

**SUMMARY OF ENVIRONMENTAL STUDY  
CONDUCTED DECEMBER 2018 – JANUARY 2019  
WEBSTER CENTRAL SCHOOL DISTRICT  
WILLINK MIDDLE SCHOOL  
FEBRUARY 15, 2019**

LaBella Associates, D.P.C. (“LaBella”) was retained by Webster Central School District (CSD), to conduct a preliminary Environmental Study at the Willink Middle School located at 900 Publishers Parkway in Webster, New York (“the Site”). Work was completed between December 19, 2018 and January 8, 2019. The objective of this study was to assess environmental conditions and evaluate chemicals in indoor air, soil and groundwater and overall indoor air quality at the Willink Middle School in Webster CSD.

## **1.0 SCOPE OF WORK**

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The tasks completed during this assessment included: 1) historical research to assess for potential unknown issues at the Site or surrounding area; 2) mold and indoor air quality assessment to assess general air quality in the building; 3) indoor volatile organic compound (VOC) screening and soil vapor intrusion (SVI) sampling to assess indoor air for typical contaminants of concern from industrial and/or commercial operations; 4) indoor aldehyde sampling to assess potential off-gassing of building products; 5) indoor radon sampling to assess potential radon gas levels (radon is naturally occurring and can infiltrate buildings in some areas); and, 6) exterior soil and groundwater sampling to further assess for typical contaminants of concern from industrial and/or commercial operations.

The mold assessment, VOC screening and indoor air quality screening which included temperature, relative humidity, carbon dioxide (CO<sub>2</sub>), and carbon monoxide (CO) was conducted across the entire school (171 locations). Twelve (12) interior representative locations were selected throughout the school for laboratory analytical testing of VOCs, aldehydes, and radon to confirm previous assessments by others and the initial screening results. Five (5) subsurface testing locations were selected surrounding the exterior of the school.

## **2.0 HISTORICAL RESEARCH**

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The Site was historically utilized for farmland. An apparent orchard was located on the southeastern portion of the Site in at least 1930 but was noted to be relatively small in size and was not present in 1951. Analytical testing was completed at the Site to evaluate pesticides due to the historical agricultural use. The other historical research did not identify environmental concerns with the Site or surrounding properties. As a precautionary measure, groundwater was analyzed for a total of 173 compounds to evaluate the potential for migration of contaminants on-Site from off-Site sources. Refer to Section 5.0 for soil and groundwater analytical results.

## **3.0 INDOOR AIR SCREENING**

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Indoor air quality screening for temperature, relative humidity, carbon dioxide (CO<sub>2</sub>), and carbon monoxide (CO) was completed using a Q-Trak TSI Indoor Air Quality Meter. In addition, a visual mold assessment was conducted in which rooms were inspected for mold growth or water damage. Normal ranges of temperature and relative humidity were identified. Carbon monoxide (CO) was not detected. Evidence of mold was not identified. Carbon dioxide (CO<sub>2</sub>) readings ranged from 529 to 1,467 parts per million (ppm) with an average of 801 ppm. According to Occupational Safety & Health Administration (OSHA), concentrations of carbon dioxide greater than 5,000 ppm can pose a health risk. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends that carbon dioxide concentrations remain within a range of 1,000 to 1,200 ppm exceeding 1,000 ppm for only short periods of time. It should be noted that carbon dioxide is a measure of ventilation effectiveness to establish that

the space is getting the recommended amount of outside fresh air. Based on the sampling and laboratory analysis completed, buildup of compounds in indoor air at concentrations that exceed applicable regulatory standards or guidance values is not occurring. Indoor air analytical data is summarized in Section 4.0. The ventilation system in areas with carbon dioxide levels above 1,000 ppm should be evaluated for fresh air intake, balance or other factors to increase effectiveness. The following table provides a comparison of the indoor air quality data to applicable standards.

**Indoor Air Quality Data Compared to OSHA and ASHRAE Standards**

Parameter (units)	OSHA Standard 29 CFR 1910.1000	ASHRAE Standard 62.1 - 2013	Data Collected at Willink (Range)	Data Collected at Willink (Average)
Temperature (Fahrenheit)	N/A	N/A	64.2 - 72.4	69.7
Relative Humidity (%)	N/A	< 65	19.5 - 36.6	27.0
CO (PPM)	N/A	N/A	0 - 0	0
CO <sub>2</sub> (PPM)	5,000	<1,000	529 - 1,467	801

N/A indicates no applicable standard or guidance value  
PPM = parts per million

#### 4.0 INDOOR AIR ANALYTICAL TESTING

Indoor air analytical testing consisted of VOC, aldehyde, and radon sampling and analysis in twelve (12) representative locations throughout the school. VOCs, aldehydes, and radon were not detected in indoor air exceeding applicable regulatory standards or guidance values. Results are summarized in the following subsections.

##### 4.1 VOCs

Initially, VOC screening was conducted across the school using a Rae Systems ppbRAE 3000 to select locations for sample collection. Twelve (12) indoor air samples, six (6) sub-slab soil vapor samples, and one (1) outdoor air sample were collected to evaluate VOCs in indoor air and the potential for soil vapor intrusion from sub-slab soil vapor using laboratory-supplied Summa® canisters. Results were compared to the New York State Department of Health (NYSDOH) Decision Matrices dated May 2017 and the Air Guideline Values the *NYSDOH Guidance for Evaluation Soil Vapor Intrusion in the State of New York* dated 2006, and updated in 2013 and 2015. In accordance with the NYSDOH Guidance, for compounds without a NYSDOH Decision Matrix or Air Guideline value, results were compared to the Environmental Protection Agency (EPA) Building Assessment and Survey Evaluation (BASE) Database 90<sup>th</sup> percentile. The EPA BASE database was generated from a study of measured concentrations of VOCs from 100 randomly selected public and commercial office buildings.

Of the seventy-four (74) VOCs analyzed in indoor air, none of the compounds detected exceed the NYSDOH Air Guideline Values or EPA BASE Database 90<sup>th</sup> percentile values. Concentrations of detected compounds that are applicable to a NYSDOH Decision Matrix resulted in no further action.

##### 4.2 Aldehydes

Aldehyde samples were collected to assess potential off-gassing of building products using laboratory-supplied silica gel samplers and pumps. Of the twelve (12) aldehyde samples collected, one (1) aldehyde, formaldehyde, was detected in two (2) of the samples at a concentration of 0.009 ppm in each sample. There are no applicable regulatory standards for formaldehyde in indoor air. The National Institute for Occupational Safety and Health (NIOSH) recommends exposure to formaldehyde be limited to less than 0.016 ppm over a 10 hour day. The National Cancer Institute indicates typical levels of formaldehyde in indoor and outdoor air are around 0.03 ppm and individuals may experience adverse effects at 0.10 ppm.

Concentrations of formaldehyde detected in the indoor air (0.009 ppm) are below the NIOSH recommended exposure limit (0.016 ppm) and below the typical levels of formaldehyde found in indoor and outdoor air (0.03 ppm) and the level which may cause adverse health effects (0.10 ppm) according to the National Cancer Institute.

### 4.3 Radon

Radon samples were collected using laboratory-supplied radon kits. Of the twelve (12) radon samples collected during the 2018 study, radon was detected in three (3) samples and none of the results exceeded the USEPA's recommended action level of 4 picoCuries per liter (pCi/L). Radon sampling was previously conducted in February 2016 in which 136 radon samples were collected across the school. None of the radon concentrations in the 2016 study exceeded the USEPA's recommended action level of 4 pCi/L.

## 5.0 EXTERIOR SOIL AND GROUNDWATER ANALYTICAL TESTING

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Five (5) exterior soil borings were completed to the top of bedrock. Three (3) soil samples and one (1) groundwater sample were collected. Groundwater was only encountered in one (1) of the five (5) exterior testing locations. Evidence of field impacts (e.g., odors, staining, etc.) were not identified during sampling.

### 5.1 Soil

Compounds detected in soil were compared to 6 New York Codes, Rules and Regulations (NYCRR) Part 375 Soil Cleanup Objectives (SCOs) for Unrestricted and Restricted Residential Use. Restricted Residential SCOs have been used as the comparison criteria for schools on sites managed by NYSDEC. It should be noted that these criteria are for sites within a NYSDEC program; however, these criteria are routinely used to assess if there is a remedial concern. It should be noted that this Site is not within a NYSDEC program and thus these criteria are for comparison purposes only.

Three (3) soil samples were analyzed for VOCs, semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and cyanide. Of the 150 compounds analyzed for in soil, one (1) SVOC, indeno(1,2,3-cd)pyrene was detected in one (1) soil sample at 0.540 ppm which slightly exceeds the Restricted Residential Use SCO of 0.5 ppm. This compound was not detected in groundwater, and was detected in one (1) of the other two (2) soil sample locations at a concentration below the 6NYCRR Part 375 Unrestricted and Restricted Residential Use SCOs.

Indeno(1,2,3-cd)pyrene is a compound known as a polycyclic aromatic hydrocarbon (PAH). PAHs are byproducts of fuel combustion and are routinely found in asphalt pavement. Based on the lack of presence of this compound in groundwater and the low-level concentrations detected in soil, the presence of this compound does not appear to represent a Site-wide concern, but rather is likely a result of runoff from the adjacent asphalt parking lot and driveway. Additionally, other PAHs also known to be present in asphalt were detected in the same soil sample, but at concentrations below the Restricted Residential SCOs. It should be noted portions of the adjacent parking lot and driveway were resurfaced in the summer of 2018.

### 5.2 Groundwater

Compounds detected in groundwater were compared to 6NYCRR Part 703 Groundwater Quality Standards and Guidance Values. It should be noted the groundwater at the Site is not used as a source of potable water and, water used at the Site is supplied by Monroe County Water Authority.

One (1) groundwater sample was analyzed for VOCs, SVOCs, pesticides, PCBs, metals, cyanide, glycol (which is utilized in the geothermal system) and perfluorinated compounds including PFOA and PFOS. Of the 173 compounds analyzed for in groundwater, one (1) pesticide, dieldrin, was detected above the NYSDEC Groundwater Quality Standard. Dieldrin was not detected in soil at the Site. Due to the turbid sample, the dieldrin concentration may not represent a dissolved groundwater concentration. It should be

noted the groundwater sample for metals analysis was filtered by the laboratory due to high turbidity and after filtration, metals were not detected above Groundwater Quality Standards. Groundwater at the Site is not used as a source of potable water. Water used at the Site is supplied by Monroe County Water Authority. Groundwater was only encountered above the bedrock in one (1) of the five (5) exterior testing locations at approximately 2.5-ft and thus, is not accessible.

## **6.0 CONCLUSIONS**

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Based on the assessment completed, there does not appear to be a remedial concern. Concentrations of compounds detected in indoor air do not exceed applicable regulatory standards or guidance values. The ventilation system in areas with carbon dioxide (CO<sub>2</sub>) levels above 1,000 ppm should be evaluated for fresh air intake, balance or other factors to increase effectiveness.