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Prepared at the Request of Counsel

ASBESTOS ASSESSMENT REPORT

**3 WORLD FINANCIAL CENTER
NEW YORK, NEW YORK**

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A. EXECUTIVE SUMMARY

The collapse of the World Trade Center (WTC) buildings on September 11, 2001 caused significant collateral damage to buildings in proximity to them. The American Express Tower, 3 World Financial Center (3 WFC), which is located directly west of the site of One World Trade Center, the North Tower, sustained serious structural damage. Other buildings in the immediate vicinity suffered less serious damage.

The dust from the collapse of the World Trade Center entered 3 WFC primarily through its structurally damaged southeast corner and broken windows on the south and east sides of the building. Information shown on the façade survey drawings prepared by Wiss, Janney, Elstner Associates, Inc, dated October 15, 2001, provides insight as to the cause for the significant debris and dust impacts to the interior space of 3 WFC. Approximately 1,019 windows were broken, or damaged, all of which occurred on the East and South elevations.

During the period from September 27, 2001 through January 31, 2002, a total of 1,020 bulk dust asbestos samples were analyzed by Polarized Light Microscopy, 574 bulk dust asbestos samples were analyzed by Transmission Electron Microscopy (TEM), 366 micro-vacuum dust asbestos samples were analyzed by TEM, 1,298 airborne asbestos samples were analyzed by Phase Contrast Microscopy, and 1,045 airborne asbestos samples were analyzed by TEM.

The findings of this asbestos assessment indicated significant asbestos contamination of floors Lobby – 16. Contamination in settled dust collected from the floor spaces and above ceilings on floors 4 – 16 was not confined to the damaged southeast corner, as was the case for floors Lobby –3 and 17 – 26. A number of the samples collected demonstrated asbestos contamination of both floor space and above ceilings, both west and north of the central “core” area of the building. The presence of asbestos contamination, both within the floor space and above ceilings required that the entire floor space of floors 4 – 16 be abated as regulated areas. Asbestos contamination was determined to be isolated to the damaged southeast corner of the building on floors

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Lobby – 3 and 17 – 26. This was abated under DEC's emergency cleanup guidance in order to permit the construction of a temporary wall to close the building and the removal of debris by the City's demolition contractor, AMEC. In contrast, analysis of settled dust on floors 27 – 51 of 3 WFC, showed no significant asbestos contamination.

The general cleaning and asbestos abatement performed throughout this project were completed in accordance with applicable Federal, State and Local rules, regulations and guidance. The results of the airborne asbestos sampling show that the cleanup is complete and that the affected areas of the building may be re-occupied.

This Report summarizes the asbestos assessment data, the subsequent cleanup activities, and the air monitoring results from samples collected prior to, during, and following the completion of the work.

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1.0 Introduction

The collapse of the World Trade Center (WTC) buildings on September 11, 2001 caused significant collateral damage to buildings in proximity to the WTC. The American Express Tower, 3 World Financial Center (3WFC), which is directly west of the original location of One World Trade Center, the North Tower, sustained serious structural and façade damage.

Three World Financial Center, the corporate headquarters for American Express and Lehman Brothers prior to the terrorist attacks on September 11, 2001, was constructed in 1985-86. The fifty-one story building is comprised of 1.8 million square feet and was constructed from conventional steel framing, portions of which were damaged by steel and debris from the collapse of the World Trade Center Towers. The majority of the structural and facade damage to the building occurred from the 26th Floor down to the street level on the southeast corner of the building. Fallout from the collapse of WTC Towers, One and Two, caused significant curtain wall and structural damage, which allowed dust and debris to enter the building.

EMG, Inc. has served as the lead environmental consultant for the 3 WFC restoration project since October 2001, and was retained by the law firm of Stroock & Stroock & Lavan, LLP, on behalf of the building owners, Lehman Brothers and American Express. Edifice Rx/The Clean Air Company, Inc. and Ambient Group, Inc., were subcontracted by EMG, Inc., to perform specific aspects of the assessment.

Dust and air samples were collected by appropriately credentialed professionals in asbestos inspection, industrial hygiene, mechanical hygiene, and engineering. The samples collected were analyzed for asbestos by Polarized Light Microscopy (PLM),

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Phase Contrast Microscopy (PCM), or Transmission Electron Microscopy (TEM) methods, by accredited laboratories, as shown in Section 2, below.

A summary of the number of samples collected, the method used for the analysis, and the results for samples reported to have asbestos present are presented in the Findings and Discussion Section 3. A summary of the cleanup activities and the airborne asbestos clearance results is also presented in this section. Conclusions are presented in Section 4.

2.0 Sampling and Laboratory Methods

A summary table of the analytical methods used, as well as the accredited laboratories that performed the analyses is provided below:

Method	Description	Laboratories
NYS ELAP 198.1	Asbestos Analysis of Bulk Materials by PLM	Ambient Labs, Inc. EMSL Analytical, Inc.
NYS ELAP 198.4	Asbestos Analysis of Non-Friable Organically Bound Materials by TEM	EMSL Analytical, Inc.
ASTM D 5755-95	Standard Method for Microvacuum Sampling and Indirect Analysis of Asbestos in Settled Dust by TEM	EMSL Analytical, Inc. International Asbestos Testing Laboratory
NIOSH 7400	Fiber Analysis of Air Samples by PCM	Ambient Labs, Inc. EMSL Analytical, Inc.
EPA 40 CFR Part 763, Final Rule (AHERA)	Airborne Fiber Analysis by TEM	Ambient Labs, Inc. ATC Associates EMSL Analytical, Inc. International Asbestos Testing Laboratory

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3.0 Findings and Discussion

3.1 Asbestos Dust

During the initial, emergency response phase of the project, Emteque Corporation and JLC Environmental Consultants, Inc, conducted an assessment of asbestos contamination, which was initially suspected in the Southeast corner of the building from the Lobby level to Floor 26, as well as the set-back roofs. Bulk debris samples were collected on September 29 and 30, 2001, by Emteque Corporation and by JLC Environmental, Inc., on September 27 – 28, 2001. On October 24, 2001, Emteque Corporation collected additional bulk debris samples, from street level to Floor 10. Asbestos contamination was determined to be isolated to the damaged southeast corner of the building on floors Lobby – 3 and 17 – 26. This was abated under DEP's emergency cleanup guidance in order to permit the construction of a temporary wall to close the building and the removal of debris by the City's demolition contractor, AMEC.

EMG commenced a comprehensive asbestos assessment on October 30, 2001, on floors 2 – 52. Bulk dust samples were collected from surfaces of furniture, fixtures, and equipment below the suspended ceiling system, as well as from HVAC systems and components above the suspended ceiling, and inside the core ventilation fan units. Additional bulk samples were collected from HVAC systems or components using the micro-vacuum sampling method established by the American Society for Testing and Materials (ASTM) Test Method D 5755-95.* In either case, efforts were made by the personnel collecting the bulk samples to minimize fiber release. Personal protective

* In a memorandum dated September 14, 2001, DEP stated that it does not recognize micro-vacuum sampling for the purpose of determining whether a material is asbestos-containing. However, the ASTM micro-vacuum method provides an accurate determination as to whether disturbed ACM has resulted in surface contamination. Therefore, this method was used on this project, in addition to DEP-approved protocols, to assess the presence of asbestos in settled dust in the open return air plenum (above suspended ceilings), on HVAC system components and inside ductwork.

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equipment consisted of disposable protective clothing, gloves, safety glasses, and HEPA-filtered, air purifying respirators.

Asbestos was reported to be present in both bulk dust samples collected from floor space and above ceilings, using the PLM method, and in bulk dust and micro-vacuum samples collected above ceilings using TEM methods. For purpose of discussion the data have been grouped as Lobby – floor 3, floors 4 – 16, floors 17- 29, and floors 30 – 52. A summary table depicting the bulk dust asbestos results is presented below:

Asbestos Dust Samples

Floors	Lobby - 3		4 - 16		17 - 29		30 - 52		Tot als	
	Collected	Present	Collected	Present	Collected	Present	Collected	Present	Collected	Present
Method										
NYS ELAP 198.1	69	21	454	136	408	49	89	2	1020	208
NYS ELAP 198.4	20	7	255	11	197	9	102	6	574	33
ASTM D 5755-95	8	0	223	112	117	42	18	7	366	161

Note: Present for ASTM D 5755-95 is $> 10,000 \text{ s/cm}^2$

The asbestos results presented above are consistent with the conclusion that there was a significant difference in the degree of dust impact on floors Lobby – 16, as compared to floors 17 – 52. A total of 157 (30%) of the 523 bulk dust samples from floor space locations were reported to have asbestos present on floors Lobby – 16. By contrast, 12% of the samples from floors 17 –29, and only 2% of the samples from floors 30 –52 were reported as asbestos present. Samples from floors 30 – 52 where asbestos was reported as present were from the 52nd floor air handler unit and a few isolated mechanical system components. Asbestos in dust results from samples collected inside the building by PLM methods ranged from non-detect to 5 percent. Bulk sample results from debris collected on the set-back roofs ranged from non-detect to 35 percent.

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The HVAC micro-vacuum sampling results were similarly comparable, with 48% of the samples from floors Lobby – 16 reported as present. The concentrations reported ranged from non-detect to 12,976,000 asbestos structures per square centimeter.

3.2 PCM Sampling

Personal air monitoring was conducted following the NIOSH 7400 Method, utilizing Phase Contrast Microscopy. Approximately 1,298 airborne fiber samples were collected and analyzed to determine Initial exposure assessments, for separate dust disturbing activities conducted by general cleaners, electricians, carpenters, and artwork and personal item retrieval personnel. A “negative” exposure was determined for each of these activities as compared to the OSHA 8-hour TWA PEL of 0.1 fibers per cubic centimeter (f/cc).

The emergency response cleanup on floors 3 – 26 was performed by Safeway Environmental, Inc., as described in the Asbestos Project Notification (ACP-7) filed with DEP and dated October 9, 2001. This work was completed during the period of October 9 to November 5, 2001. Emteque Corporation conducted air monitoring for these activities by sampling prior to work (baseline), during, and after completion of the work (clearance). A total of 575 air samples were collected and analyzed by PCM during these cleanup activities, which also included the set-back roof areas at Floors 4, 5, 10, 20, 26, 48, 51, and 52. None of the sample results were reported to be above the clearance criteria of 0.01 f/cc.

3.3 TEM Sampling

Following the general cleaning of a floor space by respiratory protected personnel, airborne asbestos samples were collected for analysis by TEM, following the AHERA methodology, per USEPA 40CFR Part 763, Final Rule. This “clearance” testing was performed by collecting a minimum of nine samples per floor, using aggressive sampling methods. The entire floor space of Floors 17 – 52 were cleared in this

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manner. Additionally, building engineering staff cleaned mechanical system components and replaced filters. Following this cleaning, the mechanical systems were turned on and a second round of clearance testing was performed. Analytical results for each of the samples collected were reported below the "clearance" criteria of 70 s/mm² and below the analytical sensitivity of 0.005 structures per cubic centimeter (s/cc), as established in the sampling plan.

ETS Contracting, Inc. filed an ACP-7 dated December 6, 2001, as well as amendments (ACP-8) dated December 14, 2001 and January 25, 2002, for the cleanup on the Lobby Level through Floor 16. ALC Environmental, Inc. provided project management, project monitoring and air monitoring during the period of December 13, 2001 through April 5, 2002. Airborne asbestos sampling and analysis for this work was performed using TEM clearance, in accordance with DEP rules. A summary of the activities and the clearance testing of the cleanup work on these floors is provided below:

[Table on following page. This space intentionally left blank.]

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FLOOR	DATE OF BACKGROUND SAMPLE COLLECTION	NUMBER OF BACKGROUND SAMPLES	DATE OF INITIAL CLEARANCE SAMPLE COLLECTION	NUMBER OF CLEARANCE SAMPLES (1ST SET)	DATE OF FINAL CLEARANCE SAMPLE COLLECTION	NUMBER OF CLEARANCE SAMPLES (2ND SET)
16	2/2/2002	12 IN / 12 OUT	2/11/2002	9 IN / 9 OUT	3/20/2002	9 IN
15	2/3/2002	12 IN / 12 OUT	3/22/2002	9 IN / 9 OUT	3/27/2002	9 IN
14	2/3/2002	12 IN / 12 OUT	3/19/2002	12 IN / 12 OUT	3/22/2002	9 IN
12	2/5/2002	9 IN / 5 OUT	3/20/2002	9 IN / 9 OUT	3/26/2002	12 IN
11	3/12/2002	9 IN / 9 OUT	3/26/2002	9 IN / 9 OUT	3/29/2002	9 IN
10	3/8/2002	12 IN / 12 OUT	3/16/2002	12 IN / 12 OUT	3/21/2002	12 IN
9	2/13/2002	12 IN / 12 OUT	2/22/2002	12 IN / 12 OUT	2/28/2002	12 IN
8	2/18/2002	12 IN / 12 OUT	2/26/2002	12 IN / 12 OUT	3/3/2002	12 IN / 12 OUT
7	2/18/2002	12 IN / 12 OUT	2/28/2002	12 IN / 12 OUT	3/6/2002	12 IN
6	2/24/2002	12 IN / 12 OUT	3/4/2002	12 IN / 12 OUT	3/10/2002	12 IN
5	2/28/2002	12 IN / 12 OUT	3/9/2002	12 IN / 12 OUT	3/14/2002	12 IN
4	3/5/2002	12 IN / 12 OUT	3/14/2002	12 IN / 12 OUT	3/19/2002	12 IN
3rd floor - Training room	12/20/2001	5 IN / 5 OUT	12/28/2001	5 IN / 5 OUT	N/A	N/A
3rd floor - AC2C	12/26/2001	3 IN / 3 OUT	12/28/2001	3 IN / 3 OUT	N/A	N/A
2nd floor and 2 nd floor mezzanine	12/13/01, 12/14/01	16	12/22/2001	5 IN / 5 OUT	N/A	N/A
1st floor - Southeast corner	1/2/2002	5 IN / 5 OUT	1/4/2001	5 IN / 5 OUT	N/A	N/A

As shown in the table above, two air clearance sample collections were conducted. The initial clearance was collected following the thorough cleaning of the floor space, and following the encapsulation of the original, non-asbestos spray-on fireproofing on decks and columns floor. The second set, the final clearance samples, were collected following the cleaning of the Heating, Ventilation, and Air Conditioning (HVAC) interior duct systems on each floor.

A "negative" exposure was also determined during this portion of the cleanup, as compared to the OSHA 8-hour TWA PEL of 0.1 fibers per cubic centimeter (f/cc).

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4.0 CONCLUSIONS

The findings of this asbestos assessment indicated significant ACM dust and asbestos contamination on floors Lobby – 16. Contamination on these floors, in the form of settled dust collected from the floor space and above suspended ceilings, was not limited to the areas immediately adjacent to the damaged Southeast corner, as was the case for floors 17 – 26. There were no significant impacts to floors 27 – 52.

Based upon our observations of the work performed throughout this project and relying upon air monitoring results, the asbestos cleanup was successfully completed in accordance with applicable Federal (ASHERA), New York State and City regulations and guidance. The abated areas in 3 WFC meet all applicable criteria for re-occupancy by the public.

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