November 26, 2018

Prepared for:

MR. ROBERT SALERNO
FACILITIES PROJECT SUPERVISOR
FACILITIES SERVICES
CALIFORNIA STATE UNIVERSITY
5151 STATE UNIVERSITY DRIVE
LOS ANGELES, CA 90032

Re:
Asbestos TEM Air Clearance
King Hall Room C129

INTRODUCTION

California State University Los Angeles retained Terra Environmental Services, Inc. to perform final air clearance inspection at King Hall Building for the removal and cleanup of asbestos containing materials associated with the renovation project at Room C129. Using visual inspections and air sampling Terra Environmental can confirm that the work performed by Quality Environmental Inc., on this project was done in compliance with all applicable local, state and federal regulations.

VISUAL INSPECTION

Mr. Ricardo Ayala, Cal-DOSH Certified Site Surveillance Technician (CSST 16-5785) performed the on-site environmental clearance inspection on November 21, 2018 while Quality Environmental Inc. performed the asbestos removal/cleanup work.

Terra Environmental made the following general observations.

- The ACM Ceiling Mastic was removed under OSHA Class I method and SCAQMD Procedure 1 with attached 2 stage decontamination unit.
- The work area (Room C129) was free of ACM dust and debris.
- All ACM Ceiling Mastic (approximately 570 SF) was removed from the ceiling panels and deck.
- The removed ACM was bagged out and no containers remain at the site.
- The abated substrates were sealed with post abatement encapsulant.
- Access to work area was restricted to students and CSU personnel.
- All equipment and materials used during the ACM removal were removed offsite by the abatement contractor.
- Terra Environmental did not monitor the ACM flooring materials removal/cleanup activities by Quality Environmental Inc.

Sampling methodology, sampling procedures and Laboratory

TEM: The AHERA TEM method is the accepted state-of-the-art to determine background or clearance levels of asbestos. The analysis is used to quantify and identify asbestos structures through examination of their morphology crystal structures (through electron diffraction), and elemental composition (through energy dispersive X-ray analysis). The AHERA method will detect and report asbestos structures as small as 0.5 µm in length and 0.02 µm in diameter, well beyond the resolution of optical microscopy. The AHERA TEM clearance level for asbestos is 70 Structures per square millimeter.

Procedures: Clearance sampling for airborne asbestos is conducted after an abatement action and requires the use of sensitive sampling and analysis procedures. The TEM samples are collected on a 25 mm three-piece cassette with ca. 50 mm electrically conductive extension cowl, cellulose ester membrane filter, 0.45 µm pore size with a portable sampling pump calibrated between 0.5 to 16 liters per minute. Terra Environmental representative calibrated the sampling pump to 9.78 LPM at the beginning and end of the sampling procedure.

Laboratory: The TEM samples were transferred following proper chain of custody protocol to LA Testing, located at 520 Mission Street in South Pasadena, California, for analysis. LA Testing is an accredited laboratory for bulk asbestos analysis under the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Certification Number 200232-0). The samples were analyzed by Transmission Electron Microscopy (TEM) by AHERA 40CFR 763 Appendix A Subpart E Method.

LABORATORY RESULTS

Terra Environmental collected a total of thirteen (13) TEM air samples: 5 inside the work area, 5 outside and three blanks.

The sample analysis results revealed the following:

Sample No	Location	Results	AHERA Limits 70 S/mm^2
1	IWA – Room C129 S.	<16.00 S/mm^2	PASS
2	IWA – Room C129 N.E.	<16.00 S/mm^2	PASS
3	IWA – Room C129 N.W.	<16.00 S/mm^2	PASS
4	IWA – Room C129 E.	47.00 S/mm^2	PASS
5	IWA – Room C129 N.	<16.00 S/mm^2	PASS

Outside samples and blanks are analyzed when inside samples exceed 70 S/mm^2.

CONCLUSION

Based on the sample analysis and visual inspection, Terra concludes the asbestos abatement activities in King Hall Building- Room C129 performed by Quality Environmental Inc., were successful and the work area meets the EPA regulatory clearance of <70 S/mm^2.

Respectfully submitted,

Israel Monsalvo, CAC, CDPH-I/A & PM
CA DOSH
CAC #04-3551

LIMITATIONS

The field observations, measurements, and research reported herein are considered sufficient in detail and scope to form a reasonable basis for a site specific TEM air clearance of the subject property. The assessment, conclusions, and recommendations presented herein are based upon the subjective evaluation of limited data. They may not represent all conditions at the subject site as they reflect the information gathered from specific locations. Terra Environmental warrants the findings and conclusions contained herein have been promulgated in accordance with generally accepted industrial hygiene methodology and only for the site described in this report.

Attachments:
Laboratory results and COC
Laboratory Certification
Consultant Certification

LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 /

http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order: 321827045
Customer ID: 32TESV78
Customer PO:
Project ID:

Attention: Lab results
Terra Environmental Services
12631 Imperial Hwy
Suite A225
Santa Fe Springs, CA 90670
Project: 71616 | King Hall Room C129

Phone: (562) 868-3777
Fax:
Received Date: 11/21/2018 17:05 PM
Analysis Date: 11/21/2018
Collected Date: 11/21/2018

Test Report: Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

Sample	Location	Volume (Liters)	Area Analyzed (mm²)	Non Asb	Asbestos Type(s)	#Structures ≥0.5µ < 5µ	#Structures ≥5µ	Analytical Sensitivity (S/cc)	Asbestos Concentration (S/mm²)	Asbestos Concentration (S/cc)
1	IWA - Room C129 S.	1244.50	0.0640	0	None Detected	0	0	0.0048	<16.00	<0.0048
321827045-0001										
2	IWA - Room C129 NE	1244.50	0.0640	0	None Detected	0	0	0.0048	<16.00	<0.0048
321827045-0002										
3	IWA - Room C129 NW	1244.50	0.0640	0	None Detected	0	0	0.0048	<16.00	<0.0048
321827045-0003										
4	IWA - Room C129 E	1225.50	0.0640	0	Chrysotile	3	0	0.0049	47.00	0.0150
321827045-0004										
5	IWA - Room C129 N	1225.50	0.0640	0	None Detected	0	0	0.0049	<16.00	<0.0049
321827045-0005										

Analyst(s)

Feng Liang (5)

Jerry Drapala Ph.D, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Results reported in both structures/cm3 and structures/mm2 are dependent on the volume of air sampled and measured by non-laboratory personnel are not the responsibility of EMSL and are not covered by the laboratory 's NVLAP accreditation. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request.

Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0

Initial report from: 11/21/2018 21:26 PM

OrderID: 321827045

#321827045

Client: CAL STATE L.A

Project: 71616

Address: KING HALL ROOM C129

TERRA ENVIRONMENTAL

Date: 11/21/2018 * ANALYZE IWA ONLY.

ASBESTOS AIR MONITORING

TAT 6 HOURS

SAMPLE ID NUMBER	SAMPLE TYPE	SAMPLE LOCATION	INITIAL FLOW RATE / FINAL FLOW RATE (LIT/MIN)	TIME ON / TIME OFF	TOTAL MINUTES (MIN)	TOTAL VOLUME (LIT)	LABORATORY RESULTS
1	CLEARANCE	IWA · ROOM C129 S.	9.5 / 9.5	1359 / 1610	131	1244.5	
2	"	NE	9.5 / 9.5	1359 / 1610	131	1244.5	
3	"	NW.	9.5 / 9.5	1359 / 1610	131	1244.5	
4	"	E.	9.5 / 9.5	1401 / 1610	129	1225.5	
5	"	N.	9.5 / 9.5	1402 / 1610	129	1225.5	
6	CLEARANCE	OWA SE.	9.5 / 9.5	1420 / 1630	130	1235	
7	"	S.	9.5 / 9.5	1420 / 1630	130	1235	
8	"	W.	9.5 / 9.5	1420 / 1630	130	1235	
9	"	N.	9.5 / 9.5	1420 / 1630	130	1235	
10	"	N.E.	9.5 / 9.5	1420 / 1630	130	1235	
11	BLANK	IWA FIELD	/	/	.30 SEC.		
12	"	OWA FIELD	/	/	.30 SEC.		
13	"	LAB	/	/			

RELINQUISHED BY RICARDO ALANIS
DATE 11/21/2018
TIME 1703

RECEIVED BY (BROKISSCOR) (OI)
DATE 11/21/18
TIME 1705

ANALYSED BY
DATE
TIME

Asbestos TEM AHERA 40 CFR, Part 763

12631 IMPERIAL HWY STE A225. SANTA FE SPRINGS, CA 90670
www.terraeng.com

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200232-0

LA Testing

South Pasadena, CA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2018-07-01 through 2019-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

LA Testing
520 Mission Street
South Pasadena, CA 91030
Mr. Jerry Drapala Ph.D.
Phone: (323) 254-9960 Fax: (323) 254-9982
Email: jdrapala@latesting.com
http://www.latesting.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 200232-0

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

TERRA Environmental


State of California
Division of Occupational Safety and Health
Certified Site Surveillance Technician

Ricardo Ayala
Name

Certification No. 16-5785

Expires on 11/16/19

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.


State of California Department of Public Health

Lead-Related Construction Certificate

Certificate Type

Expiration Date

Supervisor 08/08/2019

Sampling Technician 08/08/2019

270811

Ricardo Ayala

ID #: 27455

Ricardo Ayala
CSST #16-5786
DPH Lead Supervisor / ST # 27455

12631 Imperial Hwy. Suite A225 Santa Fe Springs, CA90670
www.terraeng.com

TERRA Environmental





Israel Monsalvo, CAC, CDPH-I/A & PM
Cal/OSHA-Certified Asbestos Consultant #04-3551
CDPH-Certified Lead I/A, PM # 9699