



March 14, 2016

Project No. 01.GSAVA15.15

Mr. Jonathan Leong
San Francisco Veterans Affairs Medical Center
4150 Clement Street
San Francisco, CA 94116

Subject: Confirmation Asbestos Sampling Report
San Francisco Veterans Affairs Medical Center
Building 1 – Rooms 117, 118 & 119
4150 Clement Street
San Francisco, CA 94116

Dear Mr. Leong:

EnviroApplications, Inc. (EAI) has prepared the following report presenting the results of confirmation asbestos sampling activities at the San Francisco Veterans Affairs Medical Center (SFVAMC), located at 4150 Clement Street, in the City of San Francisco, California (the Site). The objective of the sampling was to sample potential asbestos containing materials in Building 1, Rooms 117, 118 & 119, which are scheduled for renovation which may disturb suspect asbestos containing materials (ACMs). Samples were collected using the methods presented in the Federal Asbestos Hazard Emergency Response Act (AHERA) regulations (40 CFR, Part 763) as a guideline. A brief discussion of the findings are presented herein.

SAMPLING ACTIVITIES

On March 11, 2016, as part of the sampling activities, 8 asbestos bulk material samples were collected from various floor finishes and from the fume hoods. All samples were submitted to Micro Analytical Laboratories, Inc. (MAL), of Emeryville, California. Samples containing multiple layers were separated by layer at the laboratory and analyzed as individual samples, in accordance with the analytical method. Potential ACM samples were analyzed using Polarized Light Microscopy (PLM) by U.S. Environmental Protection Agency (EPA) Method 600/R-93/116. All laboratory analyses were reported to have been conducted in accordance with methodology approved by the EPA. MAL is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program.

FINDINGS

According to the EPA, ACM is defined as material containing more than one percent (>1.0%) asbestos by volume. The California Occupational Safety and Health Administration (Cal-OSHA) defines ACM, for the purpose of worker protection, as material containing greater than one tenth of one percent (>0.1%) asbestos by volume. The following material was found to be ACM:

- **12" Off White Tiles and Associated Mastic located in Room 118/119 (2% (Tile) - 10% (Mastic) Chrysotile Asbestos)**
- **12" Olive Tiles and Associated Mastic located in Room 118/119 (2% (Tile) - 10% (Mastic) Chrysotile Asbestos)**
- **Tan Tiles and Associated Mastic located in Room 117 (3% (Tile) - 10% (Mastic) Chrysotile Asbestos; The tan tile is located underneath the 12" Grey Floor Tile with Flecks)**

- **Fume Hood Panels located in Room 117 inside the fume hoods (40% Chrysotile Asbestos)**

A further description of the material sample locations and laboratory results are provided in the enclosures. Material sample locations are described in the attached table and shown on the attached photographs.

Recommendations

EAI recommends that identified ACMs be removed by a state-licensed abatement contractor prior to any activities that may disturb the material. Should suspect materials be found that have not been previously sampled, it is recommended that a sample be collected and the material(s) remain undisturbed until the sample analytical results are obtained. Additionally, *EAI* recommends that during activities that could cause disturbance creating airborne dust, respiratory protection be used. In general, work should be conducted in accordance with federal, state and local regulations, including, but not limited to, the EPA National Emission Standard for Hazardous Air Pollutants (NESHAP), the California Occupational Safety and Health Administration (Cal-OSHA) and the Bay Area Air Quality Management District (BAAQMD). A summary of asbestos regulations is attached herein.

If you have any questions or comments regarding the information enclosed herein, please contact the undersigned at your convenience.

Respectfully submitted,

EnviroApplications, Inc.



Amanda K. Santifer, C.A.C.
Project Scientist
CA Certified Asbestos Consultant ID#05-3888

Enclosures: Statement of Limitations
 Table 1 – Summary of Analytical Results
 Photographic Log
 Floor Plan with Sample Locations
 Summary of Current Regulations
 Laboratory Analytical Reports and Chain-of-Custody

STATEMENT OF LIMITATIONS

The conclusions and recommendations contained in this report/assessment are based upon professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted standards and practices applicable to this location and are subject to the following inherent limitations:

- The data and findings presented in this report are valid as of the dates when the investigations were performed. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the site, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in the report.
- The data reported and the findings, observations, and conclusions expressed in the report are limited by the Scope of Work.
- Unless otherwise stated in the report, because of the limitations stated above, the findings observations, and conclusions expressed by *EAI* in this report are not, and should not be, considered an opinion concerning the compliance of any past or present owner or operator of the site with any federal, state or local law or regulation.
- No warranty or guarantee, whether express or implied, is made with respect to the data or the reported findings, observations, and conclusions, all of which, however, accurately reflect site conditions in existence at the time of investigation.
- *EAI* reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, state or local governmental agencies. Any use constitutes acceptance of the limits of *EAI's* liability. *EAI's* liability extends only to those parties contracted to complete this project and not to any other parties who may obtain the Report. Issues raised by the report should be reviewed by appropriate legal counsel.
- This report is based, in part, on unverified information supplied to *EAI* by third-party sources. While efforts have been made to substantiate this third-party information, *EAI* cannot guarantee its completeness or accuracy.

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
San Francisco Veterans Affairs Medical Center
4150 Clement Street
San Francisco, CA 94116

SAMPLE #	SAMPLING LOCATION	MATERIAL DESCRIPTION	ANALYTICAL RESULTS	FRIABLE (Y/N)	CONDITION	HA#
1A	Bldg 1 - Room 118/119 - South Under Counter	12" Off White Tile and Olive Streaks with Black Mastic Over Brown Sheet Flooring with Burlap Backing	2% CH (White Tile) 10% CH (Mastic)	N	Good	1
1B	Bldg 1 - Room 118/119 - NE Corner	12" Off White Tile and Olive Streaks with Black Mastic Over Brown Sheet Flooring with Burlap Backing	2% CH (White Tile) 10% CH (Mastic)	N	Good	1
2A	Bldg 1 - Room 118/119 - West Dividing Wall	12" Olive Tile with Black and Yellow Mastic Over Brown Floor Sheeting with Burlap Backing	2% CH (Olive Tile) 10% (Mastic)	N	Good	2
2B	Bldg 1 - Room 118/119 - Behind Door	12" Olive Tile with Black and Yellow Mastic Over Brown Floor Sheeting with Burlap Backing	2% CH (Olive Tile)	N	Good	2
3A	Bldg 1 - Room 117 - SW Area	12" White Tile with Grey Flecks with Black Mastic Over Tan Tile with Black Mastic Over Brown Floor Sheeting with Burlap Backing	3% CH (Tan Floor Tile) 10% CH (Mastic)	N	Good	3

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
San Francisco Veterans Affairs Medical Center
4150 Clement Street
San Francisco, CA 94116

SAMPLE #	SAMPLING LOCATION	MATERIAL DESCRIPTION	ANALYTICAL RESULTS	FRIABLE (Y/N)	CONDITION	HA#
3B	Bldg 1 - Room 117 - East Alcove	12" White Tile with Grey Flecks with Black Mastic Over Tan Tile with Black Mastic Over Brown Floor Sheeting with Burlap Backing	3% CH (Tan Floor Tile) 10% CH (Mastic)	N	Good	3
3C	Bldg 1 - Room 117A - NW Corner	12" White Tile with Grey Flecks with Black Mastic Over Tan Tile with Black Mastic Over Brown Floor Sheeting with Burlap Backing	3% CH (Tan Floor Tile) 10% CH (Mastic)	N	Good	3
4A	Bldg 1 - Room 117 - NE Corner	Fume Hood Panels	40% CH	N	Good	4

Notes:

CH = Chrysotile Asbestos

HA = Homogenous Area

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Veterans Affairs	Job Number:	01.GSAVA15.15
Site Name:	Veterans Affairs Medical Center San Francisco	Location:	4150 Clement Street San Francisco, CA 94116
Photographer:	M. Chin	Date:	March 11, 2016

Photograph No. 1



Room 118/119

Photograph No. 2



Room 117/117A

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Veterans Affairs	Job Number:	01.GSAVA15.15
Site Name:	Veterans Affairs Medical Center San Francisco	Location:	4150 Clement Street San Francisco, CA 94116
Photographer:	M. Chin	Date:	March 11, 2016

Photograph No. 3



Sample 1A

Photograph No. 4



Sample 1B

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Veterans Affairs	Job Number:	01.GSAVA15.15
Site Name:	Veterans Affairs Medical Center San Francisco	Location:	4150 Clement Street San Francisco, CA 94116
Photographer:	M. Chin	Date:	March 11, 2016

Photograph No. 5



Sample 2A

Photograph No. 6



Sample 2B

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Veterans Affairs	Job Number:	01.GSAVA15.15
Site Name:	Veterans Affairs Medical Center San Francisco	Location:	4150 Clement Street San Francisco, CA 94116
Photographer:	M. Chin	Date:	March 11, 2016

Photograph No. 7



Sample 3A

Photograph No. 8



Sample 3B

ENVIROAPPLICATIONS, INC.
PHOTOGRAPHIC RECORD

Client:	Veterans Affairs	Job Number:	01.GSAVA15.15
Site Name:	Veterans Affairs Medical Center San Francisco	Location:	4150 Clement Street San Francisco, CA 94116
Photographer:	M. Chin	Date:	March 11, 2016

Photograph No. 9
















Sample 3C

Photograph No. 10






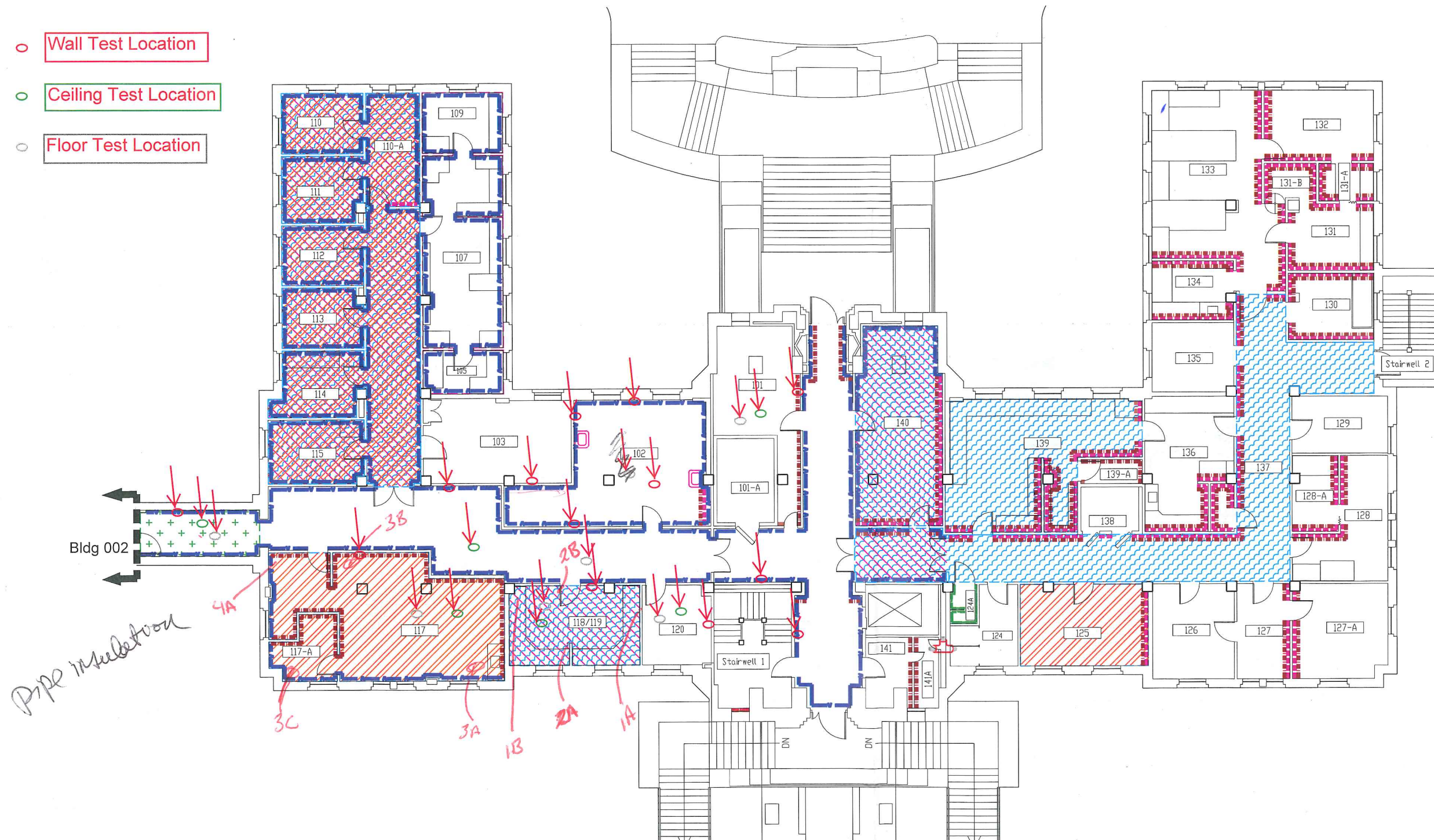
Sample 4A

Explanation:

- | | | | |
|---|-----------------------------------|---|--|
| 22 | Room Number |  | ACM Pipe Insulation |
|  | ACM Floor Tile Mastic |  | ACM Gypsum Wallboard System |
|  | ACM Floor Tile |  | ACM Skim Coat |
|  | ACM Vinyl Sheet Flooring Mastic |  | ACM Ceramic Wall Tile And Adhesive And Grout |
|  | ACM Wallboard Ceiling And Texture |  | ACM Wall Texture |
|  | ACM Ceiling Tile |  | ACM Window Caulking |
|  | ACM Black Sink Undercoating |  | ACM Mirror Adhesive |

This drawing has been altered based on information provided to IHI by the San Francisco VAMC. Some ACM locations have been removed to reflect conditions following asbestos-abatement projects. IHI did not verify any of the modifications. IHI makes no warrantee regarding the accuracy of any of the modifications on this drawing.

-  Wall Test Location
-  Ceiling Test Location
-  Floor Test Location



SF VA Medical Center
Building : 001
First Floor

Asbestos Material Location

SUMMARY OF CURRENT REGULATIONS

The following is a summary of current state and federal regulations which contain requirements related to the performance of building surveys for asbestos. These summaries are not intended to be all inclusive and do not contain every aspect of the regulations discussed. Regulations pertaining to the removal and disposal of ACMs are not included.

EPA NESHAP

Under the National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, regulation, no visible emissions are allowed during building demolition or renovation activities which involve regulated asbestos-containing materials (RACMs). For this reason, all buildings must be surveyed for ACMs prior to demolition or renovation. The EPA and/or the local air quality management district which implements EPA actions must be notified prior to any building demolition even if no ACMs are present. RACM is defined as any material with an asbestos content of greater than one percent and is friable, or Category I non-friable ACM that has or will become friable, or Category II non-friable ACM that may become or will become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation.

According to NESHAP, ACM is material containing more than one percent asbestos as determined using the methods specified in Appendix A, Subpart E, 40 CFR Part 763, Section 1, PLM. The NESHAP classifies ACM as friable or non-friable. Friable ACM is ACM that contains more than one percent asbestos and when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable ACM also contains more than one percent asbestos and is further classified as either Category I ACM or Category II ACM. The materials are distinguished by their potential to release fibers when damaged. Category II ACMs are much more likely to release fibers when damaged. Category I ACM includes asbestos-containing gaskets, packings, resilient floor coverings and mastics, and asphalt roofing products. Asphalt roofing products are those products which contain asbestos and include built-up roofing, asphalt-containing single ply membrane systems, asphalt shingles, asphalt-containing underlayment felts, asphalt-containing roof coatings and mastics, and asphalt-containing base flashings. Category II ACM includes all other non-friable ACM; for example: asbestos cement shingles, asbestos cement tiles, and transite boards or panels.

Bay Area Air Quality Management District Regulation 11 (Hazardous Pollutants) Rule 2 (Asbestos Demolition, Renovation and Manufacturing)

In response to the NESHAP requirements, the Bay Area Air Quality Management District (BAAQMD) implemented Regulation 11, Rule 2 that pertains to demolition/renovation activities including the removal and associated disturbance of ACMs. These requirements for demolition and renovation activities include asbestos surveying, notification, ACM removal procedures, time schedules, ACM handling and cleanup procedures, storage, disposal, and landfill requirements for asbestos-containing waste materials. Rule 1403 is applicable to owners and operators of any demolition or renovation activity and associated disturbance of ACMs. Failure to comply with Rule 2 requirements could result in violations that carry daily penalties (penalties assessment is based upon the size of the project and severity of noncompliance).

AHERA

AHERA requires performance of asbestos surveys and the development of Asbestos Management Plans for all of the nation's primary and secondary schools. The general procedures mandated under AHERA are considered the industry standard and are used as guidelines for all surveys performed by *EAI*.

California Occupational Safety and Health Administration (Cal-OSHA)

Per Cal-OSHA standards 1926.1101, ACMs are defined as any materials with an asbestos content greater than one-tenth of one percent ($>0.1\%$) and are further classified as Class I, Class II, Class III or Class IV ACM. The materials are distinguished by their potential to release fibers when damaged. OSHA prescribes specific engineering controls and work practices for each Class of ACM.

- Class I This Class refers to ACMs identified as Thermal System Insulation (TSI) or surfacing (sprayed-on or troweled-on) materials. These materials are generally considered friable.
- Class II This Class refers to ACMs identified that are not Thermal System Insulation (TSI) or surfacing materials. These materials are generally considered non-friable.
- Class III This Class refers to repair and maintenance operations of all identified ACMs.
- Class IV This Class refers to incidental contact with identified ACMs such as custodial staff.

California Health and Safety Code

The California Health and Safety Code 25915 (former Connelly Bill) requires all building owners in the State of California to provide written notification to employees, tenants, and contractors of the presence and location of asbestos-containing construction materials (ACCMs) within their buildings. Some exclusions to the notification rule for restricted access areas are

allowed. All documentation related to asbestos surveys (and air monitoring) must be made available to employees, tenants, or contractors for review. ACCMs are defined as any materials with an asbestos content greater than one-tenth of one percent ($>0.1\%$).

The California Health and Safety Code also require that a seller with any knowledge of ACMs on a property disclose such information or knowledge to other parties involved in a real estate transaction.

Asbestos Removal and Building Demolition/Renovation

In accordance with the EPA's NESHAPs regulation and the SCAQMD, all facilities planned for renovation or demolition must be surveyed for ACMs prior to the planned renovation or demolition. Subsequent removal of identified ACMs is also required. Removal involves, to the greatest extent practical, the complete removal, disposal, and replacement, if necessary, of the asbestos-containing building material (ACBM). Removal usually also requires encapsulation of the remaining structure to lock down residual fibers which may exist. Removal of ACMs is required prior to renovation and/or demolition activities.

The EPA and the AQMD require removal of all ACMs prior to demolition or renovation. ACMs include friable ACMs, (Class I) which have or will become friable or that has been subjected to sanding, drilling, grinding, cutting, or abrading; and Class II ACMs that may become or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation.

Trace ACMs are asbestos materials with less than 1 percent, but greater than 0.1 percent asbestos. These ACMs require an abatement plan during demolition that is protective of worker health and safety. However, unlike an EPA ACM, trace ACMs do not necessitate special disposal requirements.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Mike Benefield
Terracon Consultants, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:
JOB NO. R1167165
SFVA
BUILDING 1

Micro Log In **216345**
Total Samples 17
Date Sampled 03/11/2016
Date Received 03/11/2016
Date Analyzed 03/11/2016

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT OTHER MATERIALS

Client #: 1A		
Micro #: 216345-01A Analyst: RL HM #1 - 12" OFF WHITE TILE AND OLIVE STREAKS WITH BLACK MASTIC OVER BROWN SHEET FLOORING WITH BURLAP BACKING ROOM 118 / 119 - SOUTH UNDER COUNTER	FLOOR TILE (WHITE): 2% CHRYSOTILE ASBESTOS MASTIC (BLACK): 10% CHRYSOTILE ASBESTOS	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 1A		
Micro #: 216345-01B Analyst: RL HM #1 - 12" OFF WHITE TILE AND OLIVE STREAKS WITH BLACK MASTIC OVER BROWN SHEET FLOORING WITH BURLAP BACKING ROOM 118 / 119 - SOUTH UNDER COUNTER <i>LAB NOTE: BROWN SHEET FLOORING</i>	FLOORING (BROWN): NONE DETECTED BACKING: NONE DETECTED	5 % CELLULOSE NFM: BINDER, OTHER, MISCELLANEOUS.
Client #: 1B		
Micro #: 216345-02A Analyst: RL HM #1 - 12" OFF WHITE TILE AND OLIVE STREAKS WITH BLACK MASTIC OVER BROWN SHEET FLOORING WITH BURLAP BACKING ROOM 118 / 119 - NORTHEAST CORNER <i>LAB NOTE: OFF WHITE FLOOR TILE</i>	FLOOR TILE (WHITE): 2% CHRYSOTILE ASBESTOS MASTIC (BLACK): 10% CHRYSOTILE ASBESTOS LEVELING COMPOUND (TAN): NONE DETECTED	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 1B		
Micro #: 216345-02B Analyst: RL HM #1 - 12" OFF WHITE TILE AND OLIVE STREAKS WITH BLACK MASTIC OVER BROWN SHEET FLOORING WITH BURLAP BACKING ROOM 118 / 119 - NORTHEAST CORNER <i>LAB NOTE: BROWN SHEET FLOORING</i>	FLOORING (BROWN): NONE DETECTED BACKING: NONE DETECTED	5 % CELLULOSE NFM: BINDER, OTHER, MISCELLANEOUS.
Client #: 2A		
Micro #: 216345-03 Analyst: RL HM #2 - 12" OLIVE TILE WITH BLACK AND YELLOW MASTIC, OVER BROWN SHEET FLOORING AND BURLAP BACKING ROOM 118 / 119 - WEST BUILDING WALL	FLOOR TILE: 2% CHRYSOTILE ASBESTOS MASTIC (BLACK / YELLOW): 10% CHRYSOTILE ASBESTOS LEVELING COMPOUND (TAN): NONE DETECTED	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.

Technical Supervisor: *[Signature]*

Gamini Ranatunga, Ph.D.

3/11/2016

Date Reported

NVLAP Lab Code 101872-0, CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101. Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials (fibrous and non-fibrous) are listed. This analysis shall not be construed as conclusive for the presence of any reported materials other than asbestos, or for the absence of any non-asbestos material. Common interferences include, but are not limited to: cellulose, fibrous glass, other man-made vitreous fibers, synthetic fibers, elongate fragments of calcium sulfate, talc, wollastonite, animal hair, and other miscellaneous elongate particles. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. If more than one distinct sample is received in the same container, samples shall be marked with letters and analyzed separately. Layers within a sample are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Reanalyzed samples are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full, without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed. NFM = Non-fibrous materials.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Mike Benefield
Terracon Consultants, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:
JOB NO. R1167165
SFVA
BUILDING 1

Micro Log In **216345**
Total Samples 17
Date Sampled 03/11/2016
Date Received 03/11/2016
Date Analyzed 03/11/2016

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT OTHER MATERIALS

Client #: 2B		
Micro #: 216345-04A Analyst: RL AF HM #2 - 12" OLIVE TILE WITH BLACK AND YELLOW MASTIC, OVER BROWN SHEET FLOORING AND BURLAP BACKING ROOM 118 / 119 - BEHIND DOOR LAB NOTE: FLOOR TILE	FLOOR TILE: 2% CHRYSOTILE ASBESTOS MASTIC (BROWN / YELLOW): NONE DETECTED	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 2B		
Micro #: 216345-04B Analyst: RL AF HM #2 - 12" OLIVE TILE WITH BLACK AND YELLOW MASTIC, OVER BROWN SHEET FLOORING AND BURLAP BACKING ROOM 118 / 119 - BEHIND DOOR LAB NOTE: BROWN SHEET FLOORING	FLOORING (BROWN): NONE DETECTED BACKING: NONE DETECTED	5 % CELLULOSE NFM: BINDER, OTHER, MISCELLANEOUS.
Client #: 3A		
Micro #: 216345-05A Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117 - SOUTHWEST AREA LAB NOTE: TOP FLOOR TILE	FLOOR TILE: NONE DETECTED MASTIC (BLACK): NONE DETECTED	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 3A		
Micro #: 216345-05B Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117 - SOUTHWEST AREA LAB NOTE: MIDDLE FLOOR TILE	FLOOR TILE: 3% CHRYSOTILE ASBESTOS MASTIC (BLACK): 5% CHRYSOTILE ASBESTOS	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 3A		
Micro #: 216345-05C Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117 - SOUTHWEST AREA LAB NOTE: BOTTOM FLOOR TILE	FLOORING: NONE DETECTED BACKING: NONE DETECTED	5 % CELLULOSE NFM: BINDER, OTHER, MISCELLANEOUS.

Technical Supervisor: 

Gamini Ranatunga, Ph.D.

3/11/2016

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101. Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials (fibrous and non-fibrous) are listed. This analysis shall not be construed as conclusive for the presence of any reported materials other than asbestos, or for the absence of any non-asbestos material. Common interferences include, but are not limited to: cellulose, fibrous glass, other man-made vitreous fibers, synthetic fibers, elongate fragments of calcium sulfate, talc, wollastonite, animal hair, and other miscellaneous elongate particles. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. If more than one distinct sample is received in the same container, samples shall be marked with letters and analyzed separately. Layers within a sample are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Reanalyzed samples are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full, without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed. NFM = Non-fibrous materials.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Mike Benefield
Terracon Consultants, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:
JOB NO. R1167165
SFVA
BUILDING 1

Micro Log In **216345**
Total Samples 17
Date Sampled 03/11/2016
Date Received 03/11/2016
Date Analyzed 03/11/2016

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT OTHER MATERIALS

Client #: 3B		
Micro #: 216345-06A Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117 - EAST ALCOVE LAB NOTE: TOP FLOOR TILE	FLOOR TILE: NONE DETECTED MASTIC (BLACK): NONE DETECTED	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 3B		
Micro #: 216345-06B Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117 - EAST ALCOVE LAB NOTE: MIDDLE FLOOR TILE	FLOOR TILE: 3% CHRYSOTILE ASBESTOS MASTIC (BLACK): 5% CHRYSOTILE ASBESTOS	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 3B		
Micro #: 216345-06C Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117 - EAST ALCOVE LAB NOTE: BOTTOM FLOOR TILE	FLOORING: NONE DETECTED BACKING: NONE DETECTED MASTIC (BROWN): NONE DETECTED	20 % CELLULOSE NFM: BINDER, OTHER, MISCELLANEOUS.
Client #: 3C		
Micro #: 216345-07A Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117A - NORTHWEST CORNER LAB NOTE: TOP FLOOR TILE	FLOOR TILE: NONE DETECTED MASTIC (BLACK): NONE DETECTED	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.
Client #: 3C		
Micro #: 216345-07B Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117A - NORTHWEST CORNER LAB NOTE: MIDDLE FLOOR TILE	FLOOR TILE: 3% CHRYSOTILE ASBESTOS MASTIC (BLACK): 5% CHRYSOTILE ASBESTOS	NFM: SYNTHETIC MATERIAL, CARBONATE, ADHESIVE.

Technical Supervisor: 

Gamini Ranatunga, Ph.D.

3/11/2016

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101. Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials (fibrous and non-fibrous) are listed. This analysis shall not be construed as conclusive for the presence of any reported materials other than asbestos, or for the absence of any non-asbestos material. Common interferences include, but are not limited to: cellulose, fibrous glass, other man-made vitreous fibers, synthetic fibers, elongate fragments of calcium sulfate, talc, wollastonite, animal hair, and other miscellaneous elongate particles. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. If more than one distinct sample is received in the same container, samples shall be marked with letters and analyzed separately. Layers within a sample are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Reanalyzed samples are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full, without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed. NFM = Non-fibrous materials.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Mike Benefield
Terracon Consultants, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:
JOB NO. R1167165
SFVA
BUILDING 1

Micro Log In **216345**
Total Samples 17
Date Sampled 03/11/2016
Date Received 03/11/2016
Date Analyzed 03/11/2016

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT OTHER MATERIALS

Client #: 3C		
Micro #: 216345-07C Analyst: RL HM #3 - 12" WHITE TILE AND GREY FLECKS WIT BLACK MASTIC OVER TAN TILE AND BLACK MASTIC OVER BROWN RSF AND BURLAP BACKING ROOM 117A - NORTHWEST CORNER LAB NOTE: BOTTOM FLOOR TILE	FLOORING: NONE DETECTED BACKING: NONE DETECTED	20 % CELLULOSE NFM: BINDER, OTHER, MISCELLANEOUS.
Client #: 4A		
Micro #: 216345-08 Analyst: RL HM #4 - PANELS IN FUME HOOD ROOM 117 - FUME HOOD NORTHEAST	40% CHRYSOTILE ASBESTOS	NFM: SYNTHETIC MATERIAL, CARBONATE.

Technical Supervisor: *[Signature]*

Gamini Ranatunga, Ph.D.

3/11/2016

Date Reported

NVLAP Lab Code 101872-0, CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101. Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials (fibrous and non-fibrous) are listed. This analysis shall not be construed as conclusive for the presence of any reported materials other than asbestos, or for the absence of any non-asbestos material. Common interferences include, but are not limited to: cellulose, fibrous glass, other man-made vitreous fibers, synthetic fibers, elongate fragments of calcium sulfate, talc, wollastonite, animal hair, and other miscellaneous elongate particles. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. If more than one distinct sample is received in the same container, samples shall be marked with letters and analyzed separately. Layers within a sample are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Reanalyzed samples are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full, without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed. NFM = Non-fibrous materials.

<input type="checkbox"/> PM - S. Steiner spsteiner@terracon.com <input type="checkbox"/> PM - M. Bryant mnbryant@terracon.com <input checked="" type="checkbox"/> PM - M. Benefield msbenefield@terracon.com	<input type="checkbox"/> PM - K. Schroeter kmschroeter@terracon.com <input type="checkbox"/> PM - T. Kattchee takattchee@terracon.com <input type="checkbox"/> PM D. Ufferfilge dufferfilge@terracon.com	<input type="checkbox"/> PM - K. Pilgrim kmpilgrim@terracon.com <input type="checkbox"/> PM - W. Frieszell wmfrieszell@terracon.com <input type="checkbox"/> PM - M. Bishop mrbishop@terracon.com	ACM BULK SAMPLE DATA SHEET <input checked="" type="checkbox"/> PLM Analysis (Analyze all samples) <input type="checkbox"/> Stop Analysis at First Positive <input type="checkbox"/> Point Count Analysis (400-point)
			PAGE 1 OF 1

Project Name/ Address/ Building No. SFVA - BLDG 1Project# 21167165 Sampled By: JLC Sampling Date: 3/11/16Sample(s) sent to: ☒ MAL ☐ AERO ☐ EMLAB ☐ OtherTAT ☐ Rush ☐ 24HRS ☐ 48HR ☒ 3-5 days

INVOICE: AMANDA SANTIFER at ENVIROAPPLICATIONS

HM#	1	Material Description	12" OFFWHITE TILE & GROUT STREAKS w/ BLACK MASTIC
Sample ID		Sample Location & Material Location	Quantity: OVER BROWN
	1A	Rm 118/119 - SOUTH UNDER COUNTER	SHEET FLOORING
	1B	↓ - NE CORNER	w/ BURLAP BACKING
			240 sq ft
HM#	2	Material Description:	12" OLIVE TILE w/ BLACK & YELLOW MASTIC, OVER BROWN
Sample ID		Sample Location & Material Location	Quantity: SHEET FLOORING w/ BURLAP BACKING
	2A	Rm 118/119 - WEST DIVIDING WALL	
	2B	↓ - BEHIND DOOR	
			20 sq ft
HM#	3	Material Description:	12" WHITE tile & GREY FLECKS w/ BLACK MASTIC OVER
Sample ID		Sample Location & Material Location	Quantity: TAD TILE & BLACK MASTIC
	3A	Rm 117 - SW AREA	OVER BROWN RSF & BURLAP BACKING
	3B	↓ - EAST ALCOVE	
	3C	Rm 117A - NW CORNER	
			360 sq ft
HM#	4	Material Description:	PANELS IN FUME HOOD
Sample ID		Sample Location & Material Location	Quantity: 45 sq ft
	4A	Rm 117 - FUME HOOD - NE CORNER	
HM#		Material Description:	
Sample ID		Sample Location & Material Location	Quantity:

Relinquished By: H. Chu

Received By: _____

Relinquished By: _____

Received By: _____

Signature: [Signature]Signature: [Signature]

Signature: _____

Signature: _____

Date/Time: 3/11/16Date/Time: 3/11/16 11:53

Date/Time: _____

Date/Time: _____