INDIANA ENGINEERING AND GEOLOGICAL SERVICES

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Noblesville Schools
[redacted]ector of Operations
18025 River Road
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May 6, 2016

RE: Drinking Water Testing
IEGS Project No. 0216A

Dear [redacted]

The drinking water testing you requested for Noblesville Schools has been completed. Following are the details of the sampling, results of the independent laboratory analysis, and recommendations.

Introduction

Lead in drinking water has become an issue of increasing concern over the past few years with media reports and Congressional hearings related to elevated lead found levels in schools and municipal water supplies. Water sampling was conducted and independent laboratory analysis performed to determine if any Noblesville Schools facilities had lead present in the drinking water and, if so, at what concentrations.

US EPA Water Quality Standards

The United States Environmental Protection Agency (EPA) established the Lead and Copper Rule (LCR) in 1991 to protect public health by minimizing exposure to lead and copper in drinking water. Lead and copper are most commonly found plumbing fixtures and materials and enter drinking water though corrosion of the pipes and fixtures.

Schools and child care facilities that have their own water supply and are considered non-transient, non-community water systems (NTNCWSs) are subject to the Lead and Copper Rule (LCR) requirements.The 2014 Reduction of Lead in Drinking Water Act set the permissible lead content in plumbing fixtures from not more than 8.0% to a weighted average of not more than 0.25% with respect to wetted surfaces of pipes, pipe fitting and plumbing fixtures. The 2014 Act further reduced

1986 Federal regulations which restricted lead content in the solder used in plumbing systems to < 0.2% and < 8.0 % in pipes and plumbing fixtures.

The EPA action level for lead in drinking water is 0.015 mg/L (15 µg/L or 15 Parts per Billion (PPB)). At levels above the EPA Action level steps must be taken to monitor water quality, notify the users of the water, and reduce lead concentrations in the water supply.

Copies of EPA references to the Lead and Copper Rule and drinking water testing in schools are included in the Appendix.

Public Water Systems and Noblesville Schools

Public Water Systems (PWS) serve Noblesville Schools and therefore the school system relies on the respective PWS to monitor water quality within their systems for compliance with established drinking water standards.

Public Water Systems serve all Noblesville Schools facilities with the exception of the maintenance building located at the southeast corner of Cumberland Road and Field Drive. This facility is served by a private water well and no students are at this location.

Citizens Water Westfield serves Noble Crossing and Hazel Dell Elementary Schools. The 2014 Drinking Water Report published by Citizens Energy, Citizens Water Westfield parent company, show compliance with the Lead and Copper Rule with lead concentrations averaging 1.4 PPB and ranging from not detected to 5.6 PPB.

Indiana American Water serve all other Noblesville Schools buildings and facilities. The 2014 Annual Water Quality Report published by Indiana American Water shows 90th percentile of samples collected lead concentrations system wide of 6 PPB. These results also meet the regulatory drinking water standard.

All of Noblesville Schools were constructed before the 2014 Reduction of Lead in Drinking Water Act took affect and many were built before the establishment of the Lead and Copper Rule. Therefore, the potential exists for the presence of pipes and plumbing fixtures that could have been manufactured using lead-based materials and by extension, for the potential for lead to be present in the drinking water at individual buildings and facilities.

The guidelines found in the LCR can also serve as a framework for managing water systems once outside the control of the PWS and inside the respective buildings and facilities served by PWS's.

Copies of the PWS annual reports may be found in the Appendix.

Sampling Methodology

A total of 56 water samples were collected from Noblesville Schools buildings and facilities on March 29 and March 31, 2016. These dates were within the Fall school break period when the buildings had been largely unoccupied for 4 to 6 days before sampling. Roy Wallace, Noblesville Schools Director of Buildings and Grounds was present during sampling and assisted with access to the facilities.

In order to maintain project confidentiality, no references were made to Noblesville Schools in the sample ID numbers or other project information provided to the laboratory.

Samples were collected, handled and analyzed following EPA guidelines and recommendations according to the following plan:

Incoming water before any treatment. Sample ID: PT

Cafeteria food preparation sink. Sample ID: CA

Drinking water fountain in the hall located away from the incoming water supply. Sample ID: DFH

Drinking water fountain located in or closest to the gym. Sample ID: DFG

Note: The layouts of all buildings and facilities did not permit the collection of each of the samples described above. At each facility samples were obtained to provide representative samples for analysis.

Samples were collected per EPA guidelines from the "first draw" upon the start of the flow of water in order to obtain samples that had been in contact with the piping and plumbing fixtures for an extended period of time thus representing the highest likelihood for elevated lead content.

Water samples were collected directly into new, 1,000 ml plastic bottles provided by the laboratory and preserved with nitric acid in accordance with EPA guidelines.

Bottles were sealed and labelled with a unique sample ID number, date and time of sample collection, chain of custody documentation was completed, and the samples secured in a cooler for shipment to the laboratory for analysis. The samples were analyzed by Pace Analytical Services, Inc., Indianapolis, State of Indiana drinking water certification number C-49-06.

A copy of EPA drinking water sampling guidelines is included in the Appendix.

Initial "First Draw" Sampling

The drinking water samples were received by Pace on March 31, 2016 and prepared for analysis of lead in drinking water by EPA Method 200.8. The results of the analysis showed the vast majority of samples with lead content consistent with the acceptable levels of lead seen in the Public Water System reports from Citizens Water and Indiana American Water.

Samples collected from the southernmost cafeteria sink at the High School, sample ID A-01-CA, and the incoming pre-treatment water samples from Hazel Dell Elementary, sample ID A-04-PT, Hinkle Creek Elementary (West portion of the building), sample ID A-05-PTW, and Stony Creek Elementary, sample ID A-09-PT were found to exceed the EPA action level of 15 PPB.

First Draw Sampling Results

Location	Sample ID	Result	EPA Action Level
High School – Cafeteria	A-01-CA	100 PPB	15 PPB
Hazel Dell – Incoming	A-04-PT	21.9 PPB	15 PPB
Hinkle Creek (West) – Incoming	A-05-PTW	41.6 PPB	15 PPB
Stony Creek – Incoming	A-09-PT	27.9 PPB	15 PPB
All other samples collected		Not Detected	15 PPB

All laboratory quality control parameters were met and maintained during analysis. A request was made to re-analyze the sample and the results were consistent with those shown above.

The sample collected from the High School cafeteria was collected from a little used sink whose fixture is slated for replacement. The samples collected from Hinkle Creek Elementary and Stony Creek Elementary were collected from the backflow prevention device installed on the incoming water line. The access point in these fittings is seldom used and would represent the highest potential for lead to be found in water samples. The sample from the incoming

waterline to the Western section of Hinkle Creek Elementary was collected from a hose bib and outside the normal water flow, again representing a higher potential for lead to be found.

Follow-up Sampling

The water collected in the initial sampling events represented the EPA recommended "first draw" sample. The samples were collected during a school break period from fixtures that had been unused for several days. These sample were expected to contain the highest lead concentrations due to the lack of water flow and extended time of contact with the respective plumbing systems and fixtures.

EPA guidelines recommends follow-up sampling where lead has been found in the "first draw" sample after a 2 to 3 minute "flush" of the plumbing fixture to more accurately represent conditions while the fixture is in use rather than after an extended idle period. The sampling procedures were the same for the re-sampling as with the initial sampling with the exception of the "flush" of the plumbing fixtures.

Ten (10) additional samples were collected on April 19, 2016 from the locations identified as having exceedances of the EPA action level of 15 PPB lead. Additional "first draw" and "flush" water samples were collected from the other sinks in the High School cafeteria since the initial sample from the High School cafeteria sink was reported to have a very high lead content.

School was in session on the date of the resampling and water usage would be expected to follow a normal pattern. Samples were submitted to Pace Analytical Services and analyzed in the same manner as the initial samples. The laboratory results from the re-sampling are shown below.

As with the initial sampling, all laboratory quality control parameters were met and maintained during analysis.

Noblesville Schools
Drinking Water Sampling
Noblesville, Indiana

Follow-up Sampling Results

Location	Sample ID	Result	EPA Action Level
High School – Cafeteria South sink – "Flush"	A-01-CA1F	Not Detected	15 PPB
High School – Cafeteria Center South sink – "First Draw"	A-01-CA2	1.3 PPB	15 PPB
High School – Cafeteria Center South sink – "Flush"	A-01-CA2F	Not Detected	15 PPB
High School – Cafeteria Center North sink – "First Draw"	A-01-CA3	Not Detected	15 PPB
High School – Cafeteria Center North sink – "Flush"	A-01-CA3F	Not Detected	15 PPB
High School – Cafeteria North sink – "First Draw"	A-01-CA4	Not Detected	15 PPB
High School – Cafeteria North sink – "Flush"	A-01-CA4F	Not Detected	15 PPB
Hazel Dell – Incoming – "Flush"	A-04-PT-F	Not Detected	15 PPB
Hinkle Creek (West) – Incoming – "Flush"	A-05-PT-F	15.0 PPB	15 PPB
Stony Creek – Incoming – "Flush"	A-09-PT-F	3.6 PPB	15 PPB

Noblesville Schools
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Noblesville, Indiana

Summary of results

Four (4) of the initial 56 "first draw" water samples collected from Noblesville Schools buildings and facilities showed exceedances of the US EPA action level for lead in drinking water. Samples from the High School cafeteria and incoming water samples collected Hazel Dell, Hinkle Creek and Stony Creek Elementary Schools showed lead content ranging from 21.9 to 100 PPB. None of the samples reporting exceedances of the EPA action level were from drinking water fountains.

24 of the 56 "first draw" samples collected reported lead concentrations between 1.0 PPB and 15.0 PPB, below the EPA action limit. Lead was not detected in the remaining 28 samples above the EPA analytical method detection limit of 1.0 PPB.

Additional sampling was undertaken to further investigate the locations where the EPA action levels were exceeded. A "flush" sample was collected from the incoming water at Hinkle Creek and was found at, but not exceeding, the EPA action level of 15.0 PPB. This sample, collected from a hose bid connection on the incoming water line in the Western section of the school. This hose bib connection is NOT used for consumption and therefore does not present a risk to public health.

The samples collected from the central South cafeteria sink at the High School and the incoming water sample collected at Stony Creek were found to be both below the EPA action level at 1.3 PPB and 3.6 PPB, respectively.

Lead was not detected in the "flush" sample collected from the High School cafeteria sink which reported the high lead content in the initial "first draw" sampling and the other sinks in the High School cafeteria.

With the exceptions discussed above, the lead content in the samples collected from Noblesville Schools buildings and facilities is consistent with the lead content reported by Public Water Systems, Citizens water Westfield and Indiana American Water and meet the US EPA water quality standards for lead in drinking water.

Copies of the field data collection sheets, aerial photographs of building and facilities sampling locations, photographs of sample collection points with laboratory ID numbers, and laboratory reports are included in the Appendix.

Recommendations

Exceedances of the US EPA actions levels for lead in water from the "first draw" samples collected from Noblesville Schools buildings and facilities were seen in the laboratory analysis. These initial samples were collected during an extended school break period and would be expected to be the most likely time when lead would be present in the water.

Resampling was conducted when the plumbing fixtures were flushed and conditions for water usage were more likely to be that seen in normal school day operations. All but one of the locations where exceedances were seen in the initial "first draw" sample continued to show lead concentrations. This sample, collected from a hose bid connection on the incoming water line in the Western section of Hinkle Creek Elementary School was at, but not exceeding, the EPA action level for lead in drinking water.

It is recommended that the following steps be taken to ensure the continued safety of the drinking water supply at Noblesville Schools:

1. Flush all waterlines following breaks and vacations and prior to the return of staff and students Complete
2. Replace the south faucet in High School cafeteria Complete
3. Replace hose bib at incoming water line at Hinkle Creek – West section Complete
4. Examine plumbing fixtures for manufacturers markings of lead-free certifications. Replace fittings not displaying the lead-free certifications. An EPA publication is included in the Appendix to assist in identifying lead-free certification marking. Complete

Please feel free to call should you need additional information or wish to discuss the project in more detail. I appreciate this opportunity to serve you and Noblesville Schools.

Sincerely,

David M. Johnson, L.P.G.
President