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Mr. Allan Scotto
Lynbrook UFSD
111 Atlantic Avenue
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Dear Mr. Scotto,

Executive Summary

Enviroscience Consultants, Inc. has performed lead in water testing throughout the Lynbrook Union Free School District in accordance with United States Environmental Protection Agency’s “3Ts for Reducing Lead in Drinking Water in Schools”, October, 2006 and New York State Department of Health Subpart 67-4 of Title 10, September, 2016. Primary and secondary drinking water source locations in each of the school buildings were assessed. Initial first draw samples were collected at each location tested. Six (6) locations were sampled at the Administration Building, eighteen (18) locations were sampled at Lynbrook Kindergarten Center, fifty-three (53) locations were sampled at Marion Street Elementary School, forty-one (41) locations were sampled at Waverly Park Elementary School, thirty-one (31) locations were sampled at West End Elementary School, thirty-seven (37) locations were sampled at Lynbrook North Middle School, forty-two (42) locations were sampled at Lynbrook South Middle School and thirty-eight (38) locations were sampled at Lynbrook High School.

First draw samples with concentrations above 15 ppb were identified as found in the Results section below. These locations were then sampled using 15 second and 60 second flush methods, to assess the source of lead contamination. Sample locations were motionless for 8 to 18 hours, in accordance with Subpart 67-4. Results of these samples can be found in the corresponding table for each school as found in each appendix.

Remediation is required in the following locations. The type of remediation is indicated as either fixture replacement (FR), fixture and associated supply lines and valves replacement (FRSLV) or replacement of fixture, supply lines, valves and plumbing assessment (FRSLVPA), or the implementation of signage warning against using the fixture as a drinking water source (SIGN). The district may also choose to simply remove the fixture and/or cap the lines leading to it.

Lynbrook Kindergarten Center

<u>Location and Remediation Type</u>	
Room 1 Sink	FR
Room 5 Sink	FR
Room 7 Sink	FR
Room 8 Sink	FR

Marion Street Elementary School

Location and Remediation Type

Room 10 Sink	FR
Boys Locker Room Sink	FR
Room 16 Sink	FR
Room 17 Sink	FR
Room 18 Sink	FR
Water Fountain Nearby Room 19B	FRSLV
Room 19 Water Fountain	FR
Room 20 Sink	FR
Room 47 BR Sink	FR
Faculty Room Kitchen Sink	FR

Waverly Park Elementary School

Location and Remediation Type

Room 20 Sink	FRSLV
Room 1 Sink	FR
Kitchen Sink	FR
Room 2 Sink	FR
Room 4 Sink	FR
Room 8 Sink	FR
Room 6 Sink	FR
Room 36 Sink	FR
Room 34 Sink	FR
Room 37 Sink	FRSLVPA
Room 38 Sink	FR
Room 33 Sink	FR
Room 32 Sink	FRSLVPA
Room 31 Sink	FR
Room 47 Sink	FRSLV
Exterior (East Side) Sink	FR
Principals BR Sink	FR

North Middle School

Location and Remediation Type

Main Office Water Fountain	FRSLVPA
Spigot next to team Room	FR
Spigot between Outside BR's	FR
Librarian Office Sink	FR

South Middle School

Location and Remediation Type

Kitchen Food Prep Sink	FR
Kitchen Sink by Windows	FR
Kitchen Pot Filler	FR
Main Office Water Fountain	FR
Principals BR Sink	FR
Room 118 Sink	FR
Boys LR Slop Sink	FR
Girls LR Water Fountain	FR
Girls Coaches Office Sink	FR
Tech Room Sink (right)	FR
Spigot outside Girls Outside BR	FR
Boys Sport LR Sink	FR

Lynbrook High School

Location and Remediation Type

Nurse Office Sink	FR
Girls Locker Room BR Sink	FR
Library Sink	FR
Main Office Sink	FR

All elevated locations should be taken off line until the remediation is completed. Any other drinking water sources in these locations that have not been tested should be tested.

Background, Methods and Results

Background

Lead is a toxic metal that is harmful to human health. Lead has no known value to the human body. The human body cannot tell the difference between lead and calcium, which is a mineral that strengthens the bones. Like calcium, lead remains in the bloodstream and body organs like muscle or brain for a few months. What is not excreted is absorbed into the bones, where it can collect for a lifetime.

Young children, those 6 years and younger, are at particular risk for lead exposure because they have frequent hand-to-mouth activity and absorb lead more easily than do adults. Children's nervous systems are still undergoing development and thus are more susceptible to the effects of toxic agents. Lead is also harmful to the developing fetuses of pregnant women.

No safe blood lead level in children has been determined. Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system (brain), particularly in children. Lead also damages kidneys and the reproductive system. The effects are the same whether it is breathed or swallowed. Low blood levels of lead (those below 10 µg/dL) have been associated with reduced IQ and attention span, learning disabilities, poor classroom performance, hyperactivity, behavioral problems, impaired growth, and hearing loss. Very high lead level (blood lead levels above 70 µg/dL) can cause severe neurological problems such as coma, convulsions, and even death. The only method to determine a child's lead level is for them to have a blood lead test done by a health provider.

In general, we find widespread presence of lead in drinking water when:

- Lead pipes are used throughout the facility.
- The building's plumbing is less than 5 years old and lead solder was illegally used (i.e., after the "lead-free" requirements of the 1986 Safe Drinking Water Act Amendments took effect). This situation is rare.
- The water is corrosive.
- Sediment or scale in the plumbing and faucet screens contain lead.
- Brass fittings, faucets, and valves were installed throughout the building less than five years ago (even though they may contain less than the "lead-free" requirements of the Safe Drinking Water Act).
- The service connection (i.e., the pipe that carries water from the public water system main to the building) is made of lead.

In general, there may be a localized presence of lead if:

- Some brass fittings, faucets, and valves have been installed in the last five years (even though they may meet the SDWA "lead-free" requirement).
- Drinking water outlets are in line with brass flush valves, such as drinking water fountains near restroom supply piping.
- Lead pipes are used in some locations.
- The water is non-corrosive.
- Lead solder joints were installed in short sections of pipe before 1986 or were illegally installed after 1988 (i.e., after the lead-free requirements of the Safe Drinking Water Act took effect).
- There are areas in the building's plumbing with low flow or infrequent use.

- Sediment in the plumbing and screens frequently contains lead.

Methods

EPA recommends that a two-step sampling process be followed for identifying lead contamination. Lead in a water sample taken from an outlet can originate from the outlet fixture (the faucet, bubbler etc.), plumbing upstream of the outlet fixture (pipe, joints, valves, fittings etc.), or it can already be in the water that is entering the facility. The two-step sampling process helps to identify the actual source(s) of lead.

In Step 1, initial samples are collected to identify the location of outlets providing water with elevated lead levels and to learn the level of the lead in the water entering the facility (i.e., at the service connection). In Step 2, follow-up flush samples are taken only from outlets identified as problem locations to determine the lead level of water that has been stagnant in upstream plumbing, but not in the outlet fixture. Sample results are then compared to determine the sources of lead contamination and to determine appropriate corrective measures.

The protocol, which consists of an established sample size volume and water retention time, is designed to identify lead problems at outlets and upstream plumbing within school facilities, and in the water entering the facility.

Step 1: Initial Sampling

In Step 1, initial samples are taken from prioritized outlets (e.g., bubblers, fountains) in the facility. These samples determine the lead content of water sitting in water outlets that are used for drinking or cooking within your building(s). Initial samples taken from bubblers, fountains, and other outlets used for consumption are all first-draw samples (i.e., the stagnant water is sampled before **any** flushing or use occurs). The goal of Step 1 is to compare the lead level of water from your facility's service connection to water that has remained stagnant between 8 and 18 hours in an outlet or fixture.

Step 2: Follow-Up Flush Sampling

If initial test results reveal lead concentrations greater than 15 ppb in a 250 mL sample for a given outlet, follow-up flush testing described in Step 2 is recommended to determine if the lead contamination results are from the fixture or from interior plumbing. EPA has established this trigger for follow-up flush testing to ensure that the sources of lead contamination in drinking water outlets are identified.

In Step 2, follow-up flush samples are collected and analyzed from outlets whose initial first draw results revealed lead concentrations greater than 15 ppb. The purpose of Step 2 is to pinpoint where (i.e., fixtures or interior plumbing) lead is getting into drinking water so that appropriate corrective measures can be taken.

As with initial first draw samples, follow-up flush samples are to be taken before a facility opens and before any water is used. Follow-up flush samples generally involve the collection of water from an outlet where the water has run for 15 seconds to assess water coming from supply lines and valves, and a second sample after a 60 second flush designed to analyze the lead content in the water in the plumbing behind the wall. The sampler induces a small (e.g., pencil-sized) steady flow of water from the outlet or other sample location.

A comparison of initial and follow-up samples is used to assess where the lead may be getting into the drinking water.

Sample analysis was performed at NY Environmental & Analytical Labs, Inc., a New York State Department of Health Environmental Laboratory Approval Program (ELAP) certified laboratory (ELAP #11510) and York Analytical Laboratories Inc., a New York State Department of Health Environmental Laboratory Approval Program (ELAP) certified laboratory (ELAP #10854).

Results

First draw water samples were collected on June 9, 2016 from the Administration Building, Lynbrook Kindergarten Center, Marion Street Elementary School, and West End Elementary School. Water samples were collected on June 10, 2016 from the North Middle School, South Middle School and the Lynbrook High School. Samples were collected from Waverly Park Elementary School on both days, June 9 & 10, 2016. Second and third draws were collected on June 24, 2016.

The samples were collected in laboratory-supplied containers, preserved properly, and transported to a certified laboratory for analysis of lead in drinking water. A chain-of-custody was prepared to document the sequence of sample

possession.

A table for each school summarizes the results, and a copy of the laboratory reports is provided in each corresponding appendix.

Based on the results, the following locations have exceeded the USEPA Action Level of 15 parts per billion (ppb) for first draw (the results are reported in parts per billion). The results are as follows:

Lynbrook Kindergarten Center

<u>Location and Result (ppb)</u>	
Room 1 Sink	38.9
Room 5 Sink	26.4
Room 7 Sink	23.2
Room 8 Sink	16.5

Marion Street Elementary School

<u>Location and Result (ppb)</u>	
Room 10 Sink	26.4
Boys Locker Room - Sink	15.8
Room 16 - Sink	22.0
Room 17 - Sink	21.0
Room 18 - Sink	41.4
Water Fountain Nearby Rm 19B	55.4
Room 19 - Water Fountain	79.2
Room 20 - Sink	17.0
Room 47 BR - Sink	25.1
Faculty Room Kitchen - Sink	19.5

Waverly Park Elementary School

<u>Location and Result (ppb)</u>	
Room 20 - Sink	38.4
Room 1 - Sink	60.2
Kitchen - Sink	46.2
Room 2 - Sink	27.3
Room 4 - Sink	58.0
Room 8 - Sink	16.9
Room 6 - Sink	28.1
Room 36 - Sink	24.3
Room 34 - Sink	84.5
Room 37 - Sink	160
Room 38 - Sink	90.9
Room 33 - Sink	15.5
Room 32 - Sink	39.6
Room 31 - Sink	876
Room 47 - Sink	35.8
Exterior (East Side) - Spigot	54.2
Principal's BR - Sink	15.4

North Middle School

<u>Location and Result (ppb)</u>	
Main Office - Water Fountain	64.9
Spigot next to Team Room	47.0
Spigot between Outside BR's	44.7
Librarian Office - Sink	26.1

South Middle School

Location and Result (ppb)

Kitchen Food Prep - Sink	23.2
Kitchen Sink by Windows	31.3
Kitchen Pot Filler	33.2
Main Office - Water Fountain	35.7
Principals BR - Sink	56.1
Room 118 – Sink	21.0
Boys LR Slop Sink	15.6
Girls LR - Water Fountain	17.5
Girls Coaches Office - Sink	46.2
Tech Room Sink (right)	20.2
Spigot Outside Girls Outside BR	94.8
Boys Sport LR - Sink	61.9

Lynbrook High School

Location and Result (ppb)

Nurse Office - Sink	23.0
Girls Locker Room BR - Sink	20.1
Library - Sink	19.1
Main Office - Sink	22.4

Results of second draw (15 second flush) and third draw (60 second flush) of elevated first draw sample locations are as follows:

Lynbrook Kindergarten Center

Location and Result for Second Draw and Third Draw (ppb)

Room 1 Sink	1.2	<1.0
Room 5 Sink	1.3	<1.0
Room 7 Sink	2.3	<1.0
Room 8 Sink	<1.0	<1.0

Marion Street Elementary School

Location and Result for Second Draw and Third Draw (ppb)

Room 10 Sink	1.5	<1.0
Boys Locker Room - Sink	3.9	<1.0
Room 16 - Sink	<1.0	<1.0
Room 17 - Sink	<1.0	<1.0
Room 18 - Sink	2.2	<1.0
Water Fountain Nearby Rm 19B	53	14
Room 19 - Water Fountain	7.6	3.6
Room 20 - Sink	<1.0	<1.0
Room 47 BR – Sink	2.7	1.3
Faculty Room Kitchen - Sink	<1.0	<1.0

Waverly Park Elementary School

Location and Result for Second Draw and Third Draw (ppb)

Room 20 - Sink	45	9.8
Room 1 - Sink	3.6	1.1
Kitchen - Sink	1.0	<1.0

Room 2 - Sink	1.1	<1.0
Room 4 - Sink	2.3	<1.0
Room 8 - Sink	1.5	<1.0
Room 6 - Sink	1.1	<1.0
Room 36 - Sink	<1.0	<1.0
Room 34 - Sink	1.1	1.0
Room 37 - Sink	305	21
Room 38 - Sink	4.6	1.9
Room 33 - Sink	1.4	<1.0
Room 32 - Sink	17	27
Room 31 - Sink	1.9	1.0
Room 47 - Sink	23	11
Exterior (East Side) - Spigot	<1.0	<1.0
Principal's BR - Sink	1.0	<1.0

North Middle School

Location and Result for Second Draw and Third Draw (ppb)

Main Office - Water Fountain	27	32
Spigot next to Team Rm	4.7	8.4
Spigot between Outside BR's	1.1	<1.0
Librarian Office - Sink	5.3	<1.0

South Middle School

Location and Result for Second Draw and Third Draw (ppb)

Kitchen Food Prep - Sink	<1.0	<1.0
Kitchen Sink by Windows	5.3	8.5
Kitchen Pot Filler	<1.0	<1.0
Main Office - Water Fountain	10	2.6
Principals BR - Sink	1.8	2.1
Room 118 - Sink	<1.0	<1.0
Boys LR Slop Sink	3.2	<1.0
Girls LR - Water Fountain	3.1	2.3
Girls Coaches Office - Sink	7.4	2.4
Tech Room Sink (right)	<1.0	<1.0
Spigot Outside Girls Outside BR	<1.0	<1.0
Boys Sport LR - Sink	8.6	2.8

Lynbrook High School

Location and Result for Second Draw and Third Draw (ppb)

Nurse Office - Sink	4.8	3.4
Girls Locker Room BR - Sink	2.5	1.3
Library - Sink	1.0	<1.0
Main Office - Sink	4.9	<1.0

Conclusion & Recommendations

In locations where only first draw samples exceed 15 ppb, the district should replace the fixture (bubbler, faucet, pot filler, etc.) with a fixture certified by the manufacturer as lead free, in accordance with US EPA definitions contained in 1986 Safe Drinking Water Act.

In locations where the first draw sample and the second draw sample are both elevated, and the first draw sample exceeds the second draw, the fixture, supply lines and valves leading from the wall to the fixture should be replaced with lead free components, including lead free solder.

In locations where first, second and third draw samples are all elevated, assessment must be made of the plumbing behind the wall leading to the fixture location.

Upon implementation of the corrective actions, first draw samples must be recollected to assess the effectiveness of the repairs. Upon completion of remediation, response and retesting, the results will be incorporated into the final appendix.