

ASBESTOS INVESTIGATION REPORT

for

**Building 235
Fort Chaffee, Arkansas 72917**

PROJECT # 07-0111-081

Prepared for:

Mr. Seth Schultz
Louis Berger Group
199 Water Street
New York, New York 10038

July 16, 2007

Prepared for

Mr. Seth Schultz
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199 Water Street
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The following pages of this Asbestos Investigation report have been prepared for the exclusive use of the Louis Berger Group at the request of Mr. Seth Schultz. The property surveyed is described as Building 235 in Fort Chaffee, Arkansas.

Performed by:



Mr. James Waldo
Environmental Professional
Environmental Enterprise Group, Inc. (EEG)

07/16/07

Date

Senior Review:



Mr. Bob E. Smith
Vice President /Senior Project Manager
Environmental Enterprise Group, Inc. (EEG)

07/16/07

Date

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

ENVIRONMENTAL ENTERPRISE GROUP, INC. (EEG) was retained by Louis Berger Group to conduct an inspection for suspect asbestos-containing materials (ACM) at the above-referenced property located in Fort Chaffee, Arkansas. The inspection included the assessment of suspect friable and non-friable ACM.

The purpose of this inspection was to locate, identify, sample and assess the condition of accessible materials found throughout Building 235 in Fort Chaffee, Arkansas, that were suspected of containing more than one percent (1%) asbestos. The investigation took place at the request of Mr. Seth Schultz of Louis Berger Group and was conducted by Mr. James Waldo, Arkansas Department of Environmental Quality (ADEQ) Asbestos Inspector Certification No. 012679 (**Appendix A**) on June 28, 2007.

In order to ensure a safe and healthy work environment, Federal, State and local regulations require that ACM be identified prior to demolition or renovation activities and to ensure proper dispose of ACM in order to reduce visible emissions of ACM. This asbestos investigation report also provides the basis for an Operations and Maintenance (O&M) Plan.

1.2 Building Description

Building 235 contains approximately 1,488 square feet and is constructed of wood with transite siding exterior walls and a built-up roof. The interior walls are wood. The building sits on a concrete foundation. The building utilized natural gas heat.

1.3 Findings

As suspect ACM was identified, it was classified as either friable or non-friable. Friable materials are more hazardous than non-friable materials because they are more likely to release fibers into the air. In assessing the fiber release potential, the current condition of all suspect ACM was noted. Evidence of deterioration, physical or water damage and the potential for future disturbance were taken into consideration. The potential of erosion of the suspect ACM due to air disturbance, high vibration or contact was also noted.

The following materials were found to be asbestos containing and were present in the building in the listed quantities and locations:

Building 235

Sample Group	*HA 3602-	Material Description	Sample Location	Friable/ Non-Friable	Quantity	Condition
LBG-1A	1A	Original Gray Cementitious Siding with Non-ACM Felt	Exterior of Building	NF	978 ft ²	Significantly Damaged
LBG-2A	2A	Added Gray Cementitious Siding	Over Exterior Windows & Doors	NF	1,550 ft ²	Significantly Damaged

*HA = Homogeneous Area

Ordinarily, EEG would recommend that the gray cementitious siding material be removed prior to planned demolition activities. However, it is understood that this survey was performed in anticipation of a research project administered by the United States Environmental Protection Agency (USEPA). It is EEG's understanding that the building will be torn down in its present condition and with the existing asbestos containing siding in place.

It is important to note that non-friable materials may become friable when being removed or demolished. The condition of these materials must be monitored when they are being disturbed. In the event that non-friable asbestos containing materials become friable during removal or demolition, there may be regulatory issues that must be addressed.

According to the Arkansas Pollution Control and Ecology Commission Regulation 21 – Arkansas Abatement Regulation, effective July 15, 1997, all demolitions and renovations of regulated asbestos containing materials (RACM) must provide a written notice of intent (NOI) to the Arkansas Department of Environmental Quality (ADEQ). The NOI provides detailed information concerning renovations of RACM and all demolitions. A copy of the ADEQ NOI form is included in **Appendix B**.

2.0 MATERIAL ASSESSMENT & RECOMMENDATIONS

2.1 *Asbestos Containing Materials*

As a result of the inspection conducted by EEG, the following materials were classified as asbestos-containing. EEG has made recommendations regarding each positive material in accordance with the AHERA guidelines (*see Section 4.3*).

HA: LBG-1A

Material Description: Original Gray Cementitious Siding with Non-ACM Felt

Material is located on the exterior of Building 235.

The material is a non-friable, miscellaneous material and is in significantly damaged condition.

EEG recommends that the ACM be removed in accordance with local, state and federal regulations. Current Arkansas Department of Environmental Quality (ADEQ) regulations require all ACM in **significantly damaged** condition be removed prior to demolition activities.

Priority Level: High

HA: LBG-2A

Material Description: Added Gray Cementitious Siding

Material is located over the exterior windows and doors of Building 235.

The material is a non-friable, miscellaneous material and is in significantly damaged condition.

EEG recommends that the ACM be removed in accordance with local, state and federal regulations. Current Arkansas Department of Environmental Quality (ADEQ) regulations require all ACM in **significantly damaged** condition be removed prior to demolition activities.

Priority Level: High

3.0 ESTIMATED COST FOR REMOVAL

Sample Group	*HA 3602-	Material	Location	Quantity	Estimated Removal Cost
LBG-1A	1A	Original Gray Cementitious Siding with Non-ACM Felt	Exterior of Building	978 ft ²	\$ 4,890.00
LBG-2A	2A	Added Gray Cementitious Siding	Over Exterior Windows & Doors	1,550 ft ²	\$ 7,750.00
**Total Estimated Removal Cost					\$12,640.00

**HA = Homogeneous Area*

***Total Estimated Removal Cost is based on all asbestos-containing materials being removed at the same time. Total Estimated Removal Cost does not include project management and air monitoring consultant fees.*

It is important to note that non-friable materials may become friable when being removed or demolished. The condition of these materials must be monitored when they are being disturbed. In the event that non-friable asbestos containing materials become friable during removal or demolition, there may be regulatory issues that must be addressed if the ACM becomes regulated asbestos-containing material (RACM.)

3.1 Assumed Asbestos Containing Materials

All suspect materials identified were sampled. No building materials were assumed to be asbestos containing.

3.2 Materials Sampled, Analyzed and Found to be Non-Asbestos Containing Materials

The following materials, found in Building 235, were suspected of being asbestos-containing, but sampling and analytical testing by Polarized Light Microscopy (PLM) showed asbestos concentrations of less than or equal to one percent (1%). These materials are:

MATERIAL	MATERIAL LOCATION
Felt under Original ACM Gray Cementitious Siding	Exterior of Building
Asphalt Siding	Exterior Fascia
Drywall (Unfinished)	Bathroom
Window Glaze	Exterior Windows
Built-Up Roofing	Roof
Felt Paper Flooring	Landing

3.3 *Materials Considered to be Non-Suspect by USEPA*

- Concrete Slab Walls and Concrete Roofing
- Wood Structures and Beams
- Fiberglass Bat Insulation Panels
- Fiberglass Pipe Insulation
- Fiberglass Tank Insulation
- Fiberglass Wall Insulation
- Cinder Block Walls
- Non-Insulated Piping
- Sheet Metal Ceilings and Walls
- Brick on Walls and Floors
- Ceramic Tiles on Floors and Walls
- Carpet
- Wood Paneling
- Epoxy Flooring Material
- Synthetic Glass Block Pipe Insulation
- Fiberglass and Metal HVAC Ductwork
- Steel and Sheet Metal Storage Buildings
- Steel and Sheet Metal Storage Tanks

4.0 METHODOLOGY

Asbestos is a naturally occurring fibrous mineral that has many beneficial properties. It is resistant to acids and heat, and does not conduct electricity or heat well. It is because of these features that it was widely used in buildings constructed prior to 1975. Asbestos was used in over 3,000 types of construction materials. Additional *Asbestos Background Information* can be found in **Appendix C** of this report.

The Asbestos Hazard and Emergency Response Act (AHERA) Section 203 of Title II of TSCA, is a Federal law that describes standard methods for asbestos inspections. The AHERA addresses the hazard of asbestos in schools, and grants no jurisdictional powers to any branch of government for the regulation of asbestos in any facility other than a school. This asbestos investigation satisfies the inspection requirements outlined in the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1001 and 1926.1101. An Operations and Maintenance (O&M) Plan may be implemented from this asbestos investigation. This asbestos investigation also satisfies requirements specified under the Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAPS) 40 CFR Part 61 and Arkansas Pollution Control and Ecology Commission Regulation 21 – Arkansas Abatement Regulation, effective July 15, 1997 that states a survey must be performed identifying friable and non-friable ACM in a building prior to renovation or demolition. However, one may elect to have additional samples collected and analyzed of affected materials at the time of renovation or demolition.

The laboratory was required to follow the analytical test method and QA/QC requirements specified in EPA Test Method; *Method for the determination of Asbestos in Bulk Building Materials*: EPA/600-93/116,1993.

4.1 *Homogeneous Areas*

The site was inspected for the presence of materials that may contain asbestos. These materials were then described and categorized by homogeneous area (HA). The AHERA defines "homogeneous area" as an area of surfacing material, thermal system insulation material or miscellaneous material that is uniform in color, texture and date of material application. During the building inspection, the inspector classifies all materials by "homogeneous area." Homogeneous area might be better understood as a homogeneous material, since there is no requirement that a homogeneous area be contiguous or continuous. An example of this might be a building that has a single type of floor tile. All floor tile in the building would be considered a single "homogeneous area" regardless of where it is located because it is uniform in color, texture and date of material application. During this study, a homogeneous area is considered identical in each building investigated. See **Appendix D** for photographs of homogeneous materials.

4.2 *Inspection and Sampling*

4.2.1 **Inspection Methods**

The building inspection was performed as follows:

1. A visual determination of the quantity and condition of suspect materials in the facility.
2. A physical "hand pressure" test for determining the condition of suspect materials.
3. Sampling and documentation of observable suspect materials according to EPA guidelines.
4. Measurement of all observable material sampled to determine the quantity existing within the facility. The quantity is determined by a visual inspection and/or by blueprint examination.

4.2.2 **Sampling Strategies**

1. As much as possible, sampling was conducted in unoccupied areas such as mechanical rooms, pipe chases and closets.
2. Samples of each material were collected according to material type, color and texture. If a suspect material such as corrugated pipe covering was found in an unoccupied area on a floor, those samples were used to represent the material throughout the building as long as the appearance did not change.
3. In a general assessment, pipe covering and mudded joint packings are sampled and measured as homogeneous material unless otherwise noted. Each homogeneous material was randomly sampled four times. If different suspect asbestos-containing thermal insulation was identified, four additional random samples of the homogeneous material were collected.
4. In this assessment, three composite or grab samples were collected of all non-homogeneous materials or materials where asbestos was not easily identifiable such as:
 - mudded joint fittings, especially those on fiberglass-insulated lines
 - mudded packings on boilers, tanks, breechings, or ducts
5. All cementitious and miscellaneous suspect materials were sampled and noted as to location and quantity.
6. Sampling was generally the last operation performed in each area after pressure testing, measuring, assigning sample numbers and evaluating the priority level. See **Appendix E** for sample locations.

4.2.3 Sampling Procedures

A comprehensive inspection was conducted of the interior and exterior of the building in accordance with EPA's Asbestos Hazard Emergency Response Act (AHERA, 40 CFR 763) to determine the presence of RACM. The interior inspection included but was not necessarily limited to resilient flooring and wall (including applicable interstitial spaces) systems, mechanical systems (including plumbing and heating), as well as the attic space. The exterior inspection included but was not necessarily limited to roofing systems, caulking, and glazing compounds.

Collection of samples was conducted in accordance with AHERA. Samples were collected using wet methods in order to minimize the potential for asbestos fiber release. All sampling tools were decontaminated between uses in order to prevent cross-contamination of samples. The following procedures were used in conducting the inspection of the building.

4.2.3.1 Identification of Homogenous Materials

Prior to sampling, each homogeneous material was categorized as surfacing material, thermal system insulation, or a miscellaneous material.¹ The specific material in each category was identified; e.g., roofing shingles. A homogeneous material was determined by the same color, texture, size, and boundary of the building.

4.2.4 Chain of Custody Procedures

A copy of the chain of custody that accompanied the samples is supplied in the Analytical Results. The inspector filled out the chain of custody form after all samples were collected and prior to shipping samples. When the laboratory received the samples, the chain of custody was transferred to the laboratory.

4.2.5 Analytical Results

Twenty-one (21) samples of suspect asbestos-containing materials were collected for analysis and submitted to EMSL for PLM analysis. Two (2) of the 21 samples collected were identified as containing more than 1% asbestos by the laboratory. The laboratory analytical reports are included in **Appendix F**.

4.3 *Assessment Logic*

4.3.1 **Priority Level Determination**

As a result of the inspection and laboratory analysis of the bulk samples collected, EEG has generated a priority level for ACM that follows AHERA guidelines. The AHERA guidelines recognize seven levels of hazard associated with asbestos based on six primary variables: material condition; water damage; exposed surface area; accessibility; activity/movement; and air plenum/direct air stream.

Material condition refers to the condition of the material at the time of the inspection. Factors included are the quality of installation, adhesion of the material to the underlying substrate, deterioration of the outer covering, de-lamination, contact damage and material disintegration.

Water damage relates to the potential for water to dislodge, delaminate and disturb materials. Water damage weakens the binding matrix of the material and can carry fibers in a slurry to other areas of the building where they can become airborne.

The exposed surface area of friable material has an effect on potential fiber fallout levels and the possibility for contact and damage. A useful criterion in determining exposed surface areas is visibility of the friable asbestos material. Materials usually fall into one of the following categories: out in the open (fully exposed); above or behind a semi-permanent enclosure such as a wall, ceiling, or floor; and above or behind a permanent enclosure. Areas with louvers, grids or other open ceiling systems are considered exposed.

Accessibility of the material is a function of proximity. If the material can be reached, it is accessible and subject to accidental or intentional contact damage.

In the variable of activity and movement, occupancy and mechanical vibrations are two important factors to consider. High-occupancy areas are subject to more vibration from noise and physical movement; therefore, a greater ambient fiber release can be expected. This variable also plays an important role in determining abatement priority. Mechanical vibrations, especially in boiler mechanical rooms, not only create ongoing ambient fiber release, but when the system is turned on or off there is a sudden burst of mechanical and air movement that creates a brief peak exposure.

The category of air plenum/direct air stream refers to potential or existing air movement. A direct air stream moving across the material erodes the material, thereby releasing fibers into the air. If the area in question forms a supply air plenum, there is usually increased exposure to building occupants since the contaminated air is blown directly into rooms of the building. Return air plenums do not create quite as high an exposure potential as supply air plenums, but do contribute to the exposure of maintenance and mechanical workers accessing these areas. A value is given to this variable if there is a real or potential air stream at the time of the inspection. A fan, present but not in use at the time of the survey, is an example of a potential air stream.

Two sub-variables are asbestos content and friability. Friability is the ease with which material can be crumbled, pulverized or reduced to powder when dry, by hand pressure. The more friable the material, the greater is the potential for fiber release and contamination. The asbestos content is factored based on the analytical results of samples from a homogeneous sampling area. Materials with a high percentage of asbestos contain more fibers for potential release and contamination of the building.

The *Decision Logic Flow Chart for Hazard Assessments*, located in **Appendix G** of this report, shows the decision logic used to classify ACM by AHERA guidelines.

4.3.2 Priority Level Interpretation

High Priority materials are generally those that have been severely damaged. Removal is the corrective action suggested for most High Priority materials. Removal is the only permanent solution to asbestos-related problems.

Moderate Priority materials have a lower exposure potential than High Priority materials. However, they still represent a significant exposure potential. EEG recommends implementing a corrective action plan to reduce the high exposure potentials that exist in these areas. Depending on the funds available, the corrective action plan may involve complete removal, or selective removal in conjunction with the cleaning up of debris that may exist and the repair of any damaged areas. Removal also eliminates future exposure incidents that may cause the building owners to incur additional liability. Any past liability the building owner has incurred as a result of an occupant's exposure to ACM will not be altered.

Low Priority materials either have a low friability or are located in inaccessible areas and are not expected to create a serious or immediate exposure potential. However, as materials deteriorate with time, a corrective action plan should be devised to minimize future asbestos exposure potential. The most effective means of reducing deterioration and accidental disturbance of ACM is the development of an Operations and Maintenance (O&M) Program. This is an interim control measure designed to train custodial and maintenance personnel, establish emergency abatement and control procedures, develop a periodic program to re-inspect the materials, and to provide the necessary supplies and equipment to perform these tasks.

Non-friable building materials do not create the potential for asbestos exposure unless they are sawed, broken, ripped or pulverized. However, even materials that are well wrapped and technically non-friable at the time of inspection have the potential to become friable very readily by accidental tearing or other disturbance (e.g., water damage, grinding, drilling, sawing, etc.). This report addresses friable and potentially friable materials.

The *Decision Logic Flow Chart for Hazard Assessments*, located in the appendix section of this report, shows the priority level associated with each hazard level using AHERA guidelines. The chart also shows the action recommended for each hazard level.

APPENDICES

Appendix A

Inspector Certificates

State of Arkansas
Department of
Environmental Quality



011927 ROBERT E. SMITH

having satisfied the requirements necessary to meet the provisions of AHERA/ASHARA under TSCA Title II and the Arkansas Pollution Control and Ecology Commission's Regulation 21 and is hereby certified in the State of Arkansas in the discipline(s) of Asbestos

Air Monitor 2/29/2008

Contractor/Supervisor 2/29/2008

Inspector 2/29/2008

Issue Date: 22-Feb-2007

Project Designer 2/29/2008

Denise Chiarino

Agency Program Coordinator
Air Division - Asbestos Program



State of Arkansas
Department of
Environmental Quality



012679 JAMES WALDO

having satisfied the requirements necessary to meet the provisions of AHERA/ASHARA under TSCA Title II and the Arkansas Pollution Control and Ecology Commission's Regulation 21 and is hereby certified in the State of Arkansas in the discipline(s) of Asbestos

Air Monitor 2/29/2008

Contractor/Supervisor 2/29/2008

Inspector 2/29/2008

Issue Date: 22-Feb-2007

Denise Chiaro

Agency Program Coordinator
Air Division - Asbestos Program

Appendix B

ADEQ Notice of Intent

ASB

ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY

ASBESTOS NOTICE OF INTENT

Department Use Only

P. O. BOX 8913
LITTLE ROCK, AR 72219-8913
ATTN: ASBESTOS SECTION
PHONE NUMBER: 501-682-0718

Postmarked
Date received
Priority
County
NOI #

1)CHECK ONE
DEMOLITION *6.1
ORDERED DEMOLITION *6.2
RENOVATION *6.3
ANNUAL NOTICE *6.4
EMERGENCY NOTICE *6.5
COURTESY NOTICE
***(DEPARTMENT REQUIRES NOTIFICATION TO BE SUBMITTED 10 WORKING DAYS PRIOR TO PROJECT START DATE.)
2) RENOVATION *6.6H (ABATEMENT DATES)
3) ABATEMENT WORK HOURS *6.6H
4) DEMOLITION DATES *6.6I
5) WORK HOURS *6.6H
6) CONTRACTOR/CONSULTANT*6.6B
AR LICENSE # ADDRESS
CITY STATE ZIP CODE
CONTACT PERSON: TELEPHONE

7) FACILITY OWNER *6.6B _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
CONTACT PERSON _____ TELEPHONE _____

8) NAME OF STRUCTURE(S)*6.6G _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
NUMBER OF FLOORS _____ DIMENSIONS _____ AGE _____
PRIOR USE _____ PRESENT USE _____

9) PROJECT DESIGNER - (NEEDED IF 3 SQ/3 LN RACM IS INVOLVED)*5.2, *5.3D & *6.6R
NAME _____ AR CERTIFICATION # _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
LICENSED FIRM _____ AR LICENSE # _____
(CERTIFIED, WORKING AS A FULL-TIME EMPLOYEE OF FACILITY OR LICENSED FIRM.)

10) INSPECTOR - (NEEDED FOR ALL FACILITY PROJECTS) *5.1, *6.3B & *6.6R
NAME _____ AR CERTIFICATION # _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
LICENSED FIRM _____ AR LICENSE # _____
DATE OF ASBESTOS SURVEY USED FOR RENO/DEMO PROJECT _____
AREA TO BE DISTURBED INCLUDED IN SURVEY? _____ YES _____ NO _____
(AS OF JAN. 15, 1998, SURVEYS ARE TO BE PREPARED BY AR CERTIFIED INSPECTOR WORKING AS FULL-TIME EMPLOYEE OF FACILITY OR FOR LICENSED FIRM.)

11) AIR MONITOR (NEEDED IF CONTAINMENT IS USED) *5.3, 6.6R & 9.7
NAME _____ AR CERTIFICATION # _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
LICENSED FIRM _____ AR LICENSE # _____
(CERTIFIED, WORKING AS FULL-TIME EMPLOYEE OF FACILITY OR LICENSED FIRM.)

12) (A) APPROXIMATE AMOUNT AND TYPE OF RACM TO BE REMOVED: *6.6F _____

(B) IF PROJECT IS DEMOLITION, LIST TYPE AND AMOUNT OF CATEGORY I AND CATEGORY II ACM BEING LEFT IN PLACE: *6.6F _____

(C) PROCEDURE, INCLUDING ANALYTICAL METHODS, EMPLOYED TO DETECT THE PRESENCE OF RACM AND CATEGORY I AND CATEGORY II NONFRIABLE ACM: *6.6E _____

13) DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK TO BE PERFORMED AND METHODS(S) TO BE EMPLOYED, INCLUDING DEMOLITION OR RENOVATION TECHNIQUES TO BE USED AND DESCRIPTION OF AFFECTED FACILITY COMPONENTS: *6.6J _____

14) DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE: *6.6K _____

15) DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED OR REDUCED TO A POWDER: *6.6P _____

16) If demolition ordered by a government agency, please identify the agency below: *6.2 & 6.6N
NAME OF INDIVIDUAL _____ TITLE _____
ADDRESS _____
CITY _____ STATE _____ ZIP CODE _____
AUTHORITY _____
DATE OF ORDER _____ DATE ORDERED TO BEGIN _____
METHOD OF DEMOLITION _____

(COPY OF ORDER MUST BE ATTACHED)

17) FOR EMERGENCY RENOVATIONS *6.5 & 6.6O

DATE OF EMERGENCY _____ HOUR OF EMERGENCY _____

DESCRIPTION OF THE SUDDEN, UNEXPECTED EVENT _____

EXPLANATION OF HOW THE EVENT CAUSED UNSAFE CONDITIONS OR WOULD CAUSE EQUIPMENT DAMAGE OR UNREASONABLE FINANCIAL BURDEN: _____

(18) WASTE TRANSPORTER *6.6Q

NAME OF TRANSPORTER _____

ADDRESS _____ CITY _____

STATE _____ ZIP CODE _____ TELEPHONE _____

19) WASTE DISPOSAL SITE *6.6L

NAME OF LANDFILL _____

ADDRESS _____ CITY _____

STATE _____ ZIP CODE _____ TELEPHONE _____

*20) If abatement is involved, I certify that at least one Contractor/supervisor trained in the provisions of Regulation 21 will be on site during the abatement process and will supervise the abatement. *6.6M*

I certify that the information contained in this Notice of Intent (NOI) is true and correct. I understand that falsification or omission of relevant information shall be grounds for enforcement action by the Department of Environmental Quality or Environmental Protection Agency.

SIGNATURE _____ DATE _____

(Signatures must be original signatures-no photocopies or rubber stamps.)

MAKE CHECKS PAYABLE TO: AR DEPARTMENT OF ENVIRONMENTAL QUALITY

**SEND TO: ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ)
ASBESTOS/LEAD SECTION
P O BOX 8913
LITTLE ROCK, AR 72219-8913**

Appendix C

*Asbestos Background
Information*

ASBESTOS

Background Information

The Asbestos Issue

Asbestos fibers can cause serious health problems. If inhaled, they can cause diseases that disrupt the normal functioning of the lungs. Three specific diseases-asbestosis (a fibrous scarring of the lungs), lung cancer, and mesothelioma (a cancer of the lining of the chest or abdominal cavity) have been linked to asbestos exposure. These diseases do not develop immediately after inhalation of asbestos fibers; it may be 20 years or more before symptoms appear.

In general, as with cigarette smoking and the inhalation of tobacco smoke, the more asbestos fibers a person inhales, the greater the risk of developing an asbestos-related disease. Most of the cases of severe health problems resulting from asbestos exposure have been experienced by workers who held jobs in industries such as shipbuilding, mining, milling, and fabricating, where they were exposed to very high levels of asbestos in the air, without benefit of the worker protections now afforded by law. Many of these same workers were also smokers. These employees worked directly with asbestos materials on a regular basis and, generally, for long periods of time as part of their jobs. Additionally, there is an increasing concern for the health and safety of construction, renovation, and building maintenance personnel, because of possible periodic exposure to elevated levels of asbestos fibers while performing their jobs.

Whenever we discuss the risk posed by asbestos, we must keep in mind that asbestos fibers can be found nearly everywhere in our environment (usually at very low levels). There is, at this time, insufficient information concerning health effects resulting from low-level asbestos exposure, either from exposures in buildings or from our environment. This makes it difficult to accurately assess the magnitude of cancer risk for building occupants, tenants, and building maintenance and custodial workers. Although in general the risk is likely to be negligible for occupants, health concerns remain, particularly for the building's custodial and maintenance workers. Their jobs are likely to bring them into close proximity to ACM, and may sometimes require them to disturb the ACM in the performance of maintenance activities. For these workers in particular, a complete and effective O&M program can greatly reduce asbestos exposure. This kind of O&M program can also

minimize asbestos exposures for other building occupants as well.

What is Asbestos?

The term "asbestos" describes six naturally occurring fibrous minerals found in certain types of rock formations. Of that general group, the minerals chrysotile, amosite, and crocidolite have been most commonly used in building products. When mined and processed, asbestos is typically separated into very thin fibers. When these fibers are present in the air, they are normally invisible to the naked eye. Asbestos fibers are commonly mixed during processing with a material that binds them together so that they can be used in many different products. Because these fibers are so small and light, they may remain in the air for many hours if they are released from ACM in a building. When fibers are released into the air, people in the building may inhale them.

Asbestos became a popular commercial product because it is strong, won't burn, resists corrosion, and insulates well. In the United States, its commercial use began in the early 1900s and peaked in the period from World War II into the 1970s. Under the Clean Air Act of 1970 the EPA has been regulating many asbestos-containing materials, which by EPA definition, are materials with more than one percent asbestos. The Occupational Safety and Health Administration (OSHA) asbestos construction standard in Section K, "Communication of hazards to employees," specifies labeling many materials containing asbestos. In the mid-1970s several major kinds of asbestos materials, such as spray-applied insulation, fireproofing, and acoustical surfacing material, were banned by EPA because of growing concern about health effects, particularly cancer, associated with exposures to such materials.

Where is Asbestos Likely to be Found in Buildings?

In February 1988, the EPA released a report titled *EPA Study of Asbestos-Containing Materials in Public Buildings: A Report to Congress*. EPA found that "friable" (easily crumbled) ACM can be found in an estimated 700,000 public and commercial buildings. About 500,000 of those buildings are believed to contain at least some damaged asbestos, and some areas of significantly damaged ACM can be found in over half of them.

According to the EPA study, significantly damaged ACM is found primarily in building areas not generally accessible to the public, such as boiler and machinery rooms where asbestos exposures generally would be limited to service and maintenance workers. Friable ACM, if present in air plenums, can lead to distribution of the material throughout the building, thereby possibly exposing building occupants. ACM can also be found in other building locations.

Asbestos in buildings has been commonly used for thermal insulation, fireproofing, and in various building materials, such as floor coverings and ceiling tile, cement pipe and sheeting, granular and corrugated paper pipe wrap, and acoustical and decorative treatment for ceilings and walls. Typically, it is found in pipe and boiler insulation and in spray-applied uses such as fireproofing or sound-deadening applications.

The amount of asbestos in these products varies widely (from approximately 1 percent to nearly 100 percent). The precise amount of asbestos in a product cannot always be accurately determined from labels or by asking the manufacturer. Nor can positive identification of asbestos be ascertained merely by visual examination. Instead, a qualified laboratory must analyze representative samples of the suspect material.

When is Asbestos a Problem?

Intact and undisturbed asbestos materials do not pose a health risk. The mere presence of asbestos in a building does not mean that the health of building occupants is endangered. ACM that is in good condition, and is not somehow damaged or disturbed, is not likely to release asbestos fibers into the air. When ACM is properly managed, release of asbestos fibers into the air is prevented or minimized, and the risk of asbestos-related disease can be reduced to a negligible level. However, asbestos materials can become hazardous when, due to damage, disturbance, or deterioration over time, they release fibers into building air. Under these conditions, when ACM is damaged or disturbed—for example, by maintenance repairs conducted without proper controls, elevated airborne asbestos concentrations can create a potential hazard for workers and other building occupants.

Appendix D

Photographs



Exterior Transite Siding



Exterior Transite over Windows

**BUILDING 235
FORT CHAFFEE, ARKANSAS**

EEG Project #07-0111-081

EEG
Environmental
Enterprise Group, Inc.
A 3W Company

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Asphalt Siding on Fascia



Drywall in Bathroom

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FORT CHAFFEE, ARKANSAS**

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Window Glazing



Felt Paper on Landing

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EEG
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Gas Heater (No Asbestos-Containing Materials)



Inside Building 235

**BUILDING 235
FORT CHAFFEE, ARKANSAS**

EEG Project #07-0111-081

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Inside Building 235



Building 235 Exterior

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FORT CHAFFEE, ARKANSAS**

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Building 235 Exterior



Building 235 with Additional Transite

**BUILDING 235
FORT CHAFFEE, ARKANSAS**

EEG Project #07-0111-081

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Building 235 with Additional Transite



Building 235 with Additional Transite

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Building 235 with Additional Transite



Bagged Transite Debris

**BUILDING 235
FORT CHAFFEE, ARKANSAS**

EEG Project #07-0111-081

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Bagged Transite Debris



Building 235 with Additional Transite

**BUILDING 235
FORT CHAFFEE, ARKANSAS**

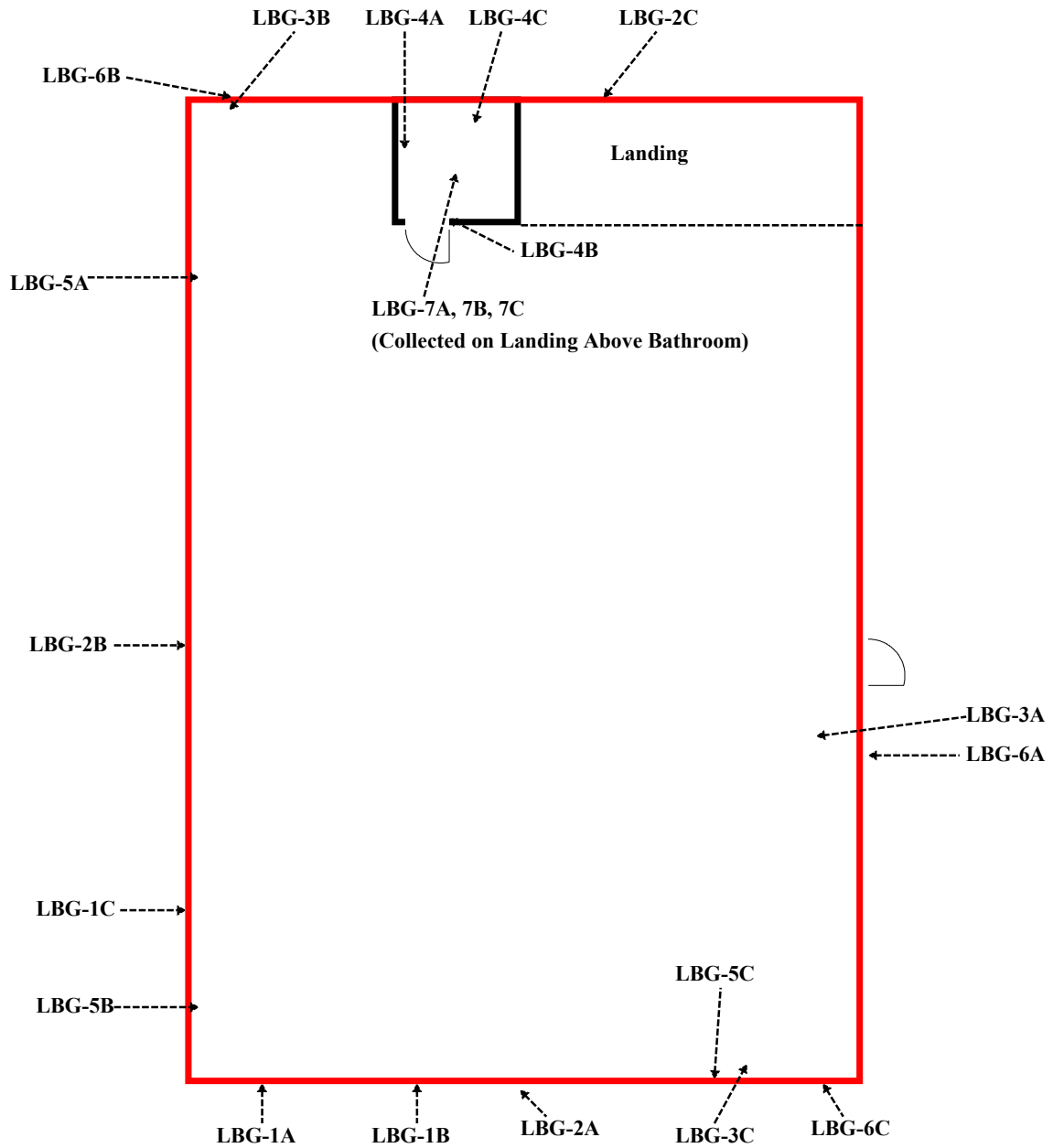
EEG Project #07-0111-081

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Appendix E

Sample Location Drawings



 Asbestos Containing Transite Siding

Project #07-0111-081



Building 235
Fort Chaffee, Arkansas

Appendix F

Analytical Results

Amended
7/13/07

046714763



Asbestos Sampling Chain of Custody/ Field Data Sheet

07-0111-081

CLIENT

Louis Berger Group
199 Water Street
New York, New York 10038

PROPERTY

1,800 Sq. Ft. Building
Fort Chaffee, Arkansas

Inspector

James Waldo

Date

6/28/07

Building ID

1,800 Sq. Ft. Bldg (Bldg 255)

Turnaround Time

Rush - 24 hour

PO's
Stop

SAMPLE ID	HA	SAMPLE DESCRIPTION (FTI - 12 x 12 White Floor Tile)	SAMPLE LOCATION	A	C	CLASS (S, T, M)	FRIABILITY (F, NF)	COND (G, D, SD)	DAMAGE (%)	POT DAM (L, M, H)	QTY	DIAG KEY
LBG	1A	Cementitious Siding	Exterior of Bldg	✓		M	NF	SD	15-20%	H	3123	978
	1B	Felt - Original										
	1C											
	2A	Cementitious Siding - Added	Over Exterior Windows and Doors	✓		M		SD	75%	H	3553	1550
	2B											
	2C											
	3A	Asphalt Siding	Exterior Facia	✓		M	F	SD	20-25%	H	3184	
	3B											
	3C											
	4A	Drywall	Bathroom	✓		M		SD	25-30%	H	1556	
	4B											
	4C											
	5A	Window Glaze	Exterior Windows	✓		M	NF	D	5-10%	H	3914	FT
	5B											
	5C											
	6A	Tar Roofing	Roof	✓		M		SD	20-25%	H	1520	1488
	6B											
	6C											

◆ - Analyze only if the previous sample was found to be negative

C - Catalogue

Relinquished by	Time	Date	Relinquished by	Time	Date
Received by	Time	Date	Received by	Time	Date

Comments: Send results to Louis Berger Group and to EEG by email to bsm14h@3wco.com & jwvaldo@3wco.com

SAMPLES ACCEPTED FOR ANALYSIS BY EMSD ANALYTICAL INC



EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108

Phone: (856) 858-4800 Fax: 8568584960 Email: westmontaslab@EMSL.com

Attn: **EE & G**
14505 Commerce Way
Suite 400
Miami Lakes, FL 33016

Customer ID: EEG50
Customer PO:
Received: 06/29/07 9:45 AM
EMSL Order: 040714703

Fax: (305) 374-9004 Phone: (305) 374-8300

EMSL Proj:
Analysis Date: 6/30/2007
Report Date: 6/30/2007

Project:

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1A CEMENTITIOUS SIDING 040714703-0001	EXTERIOR OF BLDG	Gray Non-Fibrous Heterogeneous		70% Non-fibrous (other)	30% Chrysotile
1A FELT 040714703-0001A	EXTERIOR OF BLDG	Brown Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (other)	None Detected
1B CEMENTITIOUS SIDING 040714703-0002	EXTERIOR OF BLDG				Stop Positive (Not Analyzed)
1B FELT 040714703-0002A	EXTERIOR OF BLDG	Brown Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (other)	None Detected
1C CEMENTITIOUS SIDING 040714703-0003	EXTERIOR OF BLDG				Stop Positive (Not Analyzed)
1C FELT 040714703-0003A	EXTERIOR OF BLDG	Brown Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (other)	None Detected

Analyst(s) _____

Jerry Cherian (24)

Stephen Siegel, CIH, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.
Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872



EMSL Analytical, Inc.

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Fax: (305) 374-9004 Phone: (305) 374-8300
Project:

EMSL Proj:
Analysis Date: 6/30/2007
Report Date: 6/30/2007

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
2A 040714703-0004	OVER EXTERIOR WINDOWS AND DOORS	Gray Non-Fibrous Heterogeneous		70% Non-fibrous (other)	30% Chrysotile
2B 040714703-0005	OVER EXTERIOR WINDOWS AND DOORS				Stop Positive (Not Analyzed)
2C 040714703-0006	OVER EXTERIOR WINDOWS AND DOORS				Stop Positive (Not Analyzed)
3A 040714703-0007	EXTERIOR FACIA	White/Black/Green Fibrous Heterogeneous	50% Cellulose	50% Non-fibrous (other)	None Detected
3B 040714703-0008	EXTERIOR FACIA	White/Black/Green Fibrous Heterogeneous	50% Cellulose	50% Non-fibrous (other)	None Detected
3C 040714703-0009	EXTERIOR FACIA	White/Black/Green Fibrous Heterogeneous	50% Cellulose	50% Non-fibrous (other)	None Detected
4A 040714703-0010	BATHROOM	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (other)	None Detected

Analyst(s) _____

Jerry Cherian (24)

Stephen Siegel, CIH, Laboratory Manager
or other approved signatory

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Project:

EMSL Proj:
Analysis Date: 6/30/2007
Report Date: 6/30/2007

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
4B 040714703-0011	BATHROOM	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
4C 040714703-0012	BATHROOM	Brown/White Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (other)	None Detected
5A 040714703-0013	EXTERIOR WINDOWS	Brown/Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
5B 040714703-0014	EXTERIOR WINDOWS	Brown/Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
5C 040714703-0015	EXTERIOR WINDOWS	Brown/Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
6A 040714703-0016	ROOF	Brown/Black/Silver Non-Fibrous Heterogeneous	30% Cellulose 10% Glass	60% Non-fibrous (other)	None Detected
6B 040714703-0017	ROOF	Brown/Black Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (other)	None Detected
6C 040714703-0018	ROOF	Brown/Black Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (other)	None Detected

Analyst(s) _____

Jerry Cherian (24)

Stephen Siegel, CIH, Laboratory Manager
or other approved signatory

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Project:

EMSL Proj:
Analysis Date: 6/30/2007
Report Date: 6/30/2007

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
7A 040714703-0019	LANDING	Black/Rust Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
7B 040714703-0020	LANDING	Black/Rust Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
7C 040714703-0021	LANDING	Black/Rust Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected

Analyst(s) _____

Jerry Cherian (24)

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Appendix G

Decision Logic Flow Chart for Hazard Assessments

DECISION LOGIC FLOWCHART

for Hazard Assessments

