

March 9, 2018
Mr. Jeffery Mitchell
Project Manager
Environmental Health and Safety
Charlotte-Mecklenburg Schools
3301 Stafford Drive
Charlotte, NC 28208

RE: Drinking Water Sampling Results
Cornelius Elementary School
21126 Catawba Avenue
Cornelius, Mecklenburg County, North Carolina

Dear Mr. Mitchell:

AECOM Technical Services of North Carolina, Inc. (AECOM) is submitting this letter report summarizing recent drinking water sampling results for Cornelius Elementary School at 21126 Catawba Avenue, Cornelius, North Carolina (Site or facility). The drinking water sampling was conducted in accordance with the guidelines established in the *Charlotte-Mecklenburg Schools Drinking Water Sampling Plan* (Sampling Plan) dated September 19, 2017 and in accordance with the Environmental Protection Agency (EPA) 3Ts for Reducing Lead in Drinking Water in Schools (3Ts) (EPA, 2006).

Scope of Work

AECOM conducted a comprehensive drinking water sampling program at the Cornelius Elementary School in accordance with the Sampling Plan and EPA 3Ts. The following sections outline the sampling program procedures and results.

Facility Inventory

The work completed included a facility walk through to identify consumption points and assess the conditions of those consumption points for potential repair or replacement. Following the facility inventory, sampling activities were coordinated with the facility Principal and head Custodian. A summary of the facility inventory, including photographs of the consumption points, associated unique identification label and maps with locations, is included as **Appendix A**.

Sampling Procedure

AECOM personnel arrived at the facility on October 16, 2017, subsequent to the school dismissal bell, to complete a pre-sampling flush of the facility plumbing system. Each consumption point fixture identified during the facility inventory was flushed for a minimum of five (5) minutes. Following a water flush of each consumption point, the fixture was taped off to provide visible indication the fixture was temporarily out of service, and for quality control (QC) purposes associated with the pending sampling event. Signage associated with the sampling was placed in high traffic areas advising occupants to not use any water sources within the facility including non-potable sources (i.e. sinks, faucets and toilets). Additionally,

Mr. Mitchell
March 9, 2018
Page 2

school faculty and staff were informed of the water use requirements prior to the pre-sample flushing and following completion of the pre-sample flushing.

AECOM personnel returned to the facility for collection of samples from the drinking water consumption points on October 17, 2017 a minimum of eight (8) hours following the pre-sample flushing. A total of 23 consumption points were flushed during the pre-sample flushing and subsequently sampled the next morning at the Site (**Appendix A**). In accordance with the Sampling Plan, a two-step sampling process (initial “first draw” and follow-up “flush”) was followed for the collection of samples at the facility. Each sample was collected for total lead and total copper in accordance with the Sampling Plan. All samples were collected directly into laboratory prepared containers and transferred under proper chain of custody to Research & Analytical Laboratories, Inc. in Kernersville, North Carolina (R&A), a North Carolina Drinking Water certified laboratory. Each sample was analyzed for lead and copper by EPA Method 200.8. Chain of custody records and the full laboratory analytical report is included as **Appendix B**.

Initial “First Draw” Sample Collection

Initial “first draw” samples were collected on the morning of October 17, 2017. To the extent possible, the drinking water consumption points closest to the main water service line(s) entry point were collected first, then the next closest points continuing to move away from the water service line(s) entry point until the consumption points farthest away were sampled last. Each sample location was documented in electronic field notes including a unique sample identification, sample time, sample characteristics, and additional sampling details such as unusual flow from the fixture. Each sample was collected using new disposable nitrile gloves changed between each sample.

Follow-up “Flush” Sample Collection

Following the collection of initial “first draw” samples, consumption points (with the exception of water coolers) were flushed for 30 seconds before collecting follow-up “flush” samples according to the order established during “first draw” sample collection. Water coolers were flushed for a minimum of 15 minutes prior to sample collection. Due to the length of flush time required for water coolers they were flushed and sampled after collecting all other consumption point “flush” samples, in the order established during “first draw” sample collection. “Flush” samples were collected from all consumption points where plumbing configurations were such that no piping disconnections were necessary. In some instances, plumbing configurations prohibited the collection of “flush” samples (i.e. kitchen ice makers). Following the completion of sample collection, signage was removed and normal water usage was communicated to onsite facility personnel. Sampling activities were completed prior to the start of the school day.

Sample Results

On October 17, 2017, twenty-three (23) “first draw” and twenty-two (22) “flush” samples were collected, as well as one field blank for quality assurance/quality control (QA/QC). Initial “first draw” samples were collected on October 17, 2017 for the analysis of lead and copper in drinking water. Laboratory analytical results indicated no initial sample results were in exceedance of the North Carolina Drinking Water Standards for lead (15 micrograms per liter [$\mu\text{g/L}$]) or copper (1,300 $\mu\text{g/L}$). As a result of no exceedances in the initial sample results, AECOM directed the analytical laboratory, R&A, to not analyze the

Mr. Mitchell
March 9, 2018
Page 3

subsequent flush samples and to properly dispose of the samples. An analytical summary table is included as **Table 1**.

Quality Control/Quality Assurance

A review of the data have also been conducted to determine if there are qualitative and quantitative limitations associated with the analytical results based on the results of specific QA/QC criteria. An evaluation of accuracy was determined from the review of spike recoveries [i.e., laboratory fortified blank (aka laboratory control sample) and matrix spike results]. Precision was based on the evaluation of laboratory duplicate results. Representativeness was evaluated through a review of holding times, and field and laboratory blank results. There were no qualitative and quantitative limitations associated with reported sample results. Copper and lead were detected in the field blank 346-FB-1-101717 (41696-24) at 2.35 and 0.75 J micrograms per liter ($\mu\text{g/L}$), respectively. The source of the water used for the field blank is unknown and suspected not to have been provided by the laboratory. In addition, lead and copper were not detected in laboratory blanks. Therefore, sample results have not been qualified due to potential blank contamination. Data are valid and usable for their intended purpose. Comprehensive laboratory analytical data is included as **Appendix B**.

Conclusions and Recommendations

Based on the October 17, 2017 drinking water sampling results, no lead and copper concentrations were identified above the applicable North Carolina Drinking Water Standards in identified consumption points at the Site. It is recommended as a best practice to implement a compliance monitoring program to maintain compliance due to the age of the school. A sampling program should be re-evaluated if the school undergoes a major renovation that impacts the plumbing or changes in water quality are observed.

If you have any questions or require additional information please do not hesitate to contact Robert Brookshire at (980) 345-1103 or robert.brookshire@aecom.com, or Amanda Taylor at (704) 499-8002 or amanda.m.taylor@aecom.com.

Sincerely,

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.



Robert Brookshire
Project Manager



Amanda Taylor, PG
Program Manager

Enclosures
cc: Cornelius Elementary School Principal
Project File (hard copy)

Site Name	Sample ID	Lab ID	Parameter:				Copper						Lead			
			Sample Date	Date Received	Date Sample Prep	Date Analyzed	Result µg/L	Flag	MDL	RL	Dilution Factor	Result µg/L	Flag	MDL	RL	Dilution Factor
Action Levels, µg/L:						1,300						15				
Oakdale ES - 1952/2006	485-KS-1-Initial	41698-01	10/17/2017	10/19/2017	N/A	10/30/2017	51.1		0.28	1.00	1	3.03		0.40	1.00	1
Oakdale ES - 1952/2006	485-KS-2-Initial	41698-02	10/17/2017	10/19/2017	N/A	10/30/2017	11.9		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-KS-3-Initial	41698-03	10/17/2017	10/19/2017	N/A	10/30/2017	14.8		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-KS-4-Initial	41698-04	10/17/2017	10/19/2017	N/A	10/30/2017	17.0		0.28	1.00	1	0.44	J	0.40	1.00	1
Oakdale ES - 1952/2006	485-KA-1-Initial	41698-05	10/17/2017	10/19/2017	N/A	10/30/2017	17.6		0.28	1.00	1	11.3		0.40	1.00	1
Oakdale ES - 1952/2006	485-KI-1-Initial	41698-06	10/17/2017	10/19/2017	N/A	10/30/2017	0.64	J	0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-SL-1-Initial	41698-07	10/17/2017	10/19/2017	N/A	10/30/2017	21.5		0.28	1.00	1	1.81		0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-1-Initial	41698-08	10/17/2017	10/19/2017	N/A	10/30/2017	15.3		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-2-Initial	41698-09	10/17/2017	10/19/2017	N/A	10/30/2017	16.3		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-3-Initial	41698-10	10/17/2017	10/19/2017	N/A	10/30/2017	9.28		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-6-Initial	41698-11	10/17/2017	10/19/2017	N/A	10/30/2017	7.81		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-7-Initial	41698-12	10/17/2017	10/19/2017	N/A	10/30/2017	8.70		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-8-Initial	41698-13	10/17/2017	10/19/2017	N/A	10/30/2017	7.96		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-BB-2-Initial	41698-14	10/17/2017	10/19/2017	N/A	10/30/2017	17.0		0.28	1.00	1	0.93	J	0.40	1.00	1
Oakdale ES - 1952/2006	485-BB-3-Initial	41698-15	10/17/2017	10/19/2017	10/26/2017	10/31/2017	369		0.28	1.00	1	13.5		0.40	1.00	1
Oakdale ES - 1952/2006	485-BB-1-Initial	41698-16	10/17/2017	10/19/2017	N/A	10/30/2017	29.1		0.28	1.00	1	5.96		0.40	1.00	1
Oakdale ES - 1952/2006	485-BB-4-Initial	41698-17	10/17/2017	10/19/2017	N/A	10/30/2017	13.1		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-9-Initial	41698-18	10/17/2017	10/19/2017	N/A	10/30/2017	11.8		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-10-Initial	41698-19	10/17/2017	10/19/2017	N/A	10/30/2017	12.0		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-11-Initial	41698-20	10/17/2017	10/19/2017	N/A	10/30/2017	11.8		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-12-Initial	41698-21	10/17/2017	10/19/2017	N/A	10/30/2017	26.2		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-13-Initial	41698-22	10/17/2017	10/19/2017	N/A	10/30/2017	11.4		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-14-Initial	41698-23	10/17/2017	10/19/2017	N/A	10/30/2017	12.4		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-15-Initial	41698-24	10/17/2017	10/19/2017	N/A	10/30/2017	9.12		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-16-Initial	41698-25	10/17/2017	10/19/2017	N/A	10/30/2017	10.1		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-TL-1-Initial	41698-26	10/17/2017	10/19/2017	N/A	10/30/2017	15.0		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-17-Initial	41698-27	10/17/2017	10/19/2017	N/A	10/30/2017	22.0		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-WC-18-Initial	41698-28	10/17/2017	10/19/2017	N/A	10/30/2017	22.1		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-NOS-1-Initial	41698-29	10/17/2017	10/19/2017	N/A	10/30/2017	16.5		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-OF-1-Initial	41698-30	10/17/2017	10/19/2017	N/A	10/30/2017	4.61		0.28	1.00	1	0.62	J	0.40	1.00	1
Oakdale ES - 1952/2006	485-OF-2-Initial	41698-31	10/17/2017	10/19/2017	N/A	10/30/2017	9.65		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-OF-3-Initial	41698-32	10/17/2017	10/19/2017	N/A	10/30/2017	9.35		0.28	1.00	1	1.0	U	0.40	1.00	1
Oakdale ES - 1952/2006	485-FB-1-101717	41698-33	10/17/2017	10/19/2017	N/A	10/30/2017	1.0	U	0.28	1.00	1	1.0	U	0.40	1.00	1

Footnotes:

Laboratory Certification Number = 37701

U = Not Detected

J = Estimated Concentration. Present but below RL.

µg/L = micrograms per liter = parts per billion

