EXECUTIVE ENVIRONMENTAL
HEALTH & SAFETY SIMPLIFIED

Industrial Hygiene • Air Quality • Lead & Asbestos • Training • Health & Safety

LEAD-BASED PAINT/CERAMIC TILE INSPECTION REPORT

Conducted at:

OLD PIONEER ADULT SCHOOL
BUILDINGS B, D AND E
1651 EAST ROWLAND AVENUE
WEST COVINA, CALIFORNIA 91791

Prepared for:

MR. MIKE STRAGIER
MANAGER OF M & O AND TRANSPORTATION
COVINA-VALLEY UNIFIED SCHOOL DISTRICT
519 EAST BADILLO STREET
COVINA, CALIFORNIA 91723

Prepared by:

EXECUTIVE ENVIRONMENTAL
310 EAST FOOTHILL BOULEVARD, SUITE 200
ARCADIA, CALIFORNIA 91006

Project Number EE 18-Z0172-0076
April 25, 2018

Report assembled by:

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Senior Project Manager
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LEAD-BASED PAINT/CERAMIC TILE INSPECTION

Project Number:	EE 18-Z0172-0076
Client:	Covina-Valley Unified School District 519 East Badillo Street Covina, California 91723
Site Location:	Old Pioneer Adult School Buildings B, D and E 1651 East Rowland Avenue West Covina, California 91791
Site Use:	School Property
Contact Person:	Mr. Mike Stragier Manager of M & O and Transportation Phone: (626) 974-7600, ext. 2150
Inspection Date:	April 16, 2018
Inspected By:	Mr. Wilson Medina Certified Lead Professional, DHS # 4400 Mr. George Valverde Certified Lead Professional, DHS # 24605
Report Assembled By:	Ms. Yesenia G. Galeana Technical Report Writer
Report Generated/Reviewed By:	Mr. Tim Galeana Certified Lead Professional, DHS # 3732

I. EXECUTIVE SUMMARY

Executive Environmental (EE) provided the services of a Certified Lead Professional (CLP) to conduct a limited lead-based paint/ceramic tile inspection of Buildings B, D and E at the Old Pioneer Adult School located at 1651 East Rowland Avenue, West Covina, California. EE provided a California Department of Public Health Certified Lead Inspector to conduct the inspection. Lead-based ceramic glaze was detected during this inspection. EE's CLP conducted this service on April 17 and 18, 2018. *This is considered a limited inspection. The inspection was limited to various surfaces and components associated with Buildings B, D and E, as directed by the District Representative.*

II. SAMPLING PROTOCOL

According to the United States Department of Housing and Urban Development's (HUD) guideline document, Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, and Section 1017 of Title X, Residential Lead-Based Paint Hazard Reduction Act of 1992, Public Law 102-550, paint found to have a lead concentration of at least 1.0 mg/cm^2 (milligrams per centimeter squared) by X-Ray Fluorescence (XRF), or 0.5 percent (5000 parts per million) by weight, is regulated as lead-based paint.

Los Angeles County Childhood Lead Poisoning Prevention Program (CLPPP), established in 1991, further regulates that paint found to have a lead concentration greater than 0.7 milligrams per centimeter squared (mg/cm^2) by XRF readings, 600 parts per million (ppm) or 0.06 weight-to-weight percent by Atomic Absorption Spectrometry (AAS) analysis, is considered to be lead-based paint. The Los Angeles County action level was used for determining the lead content in this inspection because it is more stringent than the HUD guidelines.

Any material containing any detectable level of lead is subject to the Occupational Safety and Health Administration's (OSHA) Lead Exposure in Construction, Code of Federal Regulations, Title 29, Section 1926 (abbreviated as 29 CFR 1926). All work that disturbs this type of material must be performed in accordance with this and any other applicable standards.

All facilities built prior to 1979 for residential buildings and prior to 1993 for schools are suspect for lead-containing materials. Federal and state regulations recognize only the following methods of identification: analysis by an XRF instrument, paint bulk sample collection and analysis, or a combination of both. This inspection was conducted via XRF instrumentation. The parameters used to interpret the XRF results are outlined in the HUD guidelines and the XRF Performance Characteristics Sheets (PCS).

III. SAMPLING METHODOLOGY

A visual inspection of Buildings B, D and E was conducted by EE's CLP to identify major site features and surfaces and/or components suspected of being lead-containing paint or lead-based ceramic glaze. After identifying the materials suspected of containing lead paint or lead-based ceramic glaze, EE grouped the components, substrates, and room equivalents into testing combinations. A testing combination is defined as the room equivalent, component, and substrate. A room equivalent is an identifiable part of a building (e.g. classrooms, restrooms, mechanical rooms, exterior). Color does not accurately indicate painting history, and is not included when assigning testing combinations. If there was any reason to suspect that materials may have been installed or painted at different times, even if they appear uniform, they were assigned to separate testing combinations.

Following the visual inspection, screening for the presence of lead-based paint was performed on-site using a portable XRF instrument. The XRF has the ability to measure lead content in paint and ceramic glaze within the range of 0 to 50 milligrams per centimeter squared (mg/cm^2). The on-site inspection capability of the XRF instrument typically reduces the number of paint-chip samples that may need to be collected and

sent for laboratory analysis. The portable XRF instrument used in this inspection was manufactured by Niton Corporation.

The following specifications apply to the Niton XRF:

- Ability to report both the K and L shell line x-ray emission energies simultaneously and report the lead concentration in mg/cm^2.
- Accuracy for a single reading on all building materials within 0.2 mg/cm^2, at 95 percent confidence, at 0 to 1 mg/cm^2.
- Equipped with a 40-milli-curie (mCi) cadmium, 109-sealed, radioactive source. Substrate effects are automatically corrected through a complex algorithm and calibration.

IV. SAMPLE ANALYSIS

According to local, state, and federal standards, the surfaces and/or components that were analyzed with the Niton XRF instrument during this inspection are considered to be coated with a regulated lead-based ceramic glaze.

XRF SAMPLE ANALYSIS DATA
Old Pioneer Adult School
1651 East Rowland Avenue
West Covina, California 91791

Location	Component	Substrate	Estimate Quantity	XRF Result Mg/cm^2
Building B (Cafeteria)[1]				
Rooms 3 thru 6	Baseboard tile	Ceramic	184 Linear Feet	5.2
Building D (Classrooms 1 thru 4)				
No regulated lead-based paint and/or ceramic glaze was identified on the exterior and interior window components, transoms and baseboard within Rooms 1 thru 4.				
Building E (Classrooms 5 thru 8)				
No regulated lead-based paint and/or ceramic glaze was identified on the exterior and interior window components, interior vents and baseboard within Rooms 5 thru 8.				

Note: This table must be used in conjunction with the entire report.

V. CONCLUSIONS/RECOMMENDATIONS

EE conduct a limited lead-based paint/lead-based ceramic glaze inspection of Buildings B, D and E at the Old Pioneer Adult School located at 1651 East Rowland Avenue, West Covina, California. The following conclusions and/or recommendations apply:

Limited Lead-Based Paint/Ceramic Tile Inspection

[1] NOTE: 1) Terrazzo flooring will not be impacted per District Representative. 2) Mechanical room and Custodial closet have bare concrete flooring.

- Various interior surfaces and components, as directed by the District Representative, were tested via the Niton XRF for the presence of lead.
- The components listed in the previous table were identified as being coated with a lead-based paint or lead-containing glaze.
- The painted surfaces were observed to be in good to fair condition during this inspection.
- A fully representative number of XRF readings were taken at the project site. The results of these assays are presented in the XRF Summary Results spreadsheets.

It is recommended that all renovation, remodelling, construction, or demolition actions that might potentially disturb surfaces covered with lead-based paint be performed by properly trained and qualified personnel.

VI. DISCLAIMER/REPORT LIMITATIONS

All reports and recommendations are based on conditions and practices observed and information made available to Executive Environmental (EE) by the client and the designated sites/facilities on the days sampling was conducted. This report does not purport to set forth all hazards, nor to indicate that other hazards do not exist. No responsibility is assumed by EE for the control or correction of conditions or practices existing at the facilities, or at any other premises surveyed by EE, for and on the behalf of the client. Services provided by EE shall be governed by the standard of practice for professional services measured at the time those services are rendered.

All information contained in this report is proprietary and limited to the scope of services, parameters of the analytical methods used and the conditions present at the time of this inspection. Any references to quantities are considered estimates and are not to be construed as actual.

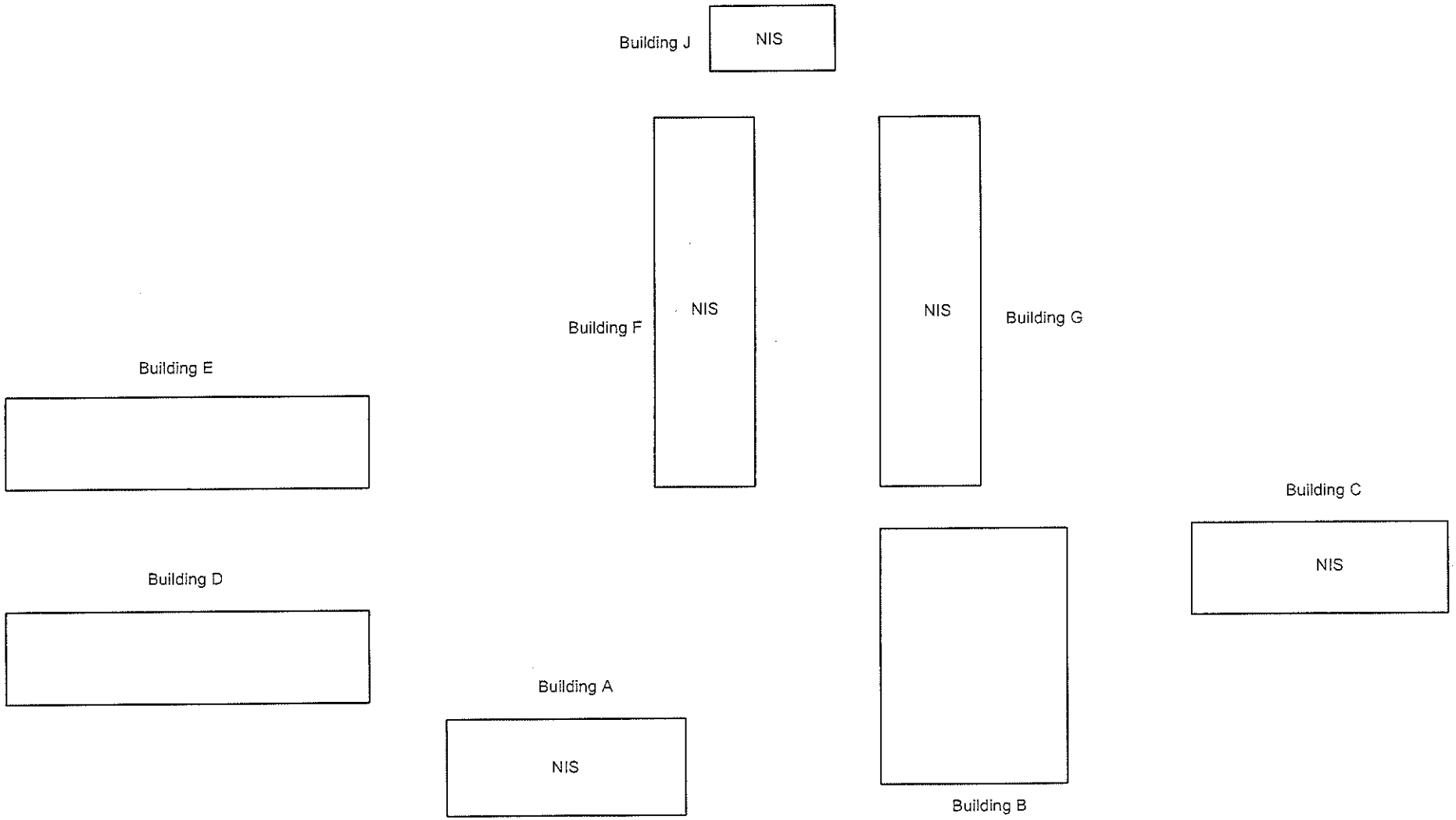
APPENDIX A – XRF SUMMARY RESULTS

Reading No	Time	Type	Building	Location	Component	Substrate	Side	Condition	Results	PbC	PbC Error	PbL	PbL Error	PbK	PbK Error
1	4/17/18	Paint			Shutter calibrate					1.76	0	0.3	0	0	0
2	4/17/18	Paint			Calibrate				Positive	1.1	0.3	1.1	0.3	0.7	2.3
3	4/17/18	Paint			Calibrate				Positive	0.9	0.1	0.9	0.1	0.14	0.91
4	4/17/18	Paint			Calibrate				Positive	0.9	0.2	0.9	0.2	0.21	1.45
5	4/17/18	Paint	Building D (Classrooms 1 thru 4)	Exterior	Window frame	Wood	A	Intact	Negative	0.23	0.18	0.23	0.18	0.4	1.5
6	4/17/18	Paint	Building D (Classrooms 1 thru 4)	Exterior	Transom	FRP	A	Intact	Negative	0	0.02	0	0.02	-1.27	2.01
7	4/17/18	Paint	Building B (Cafeteria)	Exterior	Window frame	Wood	A	Intact	Null	0.7	0.1	0.7	0.1	0.9	0.3
8	4/17/18	Paint	Building B (Cafeteria)	Exterior	Window frame	Wood	A	Intact	Negative	0.02	0.1	0.02	0.1	0.3	1.38
9	4/17/18	Paint	Building E (Classrooms 5 thru 8)	Exterior	Window frame	Wood	A	Poor	Null	0.7	0.1	0.7	0.1	0.9	0.3
10	4/17/18	Paint	Building E (Classrooms 5 thru 8)	Exterior	Window frame	Wood	A	Poor	Negative	0.5	0.2	0.5	0.2	1	0.7
11	4/17/18	Paint	Building B (Cafeteria)	Exterior	Window frame	Metal	C	Intact	Negative	0.14	0.15	0.14	0.15	-0.95	2.46
12	4/17/18	Paint	Building B (Cafeteria)	Exterior	Transom	Glass	C	Poor	Null	0	0.03	0	0.03	-4.03	204.57
13	4/17/18	Paint	Building B (Cafeteria)	Exterior	Transom	Glass	C	Intact	Null	0	0.02	0	0.02	2	9.8
14	4/17/18	Paint	Building B (Cafeteria)	Exterior	Window frame	Metal	C	Poor	Negative	0	0.02	0	0.02	0.14	1.95
15	4/17/18	Paint			Calibrate				Positive	1.1	0.3	1.1	0.3	0.7	2.5
16	4/17/18	Paint			Calibrate				Positive	0.9	0.2	0.9	0.2	0.5	1.5

Reading No	Time	Type	Building	Location	Component	Substrate	Side	Condition	Results	PbC	PbC Error	PbL	PbL Error	PbK	PbK Error
17	4/17/18	Paint			Calibrate				Positive	1	0.2	1	0.2	0.6	1.5
18	4/18/18	Paint			Shutter calibrate					1.67	0	0.28	0	0	0
19	4/18/18	Paint			Calibrate				Positive	1.4	0.4	1.4	0.4	0.9	2.8
20	4/18/18	Paint			Calibrate				Positive	1.6	0.7	1.6	0.7	1.2	4.3
21	4/18/18	Paint			Calibrate				Positive	1.4	0.6	1.4	0.6	1.2	3.9
22	4/18/18	Paint	Building D (Classrooms 1 thru 4)	Room 1	Baseboard	Wood	D	Intact	Negative	0.04	0.08	0.04	0.08	0.4	1.5
23	4/18/18	Paint	Building D (Classrooms 1 thru 4)	Room 1	Window frame	Wood	A	Intact	Negative	0.04	0.06	0.04	0.06	0.23	1.68
24	4/18/18	Paint	Building D (Classrooms 1 thru 4)	Room 3	Baseboard	Wood	B	Intact	Negative	0.07	0.15	0.07	0.15	0.03	1.8
25	4/18/18	Paint	Building D (Classrooms 1 thru 4)	Room 3	Window frame	Wood	A	Intact	Negative	0.11	0.13	0.11	0.13	0.2	1.88
26	4/18/18	Paint	Building E (Classrooms 5 thru 8)	Room 5	Baseboard	Wood	D	Intact	Negative	0.02	0.05	0.02	0.05	0.6	1.7
27	4/18/18	Paint	Building E (Classrooms 5 thru 8)	Room 5	Vent	Metal	A	Intact	Negative	0.05	0.08	0.05	0.08	-0.55	2.51
28	4/18/18	Paint	Building E (Classrooms 5 thru 8)	Room 5	Window frame	Wood	A	Intact	Negative	0.04	0.05	0.04	0.05	0.11	1.84
29	4/18/18	Paint	Building E (Classrooms 5 thru 8)	Room 7	Baseboard	Wood	B	Intact	Negative	0.03	0.1	0.03	0.1	0.7	1.5
30	4/18/18	Paint	Building E (Classrooms 5 thru 8)	Room 7	Vent	Metal	B	Intact	Negative	0.06	0.13	0.06	0.13	0.5	2.2
31	4/18/18	Paint	Building E (Classrooms 5 thru 8)	Room 7	Window frame	Wood	A	Intact	Negative	0.15	0.13	0.15	0.13	0.9	1.4

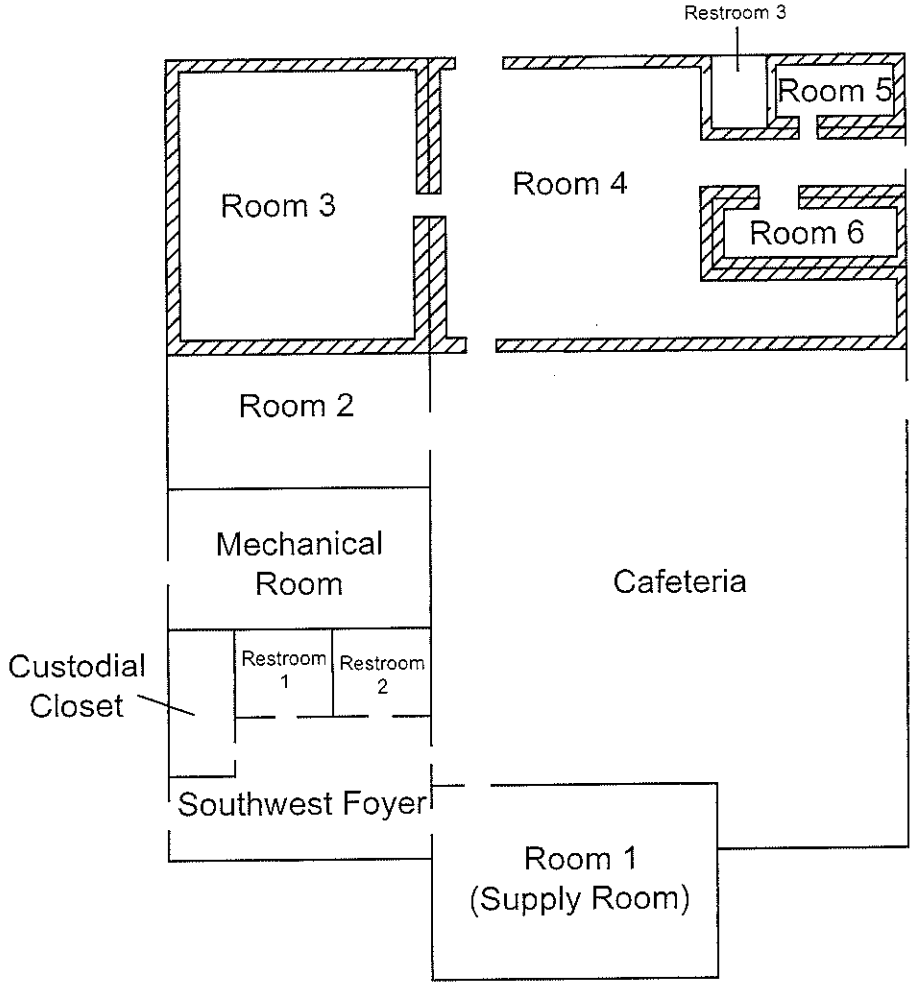
Reading No	Time	Type	Building	Location	Component	Substrate	Side	Condition	Results	PbC	PbC Error	PbL	PbL Error	PbK	PbK Error
32	4/18/18	Paint	Building B (Cafeteria)	Room 1	Baseboard	Wood	B	Intact	Negative	0.03	0.06	0.03	0.06	0.3	1.65
33	4/18/18	Paint	Building B (Cafeteria)	Southwest foyer	Baseboard	Wood	A	Intact	Negative	0	0.02	0	0.02	0.14	1.58
34	4/18/18	Paint	Building B (Cafeteria)	Southwest foyer	Window frame	Wood	A	Intact	Negative	0	0.02	0	0.02	0.18	1.35
35	4/18/18	Paint	Building B (Cafeteria)	Cafeteria	Baseboard	Wood	B	Intact	Negative	0.02	0.04	0.02	0.04	0.8	1.6
36	4/18/18	Paint	Building B (Cafeteria)	Cafeteria	Window frame	Wood	A	Intact	Negative	0	0.02	0	0.02	-0.15	1.82
37	4/18/18	Paint	Building B (Cafeteria)	Cafeteria	Transom	Glass	A	Intact	Negative	0	0.02	0	0.02	1	2.8
38	**4/18/18**	**Paint**	**Building B (Cafeteria)**	**Room 3**	**Baseboard tile**	**Ceramic**	**A**	**Intact**	**Positive**	**5.2**	**2.5**	**5.2**	**2.5**	**9**	**10.2**
39	4/18/18	Paint	Building B (Cafeteria)	Room 3	Floor	Concrete		Intact	Negative	0.02	0.03	0.02	0.03	0.04	0.96
40	4/18/18	Paint	Building B (Cafeteria)	Room 4	Window frame	Metal	C	Intact	Negative	0.16	0.13	0.16	0.13	-0.13	2.85
41	4/18/18	Paint	Building B (Cafeteria)	Room 4	Window sash	Metal	C	Intact	Negative	0.14	0.15	0.14	0.15	-0.21	2.47
42	4/18/18	Paint	Building B (Cafeteria)	Room 4	Transom	Glass	C	Poor	Negative	0	0.02	0	0.02	0.1	2.37
43	4/18/18	Paint							Positive	1.5	0.4	1.5	0.4	1	2.8
44	4/18/18	Paint							Positive	1.6	0.5	1.6	0.5	1.4	2.8
45	4/18/18	Paint							Positive	1.5	0.6	1.5	0.6	1.2	4.1

APPENDIX B – SITE DRAWING



Client: Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** Campus Wide
EXECUTIVE ENVIRONMENTAL **HEALTH & SAFETY SIMPLIFIED**		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue West Covina, California 91791

Building B
(Cafeteria)



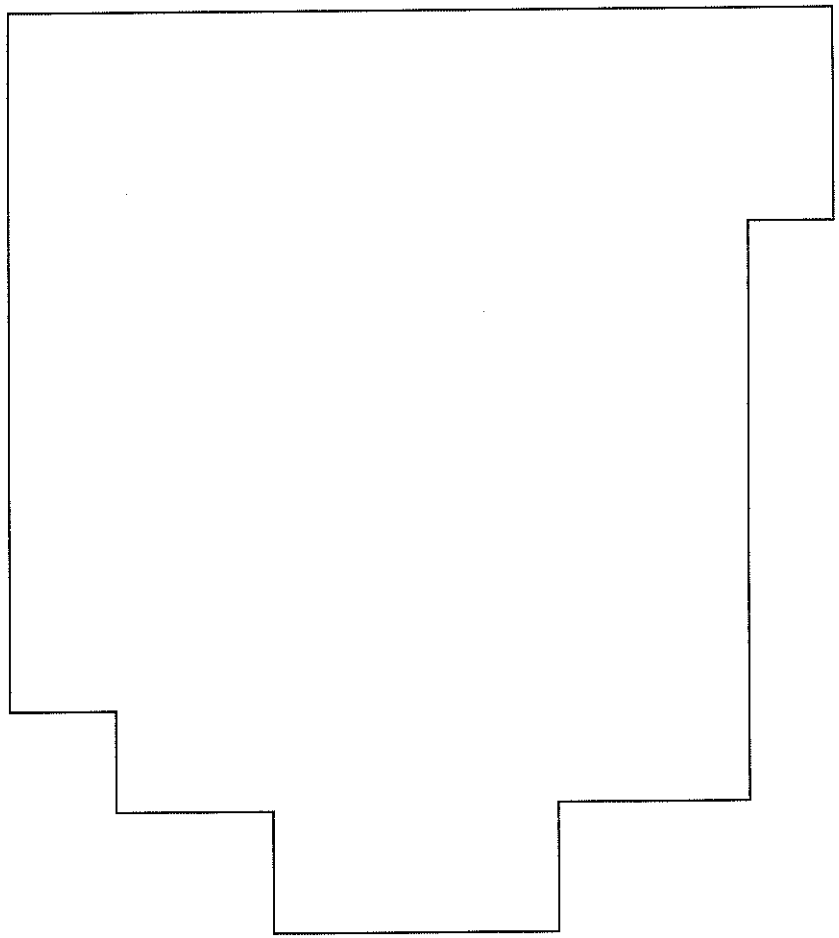
SIDE=C
SIDE=B
SIDE=D
SIDE=A

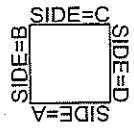
▨ - Ceramic tile Baseboard

N

Client: Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** Lead Based Paint Identified
EXECUTIVE ENVIRONMENTAL HEALTH & SAFETY SIMPLIFIED		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue WestCovina, California 91791

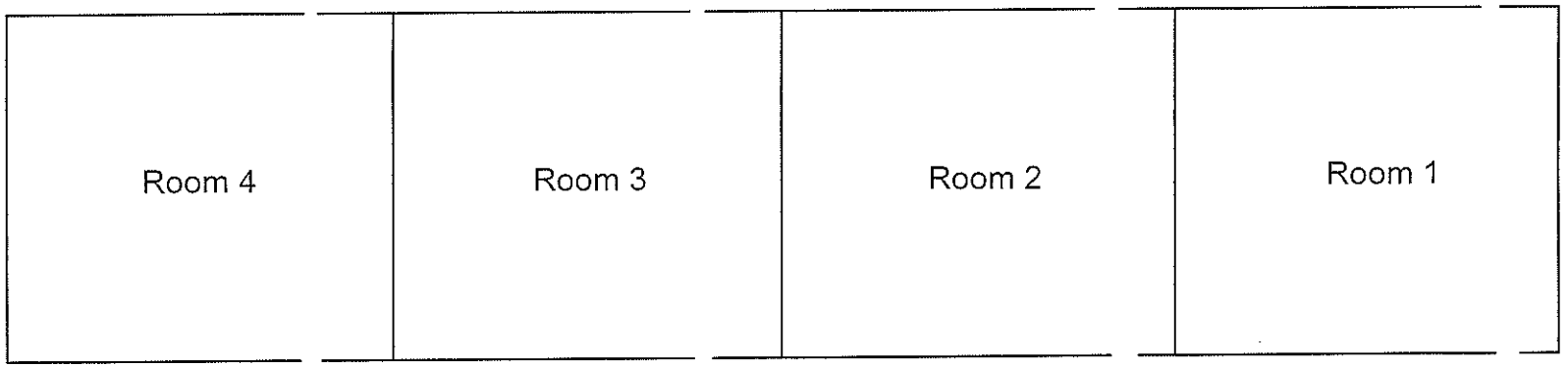
Building B
(Cafeteria)
Exterior

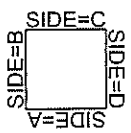


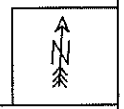


Client: Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** No Lead Based Paint Identified
EXECUTIVE ENVIRONMENTAL HEALTH & SAFETY SIMPLIFIED		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue WestCovina, California 91791

Building D
(Rooms 1 through 4)

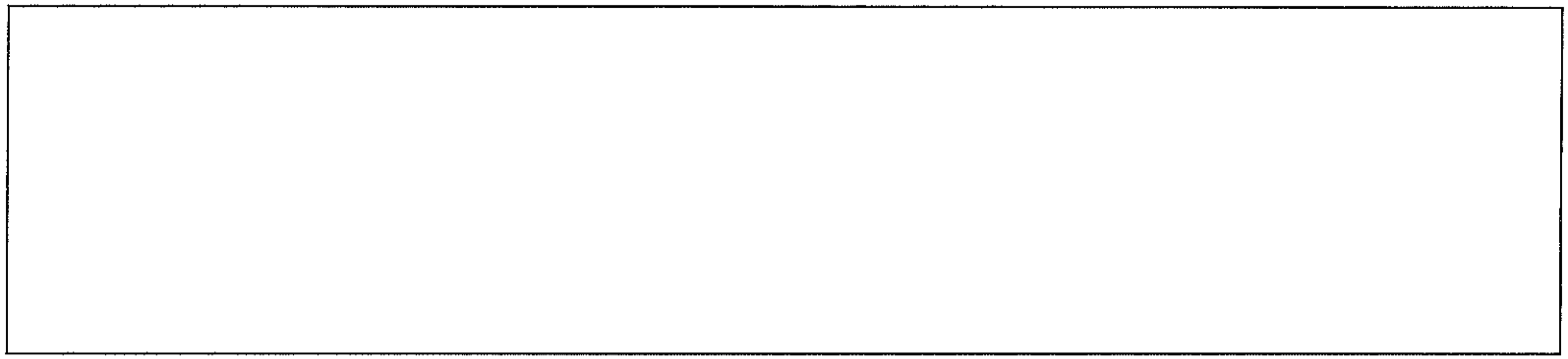


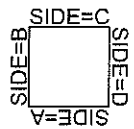




Client: Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** No Lead Based Paint Identified
EXECUTIVE ENVIRONMENTAL HEALTH & SAFETY SIMPLIFIED		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue WestCovina, California 91791

Building D
Exterior





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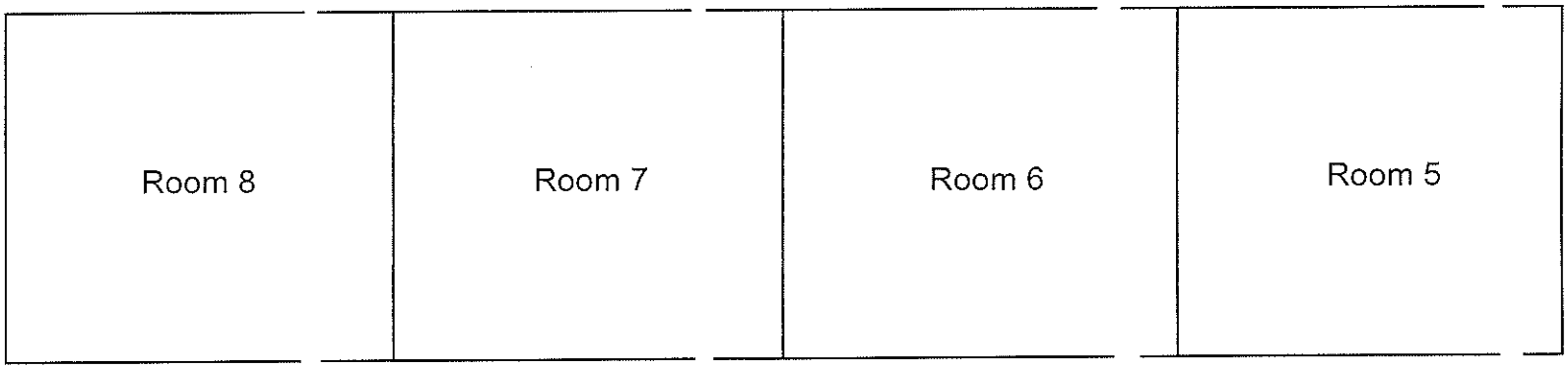
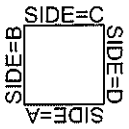
Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** No Lead Based Paint Identified
EXECUTIVE ENVIRONMENTAL **HEALTH & SAFETY SIMPLIFIED**		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue WestCovina, California 91791

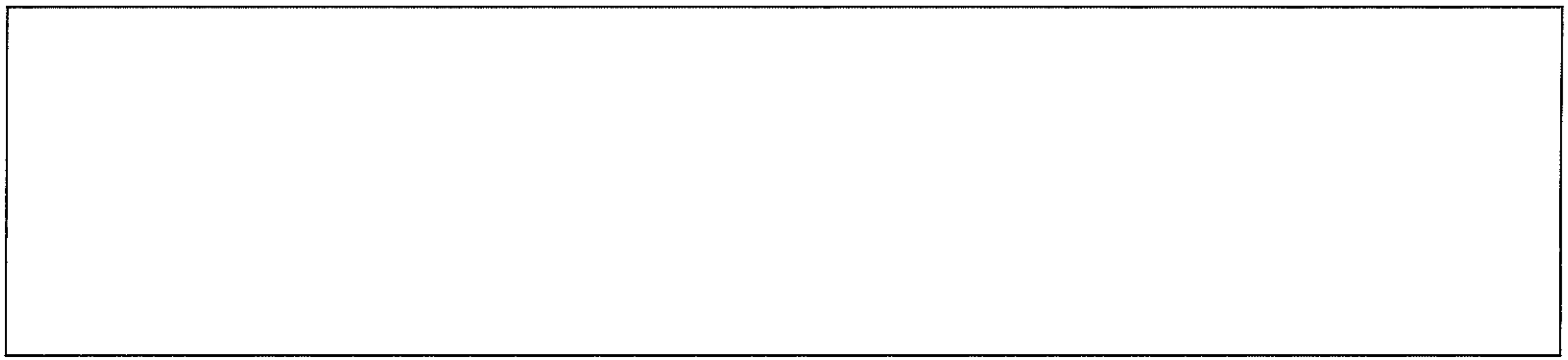
Building E
(Rooms 5 through 8)

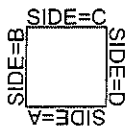




Client: Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** No Lead Based Paint Identified
EXECUTIVE ENVIRONMENTAL **HEALTH & SAFETY SIMPLIFIED**		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue WestCovina, California 91791

Building E
Exterior





Client: Covina-Valley USD	**Project #:** 18-Z0172-0076	**Info:** No Lead Based Paint Identified
EXECUTIVE ENVIRONMENTAL HEALTH & SAFETY SIMPLIFIED		**Site:** Old Pioneer Adult School **Address:** 1651 East Rowland Avenue WestCovina, California 91791

APPENDIX C – LEAD HAZARD EVALUATION REPORT

State of California—Health and Human Services Agency

California Department of Public Health

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation 4/18/18

Section 2 — Type of Lead Hazard Evaluation (Check one box only)

☑ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☐ Other (specify) _____

Section 3 — Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	Zip Code
1651 E. ROWLAND AVE.	WEST COVINA	L.A.	91791

Construction date (year) of structure	Type of structure		Children living in structure?
UNKNOWN	☐ Multi-unit building	☑ School or daycare	☐ Yes ☑ No
	☐ Single family dwelling	☐ Other_____	☐ Don't Know

Section 4 — Owner of Structure (if business/agency, list contact person)

Name	Telephone number
COVINA VALLEY USD (ALICE STRAIGER)	(626) 974-7600

Address [number, street, apartment (if applicable)]	City	State	Zip Code
519 E. BADILLO ST.	COVINA	CA	91723

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☐ No lead-based paint detected ☑ Intact lead-based paint detected ☐ Deteriorated lead-based paint detected

☐ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☐ Other_____

Section 6 — Individual Conducting Lead Hazard Evaluation

Name	Telephone number
George Valverde	(626) 441-7050

Address [number, street, apartment (if applicable)]	City	State	Zip Code
310 E. Foothill Boulevard Suite 200	Arcadia	CA	91006

CDPH certification number	Signature	Date
24605		4/18/18

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

CDPH 8552 (6/07)

APPENDIX D – XRF PERFORMANCE CHARACTERISTICS SHEET

Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A, and XLi 303A.
XLp 300A, XLp 301A, XLp 302A, and XLp 303A.
XLi 700A, XLi 701A, XLi 702A, and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick Concrete Drywall Metal Plaster Wood	1.0 1.0 1.0 1.0 1.0 1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)

	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges of thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*