



ENGINEERING CONSULTING SERVICES, LTD.
Geotechnical • Construction Materials • Environmental

September 29, 2004

Ms. Rita L. Mihalik
National Park Service
Harpers Ferry National Historic Park
P.O. Box 65
Harpers Ferry, West Virginia 25425

ECS Project No. 10520

Subject: Report of Asbestos and Lead-Based Paint Screening
Curtis Freewill Baptist Church
Harpers Ferry National Historic Park
Harpers Ferry, West Virginia

Dear Ms. Mihalik:

Engineering Consulting Services, Ltd. (ECS, Ltd) is pleased to present this report of our asbestos and lead-based paint screening at the subject site. This report is based on the scope of services as described in our Proposal No. 20843-FP, dated August 18, 2004 and authorized by you on August 27, 2004. This report presents the project information, our scope of services, test results, and conclusions and recommendations. The sample results for asbestos and lead-based paint are provided in Appendices I and II, respectively.

PROJECT INFORMATION

The Curtis Freewill Baptist Church was constructed in 1895 and is a significant component of the Storer College and Park Campus historical landscape. The church measures approximately 70 feet by 50 feet in plan. We understand the National Park Service (NPS) intends to renovate the exterior portion of the structure in the near future. The National Park Service requested testing and sampling for asbestos-containing materials and lead-based paint of the exterior of the church, prior to the scheduled renovations.

SCOPE OF SERVICES

Based on our site visit of September 16, 2004, we provided the following services:

Task I – Preliminary Asbestos Survey

We visually identified the location of suspect asbestos-building materials within the areas planned for renovations and collected a total of 11 samples of suspect materials for assessing the presence of asbestos-containing materials. The materials sampled included roofing, exterior parging and sealant, flooring materials, and plaster. The sample locations were determined in the field.

The preliminary survey was not intended to be comprehensive and did not include exploratory demolition for asbestos-containing materials. Inaccessible areas such as pipe chases or within enclosed walls were not surveyed.

The samples were delivered to Analytics Corporation in Richmond, Virginia and analyzed using Polarized Light Microscopy (PLM) coupled with Dispersion Staining as outlined in the Environmental Protection Agency's (EPA) Method for the Determination of Asbestos in Bulk Building Materials (EPA-600/R-93/116, July 1993). The EPA defines asbestos-containing material as a material that contains at least one-percent asbestos by weight.

Task II – Preliminary Lead-Based Paint Screening

We took a total of 137 direct readings of painted surfaces in select locations in the building and 6 calibration readings utilizing an RMD Model LPA-1 Direct-Read X-Ray Fluorescent (XRF) Spectrometer. The State of West Virginia defines lead-based paint as paint that contains greater than 1.0 milligrams of lead per square centimeter (mg/cm^2). The sampling was performed by a State of West Virginia-certified Lead Risk Assessor (Operator License No. 33507).

TEST RESULTS

The results of the asbestos-containing materials and lead-based paint screening are presented below:

Asbestos-Containing Materials

Samples of roofing, exterior parging and sealant, flooring materials, and plaster were collected and analyzed for asbestiform minerals. The following material was identified as asbestos-containing:

- The floor tile mastic under the 12"x12" white floor tile located in the basement kitchen

It should be noted that electrical wiring insulation was observed inside the church. For safety reasons, samples of the insulation were not collected. Based upon the age of the church, we believe it would be prudent to assume that the wiring insulation should be considered asbestos-containing.

A complete listing of the materials sampled and laboratory results is provided in Appendix I – Asbestos Sample Results.

Lead-Based Paint

The following materials were identified to be coated with lead-based paint:

- Exterior – White Wood Window Trim Components
- Exterior – White Wood Soffit, Cornice Molding, Fascia, and Rafters
- Exterior – Black Metal Gutters, Downspouts, and Flashing
- Exterior – White Wood Doors and Door Components
- Exterior – Whitewash Paint over Stonework on North Elevation
- Interior – Brown Baseboard Molding in Basement
- Interior – White Wood Transom on 1st Floor
- Interior – White Wood Window Trim Components
- Interior – Varnish on Organ Woodwork and Black Paint on Metalwork and Pipes
- Interior – Blue Glass in Stained Glass Window

A complete listing of the materials sampled, the XRF readings, and sample locations are provided in Appendix II – Lead-Based Paint Results.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the asbestos results, the floor tile mastic under the 12"x12" floor tiles located in the basement kitchen should be considered an asbestos-containing material. We also believe it would be prudent to assume that the electrical wiring insulation should be considered asbestos-containing. If these materials are to be disturbed during the planned renovations, a qualified and licensed asbestos abatement contractor should abate these materials.

Based upon the lead-based paint results, we believe it would be prudent to assume that the white paint on exterior building components of the windows and doors, the roof elements (soffit, rafter, etc.), the black metal gutters, downspouts, and flashing, the whitewash paint over the stonework on the north elevation, the brown baseboards, the interior window components, the varnish on the organ woodwork and black paint on the metalwork and pipes, and the stained window glass is lead-based paint or lead-containing. A qualified and licensed lead-based paint abatement contractor should abate these materials if they are to be disturbed during the planned renovations.

CLOSING

We appreciate the opportunity to provide our services for this project. If you have any questions following your review of this report, please contact the undersigned.

Respectfully,

ENGINEERING CONSULTING SERVICES, LTD.



Timothy P. Naski, E.I.T.
Project Manager



William Kilpatrick, Ph. D., P.E.
Senior Principal Engineer

Enclosures: Appendix I – Asbestos Sample Results
Appendix II – Lead-based Paint XRF Results and Test Locations

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APPENDIX I

**ASBESTOS SAMPLE RESULTS
AND LABORATORY ANALYSIS SHEETS**

**ASBESTOS SAMPLE RESULTS
CURTIS FREEWILL BAPTIST CHURCH
HARPERS FERRY NATIONAL HISTORIC PARK
HARPERS FERRY, WEST VIRGINIA
ECS Project No. 10520**

Sample No.	General Sample Location	Sample Description	Percent and Type of Asbestos
A-01	West Elevation	Black felt under slate siding	No Asbestiform Minerals Observed
A-02	Roof	Black felt under slate roofing	No Asbestiform Minerals Observed
A-03	West Elevation	White parging over stone foundation wall	No Asbestiform Minerals Observed
A-04	South Elevation	White parging over stone foundation wall	No Asbestiform Minerals Observed
A-05	Roof	Black mastic around chimney at southwest corner	No Asbestiform Minerals Observed
A-06	Roof	Clear sealant around nail heads	No Asbestiform Minerals Observed
A-07	Roof	Black felt under slate roofing	No Asbestiform Minerals Observed
A-08	South Elevation	White sealant above southwest portico at flashing/brickwork interface	No Asbestiform Minerals Observed
A-09	Basement Kitchen	12"x12" white floor tile with mastic	5 Percent Chrysotile in Mastic
A-10	Basement Meeting Room	12"x12" white ceiling panel	No Asbestiform Minerals Observed
A-11	1 st Floor	White plaster on south wall	No Asbestiform Minerals Observed

Notes:

1. The samples were analyzed using Polarized Light Microscopy (PLM) coupled with Dispersion Staining as outlined in the Environmental Protection Agency's (EPA) Method for the Determination of Asbestos in Bulk Building Materials (EPA-600/R-93/116, July 1993). The EPA defines asbestos-containing material as a material that contains at least one-percent asbestos by weight.
2. Suspect electrical wiring insulation was observed inside the church. For safety reasons, samples of the insulation were not collected. Based upon the age of the church, we believe it would be prudent to assume that the wiring insulation be considered asbestos-containing.



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CHANTILLY, VA 20151

**** FINAL REPORT ****

Date Received: 09/21/04 Date Sampled: 09/16/04
Sample Type: 11 - Bulk Sample(s)
Project: 10520 PO Number: 10520

Analytical Results

Client No.\ Description	Lab ID	Total % Asbestos in Samp	Layer % of Samp	Sample Components	Results per Layer
ACM-01	-001	ND, <1	100	BLACK TARRY FIBROUS Cellulose Non-fibrous	50 % 50 %
ACM-02	-002	ND, <1	100	BLACK TARRY FIBROUS Cellulose Non-fibrous	50 % 50 %
ACM-03	-003	ND, <1	100	BEIGE GRANULAR Non-fibrous	100 %
ACM-04	-004	ND, <1	100	BEIGE GRANULAR Non-fibrous	100 %
ACM-05	-005	ND, <1	100	GRAY PLIABLE Non-fibrous	100 %
ACM-06	-006	ND, <1	100	CLEAR PLIABLE Non-fibrous	100 %
ACM-07	-007	ND, <1	100	BLACK TARRY FIBROUS Cellulose Non-fibrous	50 % 50 %



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Final Report

Date Received: 09/21/04 Date Sampled: 09/16/04
Sample Type: 11 - Bulk Sample(s)
Project: 10520 PO Number: 10520

Analytical Results

Client No.\ Description	Lab ID	Total % Asbestos in Samp	Layer % of Samp	Sample Components	Results per Layer
ACM-08	-008	ND, <1	100	HARD GRAY Cellulose Non-fibrous	5 % 95 %
ACM-09	-009	5	100	BEIGE FLOOR TILE W/ MASTIC ASB. ONLY IN MASTIC Chrysotile Non-fibrous	5 % 95 %
ACM-10	-010	ND, <1	100	BEIGE/WHITE FIBROUS Fibrous Glass Cellulose Non-fibrous	30 % 40 % 30 %
ACM-11	-011	ND, <1	100	BEIGE GRANULAR Non-fibrous	100 %


Lynne Overman, Analyst



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Methods, Notes and Abbreviations

Detection Limit: 1 percent by weight based on Calibrated Area Visual Estimates.

Abbreviations: ND = Not Detected; TR = Trace.

Analytical Method: EPA-600/M4-82-020

NVLAP Accreditation Code: 101004-0

PLM results may be biased on the high side, therefore you may opt to have samples with less than 10 percent asbestos re-analyzed by the reportedly more accurate point count procedure in the EPA Interim Method for the Identification of Asbestos in Bulk Materials.

PLM analysis of vinyl floor tile samples may yield false negative results as the size and thickness of asbestos fibers in vinyl floor may be less than the limit of resolution for a polarized-light microscope. Confirmation of PLM negative vinyl floor tiles by transmission electron microscopy (TEM) may be necessary.

Results reflect the samples that were tested and the report analysis must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

This report shall not be reproduced except in full, without the written approval of the laboratory.

*** End of Report ***

APPENDIX II

**LEAD-BASED PAINT XRF RESULTS
AND TEST LOCATIONS**

XRF LEAD RESULTS
CURTIS FREEWILL BAPTIST CHURCH
HARPERS FERRY NATIONAL HISTORIC PARK
HARPERS FERRY, WEST VIRGINIA
ECS Project No. 10520

Reading No.	General Sample Location	Color	Substrate	XRF Direct Reading (mg/cm ²)
01	Calibration	---	---	1.0
02	Calibration	---	---	1.0
03	Calibration	---	---	1.0
04	West elevation, semicircular window trim, outside casing	White	Wood	0.5
05	West elevation, semicircular window trim, window sill	White	Metal	4.2
06	West elevation, semicircular window trim, window sash	White	Wood	2.0
07	West elevation, semicircular window trim, inside casing	White	Wood	0.2
08	West elevation, drip edge under slate siding	White	Wood	0.0
09	West elevation, drip edge under slate siding	White	Wood	0.0
10	West elevation, gable end cornice	White	Wood	1.0
11	West elevation, gable end cornice	White	Wood	2.5
12	West elevation, gable end rafter	White	Wood	0.1
13	West elevation, gable end soffit	White	Wood	3.0
14	West elevation, gable end, underside of roof sheathing	White	Wood	1.8
15	West elevation, drip edge under slate siding	White	Wood	0.5
16	West elevation, lower window, window sill	White	Stone	0.0
17	West elevation, lower window, window casing	White	Wood	-0.1
18	West elevation, lower window, window header	White	Wood	3.4
19	West elevation, whitewash over stone	White	Stone	0.0
20	West elevation, downspout	Black	Metal	>9.9
21	Chimney flashing at southwest corner	Black	Metal	>9.9
22	Snow board on south side of roof	White	Wood	-0.1
23	Snow board on south side of roof	White	Wood	0.2
24	Snow board brackets on south side of roof	Black	Metal	0.3
25	Gutter on south side of roof	Black	Metal	>9.9

XRF LEAD RESULTS
CURTIS FREEWILL BAPTIST CHURCH
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HARPERS FERRY, WEST VIRGINIA
ECS Project No. 10520

Reading No.	General Sample Location	Color	Substate	XRF Direct Reading (mg/cm²)
26	South elevation, soffit	White	Wood	0.0
27	South elevation, fascia board	White	Wood	2.8
28	South elevation, roof rafter	White	Wood	2.6
29	South elevation, underside of roof	White	Wood	0.3
30	South elevation, west-center window, sill	White	Wood	0.2
31	South elevation, west-center window, sash	White	Wood	2.0
32	South elevation, west-center window, jamb	White	Wood	0.1
33	South elevation, west-center window, header	White	Wood	4.7
34	South elevation, east window, decorative header element	White	Wood	0.6
35	South elevation, east window, header	White	Wood	3.0
36	South elevation, east window, jamb	White	Wood	3.7
37	South elevation, east window, sill	White	Wood	0.0
38	South elevation, east window, sash	White	Wood	2.4
39	South elevation, east window, inner sill	White	Wood	0.3
40	South elevation, east window, parting bead	White	Wood	5.3
41	South elevation, west door, portico, exterior	White	Wood	-0.1
42	South elevation, west door, portico, interior	White	Wood	-0.1
43	South elevation, west door, portico soffit	White	Wood	0.0
44	South elevation, west door, portico roof rafter	White	Wood	0.0
45	South elevation, west door	White	Wood	0.0
46	South elevation, west door, casing	White	Wood	3.9
47	South elevation, parging on lower portion of wall	White	Stone	0.2
48	South elevation, lower center window, sill	White	Stone	0.0
49	South elevation, lower center window, sill	White	Wood	0.2
50	South elevation, lower center window, lintel	White	Wood	0.2
51	South elevation, lower center window, casing	White	Wood	0.0
52	South elevation, corrugated window well	Black	Metal	0.1
53	South elevation, east basement door, portico column	White	Wood	0.0
54	South elevation, east basement door, portico rake board	White	Wood	-0.1

XRF LEAD RESULTS
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Reading No.	General Sample Location	Color	Substrate	XRF Direct Reading (mg/cm²)
55	South elevation, east basement door, portico balustrade	White	Wood	0.0
56	South elevation, east basement door, header	White	Wood	0.4
57	South elevation, east basement door	White	Wood	-0.1
58	South elevation, east basement door, casing	White	Wood	5.0
59	East elevation, center window, sill	White	Wood	0.0
60	East elevation, center window, sash	White	Wood	3.3
61	East elevation, center window, casing	White	Wood	1.0
62	East elevation, vent pipe	Red	Plastic	-0.1
63	East elevation, parging on lower portion of wall	White	Stone	0.3
64	East elevation, south basement window, outer frame	White	Wood	0.0
65	East elevation, south basement window, sash	White	Wood	0.0
66	East elevation, north basement window, sill	White	Wood	1.0
67	East elevation, north basement window, sash	White	Wood	0.0
68	North elevation, east window, lintel	White	Wood	6.9
69	North elevation, east window, sill	White	Stone	-0.1
70	North elevation, east window, sill	White	Wood	0.2
71	North elevation, east window, casing	White	Wood	0.5
72	North elevation, whitewash on lower east end of wall	White	Stone	1.0
73	North elevation, whitewash on lower east end of wall	White	Stone	1.0
74	North elevation, west window, sill	White	Stone	0.4
75	North elevation, west window, sill	White	Stone	0.3
76	North elevation, whitewash on lower west end of wall	White	Stone	0.5
77	North elevation, whitewash on lower west end of wall	White	Stone	0.0
78	North elevation, west window, casing	White	Wood	0.3
79	North elevation, west window, lintel	White	Wood	8.6

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Reading No.	General Sample Location	Color	Substrate	XRF Direct Reading (mg/cm²)
80	Interior, basement women's room, west wall	White	Drywall	-0.1
81	Interior, basement women's room, east wall	White	Drywall	-0.1
82	Interior, basement men's room, west wall	White	Drywall	-0.2
83	Interior, basement men's room, east wall	White	Drywall	0.2
84	Interior, basement men's room, door casing	Gray	Wood	0.2
85	Interior, basement men's room, door	Gray	Wood	-0.2
86	Interior, basement kitchen, south wall	White	Drywall	0.5
87	Interior, basement kitchen, east window apron	Gray	Wood	0.1
88	Interior, basement kitchen, west exterior door	Gray	Wood	0.2
89	Interior, basement kitchen, west interior door	Brown	Wood	0.3
				0.3
90	Interior, basement kitchen, west wall	White	Plaster	0.0
91	Interior, basement kitchen, west door casing	Brown	Wood	0.3
92	Interior, basement meeting room, southeast window sill	Brown	Wood	0.1
93	Interior, basement meeting room, baseboard on south wall	Brown	Wood	8.4
94	Interior, basement storage room, door	Brown	Wood	0.2
95	Interior, basement storage room, door casing	Brown	Wood	0.0
96	Interior, basement storage room, north wall	White	Plaster	0.0
97	Interior, basement storage room, north window sill	Brown	Wood	0.1
98	Interior, basement storage room, north baseboard	Brown	Wood	2.0
99	Interior, basement meeting room, east column	White	Metal	0.3
100	Interior, basement meeting room, west stairwell door	Brown	Wood	0.2
101	Interior, basement meeting room, west stairwell door header	Brown	Wood	0.2
102	Interior, basement meeting room, tread to stairwell	Brown	Wood	-0.1
103	Interior, basement meeting room, west wall	White	Drywall	0.0
104	Interior, basement meeting room, southwest interior door	Brown	Wood	-0.1

XRF LEAD RESULTS
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Reading No.	General Sample Location	Color	Substrate	XRF Direct Reading (mg/cm²)
105	Interior, basement meeting room, wood above ceiling panel in southwest corner	White	Wood	0.3
106	Interior, basement meeting room, southwest exterior door	Brown	Wood	0.3
107	Interior, basement meeting room, northeast window sill	Brown	Wood	0.3
108	Interior, basement meeting room, north baseboard	Brown	Wood	0.3
109	Interior, 1st floor, threshold at southeast door	White	Wood	0.3
110	Interior, 1st floor, southeast door	White	Wood	1.0
111	Interior, 1st floor, west wall in foyer	White	Plaster	0.0
112	Interior, 1st floor, trim in foyer	Varnish	Wood	0.3
113	Interior, 1st floor, interior transom frame at foyer	White	Wood	3.4
114	Interior, 1st floor, east-center window, casing	White	Wood	3.8
115	Interior, 1st floor, east-center window, sash	White	Wood	2.8
116	Interior, 1st floor, east-center window, sill	Varnish	Wood	0.0
117	Interior, 1st floor, north wall	White	Plaster	-0.2
118	Interior, 1st floor, east-center window on north wall, casing	White	Wood	2.1
119	Interior, 1st floor, east-center window on north wall, sash	White	Wood	2.5
120	Interior, 1st floor, west stairwell tread	Brown	Wood	0.3
121	Interior, 1st floor, pew	Varnish	Wood	0.2
122	Interior, 1st floor, wainscoting on north wall	White	Wood	-0.1
123	Interior, 1st floor, west wall	White	Plaster	0.3
124	Interior, 1st floor, organ casing	Varnish	Wood	>9.9
125	Interior, 1st floor, organ pipe	Black	Metal	3.4
126	Interior, 1st floor, floor board at southwest corner	Varnish	Wood	0.1
127	Interior, 1st floor, organ bench	Varnish	Wood	0.1
128	Interior, 1st floor, lecturn	Varnish	Wood	0.2
129	Interior, 1st floor, podium step riser	Varnish	Wood	0.0
130	Interior, 1st floor, newel post in choir area	Varnish	Wood	0.3
131	Interior, 1st floor, organ pipe	Black	Metal	>9.9

XRF LEAD RESULTS
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Reading No.	General Sample Location	Color	Substrate	XRF Direct Reading (mg/cm ²)
132	Interior, 1st floor, east-center window on south side, casing	White	Wood	1.6
133	Interior, 1st floor, east-center window on south side, sash	White	Wood	2.5
134	Interior, 1st floor, east-center window on south side, sill	White	Wood	0.0
135	Interior, 1st floor, east-center window on south side, casing	White	Wood	0.1
136	Interior, 1st floor, south wall	White	Plaster	-0.1
137	Interior, 1st floor, "Franklin" window, window glazing	Orange	Glass	0.0
138	Interior, 1st floor, "Franklin" window, window glazing	Blue	Glass	1.0
139	Interior, 1st floor, electrical conduit on east wall	White	Metal	0.0
140	Interior, 1st floor, support panel behind circuit breaker panel in foyer	White	Wood	0.0
141	Calibration	---	---	1.0
142	Calibration	---	---	1.0
143	Calibration	---	---	1.0

Note: An XRF Reading of 1.0 mg/cm² or greater is considered to be lead-based paint. Lead-based paints are shown shaded above.