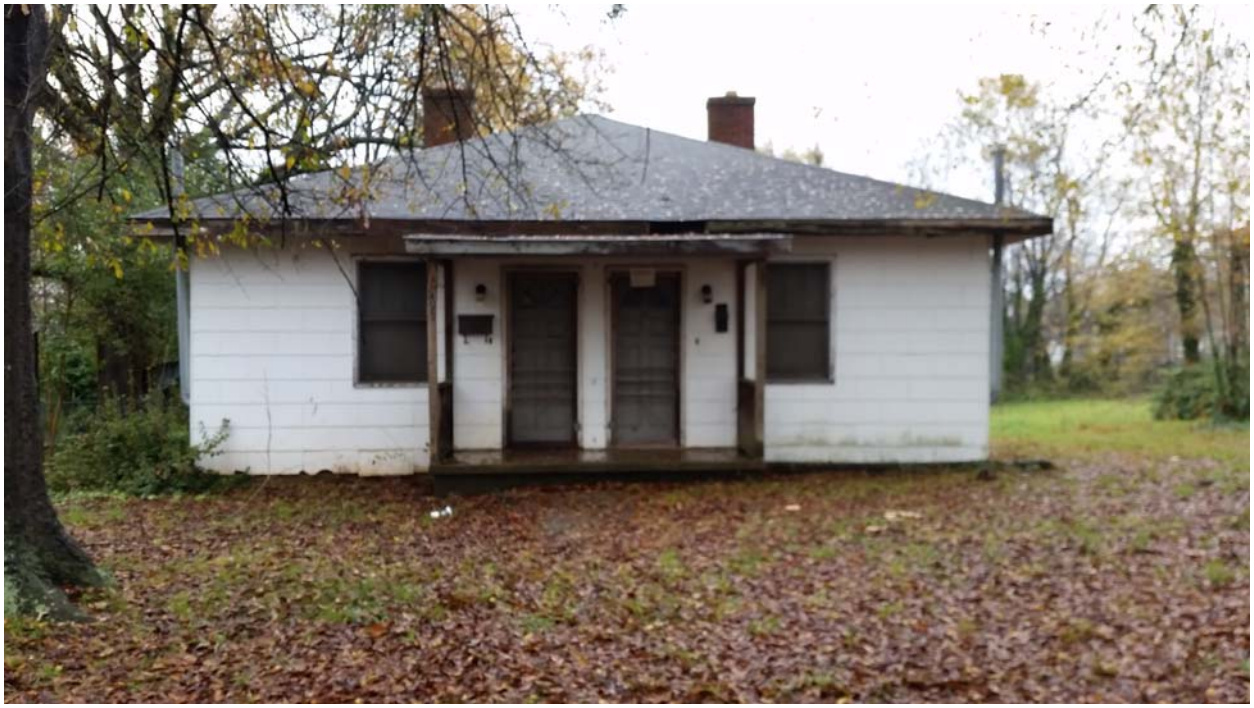

Asbestos & Lead Based Paint Assessment

City of Spartanburg
197 Bon Air Avenue
Spartanburg, South Carolina

Prepared for:
The City of Spartanburg
201 Caulder Avenue
Spartanburg, South Carolina

Prepared by:
Apex Environmental Management, Inc.
7 Winchester Court
Mauldin, South Carolina 29662

Project Number: 0815-163

December 15, 2015

Environmental Management

Environmental Management

7 Winchester Court
Mauldin, SC 29662
864.404.3210 office
864.404.3213 fax
www.apex-ehs.com

SERVICES

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Environmental Site Assessments

Hazard Communication

Apex Project Number 0815-163

December 15, 2015

Mr. Demian Carpenter
City of Spartanburg
P.O. Box 1749
Spartanburg, South Carolina 29304

Reference: Asbestos and Lead-Based Paint Assessment Services
197 Bon Air Avenue
Spartanburg, South Carolina

Dear Mr. Carpenter:

Apex Environmental Management, Inc. (Apex) is pleased to provide the results of our assessment services for the referenced property.

This report and the associated attachments summarize our evaluation of the conditions observed at the project site. The findings presented by Apex are based upon sampling performed in the subject building. There is a chance that undetected ACM may exist in the building between walls or in other areas that would only be exposed during demolition or structural renovations. Should material be discovered that could potentially contain asbestos during the demolition process, additional samples of the material should be collected by a licensed asbestos inspector and submitted to an accredited laboratory for analytical interpretation. Our recommendations are based on the guidelines presented in EPA and/or OSHA regulations.

Please note that this document is not a specification for asbestos removal. It does not contain means and methods for abatement. Quantities are estimates and contractors must verify amounts prior to bidding or removal. If you are planning an abatement project, please contact Apex to discuss the requirements. Use of this document without the express written consent of Apex is at the sole risk of the user and or/abatement contractor.

The conclusions and/or recommendations contained in this report are based on our understanding of the applicable standards at the time this report was prepared. No warranty, expressed or implied, is made. If you have any questions please feel free to contact us at (864) 404-3210.

Respectfully submitted,
APEX ENVIRONMENTAL MANAGEMENT, INC.

Thomas H. Oliver
Director of Operations

Appendices

ASBESTOS AND LEAD BASED PAINT ASSESSMENT

CITY OF SPARTANBURG
197 BON AIR AVENUE
SPARTANBURG, SOUTH CAROLINA

APEX PROJECT NO. 0815-163

TABLE OF CONTENTS

SECTION

SECTION I

Asbestos & Lead Evaluation Report

ASBESTOS/LEAD EVALUATION REPORT
APEX PROJECT NUMBER: 0815-163

Date:	12/15//2015	Page Number:	1 of 4
Client:	City of Spartanburg	Client Contact:	Mr. Demian Carpenter
Client Address:	201 Caulder Avenue Spartanburg, SC 29304	Client Phone Number:	
Project:	Asbestos and Lead Evaluation		
Property Address:	197 Bon Air Avenue Spartanburg, SC		
Assessor:	Rebecca Shultz	Date of Assessment:	12/2/2015
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number	
Purpose of Assessment:	Demolition	Age of Structure:	60+ years
Building Type:	Residential/Duplex	Number of Stories:	1
Foundation:	CMU Block Crawlspace	Approximate Square Footage	1,350 SF

EXTERIOR BUILDING MATERIALS
Pitched wooden roof with shingles felt.
Transite siding.
Wooden doors & windows.
Window glazing.
No caulk on doors.
Chimney mastic assumed positive on 2 chimneys.

INTERIOR BUILDING MATERIALS
Plaster with finish.
Wooden floors.
Multiple types & layers of vinyl floors & mastics.
Ceiling tiles.

SCOPE OF THE SURVEY

The objectives of the asbestos and lead assessment included the following:

- Identification of suspect asbestos-containing material (ACM) and lead based paints (LBP) in readily observable locations. Limited demolition of building finishes was conducted.
- Asbestos survey with sample collection by a South Carolina accredited inspector.
- Suspect ACM analysis by polarized light microscopy (PLM) utilizing CEI Labs (CEI) as an NVLAP certified laboratory, their accreditation number is 101768-0.
- Transmission electron microscopy (TEM) analysis of non-friable organically bound materials suspected to contain asbestos and testing negatively by PLM analysis.
- Lead inspection by a lead inspector certified by the Environmental Protection Agency and licensed to conduct LBP surveys in South Carolina.
- In situ analysis of suspected lead based paints by X-ray fluorescence (XRF).
- Presenting the results in a report identifying confirmed ACMs and LBPs.

METHODS

Asbestos Containing Materials

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Twenty-six (26) bulk samples were collected during the survey and submitted to CEI Labs (CEI) in Cary, North Carolina for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-82-020, Dec. 1982). CEI participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 101768-0 . EPA regulations require that multiple samples of each homogeneous material be collected for laboratory analysis. In accordance with South Carolina Regulation 61-86.1, non-friable organically bound materials that are reported to be non-asbestos containing by PLM analysis must also be analyzed by Transmission Electron Microscopy (TEM). Five (5) samples were analyzed using TEM.

Lead-Based Paint

Lead painted surfaces were analyzed in place using X-ray fluorescence. Painted surfaces were selected based on color of topcoat, underlying layers and substrate on which it was painted.

RESULTS

Asbestos Results

The EPA defines an asbestos-containing material as a material containing more than one percent asbestos. Provided below is a general discussion of the asbestos containing materials identified in the residence. A specific *PLM* and *TEM* table is located in Appendix II of this report and identifies positive materials and designates approximate quantities.

Suspect asbestos containing materials that were identified to be asbestos containing include:

- 12” x 12” tan floor tile in both kitchens, 525 SF.

- Linoleum floor beneath the sub-flooring in both kitchens, 525 SF.
- Window glazing on exterior windows, 3 window units.
- Pattern linoleum floor & mastic & 2 layers of floor tile beneath in right bathroom, 41 SF.
- Exterior transite siding, 1,000 SF.
- Roof/chimney mastic assumed positive on 2 chimneys, 12 LF.

Lead Based Paint

OSHA does not recognize a threshold level of lead for definition purposes, only the presence or absence of lead. The current OSHA regulations recognize an airborne action level of thirty micrograms per cubic meter (30 $\mu g/m^3$) during an eight-hour workday and a permissible exposure level of fifty micrograms per cubic meter (50 $\mu g/m^3$) for employees.

Currently, the EPA defines LBP as paint containing in excess of, or equal to, 1.0 mg/cm^3. The XRF analytical results and approximate locations of the paint samples collected are included in the Lead Analysis Report in Appendix II.

No surfaces in the building tested positive for lead in excess of the regulatory definition.

RECOMMENDATIONS AND DISCUSSION

Asbestos Containing Materials

If the above referenced asbestos materials are to be disturbed by renovations or demolition, the asbestos must be removed in accordance with EPA, State of South Carolina and OSHA asbestos regulations. The State of South Carolina, Department of Health and Environmental Control (DHEC) has specific regulations that must be adhered to during asbestos removal/abatement projects.

APEX recommends the following:

1. Abate the asbestos containing materials in the structure prior to renovation or demolition.

2. Follow applicable asbestos regulations during renovation or demolition of the structure. You should be aware that stringent requirements are imposed upon anyone renovating or demolishing a structure in which ACM will be disturbed. This work must be performed in accordance with OSHA asbestos regulations, 29 CFR 1910 & 1926, and NESHAP asbestos regulations 40 CFR 61, subpart M. South Carolina regulations require the accreditation of personnel who work in the asbestos field and notification and permitting fees for asbestos removal projects. There is a 10 working day notification period required prior to abatement of asbestos in a facility. Failure to take proper precautions and actions to protect human health and the environment can result in penalties, danger to personnel, and construction delays.

Lead-Based Paint

Currently the South Carolina Department of Health and Environmental Control (SCDHEC) define LBP as paint containing greater than 0.7 milligrams per square centimeter (mg/cm^2) lead or in excess of, or equal to, 0.5 percent lead. Building materials identified as being painted with LBP should be segregated from the other building materials and recycled or disposed of in a municipal lined landfill. The removed wastes would need to be containerized and further tested by Toxic Characteristic Leaching procedures (TCLP) to determine if the waste is classified as hazardous. The remaining building materials that are not painted with LBP may be disposed of in a construction and demolition landfill. However, the landfills should be contacted to determine their specific disposal requirements.

Occupational Safety and Health Administration Lead Regulations apply to actions initiated on lead containing materials. This regulation applies to lead concentrations greater than the analytical limit of detection. This regulation sets exposure levels on airborne lead and does not reference the percent lead in paint. Therefore, initial personal air monitoring should be conducted on workers performing work on surfaces which have a lead concentration of 0.1 mg/cm^2 or above to satisfy the OSHA requirements. If a baseline exposure lower than the OSHA Action Level of 30 micrograms per cubic meter ($\mu g/m^3$) is established, personal air monitoring may be terminated. The full OSHA lead standard should be referenced for compliance.

A copy of this report must be submitted to SCDHEC at least ten (10) working days prior to demolition when applying for a demolition permit.

SECTION II

Tables

ASBESTOS SURVEY FIELD DATA SHEET

Project Name: COS 197 Bon Air Ave.

Sampled By: Rebecca Shultz

Project Location: Spartanburg, SC

Project Manager: Rebecca Shultz

Project Number: 0815-163

Date: 12/2/2015

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Living Room	Ceiling tile	PLM - NAD	Friable	Good	1,352 SF
2	Kitchen 1					
3	Bedroom					
4	**Kitchen 1**	**12" x 12" tan floor tile & mastic**	**PLM - Tile 10% Chrysotile** Mastic - NAD	**Friable**	**Damaged**	**525 SF**
5	**Kitchen 2**					
6			TEM - Mastic <1% Chrysotile			
7	**Kitchens 1 & 2**	**Linoleum flooring beneath sub-floor with no mastic**	**PLM - 3% Chrysotile**	**Friable**	**Damaged**	**525 SF**
8						
9						
10	**Exterior Windows**	**Window glazing**	**PLM - 2% Chrysotile**	**Friable**	**Significantly Damaged**	**3 EA**
11						
12						
13	Throughout	Plaster & finish	PLM - NAD	Friable	Good	3,400 SF
14						
15						
16						
17						

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
18	**Right Bathroom**	**Patterned linoleum flooring & mastic with 2 layers of floor tile & mastic beneath**	**PLM - 5% - 25% Chrysotile (multiple flooring & linoleum mastic)**	**Non-Friable**	**Good**	**41 SF**
19						
20			TEM - Floor Tile Mastic <1% Chrysotile			
21	**Exterior Siding**	**Transite siding**	**PLM- 20% Chrysotile**	**Non-Friable**	**Good**	**1,000 SF**
22						
23						
24	Exterior Roof	Roof shingles & felt paper	PLM - NAD	Non-Friable	Good	2,000 SF
25						
26			TEM - NAD			
Assumed	**Roof/Chimneys**	**Roof/Chimney mastic on 2 chimneys**	**Assumed**	**Non-Friable**	**Good**	**12 LF**

NAD = No Asbestos Detected LF = Linear Feet EA = Each

Bold = Positive For Asbestos SF = Square Feet

FIELD DATA SHEET
LBP ANALYSIS

Project Name: COS 197 Bon Air Ave.

Sampled By: Rebecca Shultz

Project Location: Spartanburg SC

Project Manager: Rebecca Shultz

Project Number: 0815-163

Date: 12/2/2015

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m^3)
5	Exterior	Siding	White	Cement Board	0.00
6	Exterior	Door Frame	White	Wood	0.48
7	Exterior	Door	White	Wood	0.66
8	Exterior	Window	White	Wood	0.63
9	Living Room Left	Wall	White	Plaster	0.01
10	Living Room Left	Window	White	Wood	0.09
11	Hallway	Door Frame	White	Wood	0.06
12	Bathroom	Wall	Green	Plaster	0.07
13	Kitchen Right	Cabinet	Tan	Wood	0.25
14	Kitchen Right	Door Frame	Green	Plaster	0.26
15	Kitchen	Door Frame	Tan	Wood	0.04

SECTION III

Laboratory Analytical Results

December 9, 2015

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS; 197 Bon Air; 0815-163
CEI LAB CODE: A15-8345

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on December 4, 2015. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP Lab Code 101768-0

ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS; 197 Bon Air; 0815-163

CEI LAB CODE: A15-8345

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 12/09/15

TOTAL SAMPLES ANALYZED: 17

SAMPLES >1% ASBESTOS: 8

TEL: 866-481-1412

www.ceilabs.com

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS; 197 Bon Air; 0815-163 **CEI LAB CODE:** A15-8345

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1		A2053079	Brown	Ceiling Tile	None Detected
2		A2053080	Brown	Ceiling Tile	None Detected
3		A2053081	Brown	Ceiling Tile	None Detected
4		A2053082A	Tan	Floor Tile	**Chrysotile 10%**
		A2053082B	Yellow	Mastic	None Detected
5		A2053083A		Sample Not Analyzed per COC	
		A2053083B	Yellow	Mastic	None Detected
6		A2053084A		Sample Not Analyzed per COC	
		A2053084B		Sample Submitted for TEM Analysis	
7		A2053085	Tan	Vinyl Flooring	**Chrysotile 3%**
8		A2053086		Sample Not Analyzed per COC	
9		A2053087		Sample Not Analyzed per COC	
10		A2053088	Gray	Window Glazing	**Chrysotile 2%**
11		A2053089		Sample Not Analyzed per COC	
12		A2053090		Sample Not Analyzed per COC	
13	Layer 1	A2053091	White	Plaster Skim Coat	None Detected
	Layer 2	A2053091	Gray	Plaster Base Coat	None Detected
14	Layer 1	A2053092	White	Plaster Skim Coat	None Detected
	Layer 2	A2053092	Gray	Plaster Base Coat	None Detected
15	Layer 1	A2053093	White	Plaster Skim Coat	None Detected
	Layer 2	A2053093	Gray	Plaster Base Coat	None Detected
16	Layer 1	A2053094	White	Plaster Skim Coat	None Detected
	Layer 2	A2053094	Gray	Plaster Base Coat	None Detected
17	Layer 1	A2053095	White	Plaster Skim Coat	None Detected
	Layer 2	A2053095	Gray	Plaster Base Coat	None Detected
18	Layer 1	A2053096A	Brown	Vinyl Flooring	**Chrysotile 25%**
	Layer 2	A2053096A	Tan	Mastic	**Chrysotile 5%**
		A2053096B	Tan	Floor Tile	**Chrysotile 10%**
		A2053096C	Tan	Mastic	None Detected
		A2053096D	Tan	Floor Tile	**Chrysotile 10%**

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS; 197 Bon Air; 0815-163 **CEI LAB CODE:** A15-8345

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
		A2053096E	Tan	Mastic	None Detected
19		A2053097A		Sample Not Analyzed per COC	
		A2053097B		Sample Not Analyzed per COC	
		A2053097C	Tan	Mastic	None Detected
		A2053097D		Sample Not Analyzed per COC	
		A2053097E	Tan	Mastic	None Detected
20		A2053098A		Sample Not Analyzed per COC	
		A2053098B		Sample Not Analyzed per COC	
		A2053098C		Sample Submitted for TEM Analysis	
		A2053098D		Sample Not Analyzed per COC	
		A2053098E		Sample Submitted for TEM Analysis	
21		A2053099	White	Siding	**Chrysotile 20%**
22		A2053100		Sample Not Analyzed per COC	
23		A2053101		Sample Not Analyzed per COC	
24	Layer 1	A2053102	Black	Shingle	None Detected
	Layer 2	A2053102	Black	Felt Paper	None Detected
25	Layer 1	A2053103	Black	Shingle	None Detected
	Layer 2	A2053103	Black	Felt Paper	None Detected
26	Layer 1	A2053104		Sample Submitted for TEM Analysis	
	Layer 2	A2053104		Sample Submitted for TEM Analysis	

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CEI Lab Code: A15-8345
Date Received: 12-04-15
Date Analyzed: 12-08-15
Date Reported: 12-09-15

Project: COS; 197 Bon Air; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
1 A2053079	Ceiling Tile	Heterogeneous Brown Fibrous Loosely Bound	100%	Cellulose			**None Detected**
2 A2053080	Ceiling Tile	Heterogeneous Brown Fibrous Loosely Bound	100%	Cellulose			**None Detected**
3 A2053081	Ceiling Tile	Heterogeneous Brown Fibrous Loosely Bound	100%	Cellulose			**None Detected**
4 A2053082A	Floor Tile	Heterogeneous Tan Non-fibrous Bound			90%	Vinyl	**10% Chrysotile**
A2053082B	Mastic	Heterogeneous Yellow Non-fibrous Bound			100%	Mastic	**None Detected**
5 A2053083A	Sample Not Analyzed per COC						
A2053083B	Mastic	Heterogeneous Yellow Non-fibrous Bound			100%	Mastic	**None Detected**
6 A2053084A	Sample Not Analyzed per COC						
A2053084B	Sample Submitted for TEM Analysis						

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CEI Lab Code: A15-8345
Date Received: 12-04-15
Date Analyzed: 12-08-15
Date Reported: 12-09-15

Project: COS; 197 Bon Air; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
7 A2053085	Vinyl Flooring	Heterogeneous Tan Fibrous Bound	35%	Cellulose	47% 15%	Vinyl Tar	**3% Chrysotile**
8 A2053086	Sample Not Analyzed per COC						
9 A2053087	Sample Not Analyzed per COC						
10 A2053088	Window Glazing	Heterogeneous Gray Fibrous Bound	5%	Talc	90% 3%	Binder Paint	**2% Chrysotile**
11 A2053089	Sample Not Analyzed per COC						
12 A2053090	Sample Not Analyzed per COC						
13 Layer 1 A2053091	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Silicates Paint	**None Detected**
Layer 2 A2053091	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound			40% 60%	Binder Silicates	**None Detected**
14 Layer 1 A2053092	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Silicates Paint	**None Detected**

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

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Date Received: 12-04-15
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Project: COS; 197 Bon Air; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
Layer 2 A2053092	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound		40% 60%	Binder Silicates	**None Detected**
15 Layer 1 A2053093	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		60% 35% 5%	Binder Silicates Paint	**None Detected**
Layer 2 A2053093	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound		40% 60%	Binder Silicates	**None Detected**
16 Layer 1 A2053094	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		60% 35% 5%	Binder Silicates Paint	**None Detected**
Layer 2 A2053094	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound		40% 60%	Binder Silicates	**None Detected**
17 Layer 1 A2053095	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		60% 35% 5%	Binder Silicates Paint	**None Detected**
Layer 2 A2053095	Plaster Base Coat	Heterogeneous Gray Non-fibrous Bound		40% 60%	Binder Silicates	**None Detected**

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CEI Lab Code: A15-8345
Date Received: 12-04-15
Date Analyzed: 12-08-15
Date Reported: 12-09-15

Project: COS; 197 Bon Air; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
18 Layer 1 A2053096A	Vinyl Flooring	Heterogeneous Brown Fibrous Bound	25%	Cellulose	50%	Vinyl	**25% Chrysotile**
Layer 2 A2053096A	Mastic	Heterogeneous Tan Non-fibrous Bound			95%	Mastic	**5% Chrysotile**
Lab Notes: Analyst Opinion: Contamination from positive vinyl floor backing							
A2053096B	Floor Tile	Heterogeneous Tan Non-fibrous Bound			90%	Vinyl	**10% Chrysotile**
A2053096C	Mastic	Heterogeneous Tan Non-fibrous Bound			100%	Mastic	**None Detected**
A2053096D	Floor Tile	Heterogeneous Tan Non-fibrous Bound			90%	Vinyl	**10% Chrysotile**
A2053096E	Mastic	Heterogeneous Tan Non-fibrous Bound			100%	Mastic	**None Detected**
19 A2053097A	Sample Not Analyzed per COC						
A2053097B	Sample Not Analyzed per COC						

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

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7 Winchester Court
Mauldin, SC 29662

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Project: COS; 197 Bon Air; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous	Non-Fibrous		ASBESTOS %
A2053097C	Mastic	Heterogeneous Tan Non-fibrous Bound		100%	Mastic	**None Detected**
A2053097D	Sample Not Analyzed per COC					
A2053097E	Mastic	Heterogeneous Tan Non-fibrous Bound		100%	Mastic	**None Detected**
20 A2053098A	Sample Not Analyzed per COC					
A2053098B	Sample Not Analyzed per COC					
A2053098C	Sample Submitted for TEM Analysis					
A2053098D	Sample Not Analyzed per COC					
A2053098E	Sample Submitted for TEM Analysis					
21 A2053099	Siding	Heterogeneous White Fibrous Tightly Bound		75% 5%	Binder Paint	**20% Chrysotile**
22 A2053100	Sample Not Analyzed per COC					
23 A2053101	Sample Not Analyzed per COC					

ASBESTOS BULK ANALYSIS

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Project: COS; 197 Bon Air; 0815-163

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
24 Layer 1 A2053102	Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	**None Detected**
Layer 2 A2053102	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	**None Detected**
25 Layer 1 A2053103	Shingle	Heterogeneous Black Fibrous Bound	60%	Fiberglass	35% 5%	Tar Gravel	**None Detected**
Layer 2 A2053103	Felt Paper	Heterogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	**None Detected**
26 Layer 1 A2053104	Sample Submitted for TEM Analysis						
Layer 2 A2053104	Sample Submitted for TEM Analysis						

LEGEND:	Non-Anth	= Non-Asbestiform Anthophyllite
	Non-Trem	= Non-Asbestiform Tremolite
	Calc Carb	= Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

LIMIT OF DETECTION: <1% by visual estimation

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

ANALYST: Megan Fisher

APPROVED BY: Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP Lab Code 101768-0

CEI LABS
107 New Edition Court, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

CHAIN OF CUSTODY

LAB USE ONLY:	
CEI Lab Code:	A15-8345 (26)
CEI Lab I.D. Range:	A2053079-A2053104

COMPANY CONTACT INFORMATION	
Company: Apex Environmental Management	Client #:
Address: 7 Winchester Court	Job Contact: Rebecca Shultz
Mauldin, SC 29662	Email: rshultz@apex-ehs.com
	Tel: 864-404-3210
Project Name: COS ~~188~~ 197 Bon Air	Fax:
Project ID #: 0815-163	P.O. #:

ASBESTOS	METHOD	4 HR*	8 HR*	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☑	☐
TEM BULK	CHATFIELD		☐	☐	☐	☑	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAVIMETRIC	EPA 600		☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

POSITIVE STOP ANALYSIS	☑
SOUTH CAROLINA SAMPLES	☑

TEM INSTRUCTIONS	
BEGIN TEM ANALYSIS AFTER NEGATIVE PLM	☑
ANALYZE TEM SAMPLES SIMULTANEOUSLY WITH PLM	☐

REMARKS: If needed, combine samples from the same group to achieve sufficient weight for TEM analysis.

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	12-3-15	[signature]	10am 12/4/15

*Call to confirm RUSH analysis.

Samples will be disposed of 30 days after analysis

A15-8345

CEI LABS

SAMPLING FORM

COMPANY CONTACT INFORMATION	
Company: Apex Env. Mgmt.	Job Contact: Rebecca Shultz
Project Name: COS 97 Bon air	
Project ID #: 0815-163	Tel:

SAMPLE ID#	DESCRIPTION / LOCATION	TEST	
1	ceiling text. / Living RM	PLM ☑	TEM ☐
2	Kitchen 1	PLM ☑	TEM ☐
3	Bed RM	PLM ☑	TEM ☐
4	12x12 Tan Flr tile / Kitchen 1	PLM ☑	TEM ☐
5	Kitchen 2	PLM ☑	TEM ☐
6	Kitchen 2	PLM ☐	TEM ☑
7	vinyl flr under Sub floor / Kitchen	PLM ☑	TEM ☐
8		PLM ☑	TEM ☐
9		PLM ☐	TEM ☑
10	window glaze	PLM ☑	TEM ☐
11		PLM ☑	TEM ☐
12		PLM ☐	TEM ☑
13	Plaster / Throughout	PLM ☑	TEM ☐
14		PLM ☑	TEM ☐
15		PLM ☑	TEM ☐
16		PLM ☑	TEM ☐
17		PLM ☑	TEM ☐
18	Patterned vinyl flr over flr tile	PLM ☑	TEM ☐
19	Bath RM	PLM ☑	TEM ☐
20		PLM ☐	TEM ☑
21	cement board siding / exterior	PLM ☑	TEM ☐
22	(no felt)	PLM ☑	TEM ☐
23		PLM ☑	TEM ☐
24	Shingle + felt / Roof	PLM ☑	TEM ☐
25		PLM ☑	TEM ☐
26		PLM ☐	TEM ☑
		PLM ☐	TEM ☐
		PLM ☐	TEM ☐
		PLM ☐	TEM ☐
		PLM ☐	TEM ☐

December 14, 2015

Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CLIENT PROJECT: COS 197 Bon Air; 0815-163
CEI LAB CODE: T15-1957

Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on December 9, 2015. The samples were analyzed for asbestos using transmission electron microscopy (TEM) per Chatfield Method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the TEM Chatfield method is <1% depending on the processed weight and constituents of the sample.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

ASBESTOS ANALYTICAL REPORT
By: Transmission Electron Microscopy

Prepared for

Apex Environmental Management

CLIENT PROJECT: COS 197 Bon Air; 0815-163

CEI LAB CODE: T15-1957

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116

REPORT DATE: 12/14/15

TEL: 866-481-1412

www.ceilabs.com

ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

Client: Apex Environmental Management
7 Winchester Court
Mauldin, SC 29662

CEI Lab Code: T15-1957
Date Received: 12-09-15
Date Analyzed: 12-11-15
Date Reported: 12-14-15

Project: COS 197 Bon Air; 0815-163

TEM BULK CHATFIELD / EPA 600 / R93 / 116

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material %	Acid Soluble Material %	Acid Insoluble Material %	Asbestos %
6 T45021	Yellow Mastic	0.095	70.5	5.3	24.2	**<1% Chrysotile**
Possible contamination from positive floor tile.						
20 T45022	Tan Mastic	0.09	80	4.4	15.6	**<1% Chrysotile**
Possible contamination from positive floor tile.						
20 T45023	Tan Mastic	0.133	54.9	3.8	41.3	**<1% Chrysotile**
Possible contamination from positive floor tile.						
26 T45024	Black Shingle	0.258	19.8	44.6	35.6	**None Detected**
26 T45025	Black Felt Paper	0.219	96.3	3.2	.5	**None Detected**

LEGEND: None

METHOD: CHATFIELD & EPA/600/R-93/116

LIMIT OF DETECTION: Varies with the weight and constituents of the sample (<1%)

REGULATORY LIMIT: >1% by weight

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client.

ANALYST: Gary A. Swanson

APPROVED BY: Tianbao Bai, Ph.D., CIH
Laboratory Director

TS-1957 T45021-026 (5)

CEI LABS

107 New Edition Court, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

CHAIN OF CUSTODY

LAB USE ONLY:	
CEI Lab Code:	A15-8345 (26)
CEI Lab I.D. Range:	A2053079-A2053104

COMPANY CONTACT INFORMATION	
Company: Apex Environmental Management	Client #:
Address: 7 Winchester Court	Job Contact: Rebecca Shultz
Mauldin, SC 29662	Email: rshultz@apex-ehs.com
	Tel: 864-404-3210
Project Name: COS 197 Bon Air	Fax:
Project ID #: 0815-163	P.O. #:

ASBESTOS	METHOD	4 HR*	8 HR*	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☑	☐
TEM BULK	CHATFIELD		☐	☐	☐	☑	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAVIMETRIC	EPA 600		☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

POSITIVE STOP ANALYSIS	☑
SOUTH CAROLINA SAMPLES	☑

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☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	12-3-15	[signature]	10am 12/4/15
[signature]	12/9/15		

*Call to confirm RUSH analysis.

Samples will be disposed of 30 days after analysis

TIS-1957 A15-8345

CEI LABS

SAMPLING FORM

COMPANY CONTACT INFORMATION	
Company: Apex Env. Mgmt.	Job Contact: Rebecca Shultz
Project Name: COS 197 Bon air	
Project ID #: 0815-163	Tel:

SAMPLE ID#	DESCRIPTION / LOCATION	TEST	
1	ceiling text. / Living RM	PLM ☑	TEM ☐
2	| Kitchen 1	PLM ☑	TEM ☐
3	| Bed RM	PLM ☑	TEM ☐
4	12x12 Tan Flr tile / Kitchen 1	PLM ☑	TEM ☐
5	| Kitchen 2	PLM ☑	TEM ☐
6	| Kitchen 2	PLM ☐	TEM ☑
7	vinyl flr under Sub floor / Kitchen	PLM ☑	TEM ☐
8	|	PLM ☑	TEM ☐
9	|	PLM ☐	TEM ☑
10	window glaze	PLM ☑	TEM ☐
11	|	PLM ☑	TEM ☐
12	|	PLM ☐	TEM ☑
13	Plaster / Throughout	PLM ☑	TEM ☐
14	|	PLM ☑	TEM ☐
15	|	PLM ☑	TEM ☐
16	|	PLM ☑	TEM ☐
17	|	PLM ☑	TEM ☐
18	Patterned vinyl flr over flr tile	PLM ☑	TEM ☐
19	| Bath RM	PLM ☑	TEM ☐
20	|	PLM ☐	TEM ☑
21	cement board siding / exterior	PLM ☑	TEM ☐
22	(no felt) |	PLM ☑	TEM ☐
23	|	PLM ☑	TEM ☐
24	Shingle + felt / Roof	PLM ☑	TEM ☐
25	|	PLM ☑	TEM ☐
26	|	PLM ☐	TEM ☑
		PLM ☐	TEM ☐
		PLM ☐	TEM ☐
		PLM ☐	TEM ☐
		PLM ☐	TEM ☐

SECTION IV

Photographs

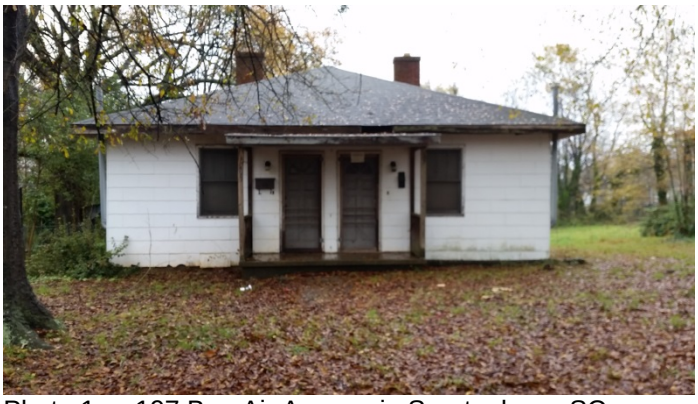


Photo 1 -- 197 Bon Air Avenue in Spartanburg, SC.

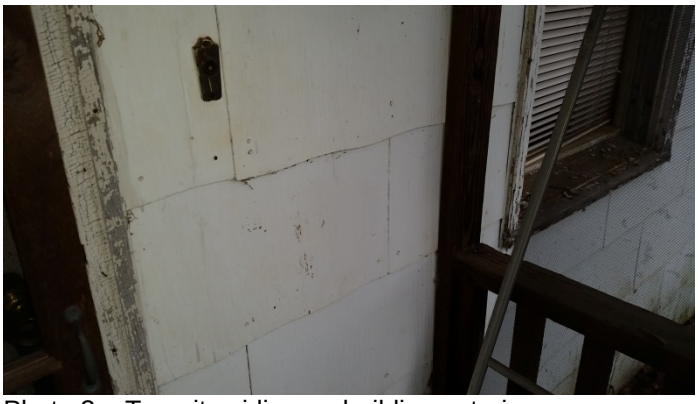


Photo 2 – Transite siding on building exterior.

Photo 3 – Window glazing.

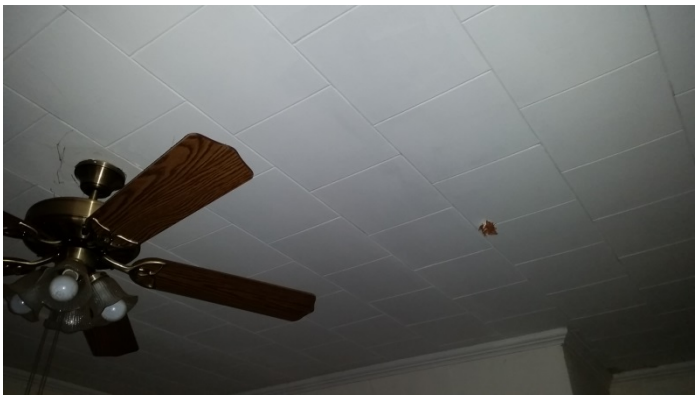


Photo 4 – Ceiling tile.

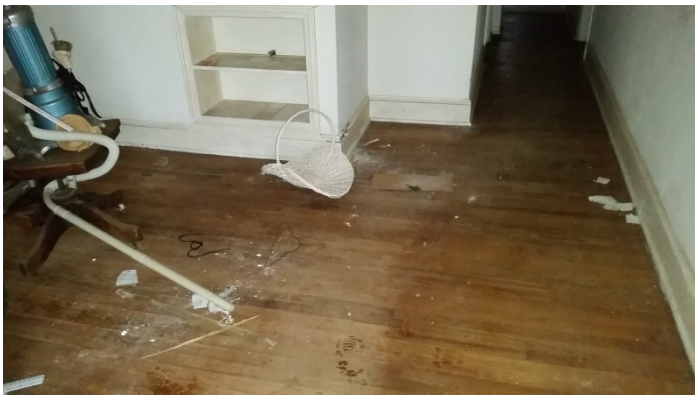


Photo 5 – Plaster with finish & hard wood floors.

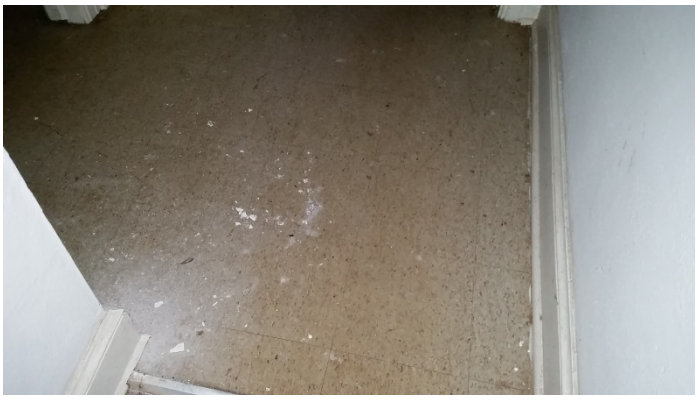
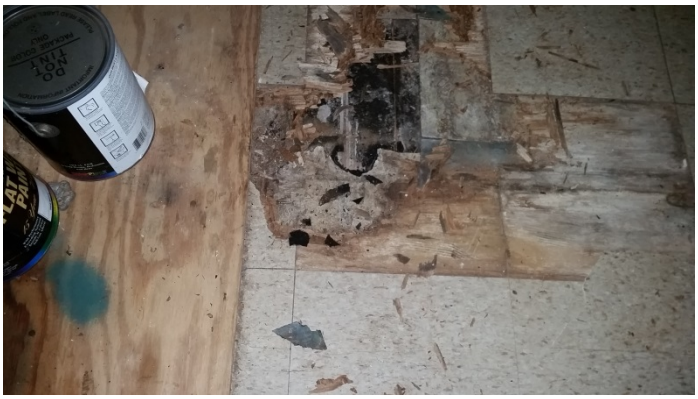
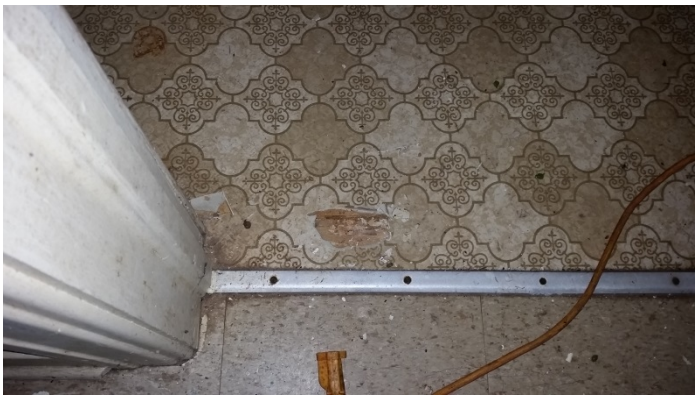


Photo 6 – 12” x 12” tan floor tile & mastic in both kitchens.

 Photo 7 -- Linoleum flooring beneath sub-floor with no mastic in both kitchens.	 Photo 8 – Patterned linoleum flooring & mastic with 2 layers of floor tile & mastic beneath in the right bathroom.

SECTION V

SC Asbestos Inspector License

North Carolina
Asbestos Accreditation

EXPIRATION			
06-30-2016			
DOB	SEX	HT	WT
09-19-1974	F	5'4"	175

CLASS	#	EXP
DESIGNER	40465	06-16
INSPECTOR	12394	06-16
SUPER AIR MONITOR	90151	08-15

Rebecca W Shultz
7 Winchester Ct
Mauldin, SC 29662

108487

SCDHEC ISSUED
Asbestos ID Card

Rebecca Shultz

		Expires
CONSULTPD	PD-00060	06/10/16
CONSULTBI	BI-00492	06/09/16