February 14, 2025

Steve Aldrich
Director of Facilities and Grounds
Liberty School District
801 Kent Street
Liberty, Missouri 64068

Project: Limited Lead in Drinking Water Testing
Address: 425 Claywoods Parkway, Liberty, Missouri 64068

Steve Aldrich

On July 3, 2024, Jeff Hurst of Axiom Service Professionals (ASP), conducted lead in drinking water resampling at the above referenced address. Inspector certification is provided in Appendix A. Sampling locations were derived from previously elevated water sources selected for retesting by the Liberty School District. A total of 9 samples were collected from various potential drinking water outlets including sources used for drinking, cooking, or cleaning of cooking and eating utensils throughout the building.

Drinking Water Standards

The use of lead solder and other lead-containing materials as defined in the EPA Safe Drinking Water Act in connecting household plumbing to public water supplies was prohibited as of 1986. The act established the definition of “lead free” to be less than 8% as a weighted average across wetted surfaces of a pipe, pipe fitting, plumbing fitting, and fixture and 0.2% lead for solder and flux. In 2011, the definition of “lead free” as it applied to wetted surfaces of a pipe, pipe fitting, and plumbing fitting and fixture was reduced from 8% to 0.25% as a weighted average. Many older structures still have lead pipe or lead-soldered plumbing internally, which may substantially increase the lead content of water at the tap. Nationwide regulations controlling the lead content of drinking-water coolers in schools went into effect in 1989.

In 1991, the EPA published the Lead and Copper Rule establishing limits on the amount of lead and copper in drinking water. This regulation can be found under 40 CFR Part 141, Subpart I. Reference: https://www.epa.gov/dwreginfo/lead-and-copper-rule

The EPA has set lead in drinking water standards as outlined below.

- For lead, the maximum contaminant level goal (MCLG) is zero. This is the levels determined to be safe by toxicological and biomedical considerations, independent of feasibility. EPA's National Primary Drinking Water Regulations for Lead establish a treatment level of **0.015 mg/L** or **15 ppb** (parts per billion) in municipal drinking water systems.

The Missouri Senate Bill 681 “Get the Lead Out of School Drinking Water Act”, passed in 2022, has set the standard summarized below.
Reference: https://www.senate.mo.gov/22info/BTS_Web/Bill.aspx?SessionType=R&BillID=71259862

- On or before January 1, 2024, each school shall conduct an inventory of all drinking water outlets and all outlets that are used for dispensing water for cooking or for cleaning cooking and eating utensils in each of the school’s buildings. A plan for testing should then be developed, prioritizing early childhood education programs and elementary schools, and made available to the public.
- The bill outlines that beginning in the 2023-2024 school year and for each subsequent school year, each school shall provide drinking water with a lead concentration below five parts per billion (**5 ppb**). Any school with greater than or equal to 5 ppb shall provide results and remediation plans to parents and staff within 7 business days of receiving results.

Water Sampling Methods:

Water samples were collected from each selected location as “first draw” and/or “flush”. First draw samples typically represent worst case sample results. A flush sample is typically collected to determine if an elevation is originating beyond the fixture in the fixture supply line or beyond. Samples were deposited into a non-preserved 250-milliliter sterile Nalgene screw top bottle. Immediately following sample collection, the samples were delivered to Keystone Laboratories located at 8857 Long Street, Lenexa, Kansas 66215. Upon arrival at the laboratory, samples were preserved through addition of nitric acid.

Keystone Laboratories is accredited through the Missouri Department of Natural Resources for analysis of lead in water.

Below is a summary of the water sampling results as reported in Appendix C by Keystone Laboratories. Results exceeding the applicable drinking water standards are shown in red text.

July 3, 2024 Water Sampling Results:

Sample #	Location	Source Under Test	Test Type	Lead Result (ppb)
425-62-RDF	Lillian Schumaker - 001384-Room 205	Sink Tap	Retest - First Draw	0.6
425-117-RDF	Lillian Schumaker - 001832-Room 106	Sink Tap	Retest - First Draw	<0.4
425-119-RDF	Lillian Schumaker - 002270-Room 106	Sink Tap	Retest - First Draw	0.7
425-121-RDF	Lillian Schumaker - 001834-Room 106-Bathroom	Sink Tap	Retest - First Draw	<0.4
425-122-RDF	Lillian Schumaker - 001835-Room 108	Sink Tap	Retest - First Draw	1.2
425-124-RDF	Lillian Schumaker - 001837-Room 108	Sink Tap	Retest - First Draw	0.5
425-127-RDF	Lillian Schumaker - 001839-Room 109	Sink Tap	Retest - First Draw	0.4
425-129-RDF	Lillian Schumaker - 001841-Room 109	Sink Tap	Retest - First Draw	<0.4
425-144-RDF	Lillian Schumaker - 001860-Room 102	Sink Tap	Retest - First Draw	7.1

Photos of the sampling locations are provided in Appendix D. A diagram containing identifiers on the outlets tested is provided in Appendix E.

Short-Term Control Measures

- Per the State of Missouri Senate Bills Nos. 681 & 662, a remediation plan should be developed and executed.
- Take immediate steps to prevent use from the failed source(s).
- Shut-off problem outlets
- Post “Not for Drinking/Cooking” at Problem Outlets. If initial sample results from an outlet(s) exceed the remediation trigger level, but are not routinely used for human ingestion (e.g., handwashing), clear signage can be posted to notify people that the outlet is not to be used for drinking or cooking until the problem is resolved.
- Consider performing follow-up flush testing in order to attempt to identify what component within the system is the source of the elevated lead concentration. This testing will assist to pinpoint where lead is getting into drinking water (i.e., fixtures versus interior plumbing) so that appropriate corrective measures can be taken.
- Shut-off or disconnection of problem outlets can provide a permanent solution. If the outlet is frequently used, this likely is not a practical long-term solution.
- Provide point-of-use (POU) filters at problem taps. Filters need routine maintenance (e.g., cartridge filter units need to be replaced periodically) to remain effective.

Permanent Control Measures

- Per the State of Missouri Senate Bills Nos. 681 & 662, a remediation plan should be developed and executed.
- Replacement of Problem Outlets and any identified upstream plumbing components (e.g., valves, leaded solder) to permanently address the problem. EPA's revised March 2015 guidance, How to Identify Lead-Free Certification Marks for Drinking Water System & Plumbing Products, can be a useful resource selecting leadfree plumbing.
- Provide point-of-use filters (POU) at problem taps as a long-term or permanent control measure. When doing this, facilities should be sure to create maintenance schedules and identify a point of contact to be in charge of making sure they are properly maintained.
- Reconfigure Plumbing. Ongoing renovation of school or childcare buildings may provide an opportunity to modify the plumbing system to redirect water supplied for drinking or cooking to bypass sources of lead contamination. Before undertaking such an alternative, be certain that you have properly identified all of the sources of lead contamination in drinking water.
- Remove and replace any drinking water coolers or drinking water outlets that the United States Environmental Protection Agency has determined are not lead-free under the federal Lead Contamination Control Act of 1988, as amended; except the school shall not be required to replace those drinking water outlets or water coolers that tested in accordance with state regulations and have been determined to be dispensing drinking water with a lead concentration less than five (5) part per billion (ppb); however, such drinking water outlet or water cooler shall be subject to all testing requirements and shall not be excluded from testing under subsection 10 of the Missouri Senate Bills Nos. 681 & 662, Section 160.077.
- Consider filtration of incoming water at the point of entry (POE) to the building.

Required Communication

- Contact staff and parents via written notification within seven (7) business days after receiving the test result.
- The notification shall include at least:
- The test results and a summary that explains such results;
- A description of any remedial steps taken; and
- A description of general health effects of lead contamination and community specific resources; and
- Provide bottled water if there is not enough water to meet the drinking water needs of the students, teachers, and staff.
- Submit such annual testing results to the Missouri Department of Health and Senior Services (DHSS).
- Before August 1, 2024, or the first day on which students will be present in the building, whichever is later, and annually thereafter, each school shall conduct testing for lead by first-draw and follow-up flush samples of a random sampling of at least twenty-five percent (25%) of remediated drinking water outlets until all remediated sources have been tested as recommended by the 2018 version of the United States Environmental Protection Agency's "Training, Testing, and Taking Action" program. The testing shall be conducted and the results analyzed for both types of tests by an entity or entities approved by the department.
- Any measures taken to remediate any elevated lead levels identified must be recorded and documented.

General Recommendations

- Retesting of all potential cooking and drinking water sources is required five (5) years from previous testing completed.
- If the condition changes or significant alterations to existing plumbing is undertaken, consider performing additional lead in drinking water sampling.
- Ensure that the plumbing system is not used as an electrical ground.
- If equipment is added that could affect water pH, alkalinity, or hardness, consider performing lead in drinking water sampling.

Any work resulting from this report should be conducted in accordance with the EPA Safe Drinking Water Act, Missouri SB 681 & 662, HUD Lead Regulations 24 CFR 35, EPA Lead Regulations 40 CFR 745, and Consumer Product Safety Commission document #5056.

If you have any questions concerning this report, please contact me at 816-678-7894.

Sincerely,

Jeff Hurst
Axiom Service Professionals LLC
jeffh@axiomservicepros.com

Limitations Drinking Water Testing

The presence or absence of lead and copper (if collected) in drinking water applies only to the test locations on the date of the field visit and it should be understood that conditions may change due to deterioration, pH, alkalinity, hardness, use levels, or maintenance. The results noted within this report were accurate at the time of the evaluation and in no way reflect the conditions at the property before or after the date of the evaluation. No other environmental concerns or conditions were addressed during this evaluation.

Appendix A
Certifications

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD ABATEMENT OCCUPATION LICENSE

Issued to:

Jeffrey Hurst

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Risk Assessor
Category of License

Issuance Date:	**8/1/2024**
Expiration Date:	**8/1/2026**
License Number:	**000801-200166567**

Paula F. Nickelson
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102

Appendix B
EPA Listed Lead Containing Drinking Fountains

Table C-1
Water Coolers With Other Lead Components

EBCO Manufacturing

- All pressure bubbler water coolers with shipping dates from 1962 through 1977 have a bubbler valve containing lead. The units contain a single, 50-50 tin-lead solder joint on the bubbler valve. Model numbers for coolers in this category are not available.

- The following models of pressure bubbler coolers produced from 1978 through 1981 contain one 50-50 tin-lead solder joint each.

CP3	DP15W	DPM8	7P	13P	DPM8H	DP15M	DP3R	DP8A
DP16M	DP5S	C10E	PX-10	DP7S	DP13SM	DP7M	DP7MH	DP7WD
WTC10	DP13M-60	DP14M	CP10-50	CP5	CP5M	DP15MW	DP3R	DP14S
DP20-50	DP7SM	DP10X	DP13A	DP13A-50	EP10F	DP5M	DP10F	CP3H
CP3-50	DP13M	DP3RH	DP5F	CP3M	EP5F	13PL	DP8AH	DP13S
CP10	DP20	DP12N	DP7WM	DP14A-50/60				

Halsey Taylor

- Lead solder was used in these models of water coolers manufactured between 1978 and the last week of 1987:

WMA-1	SCWT/SCWT-A	SWA-1	DC/DHC-1
S3/5/10D	BFC-4F/7F/4FS/7FS	S300/500/100D	

- The following coolers manufactured for Haws Drinking Faucet Company (Haws) by Halsey Taylor from November 1984 through December 18, 1987 are not lead-free because they contain 2 tin-lead solder joints. The model designations for these units are as follows:

HC8WT	HC14F	HC6W	HWC7D	HC8WTH	HC14FH	HC8W	HC2F	HC14WT
HC14FL	HC14W	HC2FH	HC14WTH	HC8FL	HC4F	HC5F	HC14WL	HCBF7D
HC4FH	HC10F	HC16WT	HCBF7HO	HC8F	HC8FH	HC4W	HWC7	

Table C-2
Halsey Taylor Water Coolers With Lead-Lined Tanks

- The following six model numbers have one or more units in the model series with lead-lined tanks:

WM8A WT8A GC10ACR GC10A GC5A RWM13A

- The following models and serial numbers contain lead-lined tanks:

WM14A Serial No. 843034	WM14A Serial No. 843006	WT11A Serial No. 222650
WT21A Serial No. 64309550	WT21A Serial No. 64309542	LL14A Serial No. 64346908

PO Box 47166 Kansas City, MO 64188 • 816-678-7894 • www.axiomservicepros.com

Appendix C
Laboratory Analytical Report

MICROBAC®

Microbac Laboratories, Inc., Lenexa

CERTIFICATE OF ANALYSIS

3HG0128

AXIOM Service Professionals

Jeff Hurst
PO Box 47166
Kansas City, MO 64188

Project Name: 425 Claywoods Parkway

Project / PO Number: 425 Claywoods Parkway
Received: 07/10/2024
Reported: 07/29/2024

Work Order Special Information

Client
425 Claywoods Parkway

Analytical Testing Parameters

Client Sample ID: 425-62-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-01
Collected By: Client
Collection Date: 07/03/2024 13:48

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	**0.6**	0.4	ppb	2		07/25/24 1600	07/27/24 0401	RVV

Client Sample ID: 425-117-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-02
Collected By: Client
Collection Date: 07/03/2024 13:49

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	<0.4	0.4	ppb	2		07/25/24 1600	07/27/24 0404	RVV

Client Sample ID: 425-119-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-03
Collected By: Client
Collection Date: 07/03/2024 13:51

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	**0.7**	0.4	ppb	2		07/25/24 1600	07/27/24 0413	RVV

Client Sample ID: 425-121-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-04
Collected By: Client
Collection Date: 07/03/2024 13:50

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	<0.4	0.4	ppb	2		07/25/24 1600	07/27/24 0416	RVV

MICROBAC®

Microbac Laboratories, Inc., Lenexa

CERTIFICATE OF ANALYSIS

3HG0128

Client Sample ID: 425-122-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-05
Collected By: Client
Collection Date: 07/03/2024 13:52

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	**1.2**	0.4	ppb	2		07/25/24 1600	07/27/24 0419	RVV

Client Sample ID: 425-124-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-06
Collected By: Client
Collection Date: 07/03/2024 13:53

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	**0.5**	0.4	ppb	2		07/25/24 1600	07/27/24 0422	RVV

Client Sample ID: 425-127-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-07
Collected By: Client
Collection Date: 07/03/2024 13:51

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	**0.4**	0.4	ppb	2		07/25/24 1600	07/27/24 0425	RVV

Client Sample ID: 425-129-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-08
Collected By: Client
Collection Date: 07/03/2024 13:55

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	<0.4	0.4	ppb	2		07/25/24 1600	07/27/24 0428	RVV

Client Sample ID: 425-144-RDF
Sample Matrix: Drinking Water
Lab Sample ID: 3HG0128-09
Collected By: Client
Collection Date: 07/03/2024 13:56

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
200.8								
Lead, total	**7.1**	0.4	ppb	2		07/25/24 1600	07/27/24 0431	RVV

Definitions

RL: Reporting Limit

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Carolyn Jackson
Project Manager
carolyn.jackson@microbac.com
07/29/24 12:37

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES
A Microbac Company

___ 600 E. 17th St. S Newton, IA 50208 Phone: 641-792-8451	___ 3012 Ansborough Ave Waterloo, IA 50701 Phone: 319-235-4440	X 835 S St. Paul Kansas City, KS 66105 Phone: 913-321-7856	___ 205 E Van Buren St Centerville, IA 52544 Phone: 641-437-7023

PRINT OR TYPE INFO BELOW:		REPORT TO:		BILL TO:	
SAMPLER:		NAME:	Jeff Hurst	NAME:	Jeff Hurst
SITE NAME:	Lillian Schumacher Elementary School	CO. NAME:		CO. NAME:	
ADDRESS:	425 Claywoods Parkway	ADRESS:	PO Box 47166	ADDRESS:	PO Box 47166
CITY/ST/ZIP:	Liberty, MO	CITY/ST/ZIP:	Kansas City, Missouri 64188	CITY/ST/ZIP:	Kansas City, Missouri 64188
PHONE:		PHONE:	816-678-7894	PHONE:	816-678-7894
		EMAIL:	jeffh@axiomservicepros.com	EMAIL:	jeffh@axiomservicepros.com

CLIENT SAMPLE #	DATE	TIME		# OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED: Lead							LAB USE ONLY: Sample Condition	Sample #
														Wk Order #:	3HG0128
														Short Hold:	
														Rush:	
														Temp: oC	23.5
425-62-RDF	7/3/2024	13:48	Room 205 - Sink Tap - 001384-Room 205	1		Grab	X								3HG0128.01
425-117-RDF	7/3/2024	13:49	Room 106 - Sink Tap - 001832-Room 106	1		Grab	X								02
425-119-RDF	7/3/2024	13:51	Room 106 - Sink Tap - 002270-Room 106	1		Grab	X								03
425-121-RDF	7/3/2024	13:50	Room 106 Bathroom - Sink Tap - 001834-Room 106-Bathroom	1		Grab	X								04
425-122-RDF	7/3/2024	13:52	Room 108 - Sink Tap - 001835-Room 108	1		Grab	X								05
425-124-RDF	7/3/2024	13:53	Room 108 - Sink Tap - 001837-Room 108	1		Grab	X								06
425-127-RDF	7/3/2024	13:54	Room 109 - Sink Tap - 001839-Room 109	1		Grab	X								07

Relinquied by: (Signature)	Date:		Received by: (Signature)	Date:		Remarks:
[signature]	7/9/24					
	Time:			Time:		
Relinquied by: (Signature)	Date:		Received by: (Signature)	Date:	07/10/24	
			[signature]			
	Time:			Time:	14:00	

3 H G 0 1 2 8

AXIOM Service Professionals

PM: Carolyn Jackson

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES
A Microbac Company

___ 600 E. 17th St. S Newton, IA 50208 Phone: 641-792-8451	___ 3012 Ansborough Ave Waterloo, IA 50701 Phone: 319-235-4440	X 835 S St. Paul Kansas City, KS 66105 Phone: 913-321-7856	___ 205 E Van Buren St Centerville, IA 52544 Phone: 641-437-7023

PRINT OR TYPE INFO BELOW:		REPORT TO:		BILL TO:	
SAMPLER:		NAME:	Jeff Hurst	NAME:	Jeff Hurst
SITE NAME:	Lillian Schumacher Elementary School	CO. NAME:		CO. NAME:	
ADDRESS:	425 Claywoods Parkway	ADRESS:	PO Box 47166	ADDRESS:	PO Box 47166
CITY/ST/ZIP:	Liberty, MO	CITY/ST/ZIP:	Kansas City, Missouri 64188	CITY/ST/ZIP:	Kansas City, Missouri 64188
PHONE:		PHONE:	816-678-7894	PHONE:	816-678-7894
		EMAIL:	jeffh@axiomservicepros.com	EMAIL:	jeffh@axiomservicepros.com

CLIENT SAMPLE #	DATE	TIME		# OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED: Lead							LAB USE ONLY: Sample Condition	Sample #
														Wk Order #:	3HG0128
														Short Hold:	
														Rush:	
														Temp: oC	
425-129-RDF	7/3/2024	13:55	Room 109 - Sink Tap - 001841-Room 109	1		Grab	X								3HG0128-08
425-144-RDF	7/3/2024	13:56	Room 102 - Sink Tap - 001860-Room 102	1		Grab	X								09

Relinquied by: (Signature)	Date:		Received by: (Signature)	Date:		Remarks:
	Time:			Time:		
Relinquied by: (Signature)	Date:		Received by: (Signature)	Date:	07/10/24	
	Time:			Time:	14:00	

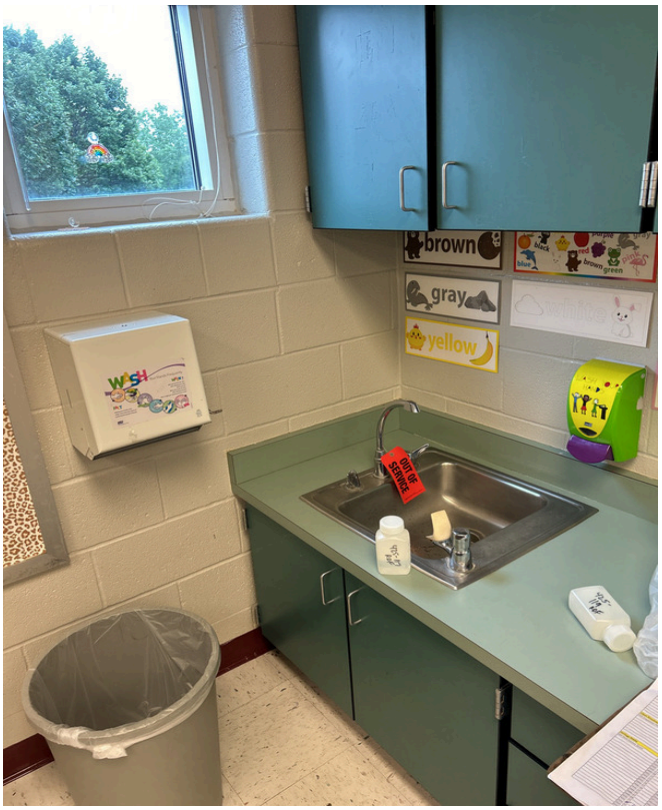
3 H G 0 1 2 8

AXIOM Service Professionals

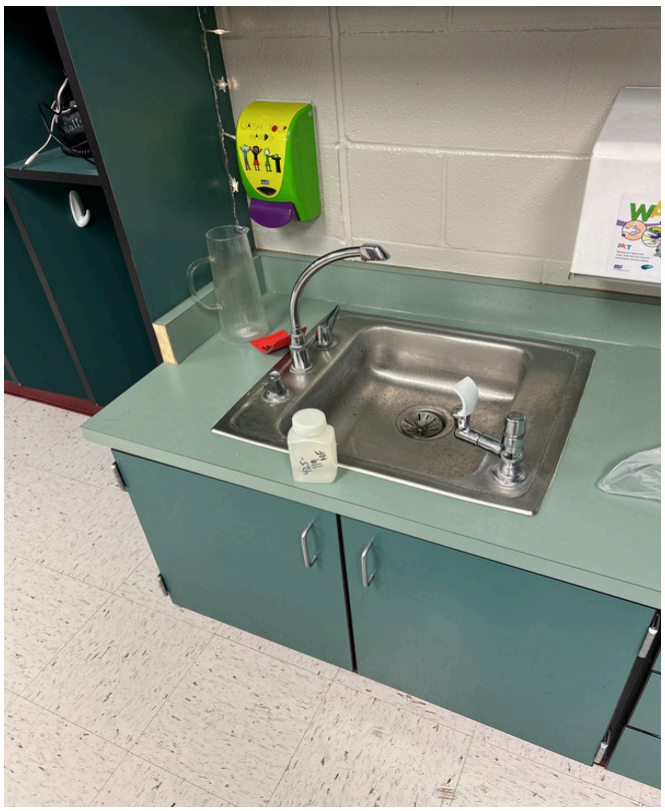
PM: Carolyn Jackson

Appendix D
Photo Log

7/3/2024 - 425-62 - Lillian Schumaker - 001384-Room 205

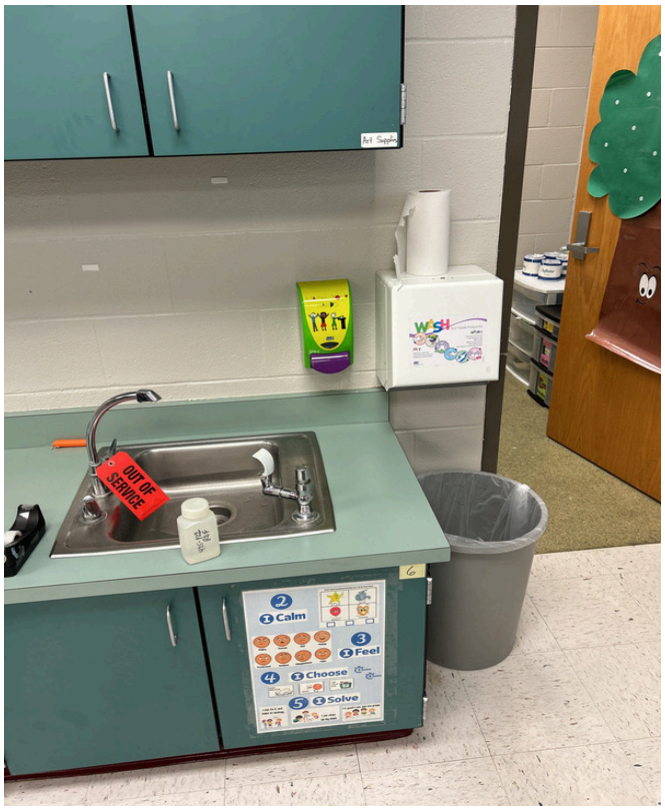


7/3/2024 - 425-117 - Lillian Schumaker - 001832-Room 106

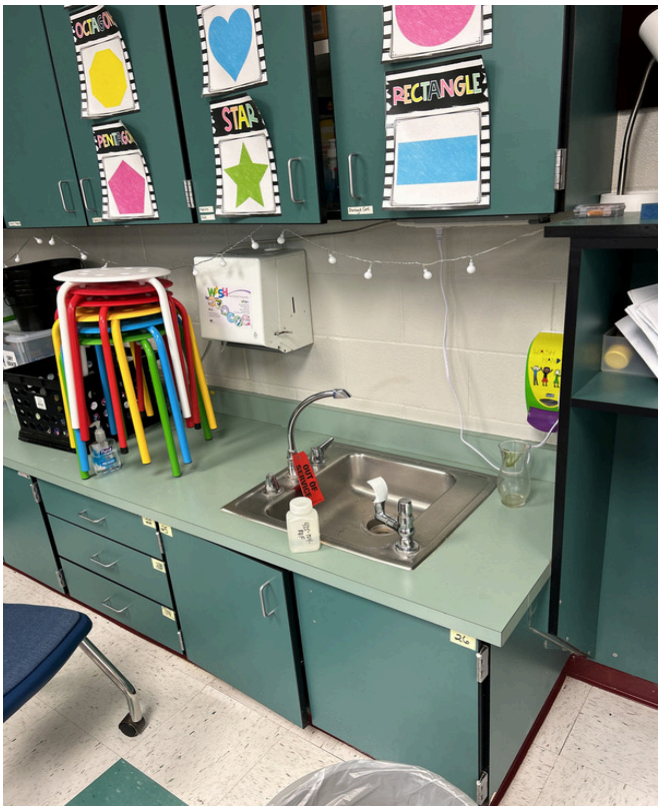


7/3/2024 - 425-119 - Lillian Schumaker - 002270-Room 106

7/3/2024 - 425-121 - Lillian Schumaker - 001834-Room 106-Bathroom

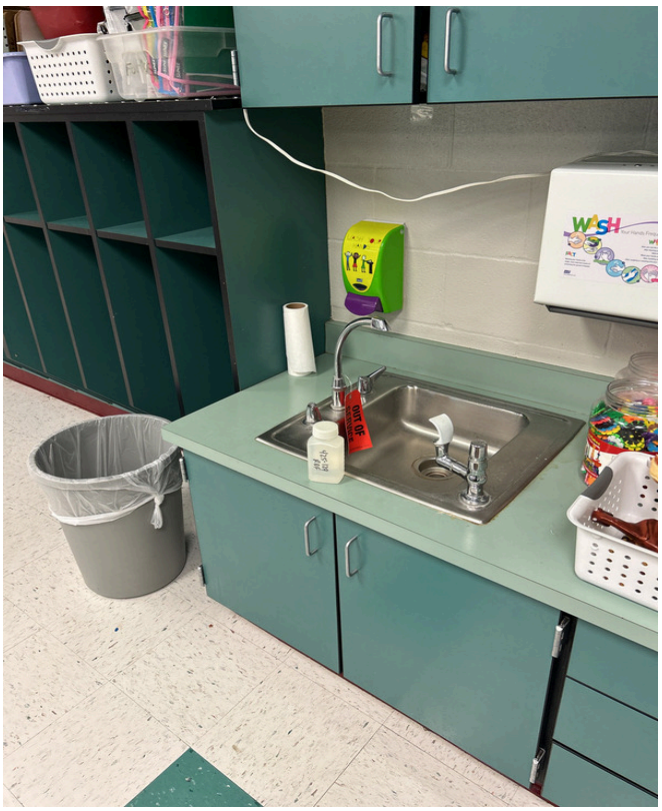


7/3/2024 - 425-122 - Lillian Schumaker - 001835- Room 108



7/3/2024 - 425-124 - Lillian Schumaker - 001837- Room 108

7/3/2024 - 425-127 - Lillian Schumaker - 001839- Room 109



7/3/2024 - 425-129 - Lillian Schumaker - 001841- Room 109

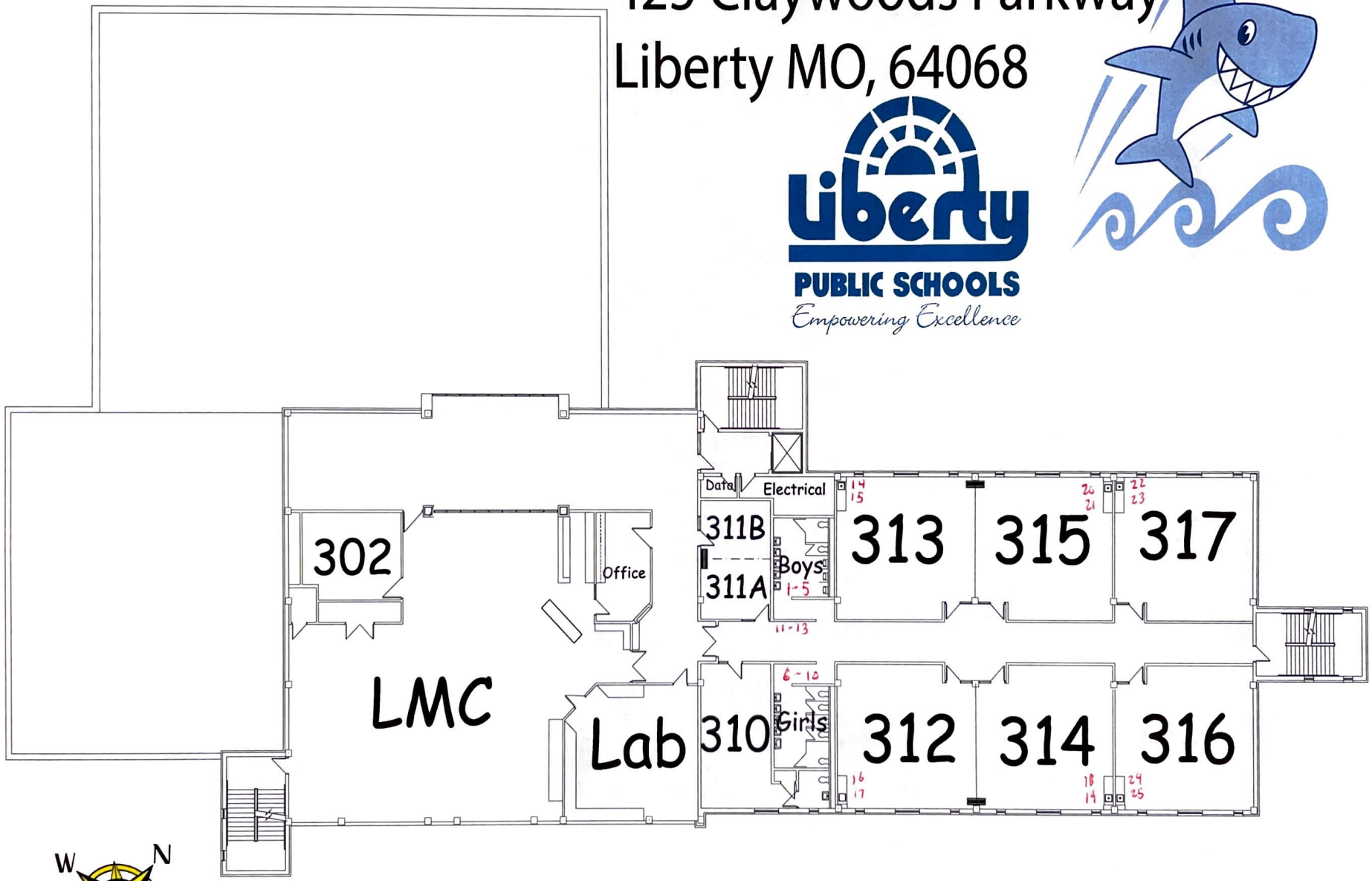
 7/3/2024 - 425-144 - Lillian Schumaker - 001860-Room 102	

Appendix E
Source Identification Diagram

ASP was provided sample locations by Liberty School District

Second Floor

Lillian Schumacher Elementary
425 Claywoods Parkway
Liberty MO, 64068

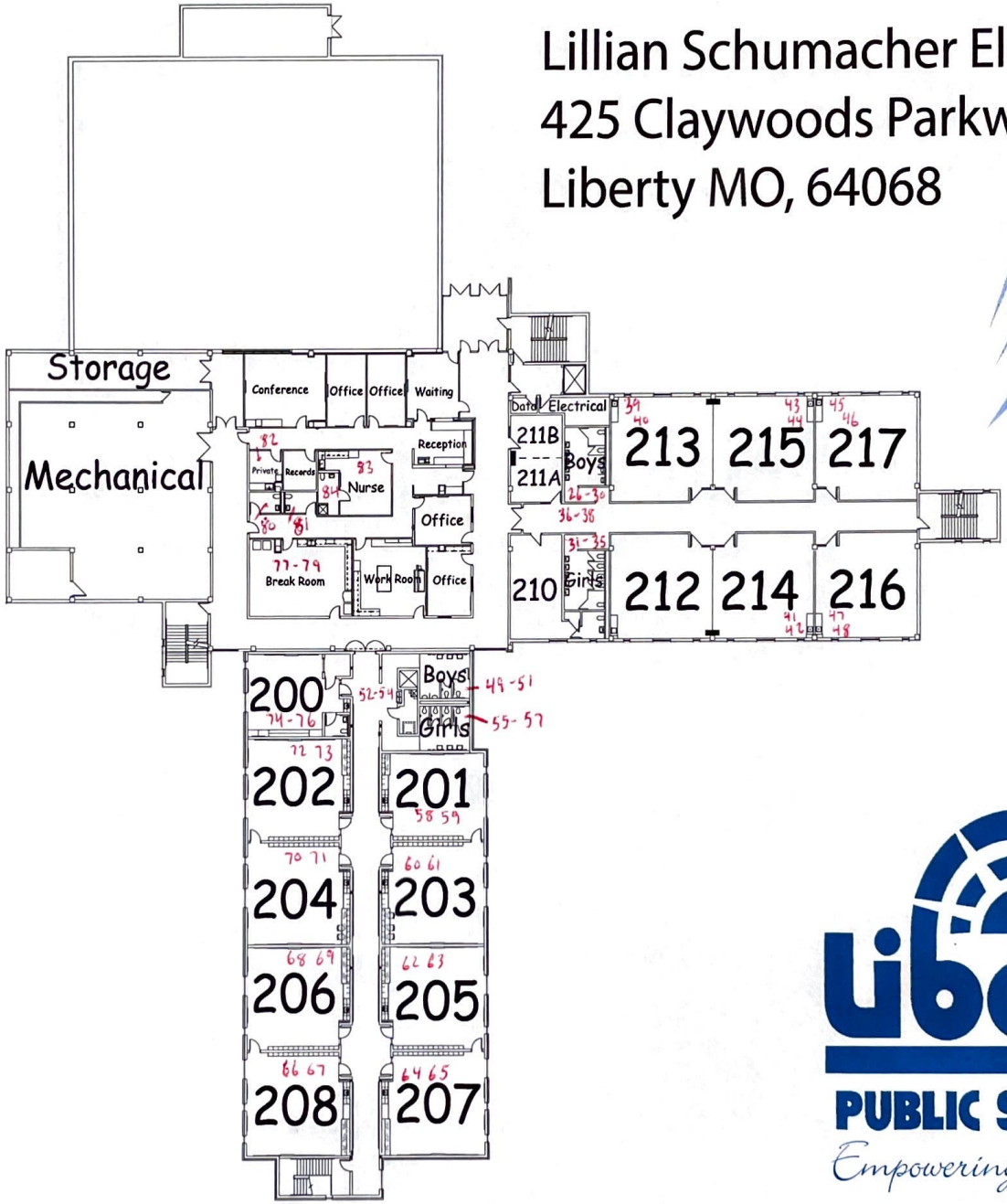


Map Design by: Curt Laven

Last Updated: 06/17/2021

First Floor

Lillian Schumacher Elementary
425 Claywoods Parkway
Liberty MO, 64068

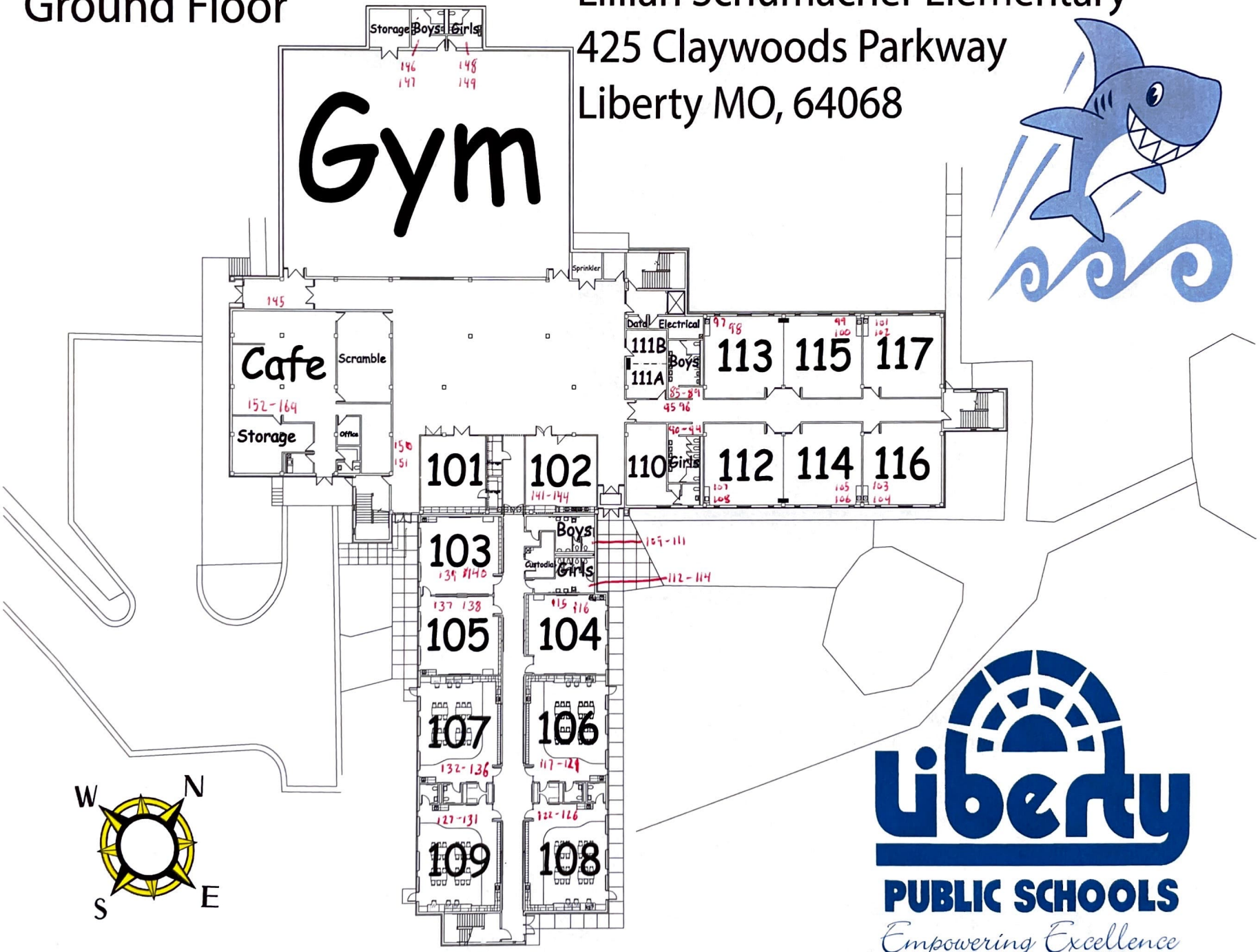


Map Design by: Curt Laven
Last Updated: 06/17/2021

Liberty PUBLIC SCHOOLS
Empowering Excellence

Ground Floor

Lillian Schumacher Elementary
425 Claywoods Parkway
Liberty MO, 64068



Map Design by: Curt Laven
Last Updated: 06/17/2021

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