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July 22, 2016

Mr. John Marek
Lindenhurst UFSD
McKenna Administration Building
Lindenhurst, NY 11757

Dear Mr. Marek,

Executive Summary

Enviroscience Consultants, Inc. has performed lead in water testing throughout the Lindenhurst School District in accordance with United States Environmental Protection Agency's "3T's 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. Sixty-two (62) locations were sampled at Kellum Street School, fifty-eight (58) locations were sampled at Albany Avenue Elementary School, fifty (50) locations were sampled at Alleghany Avenue Elementary School, eighty (80) locations were sampled at Daniel Street Elementary School, thirty-seven (37) locations were sampled at EW Bower Elementary School, forty-six (46) locations were sampled at the Harding Avenue Elementary School, forty-six (46) locations were sampled at the West Gates Avenue Elementary School, sixty-two (62) locations were sampled at the William Rail Elementary School, seventy-six (76) locations were sampled at the Lindenhurst Middle School, eighty-three (83) locations were sampled at the Lindenhurst High School, five (5) locations were sampled at the Lindenhurst Ground Shop, and forty-two (42) locations were sampled at the Buildings and Grounds Department.

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.

Kellum Street School

Location and Remediation Type	
Room 153 Sink	CAP
Prep Sink	CAP
Kitchen BR Sink	FR
Kitchen Island Sink	CAP
Boys Coaches Office BR Sink	FR
Room 161 Water Fountain	CAP
Room 161 Sink	CAP
Room 160 Sink	FR

Albany Avenue Elementary School

Location and Remediation Type	
Room 203 Water Fountain	CAP
Room 214 Water Fountain	CAP
Water Fountain by Room 214	FR
Room 215 Water Fountain	CAP
Room 112 Water Fountain	CAP
Room 202 Sink	FRSLV
Room 203 Sink	FR
Room 206 Sink	FR
Room 209 Sink	FR
Room 210 Sink	FR
Room 211 Sink	FR
Room 215 Sink	FR
Room 212 Sink	FR
Room 213 Sink	FR
Room 214 Sink	FR
Custodial Closet SS 2nd Floor	FR
Room 104 Sink	FR
Room 108 Sink	FR

Alleghany Avenue Elementary School

Location and Remediation Type	
Kitchen Bathroom Sink	FR
Room 220 Sink	FR
Room 123 BR Sink	FR
Room 113 Sink	FR

Daniel Street Elementary School

Location and Remediation Type	
Room 153 Sink	FR
Room 115 BR Sink	FRSLVPA
Room 154 Sink	FR
Room 156 Sink	FR

EW Bower Elementary School

Location and Remediation Type	
Room 100 Sink	Pending
Room 101 Sink	Pending
Room 111 Water Fountain	Pending
Room 113 Water Fountain	Pending
Room 114 Sink	Pending
Hallway by Room 213 Water Fountain	Pending
Room 211 Sink	Pending
Room 204 Sink	Pending
Room 206 Sink	Pending
Room 208 Sink	Pending
Room 201 Sink	Pending
Girls BR by Room 201 Sink	Pending
Boys BR by Room 201 Sink	Pending
Room 108 BR Sink	FR
Nurses Office Sink	Pending
Room 100 BR Sink	Pending
Girls Locker Room Sink	Pending
Library Office Sink	Pending
Room 111 Sink	Pending

Harding Avenue Elementary School

Location and Remediation Type	
Nurse Office Back Office Sink	CAP
Room 108 Sink	FR
Room 123 Sink	FR

West Gates Elementary School

Location and Remediation Type	
Boys Locker Rm Water Fountain	CAP
Girls Locker Rm Water Fountain	CAP
Room 112 Sink	FR
Room 118 Sink	FR
Room 122 Sink	FR

William Rail Elementary School

Location and Remediation Type	
Room 114 Sink	FRSLV
Room 222 Sink	FR
Library Office Sink	FR
CC Slop Sink by Faculty Room	FR
Kitchen CC Slop Sink	FR
Room 125 Sink	FR
Room 108 BR Sink	FR
Room 106 BR Sink	FR
CC Slop Sink by Room 106	FR
Room 110 BR Sink	FR
Room 112 BR Sink	FR
Room 218 Sink	FR
Room 220 Sink	FR

Lindenhurst Middle School

Location and Remediation Type	
Room W109 BR Sink	FR
Room S132 Water Fountain	CAP
Boys Coaches Office BR Sink	FRSLV
Kitchen Pot Filler	FR
Room E209 Sink	FR
Room E206 Sink	FR
Room E207 Sink	FR
Room E204 Sink	FRSLV
Room E205 Sink	FR
Room S206 Sink	FR

Lindenhurst High School

Location and Remediation Type	
Lab 2 Water Fountain	CAP
Room 211 Sink	FR
Room 253 Sink	FR

Administration Building

Location and Remediation Type	
Room 211 Water Fountain	CAP
Room 209 Sink	FR
Room 202 Water Fountain	CAP
Room 205 Water Fountain	CAP
Assistant Principal Office BR Sink	FR
Copy Room 113 Sink	FR
Room 113 Water Fountain	CAP
Room 115 Sink	FR
Room 110 Sink	FR
Room 102 BR 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).

Results

First draw water samples were collected on June 10, 2016 from Albany Avenue Elementary School and Alleghany Avenue Elementary School. First draw water samples were collected from Daniel Street Elementary School, EW Bower Elementary School, Harding Avenue Elementary School, and West Gates Elementary School on June 13, 2016. First draw water samples were collected on June 14, 2016 from Kellum Street School and William Rail Elementary School. Water samples were collected from the Lindenhurst Middle School and Lindenhurst High School on June 15, 2016. First draw water samples were collected from the Lindenhurst Ground Shop and the Buildings and Grounds Department on June

16, 2016. Additional first draw water samples were collected on August 2, 2016, from the district.

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:

Kellum Street School

Location and Result (ppb)	
Room 153 Sink	40
Prep Sink	37
Kitchen BR Sink	23
Kitchen Island Sink	110
Boys Coaches Office BR Sink	17
Room 161 Water Fountain	95
Room 161 Sink	94
Room 160 Sink	27

Albany Avenue Elementary School

Location and Result (ppb)	
Room 203 Water Fountain	124
Room 214 Water Fountain	840
Water Fountain by Room 214	38
Room 215 Water Fountain	181
Room 112 Water Fountain	26
Room 202 Sink	58
Room 203 Sink	18
Room 206 Sink	15
Room 209 Sink	34
Room 210 Sink	459
Room 211 Sink	152
Room 215 Sink	78
Room 212 Sink	486
Room 213 Sink	97
Room 214 Sink	1972
Custodial Closet SS 2nd Floor	31
Room 104 Sink	41
Room 108 Sink	17

Alleghany Avenue Elementary School

Location and Result (ppb)	
Kitchen Bathroom Sink	16
Room 220 Sink	974
Room 123 BR Sink	42
Room 113 Sink	58

Daniel Street Elementary School

Location and Result (ppb)	
Room 153 Sink	24

Room 115 BR Sink	18
Room 154 Sink	57
Room 156 Sink	30

EW Bower Elementary School

Location and Result (ppb)	
Room 100 Sink	106
Room 101 Sink	86
Room 111 Water Fountain	25
Room 113 Water Fountain	275
Room 114 Sink	153
Hallway by Room 213 Water Fountain	15
Room 211 Sink	19
Room 204 Sink	847
Room 206 Sink	730
Room 208 Sink	422
Room 201 Sink	20
Girls BR by Room 201 Sink	59
Boys BR by Room 201 Sink	16
Room 108 BR Sink	16
Nurses Office Sink	38
Room 100 BR Sink	37
Girls Locker Room Sink	30
Library Office Sink	975
Room 111 Sink	29

Harding Avenue Elementary School

Location and Result (ppb)	
Nurse Office Back Office Sink	67
Room 108 Sink	47
Room 123 Sink	18

West Gates Elementary School

Location and Result (ppb)	
Boys Locker Room Water Fountain	29
Girls Locker Room Water Fountain	48
Room 112 Sink	19
Room 118 Sink	21
Room 122 Sink	22

William Rail Elementary School

Location and Result (ppb)	
Room 114 Sink	118
Room 222 Sink	25
Library Office Sink	37
CC Slop Sink by Faculty Room	20
Kitchen CC Slop Sink	116
Room 125 Sink	19
Room 108 BR Sink	579
Room 106 BR Sink	34
CC Slop Sink by Room 106	146
Room 110 BR Sink	578

Room 112 BR Sink	77
Room 218 Sink	170
Room 220 Sink	24

Lindenhurst Middle School

Location and Result (ppb)	
Room W109 BR Sink	48
Room S132 Water Fountain	22
Boys Coaches Office BR Sink	22
Kitchen Pot Filler	17
Room E209 Sink	88
Room E206 Sink	21
Room E207 Sink	48
Room E204 Sink	93
Room E205 Sink	16
Room S206 Sink	20

Lindenhurst High School

Location and Result (ppb)	
Lab 2 Water Fountain	20
Room 211 Sink	42
Room 253 Sink	27

Administration Building

Location and Result (ppb)	
Room 211 Water Fountain	59
Room 209 Sink	18
Room 202 Water Fountain	31
Room 205 Water Fountain	315
Assistant Principal Office BR Sink	260
Assistant Principal BR Sink, Add'l 1st draw	29
Room 113 Water Fountain	68
Copy Room 113 Sink	516
Room 115 Sink	62
Room 110 Sink	15
Room 102 BR Sink	32

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

Kellum Street School

Location	Result for Second Draw and Third Draw (ppb)	
Room 153 Sink	CAP	
Prep Sink	CAP	
Kitchen BR Sink	<2.5	<2.5
Kitchen Island Sink	CAP	
Boys Coaches Office BR Sink	<2.5	<2.5
Room 161 Water Fountain	CAP	
Room 161 Sink	CAP	
Room 160 Sink	<2.5	<2.5

Albany Avenue Elementary School

Location	Result for Second Draw and Third Draw (ppb)
Room 203 Water Fountain	CAP
Room 214 Water Fountain	CAP

Water Fountain by Room 214	9	<1.0
Room 215 Water Fountain	CAP	
Room 112 Water Fountain	CAP	
Room 202 Sink	72	<1.0
Room 203 Sink	<1.0	<1.0
Room 206 Sink	2	<1.0
Room 209 Sink	<1.0	<1.0
Room 210 Sink	6.7	<1.0
Room 211 Sink	3.9	<1.0
Room 215 Sink	2.3	<1.0
Room 212 Sink	5.5	<1.0
Room 213 Sink	4.9	<1.0
Room 214 Sink	12	1.5
Custodial Closet SS 2nd Floor	1	<1.0
Room 104 Sink	1.6	<1.0
Room 108 Sink	<1.0	<1.0

Alleghany Avenue Elementary School

Location	Result for Second Draw and Third Draw (ppb)	
Kitchen Bathroom Sink	4.9	3.6
Room 220 Sink	5.5	7.5
Room 123 BR Sink	<2.5	<2.5
Room 113 Sink	3.6	<2.5

Daniel Street Elementary School

Location	Result for Second Draw and Third Draw (ppb)	
Room 153 Sink	<2.5	<2.5
Room 115 BR Sink	35	18
Room 154 Sink	10	<2.5
Room 156 Sink	4.2	<2.5

EW Bower Elementary School

Location	Result for Second Draw and Third Draw (ppb)	
Room 100 Sink	-	-
Room 101 Sink	-	-
Room 111 Water Fountain	-	-
Room 113 Water Fountain	-	-
Room 114 Sink	-	-
Hallway by Room 213 Water Fountain	-	-
Room 211 Sink	-	-
Room 204 Sink	-	-
Room 206 Sink	-	-
Room 208 Sink	-	-
Room 201 Sink	-	-
Girls BR by Room 201 Sink	-	-
Boys BR by Room 201 Sink	-	-
Room 108 BR Sink	<1.0	<1.0
Nurses Office Sink	-	-
Room 100 BR Sink	-	-
Girls Locker Room Sink	-	-
Library Office Sink	-	-
Room 111 Sink	-	-

Harding Avenue Elementary School

Location	Result for Second Draw and Third Draw (ppb)

Nurse Office Back Office Sink	CAP	
Room 108 Sink	<1.0	1.3
Room 123 Sink	1.2	<1.0

West Gates Elementary School

Location	Result for Second Draw and Third Draw (ppb)	
Boys Locker Room Water Fountain	CAP	
Girls Locker Room Water Fountain	CAP	
Room 112 Sink	2.6	<2.5
Room 118 Sink	<2.5	<2.5
Room 122 Sink	2.5	<2.5

William Rail Elementary School

Location	Result for Second Draw and Third Draw (ppb)	
Room 114 Sink	15	<2.5
Room 222 Sink	4.9	<2.5
Library Office Sink	11	5.4
CC Slop Sink by Faculty Room	<2.5	<2.5
Kitchen CC Slop Sink	<2.5	<2.5
Room 125 Sink	<2.5	<2.5
Room 108 BR Sink	<2.5	<2.5
Room 106 BR Sink	7.7	<2.5
CC Slop Sink by Room 106	<2.5	<2.5
Room 110 BR Sink	<2.5	<2.5
Room 112 BR Sink	<2.5	<2.5
Room 218 Sink	11	<2.5
Room 220 Sink	<2.5	<2.5

Lindenhurst Middle School

Location	Result for Second Draw and Third Draw (ppb)	
Room W109 BR Sink	<2.5	<2.5
Room S132 Water Fountain	CAP	
Boys Coaches Office BR Sink	36	<2.5
Kitchen Pot Filler	<2.5	<2.5
Room E209 Sink	5.7	3.5
Room E206 Sink	7.5	4.5
Room E207 Sink	3.6	<2.5
Room E204 Sink	17	<2.5
Room E205 Sink	<2.5	<2.5
Room S206 Sink	1.9	1.6

Lindenhurst High School

Location	Result for Second Draw and Third Draw (ppb)	
Lab 2 Water Fountain	CAP	
Room 211 Sink	5.2	<1.0
Room 253 Sink	5.3	7.1

Administration Building

Location	Result for Second Draw and Third Draw (ppb)	
Room 211 Water Fountain	CAP	
Room 209 Sink	<1.0	<1.0
Room 202 Water Fountain	CAP	
Room 205 Water Fountain	CAP	
Assistant Principal Office BR Sink	11	<1.0
Room 113 Water Fountain	CAP	
Copy Room 113 Sink	4.7	1.2

Room 115 Sink	4.8	1.6
Room 110 Sink	5.2	2.1
Room 102 BR Sink	1.9	1.3

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.

District Details
Lindenhurst School District
Administration Building
1st Draw Samples Collected
17
Samples > 15PPB
6
Alleghany Avenue Elementary School
1st Draw Samples Collected
65
Samples > 15PPB
4
Building and Grounds Department
1st Draw Samples Collected
42
Daniel Street Elementary School
1st Draw Samples Collected
95
Samples > 15PPB
4
E.W Bower Elementary School
1st Draw Samples Collected
55
Samples > 15PPB
1
Grounds Shop
1st Draw Samples Collected
5
Harding Avenue Elementary School
1st Draw Samples Collected
61
Samples > 15PPB
2
Kellum Street School
1st Draw Samples Collected
82
Samples > 15PPB
3
Lindenhurst Middle School
1st Draw Samples Collected
76
Samples > 15PPB
9

Lindenhurst Senior High School
1st Draw Samples Collected
89
Samples > 15PPB
2
West Gates Avenue Elementary School
1st Draw Samples Collected
70
Samples > 15PPB
3
William Rall Elementary School
1st Draw Samples Collected
89
Samples > 15PPB
13
Albany Avenue Elementary School
1st Draw Samples Collected
88
Samples > 15PPB
14