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October 18, 2021

Mr. Dave Miller
Supervisor of Buildings and Grounds
Green Township Board of Education
P.O. Box 14
Greendell, NJ 07839

re: **Water Sampling for Compliance with N.J.A.C. 6A:26-12.4**
Lead in Drinking Water

Dear Mr. Miller,

We enclose the following documents and related information for compliance with the NJ Department of Education Regulation related to Lead in Drinking Water in school buildings:

Sampling Report Narrative	4 pages
Water Sampling Log and Results	1 page
Laboratory Analytical Report	36 pages

All sample results for Lead were below the NJ Standard of 0.015 mg/L. However, 3 of the 19 samples had measured Lead content exceeded 0.005 mg/L. This is the threshold that EPA recommends the water tap be opened for inspection and cleaned of any built-up sediment that may be present.

If you have any questions, please don't hesitate to call us.

Sincerely,

Patrick D. McGuinness, MS, P.E.
Vice President

PDM/ (file .... \Reports\Watertest\GreenTwp-211)

Sampling Report - Lead in Drinking Water
Green Township School District

1. Sampling Results Summary and Statistics

Sample Collection Date	August 20, 2021
Number of Buildings Sampled	1
Total Number of Samples Collected	19
Number of Samples with No Detectible Lead	7
Number of Samples Exceeding 15 PPB (0.015 mg/L Standard)	0
Number of Samples Exceeding 5 PPB (0.005 mg/L EPA threshold)	4
Highest Measured Lead Content (mg/L)	0.0148

2. Water Sampling Procedures

Sampling protocols and procedures follow the EPA "3-T's Program" that was developed for schools and Child Care centers. They recognize that the typical school building is actually a conglomeration of an original building with one or more additions, each of which typically having different plumbing system materials.

In addition, building sections constructed before 1986 likely have plumbing systems that used leaded solders on Copper water lines. Very old buildings and public water supply systems may also still have lead piping. Other potential sources of Lead in drinking water systems include brass faucets, fittings, along with valve seats and stems that are used in the municipal and building piping distribution systems. It is important to note that "Lead-Free" plumbing components used since 1986 may actually contain up to 8% Lead by weight. In January 2014, this limit was lowered from 8% to 0.2% Lead.

The sampling protocol requires that water be collected as a "First-Draw" to ensure that the water sample has been standing for at least 8 hours. This is intended to replicate a "worst-case" situation since both the Lead and Copper levels are usually lowered significantly after running the water even for a few moments.

Drinking water samples were collected early on a weekday (not Monday) or Saturday morning before staff and students arrived for classes to represent water that has sat idle in the building piping system overnight.

Laboratory analysis of the water samples was performed for both Lead and Copper since both could be sourced from the building plumbing and both are indicators of system corrosion.

All samples were collected in 250 ml contaminant-free containers. Laboratory analysis of the water samples was performed by Pace Analytical Services, LLC of Melville, NY and Mt. Juliet,

TN (NJ DEP Certification Nos. NY158 and TN002). The analytical method is per EPA Method 200.8 via atomic absorption, induction coupled plasma technique.

3. Sample Results and Discussion

Sampling results are discussed below and the sampling log is appended to this report. All results are expressed as micrograms of Lead or Copper per liter of water (µg/L). This is essentially equivalent to parts of Lead or Copper per billion (ppb) parts of water. The Action level also translates to 15 ppb.

A total of 19 water samples were collected on August 20, 2021. None of the samples exceeded the 0.015 mg/L Action Level. In fact, 7 of the 19 water samples had no detectible levels of lead present and only 4 water samples had a Lead content greater than 5 PPB.

In addition, two (2) water taps showed total measured Copper levels above the 1.3 mg/L Action Level.

4. Recommendations and Future Work

All water sample results showed acceptable results for Lead content. The following responses include those required by N.J.A.C. 6A:26-12.4 and our recommendations to maintain the drinking water quality as it relates to Lead contamination.

The NJDOE regulations requires that:

- These sampling results be made publically available at the school building and on the School District's website.

- The School District shall collect drinking water samples and analyze for Lead at any drinking water outlet that has been replaced or after any alterations to the plumbing or service lines to the outlet. Do not consume or cook with water from the affected outlet until acceptable Lead results are obtained.

- Repeat water sampling within 3 years of the date of this sampling or before July 2024.

In addition, we suggest that the following responses to minimize the potential for Lead contamination of drinking water:

Administrative Responses:

- There are several factors that influence the potential for Lead and Copper corrosion in drinking water piping systems. These include the chemistry of the water supplied being supplied to the building, water temperature and velocity through the piping, the age and condition of the plumbing, and the amount of time the water sits "stagnant" in contact with piping and drinking water fixtures. This last factor is the only one that a building owner has any control of.

- School building codes require a minimum of one (1) drinking water tap for every 100 students of building capacity. Wherever a larger number of water taps exists, the usage factor for each tap decreases. This, in turn, increases the "stagnation time" along with the increased potential for Lead corrosion. It is recommended that the need for all current water taps be investigated and reduced where appropriate while maintaining the minimum of 1 tap per 100 students.

- Consider implementing a program to shut-off and replace (if needed) any drinking water fixture of appliance that is more than 35 years old (was installed before the 1986 Lead Ban took effect).

Operational and Maintenance Responses:

- EPA recommends that any water tap where the measured Lead content exceeds 5 parts per billion (PPB) or 5 µg/L be inspected and cleaned of line sediment to eliminate potential sources of Lead contamination. There were 4 water samples above this level.

- Use cold water only for drinking or cooking. Higher water temperatures will increase the water's corrosion potential.

- The accumulation of line sediment on aerators and screens at the water taps is frequently the source of high levels of Lead. It is recommended that a program be established to regularly inspect for the presence of line sediment at all drinking water taps. Initially, an annual inspection is suggested. The inspection frequency should then be adjusted depending upon the amounts of sediment that is found and where it is found. Higher usage taps may accumulate sediment more quickly and need to be cleaned more often.

- It is known that flushing water through drinking water taps will reduce the levels of both Lead and Copper present in the drinking water. It is also recommended that a program be established to run water at all drinking or cooking taps for at least one minute before students and staff return to school after long breaks, especially after the Summer recess.

Report prepared by:

Patrick D. McGuinness, MS, P.E.
Vice President

Water Sampling Log

Name of Building: Green Hills Elementary School
Building Owner: Green Township Bd of Educ

Date Collected: 20-Aug-21
Collected by: PD McGuinness

Sample No.	Tap No.	Sample Type	Type of Outlet	Manufacturer	Location	Time	Results (mg/L) Cu	Pb
RK-082021-51	**1**	1st	Faucet		Nurse's Office sink	09:16	**1.540**	0.0051
RK-082021-52	**2**	1st	Bubbler	Rheem	Hallway - opposite Room 219, left side	09:22	0.682	0.0148
RK-082021-53	**3**	1st	Bubbler	Rheem	Hallway - opposite Room 219, left side	09:24	0.858	0.0041
RK-082021-54	**4**	1st	Bubbler	Rheem	Hallway - opposite Room 219, right side	09:25	0.420	0.0056
RK-082021-55	**5**	1st	Fountain		Hallway - opposite Room 408	09:27	0.450	0.0063
RK-082021-56	**6**	1st	Fountain		Hallway - opposite Room 318	09:29	0.481	0.0037
RK-082021-57	**7**	1st	Chiller		Hallway - opposite Room 307, tap #1 (from left)	09:31	0.722	< 0.0020
RK-082021-58	**8**	1st	Chiller		Hallway - opposite Room 307, tap #2 (from left)	09:32	0.734	< 0.0020
RK-082021-59	**9**	1st	Chiller		Hallway - opposite Room 307, tap #3 (from left)	09:34	0.931	< 0.0020
RK-082021-60	**10**	1st	Chiller		Hallway - opposite Room 307, tap #4 (from left)	09:35	0.835	< 0.0020
RK-082021-61	**11**	1st	Faucet		Sink in Room 304	09:38	0.454	< 0.0020
RK-082021-62	**12**	1st	Faucet		Sink in Room 208	09:42	0.260	0.0007
RK-082021-63	**13**	1st	Faucet		Sink in Room 207	09:43	0.932	0.0062
RK-082021-64	**14**	1st	Faucet		Sink in Room 209	09:44	1.250	0.0026
RK-082021-65	**15**	1st	Bottle Filler	Elkay	Hallway - opposite Rooms 103/104	09:49	0.406	< 0.0020
RK-082021-66	**16**	1st	Bottle Filler	Elkay	Hallway - next to Room 409	09:55	**2.030**	< 0.0020
RK-082021-67	**17**	1st	Fountain		Hallway - opposite Room 401	09:57	0.441	0.0035
RK-082021-68	**18**	1st	Faucet		Kitchen - sink next to Kitchen entrance, right	09:59	1.020	0.0035
RK-082021-69	**19**	1st	Faucet		Kitchen - sink next to Kitchen entrance, left	09:59	0.816	0.0044

Sample Type: 1st: First Draw sample collected after water sat in pipe between 8 and 18 hours
FL: Water flushed through tap for at least 2 minutes
<: means Not Detected at or above the Reliability Detection Limit (RDL) of 0.0010 mg/L for Lead.