that will consist of: 1) PDF cover sheet that identifies the school name and all qualifiers with a description for that qualifier used by the laboratory, 2) laboratory report of the analytical results in PDF format, 3) the chain of custody in PDF format and 4) an Excel spreadsheet of the results. The Excel spreadsheet must include the information outlined in the Excel template provided in Appendix D. Information required to be included in separate columns includes but is not limited to; the field ID (sample location identifier and/or code), the Laboratory sample ID, the Laboratory Name and Laboratory certification number, whether the sample was flushed, the date and time of collection and analysis, the analytical method, the analytical result in µg/L, the reporting limit in µg/L, and whether the sample was diluted or digested and any qualifiers.

The LDR Package will include the analytical results, appropriate qualifiers and reporting limits for analyses of submitted samples as requested by the District. The LDR Package must include explanations of any relevant 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 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 logbook, evaluated to determine if there will be any impact to the data and then highlighted 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

13.1 Data Review, Verification and Validation

The Project Manager will evaluate the School Field Sampling Summary Reports against the final analytical results to determine if any field observations may have contributed to lower or higher analytical results.

The Project Manager will review the analytical report and determine any limitations on the use of the data (see Section 5.2 Bias of this QAPP) and include these limitations in the Final Project Report.

Data review of all laboratory generated data is performed by the Laboratory Quality Assurance Officer (LQAO) who is not associated with the actual measurement operations for the given analytical batch but knowledgeable in the analytical processes employed. 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. Any limitations on the use of data (e.g. data qualifiers) will be included in the Final Project Report.

13.2 Reconciliation with User Requirements

As long as the Field Sampling Summary Report, LDR Package and Final Project Report 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

Below is a recommended method for storing/saving documentation:

Document:	Individual School Project Officer	School District Project Manager	School District Program Manager
QAPP	Copy	X	Copy
Field Walk-Thru 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 Data Report	X	Copy	Copy
Final Project Report	Copy	X	Copy

