

J.C. Broderick & Associates, Inc.

Environmental / Construction Consulting & Testing



August 12, 2016

Mr. Tony Fede
Half Hollow Hills Central School District
Administration Building
525 Half Hollow Road
Dix Hills, New York 11746

Re: **Lead in Water Sampling**
Half Hollow Hills Central School District

Sites:	High School East	High School West
	Natorium at High School West	Candlewood Middle School
	West Hollow Middle School	Signal Hill Elementary School
	Otsego Elementary School	Paumanok Elementary School
	Vanderbilt Elementary School	Chestnut Hill Elementary School
	Sunquam Elementary School	Manasquan Central Office
	Bus Storage Facility	Transportation Building

JCB#: 16-34685

Dear Mr. Fede:

J. C. Broderick & Associates, Inc. (JCB) was retained by the Half Hollow Hills Central School District to perform an assessment and testing of the drinking water outlets servicing the above referenced school buildings for the presence of lead. The assessment and testing was performed in accordance with the United States Environmental Protection Agency (EPA's) protocols as recommended in their publication 3Ts for Reducing Lead in Drinking Water in Schools.

In summary, the assessment and testing performed indicate that the lead levels of the drinking water outlets servicing the School District currently meet federal guidelines. Sampling was performed at 643 drinking outlets, and although lead was initially detected above the action level at only sixty-three (63) of these locations, these outlets have been removed from service until further investigation, remediation and/or retesting is completed.

Background

Lead is a toxic metal that can be harmful to human health when ingested or inhaled. Even small doses of lead can be harmful. Unlike most other contaminants, lead is stored in our bones, to be released later into the bloodstream. Even small doses can accumulate and become significant. The groups most vulnerable to lead include fetuses and young children. Drinking water represents one possible means of lead exposure.

Even though water delivered from your community's public water supply must meet Federal and State standards for lead, you may still end up with too much lead in your drinking water because of the plumbing in your facility and because of the building's water use patterns. The physical/chemical interaction that occurs between the water and plumbing is referred to as corrosion. The extent of which corrosion occurs

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depends on various factors such as the lead content of the building's plumbing and piping system, water velocity, temperature, alkalinity, chlorine levels, the age and condition of plumbing, and the amount of time water is in contact with the plumbing.

Therefore, the critical issue is that even though your public water supplier may send you water that meets all Federal and State public health standards for lead, you may end up with too much lead in your drinking water because of the plumbing in your facility. The only way to be certain that lead is not a problem in your school building is to test various drinking water outlets (i.e., taps, bubblers, coolers, etc.) for the substance. That is why testing the water from your drinking water outlets for lead is so important.

In their revised technical document, 3Ts for Reducing Lead in Drinking Water in Schools the EPA outlines a recommended guidance and testing protocol that can be used by schools to determine the source and degree of lead contamination problems in their school buildings and how to remedy such contamination. This strategy was utilized for the assessment and testing of the above referenced school buildings and included the following:

- The Development of a Plumbing Profile;
- The Development of a Sampling Plan;
- Conducting Initial and Follow-Up (Flush) Sampling and Analysis;
- Determination of Interim and Long-Term Remedies;
- Implementation of Identified Remedies
- Informing the School Community.

Development of a Plumbing Profile

The purpose of developing a plumbing profile is to target potential problems and assess the factors that can contribute to presence and extent of lead contamination in a school building. That is, determine whether the school building may have a widespread problem or a localized concern.

The plumbing profile performed included the answering of a series of questions by an informed school building representative. Typically the questionnaire is completed by the Director of Facilities, the district architect, or the district plumber. The responses to these questions assisted in determining how and where the water entered, flowed through the school building and identifying and prioritizing sampling sites. A sample copy of the plumbing profile questionnaire can be referenced in the attachments to this report.

Due to the age of the school buildings, the number of additions, historic repairs and the lack of specific information pertaining to the lead-content of the plumbing and associated fixtures, comprehensive information was not obtained from the questionnaire identifying if, or where lead-containing plumbing may exist in the school buildings' plumbing system. Therefore a sampling plan was prepared to assess all High Priority Water Outlets or outlets used for drinking or cooking within the school buildings.

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Development of a Sampling Plan

An inspection of all functional spaces located within the above referenced school buildings was performed to identify the locations of all high priority water. High priority water outlets are defined by the EPA as:

- Drinking fountains, both bubbler and water cooler style
- Kitchen sinks
- Classroom combination sinks and drinking fountains
- Home economic rooms sinks
- Teacher's lounge sink, nurse's office sink
- Classroom sinks in special education classrooms
- Or any other sinks known to be visibly used for consumption (for example, coffee maker or cups are nearby).

The location of these water outlets were demarcated on Site Location Maps which have been prepared for each school building. Copies of these maps can be referenced as an attachment of this report.

Detailed information pertaining to each outlet sampled was recorded on a chain of custody document at the time of the sampling. Unique sample identification numbers were assigned to each sample that correspond the school building's prepared site location map and chain of custody documents. The information recorded on the chain of custody forms included the type of sample collected, date and time of collection, name of the sample collector, location of the sample site and the name of the manufacturer that produced the outlet and the outlets' model number, if applicable and available. The manufacturer and model number information recorded about each of the water coolers servicing the school buildings were also compared to known water coolers that contain lead-lined tanks and or lead containing components.

Drinking water samples were collected for lead analysis utilizing the two-step process for lead contamination identification as described in the above referenced EPA document. This includes the collection of both "Initial 1st Draw" and "Follow-Up Flush" samples subsequent to meeting the recommended stagnation period. All samples were sealed immediately after collection and delivered to a certified laboratory, in laboratory provided coolers, for the analysis of lead content. A copy of the laboratory certifications can be referenced as an attachment to this report.

Initial and Follow-Up Flush Sampling

All "initial 1st draw samples" collected were analyzed for the presence of lead. Reported results were then compared to the established EPA action level of twenty parts per billion (20 ppb). If the reported level of lead in the initial first draw samples were at or below the action level, the water outlet was designated as satisfying the Federal guidelines for lead levels.

If the initial 1st draw sample's lead levels were above the action level, then further investigation and sampling was performed (including the analysis of the follow-up flush sample) in accordance with the EPA's Sampling Strategy Flowchart located in their guidance document.

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The following table summarizes the number of drinking water/high priority outlets sampled in each school building and their corresponding results. Detailed information pertaining to each water outlet sampled and their specific laboratory results can be referenced on the chain of custody and laboratory results located in the attachments.

School Building	Drinking Water Outlets Sampled	Locations which Exceeded EPA Action Level
Half Hollow Hills High School East	79	Map Location 9: Classroom Faucet in Prep Room 405/407 Map Location 19: Classroom Faucet in Room 107 Map Location 27: Nurse's Sink in East Health Office Exam Room Map Location 28: Nurse's Sink in East Health Office Exam Room Map Location 37: Classroom Faucet in Office Room 735 Map Location 40: Classroom Faucet in Prep Room 743/741 Map Location 59: Kitchen Faucet in Kitchen
Half Hollow Hills High School West	47	Map Location 3: Sink in Room 103 Map Location 17: Sink in Kitchen-Closest to South Café Map Location 29: Fountain in Girls Locker Room Map Location 42: Sink in Room 277
Nataorium	3	NONE
Candlewood Middle School	40	NONE
West Hollow Middle School	46	Map Location 32: Kitchen Faucet in Copy Room Map Location 35: Kitchen Sink in Home Economics Room 226 Map Location 36: Kitchen Sink in Home Economics Room 226 Map Location 42: Kitchen Sink in Home Economics Room 223 Map Location 43: Kitchen Sink in Home Economics Room 223 Map Location 45: Kitchen Sink in Home Economics Room 223
Signal Hill Elementary School	50	Map Location 2: Kitchen Faucet in Kitchen Map Location 6: Fountain by Nurse's Office Map Location 15: Fountain in Room 205 Map Location 16: Classroom Faucet in Library Map Location 32: Fountain in Room 118 Map Location 33: Fountain in Room 116 Map Location 35: Fountain in Room 113 Map Location 37: Fountain in Room 112 Map Location 41: Fountain in Room 108b
Otsego Elementary School	92	Map Location 3: Sink in Room 303 Map Location 4: Sink in Room 304 Map Location 45: Sink in Nurse's Office Map Location 49: Sink in Room 101 Bathroom Map Location 50: Sink in Room 102 Bathroom Map Location 55: Sink in Room 103 Bathroom Map Location 56: Sink in Room 106 Bathroom Map Location 64: Fountain in Room 108 Map Location 72: Fountain in Room 110
Paumonok Elementary School	101	NONE

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School Building	Drinking Water Outlets Sampled	Locations which Exceeded EPA Action Level
Vanderbilt Elementary School	50	Map Location 24: Fountain in Room 120 Map Location 29: Fountain in Room 116 Map Location 37: Fountain in Room 106 Map Location 44: Fountain in Room 102 Map Location 50: Fountain in Room 123
Chestnut Hills Elementary School	56	Map Location 2: Kitchen Faucet in Kitchen Map Location 3: Kitchen Faucet in Kitchen Map Location 4: Kitchen Faucet in Kitchen Map Location 5: Kitchen Faucet in Kitchen Map Location 8: Fountain in Room 201 Map Location 9: Fountain in Physical Education Storage Map Location 10: Fountain in Room 200c Large Storage Map Location 11: Fountain in Room 113 Map Location 12: Fountain in Room 202 Map Location 18: Fountain in Room 210 Map Location 20: Fountain in Room 209 Map Location 22: Fountain in Room 207 Map Location 25: Fountain in Room 119 Map Location 26: Fountain in Room 118 Map Location 27: Fountain in Room 117 Map Location 28: Fountain in Room 116 Map Location 35: Fountain in Room 110 Map Location 41: Fountain in Room 108 Map Location 45: Fountain in Corridor by Room 103 Map Location 52: Fountain in Room 122 Map Location 53: Fountain in Room 121 Map Location 54: Fountain in Room 120
Sunquam Elementary School	50	NONE
Manasquan Central Office	21	Map Location 18: Sink in Room 107 Kitchen
Bus Garage	2	NONE
Transportation Facility	6	NONE

Interim and Long-Term Remediation

Each of the above referenced outlets which exceeded the action level have been removed from service until further investigation, remediation, and or retesting is completed.

In addition to the locations identified above, twenty (20) other locations revealed concentrations of lead between fifteen (15) and twenty (20) parts per billion. Although these concentrations are below the EPA action level and there is no remediation or further action required by the school district, the District has proactively elected to remove these fixtures from service for further investigation, remediation and/or retesting. The reasoning behind the District's decision is such that the District seeks to get ahead of any potential upcoming New York State regulation changes which may expand or otherwise modify the lead levels which require action by the District.

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For all active water outlets, it is recommended that the district perform routine control measures including, but not limited to:

- Maintain all drinking water outlets, screens/aerators, and any associated filters.
- Use only cold water for food and beverage preparation
- Instruct users to run the water before use or drinking
- Communicate with building occupants regarding approved drinking water locations

For more information pertaining to these control measures, please reference the EPA's guidance document entitled "Drinking Water Best Management Practices for Schools and Child Care Facilities Served by Municipal Water Systems."

Informing the Public

EPA recommends that schools conducting lead-in-drinking-water sampling programs comply with the public information components of the Lead Contamination Control Act. There are two components:

1. Notify relevant parent, teacher, student, and employee organizations of the availability of your sampling program results, and
2. Make copies of the sampling results available in your administrative offices "for inspection by the public, including teachers, other school personnel and parents."

Given the health effects of lead, EPA advocates that any school conducting sampling for lead make public any test results. In addition, such schools should identify activities they are pursuing to correct any lead problems.

There are six (6) basic public notification methods recommended by the EPA that should be applied alone, or in combination, to communicate lead-in-drinking-water issues and the meaning of your sampling results. The method(s) that best suits the school districts particular situation should be chosen and can include:

- Press Releases
- Letters/Fliers
- Mailbox or Paycheck Stuffers
- Staff Newsletters
- Presentations, or
- Email and Web Sites.

Advice, suggestions and samples to assist in the public notification process is available from the EPA in their 3Ts for Reducing Lead in Drinking Water in Schools. This publication is available online in the EPA's website.

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It should be noted that this sampling was performed in accordance with current guidelines. Should the guidelines change, or legislation dictate other criteria, these results may need to be reevaluated.

If you need any further assistance, please feel free to contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read "E. McGuire". The signature is written in a cursive style with a large initial "E" and a stylized "M".

Edward McGuire
J.C. Broderick & Associates, Inc.