Environmental Consultants and Contractors, Inc.

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August 24, 2011

Ms. Cheryl O'Neill
Torti Gallas Urban, Inc.
1316 9th Street, N.W.
2nd Floor
Washington, D.C. 20001

Re: Report of Asbestos Inspections
Anacostia Properties
2228, 2234, 2238, and 2252 Martin Luther King, Jr., Ave., S.E.
Washington, D.C.
ECC Project #10-10494

Dear Ms. O'Neill:

Environmental Consultants and Contractors (ECC), Inc., is pleased to present this summary of the asbestos inspections performed at the referenced locations. Structures at these locations are significantly damaged and partially collapsed. As understood, these structures are historically significant, are planned to be returned to structural stability, and be preserved. Asbestos inspections of the structurally sound portions of these structures are required prior to the start of restoration. Structurally unsound portions are exempt from inspection requirements; however, regulations require presuming debris from exempt portions contains asbestos.

As authorized, ECC conducted an asbestos inspection and collected bulk samples from suspect asbestos-containing materials (ACMs) in order to conform with Federal regulations requiring an asbestos inspection of a building prior to renovation or demolition. These regulations pertain to retail, commercial, and industrial facilities and residential properties planned for commercial redevelopment, built before 1986.

The inspection was performed following inspection and sampling guidelines established by the United States Environmental Protection Agency (EPA) Asbestos Hazard Emergency Response Act (AHERA) to address asbestos hazards in schools. The Asbestos School Hazard ReAuthorization Act (ASHARA) made these requirement applicable to public and commercial buildings. The guidelines include the following:

- Collection of three samples from each type of suspect thermal system insulation in a building, including: boiler insulation, pipe insulation, tank insulation, and breeching insulation;

- Collection of three samples from suspect surfacing materials such as spray-applied fireproofing or acoustical treatment of a quantity less than 1,000 square feet, five samples if

the quantity is greater than 1,000 square feet but less than 5,000 square feet, and seven samples if the quantity is greater than 5,000 square feet.

- Collection of at least one sample from suspect miscellaneous materials such as vinyl floor tile, acoustical ceiling tile, and drywall system.

Drywall system is the subject of a technical dispute between EPA and the Occupational Safety and Health Administration (OSHA). EPA defines drywall system to be composite of gypsum board, tape, and joint compound, and if analysis of the composite system detects more than one percent asbestos (the definition of an asbestos-containing material) regulates the system to control air pollution. Additionally, if less than 10% asbestos is detected in a sample, EPA recommend presuming the material to be an ACM unless rebutted by PLM point-count analysis. PLM point-count analysis has greater precision (0.25%) than visual estimation by PLM and, therefore, is most useful if the asbestos concentrations detected by PLM analysis are near the definition of an ACM. OSHA requires layered analysis of all samples and regulates employee exposures if asbestos is detected in any layer. EPA air pollution regulations (NESHAPS) determine if an ACM is required to be removed prior to demolition or renovation and determine the disposal requirements. OSHA regulations determine how to protect employees working around asbestos.

ECC representatives Robert Cienki and Corey Ashford, both EPA-accredited asbestos inspectors, visited the site and performed the inspections on July 15 and 16, 201. Copies of their accreditations are is attached.

The inspectors identified homogenous areas of suspected ACMs (an area of material which is visually similar and contiguous) per construction phase at each structure, classified and assessed each suspected ACM, and presumed or sampled each homogenous area of suspect ACM per the referenced guidelines.

2228 Martin Luther King Jr. Ave., S.E.
The two-story residence with basement at this address appears to have been constructed in the 1800s. The back portion of this residence and much of the ground floor flooring are collapsed into the basement. The upper floor and basement were deemed unsafe to enter. The residence has a field-stone basement foundation, wood framed walls, and gabled roofs. Most of the roofs on this building are covered with standing seam metal; however, the top-center portion of the main roof appears to be covered with fish scale asphalt shingles. This residence appears to formerly have been heated by a boiler via steam radiators, hot-water baseboards, and most recently by electric baseboards, supplemented with at least one fireplace.

ECC observed six suspect ACMs in accessible portions of the residence, including: white plaster, gypsum board, brown 9" x 9" vinyl floor tile (VFT), parging, fiberboard, and textured ceiling material.

ECC collected 18 samples from materials suspected to contain asbestos at this location and submitted all these samples for laboratory analysis. A summary of information regarding the suspected ACMs, samples, and results of laboratory analysis is presented in Table 1.

2234 Martin Luther King Jr. Ave., S.E.
The two-story residence with basement at this address appears to have been constructed in the 1800s. The back portion of this residence and much of the ground floor flooring are collapsed into the basement. The upper floor and basement were deemed unsafe to enter. Inspection at this residence was limited to the exterior, ground floor hallway, and two front rooms. The residence has a field-stone basement foundation, wood framed walls, and gabled roofs. Roofs are covered with standing seam metal. The residence was heated by a boiler via radiators, supplemented with several fireplaces.

ECC observed five suspect ACMs at the residence, including: white plaster, gypsum board, gray/black insulation, black caulking on an exterior pipe, and gray packing on the inside wall where the exterior pipe penetrates into the foyer.

ECC collected 17 samples from materials suspected to contain asbestos at this location and submitted 16 of these samples for laboratory analysis. One sample of black caulking on piping was retained. A summary of information regarding the suspected ACMs, samples, and results of laboratory analysis is presented in Table 1.

2238 Martin Luther King Jr. Ave., S.E.
The two-story residence with basement at this address appears to have been constructed in the 1800s. Most areas of this residence appear structurally sound. The only apparently unsafe portion of this residence is the rear porch roof, which has burned, and two rooms on the second floor where the ceiling has collapsed. The residence was heated by a boiler via radiators, supplemented with several fireplaces.

ECC observed seven suspect ACMs at the residence, including: textured exterior stucco, exterior parging, green linoleum in the kitchen, white smooth-coat and brown base-coat wall plaster, gypsum board, and glazing.

ECC collected 22 samples from materials suspected to contain asbestos at this location and submitted all of these samples for laboratory analysis. A summary of information regarding the suspected ACMs, samples, and results of laboratory analysis is presented in Table 1.

2252 Martin Luther King Jr. Ave., S.E.
The structure at this address appears to have three construction phases: the front, two-story section; a rear single-story warehouse bay; and a side, single-story cooler. The two-story section appears to have been constructed c. 1930 using masonry load-bearing walls and wooden framing to support wooden floor decking and roofing. The roof of this section is covered with standing seam metal roofing. This section appears to formerly have been heated by a boiler and radiators; however, all equipment formerly associated with the heating system have been removed. The second floor of this structure appears to have most recently been used as an apartment, with no obvious central heat. The first floor appears to have been used as a liquor retail outlet, heated by gas-fired space heaters suspended from the ceiling. The side addition appears to have been constructed c. 1960 using concrete block walls to support the flat roof. The side addition was most recently used as a walk-in cooler and is insulated with styrofoam panels. The rear addition appears to have been constructed c. 1980 as a warehouse, is a high one-story slab-on-grade structure which uses steel web joists and load-bearing concrete-block walls to support the flat roof. This roof is covered with a rubber membrane. The warehouse is heated by gas-fired space heaters suspended from the ceiling.

ECC observed 24 suspect ACMs at this location, including: nine styles of vinyl floor tile, white plaster, gypsum board, tan parging, door caulking, three styles of acoustical ceiling tile, fiberboard, two styles of linoleum, sheet vinyl floor covering, joint compound, caulking on windows, and two styles of caulking on pipes.

ECC collected 34 samples from materials suspected to contain asbestos at this location and submitted all these samples for laboratory analysis. A summary of information regarding the suspected ACMs, samples, and results of laboratory analysis is presented in Table 1.

Results
Samples collected during the inspections were submitted the samples to Aerobiology Laboratory Associates, a Virginia-licensed asbestos analytical laboratory located in Dulles, Virginia, for analysis via Polarized Light Microscopy (PLM) EPA Method 600/R-93/116. A total of 89 samples were submitted for analysis. Samples were submitted on a “positive stop” basis; this is, once the laboratory identified a homogenous material as an ACM, no additional samples of that material would be analyzed. Pursuant to OSHA guidelines, the laboratory identified 111 layers in these samples. Analysis of 10 of these layers was positive-stopped; therefore the laboratory performed 101 analyses on the submitted samples. Copies of the laboratory accreditation, analytical report(s), and sample chain(s)-of-custody are attached.

Laboratory analysis determined the following materials to be ACM:

2228 Martin Luther King Jr. Ave, S.E.

- Brown 9" x 9" VFT in the kitchen and hallway covering approximately 250 square feet.

2234 Martin Luther King Jr. Ave, S.E.

- Black caulking on a pipe penetrating the front exterior wall covering approximately 1 square foot.

2238 Martin Luther King Jr. Ave, S.E.

- Exterior stucco covering three sides of the residence, an area of approximately 1,600 square feet,
- Parging on the exterior of the residence, an area of approximately 2,400 square feet.

2252 Martin Luther King Jr. Ave, S.E.

- White, green, red, and yellow 12" x 12" VFT comprising a pattern on the sales floor covering approximately 1,650 square feet,
- Gray 9" x 9" VFT comprising a border around the sales floor pattern of VFT covering an area of approximately 120 square feet,
- Black mastic adhering the gray 9" x 9" VFT and present as a residue underneath other VFT across the sales floor, covering an area of approximately 1,800 square feet,
- Door caulking, covering approximately 56 LF,
- Yellow sheet vinyl flooring located in the upstairs kitchen and covering approximately 250 square feet,
- Black caulking on two rooftop pipes, covering approximately 2 square feet.

The exterior stucco, exterior parging, and wall material at 2238 Martin Luther King Jr. Ave. are classified as friable materials. The exterior stucco and parging have weathered to become friable and are severely damaged.

The yellow sheet vinyl on the apartment kitchen floor at 2252 Martin Luther King Jr. Ave. is classified as a non-friable Category II ACM and was observed to be in fair condition.

The brown 9" x 9" VFT in the foyer and side room at 2222 Martin Luther King Jr. Ave., the black caulking on a pipe at 2234 Martin Luther King Jr. Ave., the pattern of VFT and adhering black mastic on the sales floor 2252 Martin Luther King Jr. Ave. are classified as non-friable Category I ACMs and were observed to be in fair condition.

Laboratory analysis detected trace concentrations of asbestos, defined to be less than 1%, in several materials including:

2228 Martin Luther King Jr. Ave.

- black mastic adhering brown vinyl asbestos floor tile (VAT) in the ground floor hallway and kitchen, covering approximately 250 square feet,

2252 Martin Luther King Jr. Ave.

- yellow VFT in the warehouse restroom, covering approximately 20 square feet,
- blue VFT and black VFT comprising portions of the pattern on the sales floor.

EPA recommends subjecting materials determined to contain less than 10% asbestos by PLM analysis to supplemental analysis, either via PLM point-count or TEM, unless the material will be considered to be ACM. Additionally, EPA recommends supplementing PLM analysis with TEM for organically-bound materials, such as floor tile and mastic, because the binder can conceal asbestos when using PLM analysis. ECC recommends considering the materials with trace concentrations of asbestos to be ACM, since other associated materials at the same locations are ACM.

Conclusions and Recommendations

Any abatement undertaken is required to be performed by a District of Columbia-licensed asbestos abatement contractor, using specific engineering controls and personal protective equipment. Abatement is required to be monitored by an EPA-accredited asbestos project monitor, including the collection and laboratory analysis of air samples. Clearance air samples are required to be analyzed by TEM methodology.

All ACMs, regardless of classification, are required to be appropriately abated prior to any renovation activity which could impact them.

Friable ACMs and non-friable Category II ACMs likely to become friable during demolition are required to be appropriately removed by a District of Columbia-licensed asbestos abatement contractor, using specific engineering controls and personal protective equipment, prior to demolition, regardless of the type of demolition method utilized.

Non-friable Category I ACMs, may remain in the structure(s) during conventional demolition, provided they remain non-friable (are not burned, sanded, ground, or abraded) and are adequately wetted to prevent visible (dust) emissions. The demolition debris, including the ACM, may be removed for disposal at any landfill which will accept it. OSHA requires notifying the landfill and demolition contractor the debris includes unregulated non-friable Category I ACMs; ECC recommends this notification be made in writing with receipt confirmation. ECC also recommends retaining an EPA-accredited asbestos project monitor to

measure personal exposures and perimeter asbestos fiber concentrations during demolition of structures containing ACMs.

Non-friable Category I ACMs are required to be appropriately removed by a licensed asbestos abatement contractor prior to demolition using intentional burning, or demolition including sanding, grinding, cutting, or abrading.

ECC recommends sampling PACM to potentially rebut the PACM designation prior to undertaking any abatement.

Note that the EPA requires environmental notification, separate from the permit, prior to any demolition.

If ACMs will remain inside the structures following renovation, or if renovation of demolition of the structures will not occur for several months, ECC recommends the development and implementation of an asbestos operations and maintenance program to address all of the issues associated with managing buildings containing asbestos.

ECC is pleased to have provided these inspections. If questions or comments concerning this report arise, please do not hesitate to call this office at (703) 327-2700.

Sincerely,
for: ECC, Inc.

Robert Cienki
Industrial Hygiene Program Manager

attachments

Table 1
Summary of Suspected ACMs
Anacostia Properties

Address	Material				Sample	Result	Category
	Description	Location	Quantity	Class			
2228 MLK	White plaster	Walls	6,000 ft^2	S	1A-G	NAD	N/A
	Tan plaster					NAD	
	Gypsum board	Ceilings	3,000 ft^2	M	2	NAD	N/A
	Brown 9" x 9" VFT	Ground floor hallway and kitchen	250 ft^2	M	3	5% chrysotile	NF Cat I
	Black mastic					trace chrysotile	NF Cat I
	Packing	Front hallway	288 ft^2	S	4A-C	NAD	N/A
	Brown fibrous material	Outside front entrance	288 ft^2	M	5	NAD	N/A
	Black tar					NAD	N/A
	Textured ceiling plaster	Hallway and bedroom	1,500 ft^2	S	6A-E	NAD	N/A
	Scale-style asphalt shingles	Top roof	400 ft^2	M	N/A	PACM	NF Cat I
2234 MLK	White plaster	Walls	6,000 ft^2	S	1A-G	NAD	N/A
	Tan plaster					NAD	N/A
	Gypsum board	Ceilings	3,000 ft^2	M	2	NAD	N/A
	Insulation	Front wall	1,900 ft^2	T	3A-C	NAD	N/A
	Black caulking on pipe	Exterior near front entrance	1 ft^2	M	4A-B	7% chrysotile	NF Cat I
	Gray patching material	Inside front door	1 ft^2	S	5A-C	NAD	N/A
2238 MLK	Stucco	Exterior, three walls	1,600 ft^2	S	1A-E	7% chrysotile	Friable
	Parging	Exterior all walls	2,400 ft^2	S	2A-E, 5	10-50% chrysotile	Friable
	Beige plaster	Interior walls	~ 6,000 ft^2	S	3A-G	NAD	N/A
	Green linoleum	Kitchen	180 ft^2	M	4	NAD	N/A

Table 1
Summary of Suspected ACMs
Anacostia Properties

Address	Material				Sample	Result	Category
	Description	Location	Quantity	Class			
	Brown wall material	Bathroom interior wal	N/A	M	6	NAD	N/A
	Drywall	Ceilings	2,000 ft^2	M	7	NAD	N/A
	Window glazing	Intermittent windows	156 LF	M	8	NAD	N/A
2252 MLK	Yellow VFT	Warehouse restroom	30 ft^2	M	1	trace chrysotile	NF Cat I
	Blue 12" x 12" VFT	Pattern on sales floor	1,650 ft^2	M	2	trace chrysotile	NF Cat I
	Black 12" x 12" VFT			M	3	trace chrysotile	NF Cat I
	White 12" x 12" VFT			M	4	2% chrysotile	NF Cat I
	Green 12" x 12" VFT			M	5	2% chrysotile	NF Cat I
	Red 12" x 12" VFT			M	6	2% chrysotile	NF Cat I
	Yellow 12" x 12" VFT			M	7	2% chrysotile	NF Cat I
	Gray 9" x 9" VFT	Sales floor border	120 ft^2	M	8	7% chrysotile	NF Cat I
	Black mastic adhering gray VFT	Border and residue all sales floor	1,800 ft^2	M		7% chrysotile	NF Cat I
	White plaster	Original section wall system	> 5,000 ft^2	S	9A-G	NAD	N/A
	Gypsum board			M	10	NAD	N/A
	Tan parging	Behind sales floor walls	2,000 ft^2	S	11A-E	NAD	N/A
	Door caulking	Original section doors	56 LF	M	12	2% chrysotile	NF Cat I
	ACT 2' x 4' w/ pinholes and lateral fissures	Pattern on sales floor	950 ft^2	M	13	NAD	N/A
	ACM 2' x 4' w/ pinholes and pockmarks		950 ft^2	M	14	NAD	N/A

Table 1
Summary of Suspected ACMs
Anacostia Properties

Address	Material				Sample	Result	Category
	Description	Location	Quantity	Class			
2252 MLK	ACT 2' x 4' textured	Sales area	32 ft^2	M	15	NAD	N/A
	Fiberboard	Apt ceiling patches	600 ft^2	M	16	NAD	N/A
	Gray 9" x 9" VFT	Apt. bathroom	40 ft^2	M	17	NAD	N/A
	Gray linoleum	Apt hall, top layer	10 ft^2	M	18	NAD	N/A
	Linoleum fibrous backing					NAD	N/A
	Tan linoleum	Apt. hall and bath	60 ft^2	M	19	NAD	N/A
	Linoleum fibrous backing					NAD	N/A
	Yellow sheet vinyl floor covering	Apt. kitchen	250 ft^2	M	20	2% chrysotile	NF Cat II
	Linoleum fibrous backing					NAD	
	Joint compound	Seams of fiberboard ceiling patches	40 LF	M	21	NAD	N/A
	Window caulk	Windows	160 LF	M	22	NAD	N/A
	Caulking	Warehouse roof pipe penetration	1 ft^2	M	23	10% chrysotile	NF Cat I
	Caulking	Warehouse roof pipe penetration	1 ft^2	M	24	12% chrysotile	NF Cat I

SVFC = Sheet vinyl floor covering ACT = Acoustical Ceiling Tile VFT = Vinyl Floor Tile
T = Thermal System Insulation S = Surfacing M = Miscellaneous
NAD = No Asbestos Detected PACM = Presumed asbestos-containing material * = Analyzed via PLM Point-Count Methodology
F = Friable NF = Non-friable (Category) N/A = Not applicable

AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

ROBERT CIENKI

has met the attendance requirements and successfully completed the course entitled

4-Hour EPA AHERA Inspector Refresher

For Accreditation Under TSCA Title II.

7/26/2010	*7/26/2010*	*7/26/2011*	*ROBERTA SPRATT-RITTER*
Course Date	***Exam Date***	***Expiration Date***	***Principal Instructor***

108814	*VA108814*	*E. RUSH BARNETT*
Certification No.	***Virginia Certification No.***	***Course Director***

1331 Ashton Road *P.O. Box 646* *Hanover, MD 21076* *P: 410-684-3327* *F: 410-684-3724*

www.amatraining.com

AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

COREY ASHFORD

has met the attendance requirements and successfully completed the course entitled

4-Hour EPA AHERA Inspector Refresher

For Accreditation Under TSCA Title II.

6/22/2010	*6/22/2010*	*6/22/2011*	*DAVID TRUMAN*
Course Date	***Exam Date***	***Expiration Date***	***Principal Instructor***

108460	*VA108460*	*E. RUSH BARNETT*
Certification No.	***Virginia Certification No.***	***Course Director***

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AEROBIOLOGY LABORATORY ASSOCIATES, INCORPORATED
CONSULTING LABORATORY

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Suite 100
Dulles, VA 20166
(877) 648-9150
www.aerobiology.net

Certificate of Analysis

ECC
43045 John Mosby Highway
Chantilly, VA 20152
Attn: Rob Cienki
Client Project Name: Anacostia

NVLAP LAB CODE 200829-0

Date Collected: 06/20/11
Date Received: 07/21/11
Date Analyzed: 07/25/11
Date Reported: 07/27/11
Project ID: A11 0503
Job ID: 11008504

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2222-1A	A11 0503-001	Tan Plaster	Yes	1	100	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
2222-1B	A11 0503-002	Tan Plaster	Yes	1	100	ND1	ND1	CELL (1) AH (3)	96	Q, C, OP, G
2222-1C	A11 0503-003a	Tan Plaster	Yes	1	97	ND1	ND1	CELL (1) AH (3)	96	Q, C, OP, G
	A11 0503-003b	Painted White Plaster	Yes	1	3	ND1	ND1	CELL (Trace)	>99	C, OP, G
2222-1D	A11 0503-004a	Tan Plaster	Yes	1	97	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0503-004b	White Plaster	Yes	1	3	ND1	ND1		>99	C, OP, G
2222-1E	A11 0503-005a	Tan Plaster	Yes	1	98	ND1	ND1	CELL (Trace) AH (3)	97	C, OP, G
	A11 0503-005b	White Plaster	Yes	1	2	ND1	ND1	CELL (Trace)	>99	C, OP, G
2222-1F	A11 0503-006a	Tan Plaster	Yes	1	98	ND1	ND1	CELL (1) AH (3)	96	Q, C, OP, G
	A11 0503-006b	White Plaster	Yes	1	2	ND1	ND1	CELL (Trace)	>99	C, OP, G

A = Amosite
AC = Actinolite
AN = Anthophyllite
CR = Crocidolite
TR = Tremolite
ND1 = None Detected
Trace = Less Than 1%

CELL = Cellulose
MW = Mineral Wool
FBG = Fiberglass
SYN = Synthetic
WO = Wollastonite
NTR = Non-Asbestiform TR
NAC = Non-Asbestiform AC
FT = Fibrous Talc
AH = Animal Hair

Q = Quartz
C = Carbonates
V = Vermiculite
G = Gypsum
M = Mica
T = Tar
P = Perlite
O = Organic
B = Binder
OP = Opaques
D = Diatoms

Cathi Piccione
Laboratory Analyst

Cathi Piccione
Technical Supervisor

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Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2222-1G	A11 0503-007a	Tan Plaster	Yes	1	96	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0503-007b	Painted White Plaster	Yes	1	4	ND1	ND1		>99	C, OP, G
2222-2	A11 0503-008	White Drywall	Yes	1	100	ND1	ND1	CELL (15)	85	C, OP, G
2222-3	A11 0503-009a	Brown Floor Tile	Yes	1	96	5	ND1	CELL (Trace)	95	C, B, OP
	A11 0503-009b	Black Mastic	Yes	1	4	Trace	ND1	CELL (3)	97	C, T, B, OP
2222-4A	A11 0503-010	Grey Plaster	Yes	1	100	ND1	ND1	CELL (2)	98	Q, C, OP, G
2222-4B	A11 0503-011	Grey Plaster	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
2222-4C	A11 0503-012	Grey Plaster	Yes	1	100	ND1	ND1	CELL (1)	99	Q, C, OP, G
2222-5	A11 0503-013a	Tan Fibrous Material	Yes	1	85	ND1	ND1	CELL (97)	3	OP
	A11 0503-013b	Black Tar	Yes	1	15	ND1	ND1	CELL (3)	97	T, B, OP

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NTR = Non-Asbestiform TR
NAC = Non-Asbestiform AC
FT = Fibrous Talc
AH = Animal Hair

Q = Quartz
C = Carbonates
V = Vermiculite
G = Gypsum
M = Mica
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P = Perlite
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B = Binder
OP = Opaques
D = Diatoms

Cathi Piccione
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Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2222-6A1	A11 0503-014	Off-White Non-Fibrous Material	Yes	1	100	ND1	ND1		>99	C, OP, M
2222-6B	A11 0503-015	Off-White Non-Fibrous Material	Yes	1	100	ND1	ND1		>99	C, OP, M
2222-6C	A11 0503-016	Off-White Non-Fibrous Material	Yes	1	100	ND1	ND1		>99	C, OP, M
2222-6D	A11 0503-017	Off-White Non-Fibrous Material	Yes	1	100	ND1	ND1		>99	C, OP, M
2222-6E	A11 0503-018	Off-White Non-Fibrous Material	Yes	1	100	ND1	ND1		>99	C, OP, M

Cathi Piccione
Laboratory Analyst

Cathi Piccione
Technical Supervisor

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Certificate of Analysis-Amended Report

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43045 John Mosby Highway
Chantilly, VA 20152
Attn: Rob Cienki
Client Project Name: Anacostia

NVLAP LAB CODE 200829-0

Date Collected: 06/20/11
Date Received: 07/21/11
Date Analyzed: 07/25/11
Date Reported: 08/03/11
Project ID: A11 0501
Job ID: 11008505

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2234-1A	A11 0501-001a	Tan Plaster	Yes	1	90	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0501-001b	White Plaster	Yes	1	10	ND1	ND1		>99	C, OP, G
2234-1B	A11 0501-002a	Tan Plaster	Yes	1	95	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0501-002b	White Plaster	Yes	1	5	ND1	ND1		>99	C, OP, G
2234-1C	A11 0501-003a	Tan Plaster	Yes	1	95	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0501-003b	White Plaster	Yes	1	5	ND1	ND1		>99	C, OP, G
2234-1D	A11 0501-004	Tan Plaster	Yes	1	100	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
2234-1E	A11 0501-005a	Tan Plaster	Yes	1	95	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0501-005b	White Plaster	Yes	1	5	ND1	ND1		>99	C, OP, G

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Date Reported: 08/03/11
Project ID: A11 0501
Job ID: 11008505

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2234-1G	A11 0501-006a	Tan Plaster	Yes	1	95	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0501-006b	White Plaster	Yes	1	5	ND1	ND1		>99	C, OP, G
2234-2	A11 0501-007	Grey Drywall	Yes	1	100	ND1	ND1	CELL (15)	85	C, OP, G
2234-3A	A11 0501-008	Grey Fibrous Material	Yes	1	100	ND1	ND1	CELL (3) MW (95)	2	OP
2234-3B	A11 0501-009	Grey Fibrous Material	Yes	1	100	ND1	ND1	CELL (2) MW (95)	3	OP
2234-3C	A11 0501-010	Grey Fibrous Material	Yes	1	100	ND1	ND1	CELL (2) MW (95)	3	OP
2234-4A	A11 0501-011	Grey and Black Semi-Fibrous Material	Yes	1	100	7	ND1	CELL (Trace)	93	C, OP
2234-4B	A11 0501-012	Not Analyzed-Prior Positive								
2234-4C	A11 0501-013	Not Analyzed-Prior Positive								

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Project ID: A11 0501
Job ID: 11008505

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2234-5A	A11 0501-014a	Grey Cementitious Material	Yes	1	97	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
	A11 0501-014b	White Plaster	Yes	1	3	ND1	ND1	CELL (Trace)	>99	C, OP, G
2234-5B	A11 0501-015	Grey Cementitious Material	Yes	1	100	ND1	ND1	CELL (2)	98	Q, C, OP, G
2234-5C	A11 0501-016	Grey Cementitious Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
2234-1F	A11 0501-017a	Tan Plaster	Yes	1	95	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
	A11 0501-017b	White Plaster	Yes	1	5	ND1	ND1		>99	C, OP, G

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Date Collected: 06/20/11
Date Received: 07/21/11
Date Analyzed: 07/22/11
Date Reported: 08/03/11
Project ID: A11 0502
Job ID: 11008507

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2236-1A	A11 0502-001	Painted Beige Semi-Fibrous Material	Yes	1	100	7	ND1	CELL (Trace) FT (Trace)	93	C, B, OP
2236-1B	A11 0502-002	Not Analyzed-Prior Positive								
2236-1C	A11 0502-003	Not Analyzed-Prior Positive								
2236-1D	A11 0502-004	Not Analyzed-Prior Positive								
2236-1E	A11 0502-005	Not Analyzed-Prior Positive								
2236-2A	A11 0502-006	Tan Semi-Fibrous Material	Yes	1	100	10	ND1	CELL (Trace)	90	Q, C, OP, G, P
2236-2B	A11 0502-007	Not Analyzed-Prior Positive								
2236-2C	A11 0502-008	Not Analyzed-Prior Positive								
2236-2D	A11 0502-009	Not Analyzed-Prior Positive								
2236-2E	A11 0502-010	Not Analyzed-Prior Positive								

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Date Analyzed: 07/22/11
Date Reported: 08/03/11
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Job ID: 11008507

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2236-3A	A11 0502-011	Beige Plaster	Yes	1	100	ND1	ND1	AH (3)	97	Q, C, OP, G
2236-3B	A11 0502-012	Beige Plaster	Yes	1	100	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
2236-3C	A11 0502-013	Beige Plaster	Yes	1	100	ND1	ND1	CELL (1) AH (3)	96	Q, C, OP, G
2236-3D	A11 0502-014	Beige Plaster	Yes	1	100	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
2236-3E	A11 0502-015	Beige Plaster	Yes	1	100	ND1	ND1	CELL (1) AH (3)	96	Q, C, OP, G
2236-3F	A11 0502-016	Beige Plaster	Yes	1	100	ND1	ND1	CELL (Trace) AH (3)	97	Q, C, OP, G
2236-3G	A11 0502-017	Beige Plaster	Yes	1	100	ND1	ND1	CELL (1) AH (3)	96	Q, C, OP, G
2236-4	A11 0502-018a	Off-White Sheet Flooring	Yes	1	45	ND1	ND1		>99	C, B, OP
	A11 0502-018b	Beige Fibrous Backing	Yes	1	55	ND1	ND1	SYN (25) FBG (10)	65	C, OP
2236-5	A11 0502-019	White Fibrous Material	Yes	1	100	50	ND1	CELL (10)	40	C, OP, G

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Laboratory Analyst

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Technical Supervisor

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Date Collected: 06/20/11
Date Received: 07/21/11
Date Analyzed: 07/22/11
Date Reported: 08/03/11
Project ID: A11 0502
Job ID: 11008507

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2236-6	A11 0502-020	Painted Brown Fibrous Material	Yes	1	100	ND1	ND1	CELL (97)	3	OP
2236-7	A11 0502-021	Off-White Semi-Fibrous Material	Yes	1	100	ND1	ND1	CELL (Trace) FBG (10)	90	C, OP, G

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Client Project Name: Anacostia Properties

NVLAP LAB CODE 200829-0

Date Collected: 08/19/11
Date Received: 08/19/11
Date Analyzed: 08/23/11
Date Reported: 08/24/11
Project ID: A11 0551
Job ID: 11009750

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2236-8 Glazing	A11 0551-001	Off-White Non-Fibrous Material	Yes	1	100	ND1	ND1	CELL (Trace) FT (Trace)	>99	C, OP, M

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Date Collected: 06/20/11
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Date Analyzed: 07/27/11
Date Reported: 08/03/11
Project ID: A11 0500
Job ID: 11008506

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2252-1	A11 0500-001	Yellow Floor Tile	Yes	1	100	Trace	ND1	CELL (1)	99	C, B,OP
2252-2	A11 0500-002	Blue Floor Tile	Yes	1	100	Trace	ND1	CELL (Trace)	>99	C, B, OP
2252-3	A11 0500-003	Black Floor Tile	Yes	1	100	Trace	ND1	CELL (Trace)	>99	C, B, OP
2252-4	A11 0500-004	Green Floor Tile	Yes	1	100	2	ND1		98	C, B, OP
2252-5	A11 0500-005	Green Floor Tile	Yes	1	100	2	ND1		98	C, B, OP
2252-6	A11 0500-006	Red Floor Tile	Yes	1	100	2	ND1		98	C, B, OP
2252-7	A11 0500-007	Yellow Floor Tile	Yes	1	100	2	ND1		98	C, B, OP
2252-8	A11 0500-008a	Brown Floor Tile	Yes	1	95	7	ND1	CELL (Trace)	93	C, B, OP
	A11 0500-008b	Black Mastic	Yes	1	5	7	ND1	CELL (Trace)	93	C, T, B, OP
2252-9A	A11 0500-009	White Plaster	Yes	1	100	ND1	ND1		>99	C, OP, G

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Date Reported: 08/03/11
Project ID: A11 0500
Job ID: 11008506

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2252-9B	A11 0500-010	White Plaster	Yes	1	100	ND1	ND1		>99	C, OP, G
2252-9C	A11 0500-011	White Plaster	Yes	1	100	ND1	ND1	CELL (Trace)	>99	C, OP, G
2252-9D	A11 0500-012	White Plaster	Yes	1	100	ND1	ND1	CELL (Trace)	>99	C, OP, G
2252-9E	A11 0500-013	White Plaster	Yes	1	100	ND1	ND1		>99	C, OP, G
2252-9F	A11 0500-014	White Plaster	Yes	1	100	ND1	ND1	CELL (Trace)	>99	C, OP, G
2252-9G	A11 0500-015	White Plaster	Yes	1	100	ND1	ND1	CELL (Trace)	>99	C, OP, G
2252-10	A11 0500-016	Beige Non-Fibrous Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	C, OP, G, P
2252-11A	A11 0500-017	Tan Cementitious Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
2252-11B	A11 0500-018	Tan Cementitious Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
2252-11C	A11 0500-019	Tan Cementitious Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G

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www.aerobiology.net

Certificate of Analysis-Amended Report

ECC
43045 John Mosby Highway
Chantilly, VA 20152
Attn: Rob Cienki
Client Project Name: Anacostia

NVLAP LAB CODE 200829-0

Date Collected: 06/20/11
Date Received: 07/21/11
Date Analyzed: 07/27/11
Date Reported: 08/03/11
Project ID: A11 0500
Job ID: 11008506

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA-600/M4-82-20: Interim Method for the Determination of Asbestos in Bulk Insulation Samples - NVLAP Scope of Accreditation

Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2252-11D	A11 0500-020	Tan Cementitious Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
2252-11E	A11 0500-021	Tan Cementitious Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	Q, C, OP, G
2252-12	A11 0500-022	Painted Grey Non-Fibrous Material	Yes	1	100	2	ND1		98	C, OP
2252-13	A11 0500-023	Painted Beige Semi-Fibrous Material	Yes	1	100	ND1	ND1	CELL (30) MW (40)	30	P, C, OP
2252-14	A11 0500-024	Painted Beige Semi-Fibrous Material	Yes	1	100	ND1	ND1	CELL (30) MW (40)	30	P, C, OP
2252-15	A11 0500-025	Painted Beige Semi-Fibrous Material	Yes	1	100	ND1	ND1	CELL (45) MW (15)	40	P, C, OP
2252-16	A11 0500-026	Brown Fibrous Material	Yes	1	100	ND1	ND1	CELL (98)	2	OP
2252-17	A11 0500-027a	Tan Plaster	Yes	1	90	ND1	ND1	CELL (1) AH (1)	98	Q, C, OP, G
	A11 0500-027b	Painted White Plaster	Yes	1	10	ND1	ND1		>99	C, OP, G

A = Amosite
AC = Actinolite
AN = Anthophyllite
CR = Crocidolite
TR = Tremolite
ND1 = None Detected
Trace = Less Than 1%

CELL = Cellulose
MW = Mineral Wool
FBG = Fiberglass
SYN = Synthetic
WO = Wollastonite
NTR = Non-Asbestiform TR
NAC = Non-Asbestiform AC
FT = Fibrous Talc
AH = Animal Hair

Q = Quartz
C = Carbonates
V = Vermiculite
G = Gypsum
M = Mica
T = Tar
P = Perlite
O = Organic
B = Binder
OP = Opaques
D = Diatoms

Cathi Piccione
Laboratory Analyst

Cathi Piccione
Technical Supervisor

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Sample Identification		Physical Description of Sample; Additional Comments	Homo-geneous (yes/no)	Number of Layers	Percent of Sample (%)	Asbestos Detected		Non-Asbestos Fibers (area %)	Non-Fibrous Material (area %)	Matrix Material (composition)
Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2252-18	A11 0500-028a	Tan Paint	Yes	1	35	ND1	ND1	CELL (2)	98	B, OP
	A11 0500-028b	Brown Fibrous Material	Yes	1	65	ND1	ND1	CELL (98)	2	OP
2252-19	A11 0500-029a	Tan Paint	Yes	1	25	ND1	ND1	CELL (2)	98	B, OP
	A11 0500-029b	Brown Fibrous Material	Yes	1	75	ND1	ND1	CELL (98)	2	OP
2252-20	A11 0500-030a	Beige Sheet Flooring	Yes	1	40	2	ND1	CELL (Trace)	98	C, B, OP
	A11 0500-030b	Brown Fibrous Backing	Yes	1	60	ND1	ND1	SYN (25) CELL (60)	15	OP
2252-21	A11 0500-031	White Non-Fibrous Material	Yes	1	100	ND1	ND1	CELL (Trace)	>99	C, OP, M
2252-22	A11 0500-032	White Non-Fibrous Material	Yes	1	100	ND1	ND1		>99	C, B, OP
2252-23	A11 0500-033a	Black Tarry Semi-Fibrosu Material	Yes	1	65	10	ND1	CELL (Trace)	90	C, T, B, OP
	A11 0500-033b	Silver Paint	Yes	1	35	ND1	ND1	CELL (3)	97	T, B, OP

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Client	Lab Sample Number					Chrysotile (%)	Amphibole (%)			
2252-24	A11 0500-034	Black Tarry Semi-Fibrous Material	Yes	1	100	12	ND1	CELL (Trace)	88	C, T, B, OP

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General Notes

- **ND1** indicates no asbestos was detected; the method detection limit is 1%.
- **Trace or "<1"** indicates asbestos was identified in the sample, but the concentration is less than the method detection limit of 1%.
- All regulated asbestos minerals (i.e. chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite) were sought in every layer of each sample, but only those asbestos minerals detected are listed. Amosite is the common name for the asbestiform variety of the minerals cummingtonite and grunerite. Crocidolite is the common name used for the asbestiform variety of the mineral riebeckite.
- Tile, vinyl, foam, plastic, and fine powder samples may contain asbestos fibers of such small diameter (< 0.25 microns in diameter) that these fibers cannot be detected by PLM. For such samples, more sensitive analytical methods (e.g. TEM, SEM, and XRD) are recommended if greater certainty about asbestos content is required. Semi-quantitative bulk TEM floor tile analysis is accepted under the NESHAPS regulations.
- Samples identified as inhomogeneous (containing more that one layer) shall be divided into individual layers and each layer tested separately. The results for each individual layer shall be listed separately on the report.
- These results are submitted pursuant to Aerobiology's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted.
- Unless notified in writing to return the samples covered by this report, Aerobiology Laboratory will store the samples for a minimum period of 3 months before discarding. A shipping and handling charge will be assessed for the return of any samples.
- This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
- This test report relates only to the items tested or calibrated.
- This report is not valid unless it bears the name of a NVLAP-approved signatory.
- Any reproduction of this document must include the entire document in order for the report to be valid.

Environmental Consultants and Contractors, Inc.

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Lead-Based Paint Inspection Report

Anacostia Properties
2228, 2234, 2238, and 2252
Martin Luther King Jr., Ave., S.E.
Washington, D.C.

August 22, 2011

ECC Project No. 11-10494

Prepared For: Ms. Cheryl A. O'Neill
Torti Gallas Urban, Inc.
1316 9th Street, NW, 2nd Floor
Washington, D.C.

Prepared By: Environmental Consultants and Contractors, Inc.
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Chantilly, Virginia 20152

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1.0 Executive Summary

The Anacostia properties include four adjoining parcels of land addressed 2228, 2234, 2238, and 2252 Martin Luther King Jr. Ave., S.E. (MLK). Three of the four parcels are improved with vacant residences, reportedly designated historic structures. The residences addressed 2228 and 2234 MLK appear to be hazards; entire portions of the buildings have collapsed into their basements and remaining portions have several areas with collapsed floors and ceilings. The residence addressed 2238 MLK is dilapidated but more structurally sound than the others; only two of the second floor rooms have collapsed ceilings. The remaining parcel is improved with a vacant commercial building in relatively good repair. The ground floor of the commercial building appears formerly to have been used as a liquor store and the second floor contains a vacant apartment.

As understood, because of the historic nature of the residences DCHCD is constrained from demolishing these residences and plans to stabilize them. Stabilizing their conditions will likely entail removal of debris from collapsed portions, installing structural shoring, adding a weatherproof shell to collapsed areas, and repairing the roofs. ECC is not aware of plans to restore these structures to residential usage. Regulatory requirements will vary depending upon usage.

ECC's inspections of these structures were performed following HUD *Guidelines* for single-family housing. Since portions of 2228, 2234 and 2238 MLK are collapsed or structurally unsound and therefore are unsafe to inspect, ECC has attempted to draw reasonable inferences about the lead content of painted surfaces in untested areas, based on extrapolations from the test data.

Every surface tested at 2228 and 2234 MLK was covered with either lead-based paint (LBP), typically in very high lead loadings, or paint containing lead. It is reasonable to extrapolate these results to uninspected portions of these buildings and to debris from collapsed portions of these buildings, assuming that all painted surfaces contain some level of lead. Results at 2238 MLK were less clear-cut; however, all tested wooden window components, door components, and baseboards were covered with LBP, and it reasonable to assume that these components in the two untested rooms are also covered with LBP. Additional LBP was found on some walls and other components. The commercial building at 2252 Martin Luther King Jr. Ave. was completely inspected. No extrapolation of results is required or recommended. Listings of the testing combinations covered with LBP, lead-containing paint, or with no lead detected are presented in Section 5. A tabulation of the test data is presented in Appendix B.

Painted surfaces throughout all of these buildings are in extremely poor condition. Based on the amount of dust and debris from collapsed plaster covered with LBP, from friction and impact surfaces covered with LBP, and/or from LBP in poor condition, lead dust hazards likely exist in all of the buildings.

OSHA regulations prohibiting exposure to lead hazards will apply to stabilization workers regardless of future usage. Until an exposure assessment can show that workers will not be exposed to lead in concentrations above the PEL while performing manual activities impacting components with detectable lead, these activities should be handled by a licensed lead abatement contractor using specific engineering controls, work practices, and personal protective equipment.

The D.C. Lead-Based Paint Abatement and Control Act of 1996, requiring the use of D.C.-licensed abatement workers, currently does not appear to apply because the residences are vacant and not planned for residential usage; however, currently proposed regulations will require the use of D.C.-licensed abatement workers in all situations impacting LBP.

HUD requirements may apply if the project is receiving project-based assistance under programs including: (A) section 221(d)(3) or 236 of the National Housing Act; (B) section 1 of the Housing and Urban Development Act of 1965; (C) section 8 of the United States Housing Act of 1937; or (D) sections 502(a), 504, 514, 515, 516 and 533 of the Housing Act of 1949. ECC has no information regarding funding sources for this project.

Toxicity Characteristic Leachate Procedure (TCLP) testing to characterize the toxicity of waste generated during renovations and debris removal will be required. In ECC's experience, architectural components are unlikely to be characterized as hazardous waste by TCLP testing, although, due to the age of the structures some older paints or "white wash" may contain leachable lead compounds which are more likely to be characterized as hazardous.

If LBP or lead-containing paint will remain following renovation, ECC recommends the development and implementation of a lead operations and maintenance plan, to address ongoing issues associated with managing lead in-place.

2.0 Authorization and Scope

Environmental Consultants and Contractors (ECC), Incorporated, was authorized by Ms. Cheryl O'Neil of Torti Gallas Urban, Inc., to perform Lead-Based Paint (LBP) Inspections of the four structures comprising the Anacostia properties.

The inspections were conducted following Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, revised 1997. Although the use of these *Guidelines* is not mandatory for non-public housing, the *Guidelines* represent the state-of-the-art in LBP testing.

The *Guidelines* for single-family housing, applicable to this situation, require one assay of each testing combination in each room equivalent. A testing combination is defined to be a unique combination of room equivalent, component, and substrate. Additionally, the *Guidelines* require testing of each wall in a room equivalent.

Testing was accomplished using an Innov-X Spectrum Analyzer X-Ray Fluorescence (XRF) Instrument. The use of this instrument increases testing efficiency and limits paint chip sampling by eliminating the need for substrate correction.

No dust wipe sampling or soil sampling was included in this investigation.

3.0 Lead-Based Paint Background and Regulations

Lead was a primary ingredient in many types of paint in the 1930's and 1940's. In the 1950's and 1960's several older, larger cities began to regulate the use of lead-based paint, to educate the public on its dangers and how to avoid them, and to screen children for lead poisoning. Some cities with early regulation banning the use of lead-based paint on interior surfaces were Baltimore, MD; Chicago, IL; Cincinnati, OH; New York, NY; Philadelphia, PA; Washington, DC; and Wilmington, DE. In 1955 the paint industry adopted a voluntary standard limiting the use of lead in interior paints to no more than 1% by weight of nonvolatile solids.

In 1971, the Federal Government enacted the Lead-Based Paint Poisoning Prevention Act (LBPPPA), which, among other things, required the Secretary of Health, Education and Welfare (now Health and Human Services) to prohibit the use of lead-based paint in residential structures constructed or rehabilitated by the Federal Government or with Federal assistance in any form. Lead-based paint was defined as paint containing more than 1% lead by weight. In 1973, the LBPPPA was amended to lower the lead content allowed in paint to 0.5% lead by weight.

In 1978, the Consumer Products Safety Commission, acting under the authority of the Consumer Product Safety Act, banned the sale of lead-based paint to consumers and the use of lead-based paint in residences and other areas where consumers have direct access to painted surfaces. Note that this ban does not apply to industrial or commercial usage; for example, structural steel is still often coated with a lead primer.

In 1987, Congress amended the LBPPPA to require the abatement of lead hazards exceeding 1.0 mg/cm^2 as measured by a portable X-Ray Fluorescence Detector (XRF) and required several Federal agencies to develop a "comprehensive and workable plan" for abatement in privately owned housing.

In response to the 1989 HUD and Independent Agencies Appropriations Act, the Department of Housing and Urban Development (HUD), with considerable input from the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and other interested agencies and individuals, developed comprehensive, technical, interim guidelines on the testing, abatement, clean-up, and disposal of lead-based paint. These guidelines were entitled *Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing* and were enacted September, 1990. The *Interim Guidelines* required testing and abatement of lead-based paint in Public and Indian Housing and were written for use primarily in multifamily developments.

The *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, published by HUD in June, 1995, were issued pursuant to Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992, which is often referred to as Title X ("Title Ten") because it was enacted as Title X of the Housing and Community Development Act of

1992. The *Guidelines* supercede the *Interim Guidelines* and also provide the "comprehensive and workable plan" required by Congress in the 1987 amendments to the LBPPPA. The *Guidelines* cover a broader spectrum of housing types and categories of ownership than the *Interim Guidelines*, and they address the full range of activities involved in evaluating and controlling lead-based paint hazards. The Guidelines focus on correcting lead-based paint hazards, as opposed to the abatement of all lead-based paint and describe procedures for interim controls to manage lead-based paint in-place. The *Guidelines* were revised in 1997 and represent the state-of-the-art in LBP testing and management.

Title X further requires sellers, lessors, and agents of housing constructed prior to 1978 to disclose known lead-based paint and lead-based paint hazards to buyers or lessors. Each contract to sell or lease target housing is required to contain a lead warning statement and provide an EPA approved lead hazard warning pamphlet.

Additional Federal agencies regulate lead and lead-based paint within their jurisdiction, including OSHA and EPA. The Occupational Safety and Health Administration (OSHA) has established expected airborne lead exposure levels, reported in $\mu g/m^3$, based upon construction activities performed on LBP components. The Permissible Exposure Limit (PEL) for airborne lead concentrations is 50 $\mu g/m^3$ calculated over an 8-hour TWA; the Action Level (AL) for airborne lead concentrations is 30 $\mu g/m^3$ calculated over an 8-hour TWA. These exposure levels are codified in 29 CFR 1926.62. The type and amount of personal protective equipment required for construction activities performed on LBP components is a function of the expected exposure level. The OSHA regulations typically apply to LBP abatement workers although construction workers performing renovations on building components known to be covered with lead-based paint are also regulated under this standard. Note that OSHA does not recognize the EPA, HUD, or state definitions of lead-based paint, but rather, regulates substances containing any amount of lead under this standard.

EPA regulation of lead originally fell into two categories: lead in drinking water; and lead in disposal waste. Lead in drinking water is currently regulated by the *National Primary Drinking Water Regulation for Lead*. These standards require public water suppliers to monitor tap water in homes. These standards require at least 90% of taps to have lead levels of 15 parts per billion or below; zero lead is the goal. Lead-based paint or building components covered with LBP may be classified as hazardous waste for disposal purposes. The primary Federal statute governing waste management is the Resource Conservation and Recovery Act (RCRA), which is administered by the EPA. Waste exhibiting toxicity, corrosivity, ignitability, or reactivity is considered hazardous under RCRA. LBP corrosivity may cause the material to be regulated if caustic stripping agents are used to remove the paint and are unneutralized. Toxicity inherent in LBP may cause the material to be regulated as hazardous waste. LBP waste toxicity is measured by using the Toxicity Characteristic Leaching Procedure (TCLP). A TCLP extract is analyzed for lead to determine if it is above the allowable TC regulatory threshold, which for lead is 5 parts per million (ppm).

"Leachable" lead analysis differs from "total" lead analysis, which is performed as part of this inspection, in that leachable lead is dependent on the type of lead compound present and its solubility. Because total lead analysis does not determine the specific lead compound present, it is difficult, if not impossible, to predict how much lead will be leachable. Total lead levels which are very low (less than 100 ppm) suggest that the waste should not exceed the TC regulatory threshold. LBP wastes, either from abatement or demolition, are required to be characterized by TCLP analysis as hazardous or non-hazardous for disposal purposes.

EPA regulation of LBP has expanded with the promulgation of the Lead Renovation, Repair, and Painting (RRP) Program codified at 40 CFR Part 745. The EPA lead RRP program applies to all renovations performed for compensation in target housing (residences built prior to 1978) and child-occupied facilities. It requires the use of accredited renovation companies and workers, that renovators provide occupant(s) with the EPA pamphlet *Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools*, protect occupants during renovation, follow work practice standards, and verify cleanliness following the renovation. EPA has also established definitions of lead dust hazards.

Several States also regulate lead and lead-based paint; these regulations may overlap or contradict Federal standards. In each case, the most stringent regulations must be complied with. For example, the District of Columbia defines lead-based paint to contain lead in loadings exceeding 0.7 mg/cm^2. This is lower than the HUD standard of 1.0 mg/cm^2.

4.0 Methodology

4.1 Sampling Scheme

The HUD *Guidelines* include single-family and multi-family protocols. Multi-family protocols are utilized to inspect apartment complexes with twenty or more homogenous units. Single family protocols are utilized to inspect housing with fewer than twenty homogenous units.

The HUD *Guidelines* for inspecting single-family dwellings recommend a seven step methodology which includes: inventory all painted building components (including stained, shellacked, or varnished, etc. components), select surfaces to be tested, perform XRF testing (including calibration checks), collect and analyze paint-chip samples for components that cannot be tested with XRF or had inconclusive XRF results, classify XRF and paint chip results, evaluate the results to ensure inspection quality, document findings in a report.

Following the *Guidelines*, one assay was performed on every testing accessible combination at the location. Note that many of the rooms at 2228 and 2234 MLK were deemed unsafe to enter and were not tested; however, extrapolations from tested rooms were made. A testing combination is defined as a unique combination of room, component, and substrate. For example, if two wooden doors were present in a given room, only one would be tested. However, if one metal door and one wooden door were present in a given room, each would be tested.

4.2 Methodology of the Spectrum Analyzer

4.2.1 Description

uring this investigation an Innov-X Systems X-Ray Fluorescence (XRF) Spectrum Analyzer was used to test for lead in paint. This device consists of a probe, containing an X-ray tube and X-ray detector, and a battery-powered console containing a multi-channel spectrum analyzer with a microprocessor and a digital LCD display.

4.2.2 Operational Concepts

The XRF probe uses a tube to generate X-rays to excite atoms in front of the probe. Excited atoms absorb the radiation energy, causing their electrons to jump to unstable, higher energy shells. Electrons in these unstable, higher energy shells shed their excess energy as x-rays in order to return to more stable lower energy shells. These x-rays have unique characteristics which allow the probe's spectrum analyzer to determine the element from which the x-rays emanate. K-shell and L-shell x-rays are used to determine lead concentrations. The L-shell x-rays are detected from the outer few surface layers of paint, while the K-shell x-rays are detected from all layers of paint down to the substrate. The X-rays are measured in electron volt units which are divided into 256 energy classes, or “channels,” defined by an upper and lower limit. When the x-rays are analyzed by the multi-channel spectrum analyzer, it

produces a spectrum comparing the proportional energy of each channel number. The concentration of lead is determined from the proportion of x-rays within the "channels" characteristic of lead vs. other elements. The spectrum data generated by each test are automatically recorded and stored in the console memory.

As the XRF instrument measures x-ray intensity, the internal software automatically analyzes the spectrum and displays the lead concentration in milligrams per square centimeter (mg/cm^2). The microprocessor automatically compensates for substrate and matrix effects. An XRF detector is the only instrument that can be used in-situ to non-destructively measure the concentration of lead in paint. It allows simple, fast screening for detecting lead in paint at or above a user selected action limit, in this case 0.7 mg/cm^2.

4.2.3 Testing Procedures

Inspection mode uses a flexible period, testing only until the lead concentration can be determined with sufficient precision to be classified as either above or below the user selected action level, in this case 0.70 mg/cm^2. Inspection mode was used for all paint tests.

4.2.4 Precision and Accuracy

The precision and accuracy of the XRF, both element-specific and spectrum analyzer, have been studied by the National Institute of Standards and Technology (NIST). In reports published by NIST ("Methods for Measuring Lead Concentrations in Paint Films" and "Measuring Lead Concentrations in Paint Using a Portable Spectrum Analyzer X-Ray Fluorescence Device") it was concluded that:

1. spot tests when carried out by an experienced analytical chemistry technician can detect the presence of lead in paint films having concentrations in excess of 1 mg/cm^2 in approximately 90 percent of test samples;

2. the estimate of the precision of a field measurement procedure using lead-specific portable XRF analyzers for lead concentrations near 1 mg/cm^2 is 0.6 mg/cm^2 and the estimated systematic error of the procedure is 0.2 mg/cm^2; this results in a 95 percent confidence interval of 1.4 mg/cm^2;

3. based upon preliminary measurements using the latest version of the spectrum analyzer portable XRF, the 95 percent confidence interval for field measurements is estimated to be 0.5 mg/cm^2.

The Innov-X XRF is calibrated at the factory using a wide variety of reference standards and substrates. It does not need to be re-calibrated daily; however, the device is standardized daily. Standardization sets the instrument to take measurements using reference conditions previously programmed into the instrument. The instrument standardization is validated before and after testing, and every four hours, whichever is most frequent.

4.2.5 Substrate Correction

Substrate correction is the removal of paint from several areas of each substrate encountered at each project and testing the unpainted substrate to determine the substrate influence on XRF results. XRF analyzers are divided into two classes, spectrum analyzer or direct reading. Substrate correction is required for all direct reading XRFs and for some spectrum analyzer XRFs, under certain technical conditions.

The EPA has conducted extensive testing of every model of XRF to determine their operational parameters, including determining when substrate correction is required. This information is included in a Performance Characteristic Sheet (PCS) published for every model of XRF.

The instrument used during this inspection, an Innov-X XRF, is classified as a spectrum analyzer. Based upon the PCS for the Innov-X (effective December 1, 2006), substrate correction is not required.

4.2.6 Classification of Results

The PCS for the Innov-X published by the EPA establishes inconclusive ranges for XRF results. The PCS defines the inconclusive range of the Innov-X in to range from 0.6 - 1.1 mg/cm^2, based on an action level of 1.0 mg/cm^2. Inconclusive ranges in jurisdictions with action levels below 1.0 mg/cm^2 are typically adjusted lower to match the jurisdictional action level. Based on the D.C. action level of 0.7 mg/cm^2, the inconclusive range was adjusted to 0.3 - 0.8 mg/cm^2. However, classification of results is also affected by the precision achieved during each test. Precision is treated as an envelope of potential lead loading surrounding the reported result. Results are reported as LBP is the precision envelope overlaps the action level. Similarly, if a reported result and associated precision envelope could result in a potential loading greater than zero, the result is reported as lead containing. Only if the combined result and associated precision envelope are zero is the result reported as no lead detected.

4.3 Paint Condition Assessment Criteria

Each painted area sampled was also evaluated on a three point scale for condition. The scale possibilities are good, fair, and poor. Good (satisfactory) condition is self-explanatory. Paint in fair (unsatisfactory) condition is beginning to show evidence of wear, i.e. some cracking noticeable. Paint in poor condition is characterized as peeling, chipping, or scaling.

5.0 Results

ECC representative Robert Cienki performed testing and documented paint conditions on June 21 and 22, 2011. A copy of ECC's license is included in Appendix A. A total of 158 surfaces were tested during this inspection. A complete listing of all tests is presented in Appendix B.

5.1 Validation of XRF Calibration

The Innov-X XRF unit was tested daily to assure proper calibration and control, and thus accurate and precise results, immediately before inspection.

Standardization results were within manufacturer and HUD specifications. HUD specifications are developed for every type XRF unit. Specifications for the unit used during this inspection are listed in the *XRF Performance Characteristics Sheet for Corporation Innov-X* effective December 1, 2006. Standardization results are included with the test results in Appendix B. A copy of the HUD PCS is included in Appendix C.

5.2 2228 Martin Luther King Jr. Ave., S.E.

Due to concerns about structural stability, inspection at this residence was limited to the exterior, the ground floor hallway, and the living room.

A total of 18 tests were performed on accessible testing combinations in these areas. XRF analysis detected lead in every location tested. XRF analysis detected greater than or equal to 0.70 milligrams of lead per square centimeter (mg/cm^2) of lead, the definition of LBP, on 14 of the 18 assays performed. Lead loadings detected in these tests were quite high, ranging from 2.02 mg/cm^2 to more than 5.0 mg/cm^2, the upper limit of quantification. Based on these results the following testing combinations are covered with LBP:

- Exterior wooden walls, both white and yellow
- Exterior wooden windows,
- Exterior wooden columns,
- Living room wooden door components,
- Living room plaster walls,
- Living room wooden window components,
- Living room wooden baseboards,
- Hallway door jamb and trim components (not the door),
- Hallway plaster walls (all colors),
- Hallway wooden baseboards,
- Plaster ceilings

XRF analysis detected lead in concentrations less than 0.70 mg/cm^2 in the remaining four tests. Based on these test results the following testing combinations are covered with lead-containing paint:

- Exterior metal meters,
- Exterior metal downspout,
- Hall wooden door (side entry),
- Hall wooden stair stringer.

5.3 2234 Martin Luther King Jr. Ave., S.E.

Due to concerns about structural stability, inspection at this residence was limited to the exterior, the ground floor hallway, and the front right corner room identified as Room 1.

A total of 12 tests were performed on accessible testing combinations in these areas. XRF analysis detected lead in every location tested. XRF analysis detected greater than or equal to 0.70 mg/cm^2 of lead on 6 of the 12 assays performed. Lead loadings detected in these tests were quite high, ranging from 2.49 mg/cm^2 to more than 5.0 mg/cm^2, the upper limit of quantification. Based on these results the following testing combinations are covered with LBP:

- Exterior wooden walls,
- Exterior wooden door components,
- Exterior wooden columns,
- Hallway wooden door components,
- Room 1 wooden door components,
- Room 1 wooden window components.

XRF analysis detected lead in concentrations less than 0.70 mg/cm^2 in the remaining six tests. Based on these test results the following testing combinations are covered with lead-containing paint:

- Hallway plaster walls,
- Hallway wooden stair components,
- Room 1 plaster walls,
- Room 1 the metal meter,
- Room 1 metal piping,
- Room 1 metal radiators.

5.4 2238 Martin Luther King Jr. Ave., S.E.

The residence at this location is fairly structurally sound. Only the second floor bathroom and back bedroom were not inspected, due to collapsed ceilings.

A total of 53 tests were performed on accessible testing combinations at this residence. XRF analysis detected greater than or equal to 0.70 mg/cm^2 of lead on 25 of the 53 assays performed. Lead loadings detected in these tests were quite high, generally more than 5.0 milligrams of lead per square centimeter, the upper limit of quantification. Based on these results the following testing combinations are covered with LBP:

- Exterior wooden door components,
- Exterior wooden window components,
- Hallway plaster walls,
- Hallway wooden baseboards,
- Room 1 (living room) wooden door components
- Room 1 (living room) wooden window components,
- Room 1 (living room) wooden baseboards,
- Dining room wooden door components,
- Dining room wooden window components,
- Dining room wooden baseboards,
- Kitchen wooden door components,
- Kitchen plaster walls,
- Kitchen wooden window components,
- Bedroom 1 wooden door components,
- Bedroom 1 plaster walls,
- Bedroom 1 wooden window components,
- Bedroom 1 wooden baseboards,
- Bedroom 2 wooden door components,
- Bedroom 2 wooden baseboards

XRF analysis detected lead in concentrations less than 0.70 mg/cm^2 in 12 of the 53 tests. Note that several of the lead-containing results were on walls, which due to other higher test results are classified as LBP components. Based on these test results the following testing combinations are covered with lead-containing paint:

- Exterior porch columns,
- Hallway wooden stair components,
- Room 1 (living room) plaster walls,
- Room 1 (living room) metal radiators,
- Dining room plaster walls,
- Dining room metal radiators,
- Bedroom 1 metal radiators,
- Bedroom 2 metal radiators.

XRF analysis did not detect lead in 16 of the 53 tests. Note that several of the none-detected results were on walls, which due to other higher test results are classified as LBP or lead-containing components. XRF analysis did not detect lead on the following testing combinations:

- Exterior wooden rail caps,
- Exterior plaster walls,
- Room 1 metal piping,
- Bedroom 2 plaster walls.

5.5 2252 Martin Luther King Jr. Ave., S.E.

A total of 62 tests were performed on accessible testing combinations at this location. XRF analysis detected greater than or equal to 0.70 mg/cm^2 of lead on 19 of the 62 assays performed. Based on these results the following testing combinations are covered with LBP:

- Bedroom 1 plaster walls,
- Bedroom 3 wooden door components,
- Bedroom 3 plaster walls,
- Bedroom 3 wooden window components,
- Bedroom 3 wooden baseboards,
- Bedroom 4 wooden door components,
- Bedroom 4 plaster walls,
- Kitchen plaster walls,
- Hallway wooden door components,
- Hallway plaster walls,
- Bathroom plaster walls,
- Bathroom ceramic tile on walls,
- Warehouse metal door components,
- Sales floor metal columns,
- Exterior metal door components,
- Exterior painted brick walls.

XRF analysis detected lead in concentrations less than 0.70 mg/cm^2 in 33 of the 62 tests. Note that several of the lead-containing results were on walls, which due to other higher test results are classified as LBP components. Based on these test results the following testing combinations are covered with lead-containing paint:

- Bedroom 1 wooden windows,
- Bedroom 1 wooden baseboards,
- Bedroom 2 wooden door components,
- Bedroom 2 plaster walls,

- Bedroom 2 wooden window components,
- Bedroom 2 wooden baseboards,
- Bedroom 3 wooden shelves,
- Bedroom 4 wooden window components,
- Bedroom 4 wooden baseboards,
- Laundry room wooden door components,
- Kitchen wooden baseboards,
- Hallway wooden baseboards,
- Bathroom wooden door components,
- Warehouse metal roof web joists,
- Sales floor plaster walls,
- Exterior metal bollards.

XRF analysis did not detect lead in 10 of the 62 tests. Note that several of the none-detected results were on walls, which due to other higher test results are classified as LBP components. XRF analysis did not detect lead on the following testing combinations:

- Bedroom 1 wooden door components,
- Hallway wooden window components,
- Warehouse drywall walls,
- Warehouse wood paneled walls,
- Exterior metal security mesh,
- Exterior metal downspouts,
- Warehouse exterior CMU block,
- Exterior metal soffit.

6.0 Conclusions and Recommendations

The Anacostia Properties include four adjoining parcels of land addressed 2228, 2234, 2238, and 2252 Martin Luther King Jr. Ave. (MLK). Three of the four parcels are improved with vacant residences, reportedly designated historic structures. The residences addressed 2228 and 2234 MLK appear to be safety hazards; entire portions of the buildings have collapsed into their basements and remaining portions have several areas with collapsed floors and ceilings. The residence addressed 2238 MLK is dilapidated but more structurally sound than the others; only two of the second floor rooms have collapsed ceilings. The remaining parcel is improved with a vacant commercial building in relatively good repair. The commercial building appears formerly to have been used as a liquor store. The second floor of the commercial building contains a vacant apartment.

ECC's inspections of these structures were performed following HUD *Guidelines* for single-family housing. Testing in single family housing uses a surface-by-surface approach: each result stands alone. However, portions of 2228, 2234 and 2238 Martin Luther King Jr. Ave are collapsed or structurally unsound and therefore were unsafe to inspect. Even though certain areas were not tested, it is desirable to make decisions about potential hazards to renovation workers in these areas. HUD offers a strategy for making decisions about uninspected areas based on tested areas in their multi-family housing testing protocol, however, this protocol requires a minimum of 40 tests per testing combination to achieve statistical significance. No testing combination at the property has 40 iterations, therefore application of the multi-family protocol was not possible.

Listings of testing combinations covered with LBP, lead-containing paint, or with no lead detected, are presented in Section 5. A tabulation of all the test data is attached in Appendix B. ECC has attempted to draw reasonable inferences about the lead content of painted surfaces in untested areas, based on extrapolations from the test data. For instance, ECC tested window components in six rooms at 2238 Martin Luther King Jr. Ave and all were covered with LBP. Window components in two rooms were inaccessible but appeared similar to windows covered with LBP. ECC extrapolates that windows in the untested rooms are covered with LBP, even though there is no regulatory methodology nor sufficient data for statistical significance for this extrapolation. It is ECC's opinion that extrapolations of this nature are reasonable because they pass the "common sense" test and because assuming potential hazards are present will protect human health and the environment.

ECC's inspections of the residences addressed 2228 and 2234 MLK were significantly limited by collapsed and structurally unsound portions of the buildings. However, every surface tested at these residences was covered with either lead-based paint (LBP), typically in very high lead loadings, or paint containing lead. Based upon apparent construction and painting history, it is reasonable to extrapolate these results to uninspected portions of these buildings and to debris from collapsed portions of these buildings, assuming that all painted surfaces contain some level of lead.

Results at 2238 Martin Luther King Jr. Ave were less clear-cut; however, more rooms were accessible, and therefore more test data are available. Inversely, because fewer rooms were inaccessible, the consequences of extrapolations will not be as costly. All tested wooden window components, door components, and baseboards tested were covered with LBP. Therefore, it is reasonable to assume that wooden window components, door components, and baseboards in the two uninspected rooms (the second floor bathroom and rear corner bedroom) are also covered with LBP. Inversely, lead was not detected on any of the tested metal pipes, radiators, wooden porch railing components, or wooden stair components; therefore, it is reasonable to extrapolate that paint on metal pipes and radiators in uninspected areas does not contain lead (there are no stair components or porch railings in these areas).

The commercial building at 2252 Martin Luther King Jr. Ave. was completely inspected. No extrapolation of results is required.

Painted surfaces throughout all of these buildings are in extremely poor condition. Based on the amount of dust and debris from collapsed plaster covered with LBP, from friction and impact surfaces covered with LBP, or from LBP in poor condition, it is ECC's opinion that lead dust hazards are present throughout all of the buildings at the site.

As understood, because of the historic nature of the residences DCHCD is constrained from demolishing these residences and plans to stabilize them. Stabilizing the structures will likely entail remove of debris from collapsed portions, installing structural shoring, adding a weatherproof shell to collapsed areas, and repairing the roofs. ECC is not aware of plans to restore these structures to residential usage. At most, they may be converted to local museums, although collapse or demolition as a hazard seems a more reasonable fate. Conjecture about future usage is not pointless; regulatory requirements will vary depending upon usage.

OSHA regulations prohibiting the exposure of renovation workers to lead hazards will apply to stabilization workers regardless of future usage. OSHA requires assuming three classes of activities will produce exposures in excess of permissible limits. These classes include:

- abrasive blasting, welding, cutting, and torch burning;
- using lead-containing mortar, lead burning, rivet busting, power tool cleaning without dust collection systems, cleanup activities where dry abrasives are used, and abrasive blasting enclosure movement and removal;
- manual demolition of structures, manual scraping, manual sanding, heat gun applications, and power tool cleaning with dust collection systems.

Until an exposure assessment can show that workers performing these activities will not be exposed to concentrations above the PEL, employers are required to implement engineering controls and work practices, described in a compliance plan and including respiratory protection, protective clothing, housekeeping practices, hygiene facilities and practices, medical surveillance including blood lead and ZPP monitoring, provisions for medical removal, employee training, and record keeping. Because of these numerous and detailed

requirements, even though not currently required by D.C. regulations, these activities are typically performed by a licensed lead abatement contractor.

The D.C. Lead-Based Paint Abatement and Control Act of 1996, requiring the use of D.C.-licensed abatement workers, does not appear to currently apply because the residences are vacant and not planned for residential usage; however, proposed regulations to implement more recent D.C. lead laws will require the use of D.C.-licensed abatement workers if implemented.

If the residences will be returned to residential usage, D.C.'s Lead-Hazard Prevention and Elimination Act of 2008 (D.C. Law 17-381) requiring presuming paint in poor condition to be a lead hazard and requiring the abatement of lead hazards will apply, as well as Title X disclosure and record keeping requirements, and the EPA's Renovation, Repair, and Painting (RRP) program.

HUD requirements may apply if the project is receiving project-based assistance under programs including: (A) section 221(d)(3) or 236 of the National Housing Act; (B) section 1 of the Housing and Urban Development Act of 1965; (C) section 8 of the United States Housing Act of 1937; or (D) sections 502(a), 504, 514, 515, 516 and 533 of the Housing Act of 1949.

Although EPA currently has a policy statement which exempts waste from residential construction projects from toxicity characteristic testing, because the residences on the site are vacant and not intended to be re-occupied, TCLP testing to characterize the toxicity of the waste will be required. In ECC's experience, architectural components are unlikely to be characterized as hazardous waste by TCLP testing although, due to the ages of the structures some older paints or "white wash" may contain more leachable lead compounds which are more likely to be characterized as hazardous.

If LBP or lead-containing paint will remain following renovation, ECC recommends the development and implementation of a lead operations and maintenance plan, to address ongoing issues associated with managing lead in-place.

7.0 Limitations

Our professional opinions and judgements have been made based upon the information gathered, our experience in the area with similar projects, and in accordance with generally accepted professional environmental practice under similar circumstances. Conditions observed and described at the site are representative of conditions at the specified location and on the specific dates on which they were observed. The passage of time may result in changing conditions at the site location. Should additional information become available which would affect the status of this report, we reserve the right to amend our opinions and professional judgements.

ECC is pleased to have prepared this report for you and your designated users of this report. If you have any questions or comments on this report or the information contained herein, please feel free to contact this office at (703) 327-2900.

Robert S. Cienki _____
Industrial Hygiene Program Manager Signature

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Appendix A

ECC License

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF THE ENVIRONMENT
LEAD AND HEALTHY HOUSING DIVISION
COMPLIANCE AND ENFORCEMENT BRANCH

NAME: **Thomas Hardy**
COMPANY: Environmental Consultants &
CLASS CODE: Business Entity
EXPIRATION DATE: 8-18-2012
CARD NUMBER: DC11-6605

Christophe A. G. Tulou
Authorized Signature

Appendix B

XRF Assay and Standardization Data

XRF Test Data
Anacostia Properties

Date	Mode	Pass Fail Standard	Notes	Floor	Room	Side	Component	Substrate	Color	Condition	Pb	Pb +/-
21-Jun-11	Standardization	PASS										
21-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.13	0.07
21-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.25	0.11
21-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.12	0.05
21-Jun-11	Lead Paint Inspection	Positive	2228	Exterior	Front	A	Wall	Wood	White	Peeling	5	1.07
21-Jun-11	Lead Paint Inspection	Positive	2228	Exterior	Front	A	Wall	Wood	Yellow	Peeling	2	0.4
21-Jun-11	Lead Paint Inspection	Positive	2228	Exterior	Front	A	Window Apron	Wood	Yellow	Peeling	5	0.7
21-Jun-11	Lead Paint Inspection	Positive	2228	Exterior	Front	A	Column	Wood	Yellow	Peeling	5	0.87
21-Jun-11	Lead Paint Inspection	Negative	2228	Exterior	Front	A	meter	Metal	Grey	Fair	0.03	0.02
21-Jun-11	Lead Paint Inspection	Negative	2228	Exterior	Front	B	downspout	Metal	Yellow	Peeling	0.09	0.06
21-Jun-11	Lead Paint Inspection	Negative	2228	Exterior	Hall	B	Door	Wood	Yellow	Peeling	0.69	0.07
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Living room	B	Door trim	Wood	White	Peeling	5	0.97
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Living room	B	Wall	Plaster	Blue	Peeling	2.02	0.31
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Living room	B	Window	Wood	White	Peeling	3.5	0.75
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Living room	B	Baseboard	Wood	White	Peeling	1.57	0.24
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Hall	B	Door Jamb	Wood	White	Peeling	5	1.06
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Hall	C	Wall	Plaster	Pink	Peeling	1.55	0.34
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Hall	B	Wall	Plaster	Brown	Peeling	3.1	0.55
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Hall	A	Wall	Plaster	White	Peeling	3.73	0.64
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Hall	A	Baseboard	Wood	White	Peeling	3.87	0.58
21-Jun-11	Lead Paint Inspection	Positive	2228	Floor 1	Hall	A	Ceiling	Plaster	White	Peeling	5	1.46
21-Jun-11	Lead Paint Inspection	Negative	2228	Floor 1	Hall	C	Stringer	Wood	Pink	Peeling	0.13	0.06
21-Jun-11	Lead Paint Inspection	Positive	2234	Exterior	Porch	A	Wall	Wood	Yellow	Peeling	5	0.5
21-Jun-11	Lead Paint Inspection	Positive	2234	Exterior	Porch	A	Door trim	Wood	White	Peeling	5	0.59
21-Jun-11	Lead Paint Inspection	Positive	2234	Exterior	Porch	A	Column	Wood	White	Peeling	5	0.5
21-Jun-11	Lead Paint Inspection	Positive	2234	Floor 1	Hall	A	Door trim	Wood	Brown	Poor	5	0.6
21-Jun-11	Lead Paint Inspection	Negative	2234	Floor 1	Hall	A	Wall	Plaster	Wall paper	Poor	0.01	0.01
21-Jun-11	Lead Paint Inspection	Negative	2234	Floor 1	Hall	A	Newal Post	Wood	Brown	Poor	0.06	0.03
21-Jun-11	Lead Paint Inspection	Positive	2234	Floor 1	Room 1	B	Door trim	Wood	Brown	Poor	2.9	0.27
21-Jun-11	Lead Paint Inspection	Negative	2234	Floor 1	Room 1	B	Wall	Plaster	Wall paper	Poor	0.01	0.01
21-Jun-11	Lead Paint Inspection	Negative	2234	Floor 1	Room 1	B	meter	Metal	Black	Poor	0.26	0.04
21-Jun-11	Lead Paint Inspection	Negative	2234	Floor 1	Room 1	B	Pipe	Metal	Green	Poor	0.1	0.03
21-Jun-11	Lead Paint Inspection	Negative	2234	Floor 1	Room 1	D	radiator	Metal	White	Poor	0.14	0.03
21-Jun-11	Lead Paint Inspection	Positive	2234	Floor 1	Room 1	D	Window	Wood	Brown	Poor	2.49	0.23
21-Jun-11	Lead Paint Inspection	Negative	2236	Exterior	Porch	A	Column	Wood	White	Poor	0.39	0.08
21-Jun-11	Lead Paint Inspection	Negative	2236	Exterior	Porch	A	Rail Cap	Wood	White	Poor	0	0
21-Jun-11	Lead Paint Inspection	Negative	2236	Exterior	Porch	A	Wall	Plaster	White	Poor	0	0
21-Jun-11	Lead Paint Inspection	Positive	2236	Exterior	Porch	A	Door trim	Wood	Green	Poor	4.89	0.56
21-Jun-11	Lead Paint Inspection	Positive	2236	Exterior	Porch	A	window sill	Wood	White	Poor	4.78	1.01
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Hall	A	Door	Wood	Green	Poor	5	0.69
21-Jun-11	Lead Paint Inspection	Insufficient Test Time	2236	Floor 1	Hall	A	Wall	Plaster	White	Poor	0.01	0.01
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Hall	A	Wall	Plaster	White	Poor	0	0.01
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Hall	B	Wall	Plaster	White	Poor	0.7	0.04
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Hall	D	Wall	Plaster	White	Poor	0.05	0.06
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Hall	B	Baseboard	Wood	Green	Poor	5	1.17
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Hall	B	Newal Post	Wood	Green	Poor	0.03	0.02
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Room 1	B	Door trim	Wood	White	Poor	5	1.44
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Room 1	A	Wall	Plaster	Blue	Poor	0.04	0.02
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Room 1	D	Wall	Plaster	Blue	Poor	0.01	0.01
21-Jun-11	Standardization	PASS										
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Room 1	A	Window	Wood	White	Poor	5	0.85
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Room 1	A	radiator	Metal	White	Poor	0.19	0.05
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Room 1	A	Pipe	Metal	White	Poor	0	0.01
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Room 1	D	Baseboard	Wood	White	Poor	5	1.13
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Dining room	D	Door	Wood	White	Poor	5	1.18
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Dining room	A	Wall	Plaster	Blue	Poor	0.03	0.04
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Dining room	B	Wall	Plaster	Blue	Poor	0	0
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Dining room	C	Wall	Plaster	Blue	Poor	0	0
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Dining room	D	Wall	Plaster	Blue	Poor	0	0.01
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Dining room	D	Window	Wood	White	Poor	5	
21-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Dining room	D	Radiator	Metal	Brown	Poor	0.03	0.03
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Dining room	D	Baseboard	Wood	White	Poor	5	
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	C	Door trim	Wood	White	Poor	5	
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	A	Wall	Plaster	White	Poor	5	
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	B	Wall	Plaster	White	Poor	5	
21-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	C	Window	Wood	Gray	Poor	5	
21-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.22	
21-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.2	
21-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.17	

XRF Test Data
Anacostia Properties

Date	Mode	Pass Fail Standard	Notes	Floor	Room	Side	Component	Substrate	Color	Condition	Pb	Pb +/-
22-Jun-11	Standardization	PASS										
22-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.18	
22-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.08	
22-Jun-11	Lead Paint Inspection		nist 2573						Red	Intact	1.17	
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	C	Door	Wood	White	Poor	5	2.81
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 1	Kitchen	B	Wall	Plaster	White	Poor	0	0
22-Jun-11	Lead Paint Inspection	Insufficient Test Time	2236	Floor 1	Kitchen	C	Wall	Plaster	White	Poor	0.35	0.09
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	C	Wall	Plaster	White	Poor	0.7	0.08
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	D	Wall	Plaster	White	Poor	0.7	0.04
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 1	Kitchen	D	Window	Wood	Green	Poor	5	3.64
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 1	B	Door	Wood	Green	Poor	5	0.85
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 1	A	Wall	Plaster	White	Poor	5	1.09
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 1	B	Wall	Plaster	White	Poor	5	10.42
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 1	A	Window	Wood	Brown	Poor	5	0.84
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 2	Bedroom 1	A	Radiator	Metal	Brown	Poor	0.01	0.03
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 1	B	Baseboard	Wood	Brown	Poor	5	
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 2	B	Door trim	Wood	Green	Poor	5	
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 2	Bedroom 2	A	Wall	Plaster	Blue	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 2	Bedroom 2	B	Wall	Plaster	Blue	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 2	Bedroom 2	C	Wall	Plaster	Blue	Poor	0	0.02
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 2	Bedroom 2	D	Wall	Plaster	Blue	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2236	Floor 2	Bedroom 2	D	Radiator	Metal	Brown	Poor	0.16	0
22-Jun-11	Lead Paint Inspection	Positive	2236	Floor 2	Bedroom 2	B	Baseboard	Wood	Brown	Poor	5	
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 1	D	Door trim	Wood	Green	Poor	0	0.05
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 1	A	Wall	Plaster	Green	Poor	0.7	
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 1	B	Wall	Plaster	Green	Poor	0.7	0.06
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 1	C	Wall	Plaster	Green	Poor	0.01	0.02
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 1	D	Wall	Plaster	Green	Poor	0.7	0.13
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 1	A	Window	Wood	Green	Poor	0.21	0.07
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 1	D	Baseboard	Wood	Green	Poor	0.12	0.05
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	C	Door trim	Wood	White	Poor	0.14	0.04
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	A	Wall	Plaster	White	Poor	0.09	0.03
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	B	Wall	Plaster	White	Poor	0.05	0.02
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	C	Wall	Plaster	White	Poor	0.05	0.03
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	D	Wall	Plaster	White	Poor	0.04	0.02
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	A	Window	Wood	White	Poor	0.1	0.03
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 2	A	Baseboard	Wood	White	Poor	0.2	0.07
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 3	C	Door	Wood	Blue	Poor	1.49	0.34
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 3	A	Wall	Plaster	Blue	Poor	0.7	0.04
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 3	B	Wall	Plaster	Blue	Poor	0.08	0.08
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 3	C	Wall	Plaster	Blue	Poor	0.09	0.08
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 3	D	Wall	Plaster	Blue	Poor	0.01	0.01
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 3	D	Window	Wood	Blue	Poor	2.18	0.41
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 3	B	Baseboard	Wood	Blue	Poor	2.36	0.49
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 3	B	Shelf	Wood	White	Poor	0.01	0.01
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 4	B	Door	Wood	White	Poor	1.13	0.22
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 4	A	Wall	Plaster	White	Poor	0.19	0.12
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 4	B	Wall	Plaster	White	Poor	0.1	0.08
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 4	C	Wall	Plaster	White	Poor	0.27	0.1
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bedroom 4	D	Wall	Plaster	White	Poor	0.7	0.02
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 4	D	Window	Wood	White	Poor	0.09	0.04
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bedroom 4	B	Baseboard	Wood	White	Poor	0.41	0.1
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Laundry room	B	Door trim	Wood	White	Poor	0.51	0.09
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Kitchen	A	Wall	Plaster	White	Poor	0.7	0.05
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Kitchen	B	Wall	Plaster	White	Poor	0.3	0.09
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Kitchen	C	Wall	Plaster	White	Poor	0.01	0.01
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Kitchen	D	Wall	Plaster	White	Poor	0.37	0.11
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Kitchen	A	Baseboard	Wood	White	Poor	0.35	0.1
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Hall	D	Door	Wood	White	Poor	1.49	0.22
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Hall	A	Wall	Plaster	White	Poor	0.7	0.04
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Hall	B	Wall	Plaster	White	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Hall	C	Wall	Plaster	White	Poor	0.08	0.03
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Hall	D	Wall	Plaster	White	Poor	0.7	0.01
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Hall	B	Window	Wood	White	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Hall	D	Baseboard	Wood	White	Poor	0.32	0.07
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bathroom	A	Door	Wood	White	Poor	0.29	0.06
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 2	Bathroom	A	Wall	Plaster	Brown	Poor	0.06	0.02
22-Jun-11	Lead Paint Inspection	Insufficient Test Time	2252	Floor 2	Bathroom	B	Wall	Plaster	Brown	Poor	0.01	0.02
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bathroom	D	Wall	Plaster	Brown	Poor	0.7	0.05
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 2	Bathroom	D	Wall	Ceramic	Brown	Poor	1.82	0.21
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 1	Room 1	D	Ceiling	Metal	Grey	Fair	0.03	0.02
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 1	room 2	A	Door	Metal	Grey	Fair	1.68	0.17
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 1	room 2	A	Wall	Drywall	Yellow	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 1	room 2	B	Wall	Paneling	Brown	Fair	0	0
22-Jun-11	Lead Paint Inspection	Negative	2252	Floor 1	room 2	D	Wall	Plaster	Green	Peeling	0.05	0.05
22-Jun-11	Lead Paint Inspection	Positive	2252	Floor 1	room 2	D	Column	Metal	Blue	Poor	0.82	0.06
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	room 2	A	Screen	Metal	Grey	Fair	0	0
22-Jun-11	Lead Paint Inspection	Positive	2252	Exterior	room 2	A	Door	Metal	Red	Fair	0.7	0.04
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	room 2	A	Wall	Brick	White	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	room 2	D	Wall	Brick	White	Poor	0.01	0.01
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	room 2	D	downspout	Metal	White	Poor	0	0
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	Room 1	D	Wall	CMU block	White	Fair	0	0

XRF Test Data
Anacostia Properties

Date	Mode	Pass Fail Standard	Notes	Floor	Room	Side	Component	Substrate	Color	Condition	Pb	Pb +/-
22-Jun-11	Lead Paint Inspection	Positive	2252	Exterior	room 2	B	Wall	Brick	Red	Fair	1.31	0.15
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	room 2	B	Baluster	Metal	Red	Fair	0.58	0.06
22-Jun-11	Lead Paint Inspection	Negative	2252	Exterior	room 2	B	Soffit	Wood	White	Poor	0	0
22-Jun-11			nist 2573						Red	Intact	0.95	
22-Jun-11			nist 2573						Red	Intact	0.87	
22-Jun-11			nist 2573						Red	Intact	0.91	

Action Level 0.7 mg/cm2

Appendix C

Performance Characteristics Sheet (PCS) for the Innov-X XRF

Performance Characteristic Sheet

EFFECTIVE DATE: **December 1, 2006** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: ***Innov-X Systems, Inc.***
Models: ***LBP4000 with software version 1.4 and higher***
Source: ***X-ray tube***

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Inspection mode, variable reading time.

XRF CALIBRATION CHECK LIMITS:

1.0 to 1.1 mg/cm^2 (inclusive)

SUBSTRATE CORRECTION:

Not applicable

INCONCLUSIVE RANGE OR THRESHOLD:

INSPECTION MODE READING DESCRIPTION	SUBSTRATE	INCONCLUSIVE RANGE (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	0.6 to 1.1
	Concrete	0.6 to 1.1
	Drywall	0.6 to 1.1
	Metal	0.6 to 1.1
	Plaster	0.6 to 1.1
	Wood	0.6 to 1.1

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted on 146 test locations, with two separate instruments, in December 2005.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

XRF CALIBRATION CHECK:

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If the average (rounded to 1 decimal place) of three readings is outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instrument into control before XRF testing proceeds.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Chapter 7 of the HUD Guidelines provides guidance on correcting XRF results for substrate bias. Supplemental guidance for using the paint film nearest 1.0 mg/cm^2 for substrate correction is provided:

XRF results are corrected for substrate bias by subtracting from each XRF result a correction value determined separately in each house for single-family housing or in each development for multifamily housing, for each substrate. The correction value is an average of XRF readings taken over the NIST SRM paint film nearest to 1.0 mg/cm^2 at test locations that have been scraped bare of their paint covering. Compute the correction values as follows:

Using the same XRF instrument, take three readings on a bare substrate area covered with the NIST SRM paint film nearest 1 mg/cm^2. Repeat this procedure by taking three more readings on a second bare substrate area of the same substrate covered with the NIST SRM.

Compute the correction value for each substrate type where XRF readings indicate substrate correction is needed by computing the average of all six readings as shown below.

For each substrate type (the 1.02 mg/cm^2 NIST SRM is shown in this example; use the actual lead loading of the NIST SRM used for substrate correction):

Correction value = (1st + 2nd + 3rd + 4th + 5th + 6th *Reading*) / 6 - 1.02 mg/cm²

Repeat this procedure for each substrate requiring substrate correction in the house or housing development.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing.

Conduct XRF re-testing at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family and multi-family housing, a result is defined as a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and the retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF readings.

Compute the average of all ten re-test XRF readings.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the variable-time inspection paint test mode, the instrument continues to read until it has determined whether the result is positive or negative (with respect to the 1.0 mg/cm^2 Federal standard), with 95% confidence. The following table provides testing time information for this testing mode.

Testing Times Using Variable Reading Time Inspection Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25th Percentile	Median	75th Percentile	Pb < 0.25	0.25 ≤ Pb < 1.0	1.0 ≤ Pb
Wood, Drywall	2.1	2.3	5.4	2.2	5.4	2.2
Metal	2.6	3.2	5.3	2.7	5.1	5.1
Brick, Concrete, Plaster	3.1	4.0	5.7	3.2	4.0	5.9

CLASSIFICATION OF RESULTS:

When an inconclusive range is specified on the *Performance Characteristic Sheet*, XRF results are classified as positive if they are greater than the upper boundary of the inconclusive range, negative if they are less than the lower boundary of the inconclusive range, or inconclusive if in between. The inconclusive range includes both its upper and lower bounds. If the instrument reads "> x mg/cm^2", the value "x" should be used for classification purposes, ignoring the ">". For example, a reading reported as ">1.0 mg/cm^2" is classified as 1.0 mg/cm^2, or inconclusive. When the inconclusive range reported in this PCS is used to classify the readings obtained in the EPA/HUD evaluation, the following False Positive, False Negative and Inconclusive rates are obtained:

FALSE POSITIVE RATE: 2.5% (2/80)

FALSE NEGATIVE RATE: 1.9% (4/212)

INCONCLUSIVE RATE: 16.4% (48/212)

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. XRF Performance Characteristic Sheets were originally developed by the MRI under a grant from the U. S. Environmental Protection Agency and the U.S. Department of Housing and Urban Development. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.