

Limited Asbestos Survey

Project: Install Steam Line Bypass B147 to B121

VA Project No. 552-15-210

Dayton VA Medical Center

4100 West Third Street

Dayton, Montgomery County, Ohio

November 27, 2013

Terracon Project No. N1137167



Prepared for:

Heapy Engineering
Dayton, Ohio

Prepared by:

Terracon Consultants, Inc.
Cincinnati, Ohio

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Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

November 27, 2013



Heapy Engineering
1400 W. Dorothy Lane
Dayton, Ohio 45409-1310

Attn: Mr. Donald L. Engle, Jr. / Mr. Phil West, PE
T: 937.224.0861
F: 937.224.5777
E: dlengle@heapy.com

Re: Limited Asbestos Survey
Project: Install Steam Line Bypass B147 to B121
VA Project No. 552-15-210
Dayton VA Medical Center
4100 West Third Street
Dayton, Montgomery County, Ohio
Terracon Project No. N1137167

Dear Messrs. Engle and West:

The purpose of this report is to present the results of a limited asbestos survey which was performed in support of the above-referenced renovation project. This survey was conducted in general accordance with our proposal number PN1130587R1, dated August 30, 2013. We understand that this survey was requested due to the planned renovation pertaining to steam lines in specific areas and tunnels which are located between Buildings 147 and 121 at the Dayton VA Medical Center; therefore, this survey was of a limited nature specific to thermal system insulation materials in specific areas related to the above-referenced project.

Friable and non-friable asbestos-containing materials were identified as a result of the limited survey. Please refer to the attached report for details.

Terracon appreciates the opportunity to provide this service to Heapy Engineering. If you have any questions regarding this report, or if you need assistance with project oversight and sampling during renovation of these buildings, please contact us at (513) 612-9085.

Sincerely,

Terracon Consultants, Inc.

A handwritten signature in blue ink, appearing to read 'Joseph A. Tussey', is written over a light blue rectangular background.

Joseph A. Tussey, CHMM
Senior Project Manager
OH Certified AHES/AHAPD

A handwritten signature in blue ink, appearing to read 'C.R. Bishop', is written over a light blue rectangular background.

Randy C. Bishop, P.G., C.P.
Senior Associate
Environmental Department Manager



Terracon Consultants, Inc. 611 Lunken Park Drive Cincinnati, OH 45226
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Geotechnical



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LIMITED ASBESTOS SURVEY
Project: Install Steam Line By Pass B147 to B121
VA Project No. 552-15-210
Dayton VA Medical Center
Terracon Project No. N1137167
November 27, 2013

1.0 INTRODUCTION

Terracon conducted a limited, project-specific asbestos survey in support of the design planning phase for the “Install Steam Line By Pass B147 to B121” project at the Dayton VA Medical Center (DVAMC), which is located at 4100 W. Third Street, Dayton, Ohio. A copy of a client-provided drawing which indicates the boundaries of this project is attached in Appendix A. In addition to the limitation of project-specific areas, the survey was focused specifically upon accessible thermal system insulation (TSI) materials associated with steam lines in those subject areas.

The limited survey was conducted on October 17 and November 1, 2013, by Ohio Department of Health (ODH) certified Asbestos Hazard Evaluation Specialists (AHES) in general accordance with Terracon proposal number PN1130587R1, dated August 30, 2013. Homogeneous areas of suspect asbestos-containing materials (ACM) associated TSI were visually identified and documented within the project-specific areas. Although reasonable effort was made to identify accessible suspect materials, additional suspect but un-sampled (inaccessible) materials could be concealed. Suspect ACM samples were collected in general accordance with the sampling protocols outlined in EPA regulation 40 CFR 763 (Asbestos Hazard Emergency Response Act, AHERA). Samples were delivered to an accredited laboratory for analysis by polarized light microscopy (PLM) (EPA Method 600/R-93/11).

1.1 Project Objective

We understand that this survey was requested due to the planned renovation pertaining to steam lines in specific areas and tunnels which are located between Buildings 147 and 121 at the Dayton VA Medical Center; therefore, this survey was of a limited nature specific to thermal system insulation materials in specific areas related to the subject project. EPA regulation 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP), prohibits the release of asbestos fibers to the atmosphere during renovation or demolition activities. The asbestos NESHAP requires that potentially regulated ACM (RACM) be identified, classified and quantified prior to planned disturbances or demolition activities.

2.0 PROJECT-SPECIFIC AREA DESCRIPTIONS AND LIMITATIONS

Appendix A includes a drawing which indicates the project-specific areas which have TIS included this in limited survey. These areas are summarized below:

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- Steam tunnel section A, which is approximately 200 feet long, extending from a concrete wall at the foundation of B147 and proceeding westward to join steam tunnel section B,
- Steam tunnel section B, which is approximately 550 feet long, extending southward from the intersection with steam tunnel A and proceeding to the intersection of steam tunnel section C,
- Steam tunnel section C, which is approximately 220 feet long, extending eastward to Building 121
- Building 121, only the approximate western one-third of the building, and
- A separate area, which has abandoned direct-bury steam lines which connect between Buildings 147 and 121.

Please note that the separate area, which has abandoned direct-bury steam lines which connect between Buildings 147 and 121, was not accessible. Given the lack of accessibility for sampling and observations, these abandoned buried steam lines must be assumed to have asbestos-containing TSI present. Additionally, inaccessible/concealed materials, which may be present, were not included in this limited survey. This included gaskets which are likely to be associated with valves on steam lines (steam lines were active during this limited survey's field activities). Gaskets must be assumed to contain asbestos.

3.0 FIELD ACTIVITIES

The limited survey was conducted by Mr. Joseph A. Tussey, CHMM and Ms. Gina Tanner, each of whom is an ODH certified AHES. Copies of their state credentials are attached in Appendix B. The survey was conducted in general accordance with the sample collection protocols established in EPA regulation 40 CFR 763, the Asbestos Hazard Emergency Response Act (AHERA). A summary of survey activities is provided below.

3.1 Visual Assessment

Our sampling activities began with visual observation for accessible TSI materials located within the project-specific areas to identify homogeneous areas of suspect ACM. A homogeneous area consists of building materials that appear similar throughout in terms of color, texture and date of application.

Demolition or dismantling of equipment or building materials in an effort to identify possible hidden suspect ACM was not conducted. Materials identified as concrete, glass, wood, masonry, metal or rubber were not considered suspect ACM.

3.2 Physical Assessment

A physical assessment of each homogeneous area of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the EPA as a material which can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

3.3 Sample Collection

Based on results of the visual observation, bulk samples of suspect ACM were collected in general accordance with AHERA sampling protocols. Random samples of suspect materials were collected in each homogeneous area. Sample team members collected bulk samples using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

A total of 36 bulk samples were collected from 8 homogeneous areas of suspect ACM. A summary of suspect ACM samples collected during the sampling is included as Appendix C.

3.4 Sample Analysis

Bulk samples were submitted under chain of custody to IATL of Mt. Laurel, New Jersey for analysis by PLM per EPA Method EPA/600/R-93/116. The percentage of asbestos, where applicable, was determined by microscopic visual estimation and point counting. IATL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP Accreditation No. 101165-0). A copy of IATL's NVLAP certification is included in Appendix B.

4.0 REGULATORY OVERVIEW

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing materials prior to demolition or renovation activity. Under NESHAP, ACM are classified as either friable, Category I non-friable or Category II non-friable ACM. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I non-friable ACM includes packings, gaskets, resilient floor coverings and asphalt roofing products containing more than 1% asbestos. Category II non-friable ACM are any materials other than Category I materials that contain more than 1% asbestos. Friable ACM, Category I and Category II non-friable ACM which is in poor condition and has become friable or which will be subjected to drilling, sanding, grinding, cutting or abrading and which could be crushed or pulverized during anticipated renovation or demolition activities are considered regulated ACM (RACM).

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In Ohio, the federal NESHAP regulation has been delegated to the state EPA. At the subject project location, the Regional Air Pollution Control Authority (RAPCA) is responsible for administering and enforcing the federal and state EPA regulations. NESHAP notifications must be submitted to the RAPCA 10 business days prior to project commencement (where >160 SF / 260 LF of friable ACM is removed annually, facility-wide).

ODH regulates friable ACMs containing more than 1% asbestos. ODH regulates asbestos abatement activities, asbestos personnel training, and issuance of asbestos professional certifications within the state under OAC 3701-34-01 through 3701-34-11. Additionally, ODH audits asbestos abatement projects and responds to public health emergencies where friable ACMs has been released. ODH requires a 10-day notification be submitted prior to the abatement of friable ACMs in quantities greater than 50 linear or 50 square feet (per project). For more information about ODH's asbestos program, their website can be found at <http://www.odh.state.oh.us/>.

The Occupational Safety and Health Administration (OSHA) Asbestos standard for construction (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below 0.1 asbestos fibers per cubic centimeter of air (0.1 f/cc). The OSHA standard classifies construction and maintenance activities which could disturb ACM, and specifies work practices and precautions which employers must follow when engaging in each class of regulated work.

5.0 FINDINGS AND RECOMMENDATIONS

Subject to the limitations of this survey, laboratory analyses confirmed the presence of asbestos-containing pipe insulation and pipe fitting insulation associated with the 8" steam lines which are located under metal jackets in the subject western one-third portion of Building 121. Laboratory analyses also confirmed the presence of asbestos in the pipe insulation which is located on an abandoned 2" steam line along the western wall in tunnel section B.

The abandoned direct bury steam lines located between B147 and B121, which are included as a part of this project, are not accessible; therefore, it must be assumed that asbestos-containing pipe insulation is present in regard to this area of the project. Additionally, all gaskets at steam line valves, which were inaccessible during this survey, must be assumed to contain asbestos.

A summary of the classification, condition and approximate quantities of the confirmed and assumed ACM is presented in Appendix D. Laboratory analytical reports are included in Appendix E.

It should be noted that during this survey, the 10" steam line in tunnel sections A and B was observed to have "danger – contains asbestos" labels present. A total of 12 pipe insulation samples and 6 pipe fitting insulation samples (more than the regulatory minimum of 3 samples)

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samples were collected from various points on this line. All of these were analytically-confirmed as not containing asbestos. The client reported that the VA was not aware of previous sampling records for the insulation on this line which had the “danger asbestos” label. It may appear that past VA staff applied labels to this insulation while assuming it contained asbestos without having sampled it for analytical confirmation.

Terracon has also contracted with the client to provide asbestos abatement specifications relative to this project. As the design phase of the project progresses, the client and/or VA should determine and indicate to Terracon if the analytically-confirmed and assumed ACM, which were identified from this survey, will be impacted by the renovation project (e.g. determination of whether the abandoned direct bury steam lines between B121 and B147 be exhumed).

6.0 GENERAL COMMENTS

The limited asbestos sampling was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our field survey within the project-specific areas, and specific project-focused materials (i.e. TSI). Although reasonable effort was made to identify accessible suspect materials, additional suspect but un-sampled (inaccessible) materials could be concealed. If additional homogeneous suspect ACMs, not previously sampled/identified during this limited survey are encountered, those additional identified homogeneous suspect ACMs must be assumed to contain asbestos until sampled by state credentialed AHES and proven otherwise.

The information contained in this report is relevant to the date on which this sampling was performed, and should not be relied upon to represent conditions at a later date. This report has been prepared on behalf of and exclusively for use by Heapy Engineering for specific application to their project as discussed. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.

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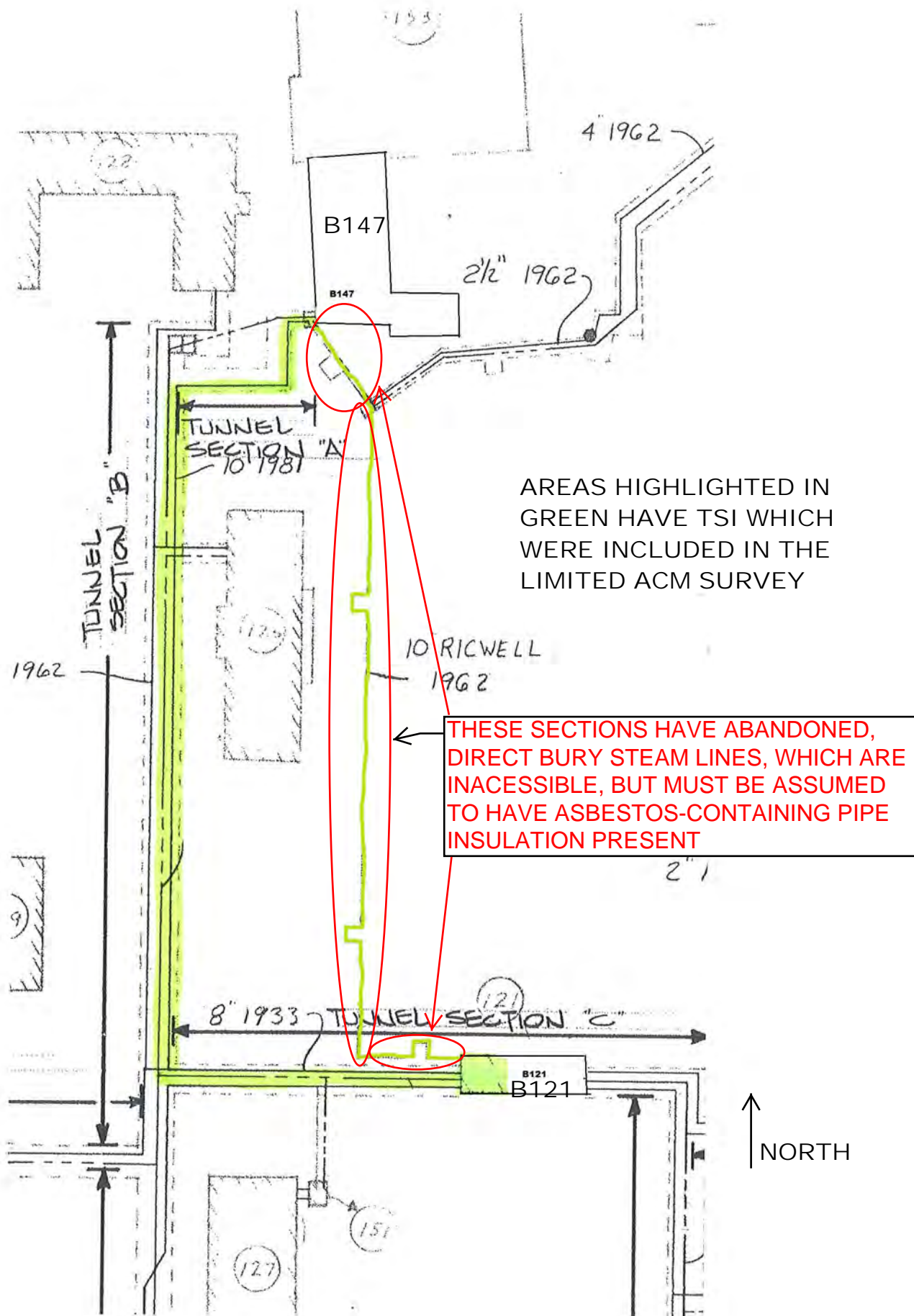
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APPENDIX A

PROJECT BOUNDARY DRAWING



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APPENDIX B

CERTIFICATIONS



OHIO DEPARTMENT OF HEALTH

246 North High Street
Columbus, Ohio 43215

614/466-3543
www.odh.ohio.gov

John R. Kasich/Governor

Theodore E. Wymyslo, M.D./Director of Health

August 08, 2013

Joseph A Tussey

Cincinnati OH

RE: Asbestos Hazard Evaluation Specialist
Certification Number: ES32388
Expiration Date: 09/02/2014

Dear Joseph A Tussey:

This letter and enclosed certification card approves your request to be certified as an Asbestos Hazard Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of Health for violation of any of the requirements of 3701-34 of the Ohio Administrative Code.

If you have any questions, please call Charlene W. Valentine, Licensure Specialist, at 614-644-0226.

Sincerely,

Bridgette C. Smith
Licensure Program Administrator
Bureau of Information and Operational Support





UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

May 14, 2013

Mr. Frank E. Ehrenfeld, III
International Asbestos Testing Labs
9000 Commerce Parkway
Suite B
Mt. Laurel, NJ 08054

NVLAP Lab Code: 101165-0

Dear Mr. Ehrenfeld:

I am pleased to inform you that continuing accreditation for specific test methods in Bulk Asbestos Fiber Analysis (PLM) is granted to your organization under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until June 30, 2014, provided that your organization continues to comply with accreditation requirements contained in the NVLAP Procedures.

Your Certificate of Accreditation is enclosed along with a statement of your Scope of Accreditation. You may reproduce these documents in their entirety and announce your organization's accreditation status using the NVLAP symbol and/or term in business publications, the trade press, and other business-oriented literature. Accreditation does not relieve your organization from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Hazel M. Richmond, Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, 100 Bureau Dr. Stop 2140, Gaithersburg, MD 20899-2140; (301) 975-4016.

Sincerely,

Warren R. Merkel, Chief
Laboratory Accreditation Program

Enclosure(s)





**National Voluntary
Laboratory Accreditation Program**



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

International Asbestos Testing Laboratories

9000 Commerce Parkway

Suite B

Mt. Laurel, NJ 08054

Mr. Frank E. Ehrenfeld, III

Phone: 856-231-9449 Fax: 856-231-9818

E-Mail: frankehrenfeld@iatl.com

URL: <http://www.iatl.com>

BULK ASBESTOS FIBER ANALYSIS (PLM)

NVLAP LAB CODE 101165-0

NVLAP Code Designation / Description

18/A01	EPA 600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

2013-07-01 through 2014-06-30

Effective dates

For the National Institute of Standards and Technology

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101165-0

International Asbestos Testing Laboratories
Mt. Laurel, NJ

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

BULK ASBESTOS FIBER ANALYSIS

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2013-07-01 through 2014-06-30

Effective dates



A handwritten signature in black ink, appearing to read "William R. Mall".

For the National Institute of Standards and Technology

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APPENDIX C

LIMITED ASBESTOS SURVEY - SAMPLE SUMMARY

APPENDIX C
LIMITED ASBESTOS SURVEY - SAMPLE SUMMARY

Project: Install Steam Line Bypass B147 to B121
Dayton VAMC; 4100 West Third Street, Dayton, Ohio

Sample Number	Suspect ACM Description	Sample Location	Material Location(s)	Results
Samples Collected on October 17, 2013				
01-PI1-01	White / tan block pipe insulation under metal jacket	B121 along south wall, near west tunnel section C	~150 total LF on 8" steam line with metal jacket in western one-third of B121 (a continuation of lines from west tunnel)	20% chrysotile & 10% amosite
01-PI1-02		B121 along south wall, ~ middle of room		None detected
01-PI1-03		B121 along south wall, east ~ 20 feet of ~ middle of room		None detected
02-MJ-04	White / gray pipe fitting insulation	B121 near entrance to west tunnel section C, close to ceiling	~ 36 fittings on 8" steam line with metal jacket in western one-third of B121 (associated with samples 01- 03 above)	15% chrysotile & 7.8% crocidolite
02-MJ-05		B121 along south wall, east ~ 20 feet of ~ middle of room, vertical branch		None detected
02-MJ-06		B121 along south wall, ~ middle of room, vertical branch		10% chrysotile
03-PI-07	White / gray block pipe insulation under metal jacket	~80 feet into tunnel section B (from the southern end) along the east wall	~ 750 total LF on 10" steam line under metal jacket in tunnel sections A and B	None detected
03-PI-08		~150 feet into tunnel section B (from the southern end) along the east wall		None detected
03-PI-08		~540 feet into tunnel section B (from the southern end) along the east wall		None detected
03-PI-10		~ 10 feet from termination of tunnel wall to B147 (tunnel section A)		None detected
04-MJ1-11	Gray pipe fitting insulation	At north end of tunnel section B where it turns east into tunnel section A toward B147	~ 36 fittings on 10" steam line with metal jacket in tunnel sections A and B	None detected
04-MJ1-12		Tunnel A section (at far east end of first section heading eastward from tunnel B section)		None detected
04-MJ1-13		~ 6 feet from termination of tunnel wall to B147 (tunnel A section)		None detected
05-PI1-14	White / gray block pipe insulation (no metal jacket)	~ 80 feet into tunnel B (from southern end) along west wall	~550 linear feet on abandoned 2" steam line, along west wall in tunnel section B (has ~10ft damaged section toward northern end)	10% amosite
05-PI1-15		~ 200 feet into tunnel B (from southern end) along west wall		20% amosite & 8.3% chrysotile
05-PI1-16		~ 450 feet into tunnel B (from southern end) along west wall (damaged area of insulation)		20% amosite
06-PI3-17	Outer black tar paper covering block pipe insulation	B121 near southwest corner, at entry to tunnel C on 8" vertical steam line branch	~50 total linear feet; appear present in western on-third of B121 on pipe before entrance into western tunnel C, and also at tunnel A termination into B147	None detected
06-PI3-18		B121 near southwest corner, at entry to tunnel C on 8" vertical steam line branch		None detected
06-PI3-19		~ 2 feet from termination of tunnel A at wall to B147 on 10" steam line over block insulation		None detected

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Sample Number	Suspect ACM Description	Sample Location	Material Location(s)	Results
07-PI4-20	White/silver/tan paper covering over fiberglass insulation	Tunnel section C, ~125 west from B121 on 8" steam line under metal jacket	~460 total linear feet under metal jacket on 8" steam line and 4" condensate line along north wall in east-west tunnel section, and extends ~10 feet into north-south tunnel section on 10" steam line	None detected
07-PI4-21		Tunnel section C, ~125 in from B121 on 8" steam line under metal jacket		None detected
07-PI4-22		Tunnel section B, ~10 in from tunnel C intersection toward north on 8" steam line under metal jacket near valve		None detected
08-PI5-23	White mastic on fiberglass insulation ends	B121 near tunnel C west entrance, on 6" steam line along south wall	Various locations throughout tunnel on lines insulated with fiberglass, but primarily on 6" steam line along south wall of east-west tunnel section off of B121	None detected
08-PI5-24		Tunnel C, ~100 into tunnel (westward) from B121, 6" steam line along south wall		None detected
08-PI5-25		Tunnel C, ~180 into tunnel (westward) from B121, 6" steam line along south wall		None detected
Samples Collected on November 1, 2013				
03-PI-01A	White block pipe insulation under metal jacket (cored to pipe substrate)	~90 feet into tunnel section B (from the southern end) along the east wall	~ 800 total LF on 10" steam line under metal jacket in north-south tunnel section and continuing sections to termination at B147 (there are 2 apparent layers of this white block insulation under the metal jacket)	None detected
03-PI-02A		~275 feet into tunnel section B (from the southern end) along the east wall		None detected
03-PI-03A		~540 feet into tunnel section B (from the southern end) along the east wall		None detected
03-PI-04A		Tunnel section A, 1 st section off of tunnel B heading east toward B147; ~ center of this section under manhole cover		None detected
03-PI-05A		Tunnel section A, ~ 20 feet from termination of tunnel wall to B147		None detected
04-MJ1-06A	Gray (top layer) and white (bottom layer) pipe fitting insulation(core to pipe substrate)	At north end of tunnel section B where it turns east toward B147 into tunnel section A	~ 36 fittings on 10" steam line with metal jacket in tunnel north-south tunnel section and continuing sections to termination at B147	None detected
04-MJ1-07A		Tunnel section A, 1 st section off of tunnel B section (at far east end of this section)		None detected
04-MJ1-08A		Tunnel section A, ~ 6 feet from termination of tunnel wall to B147 (under manhole cover)		None detected
05-PI5-09A	Paper under metal jacket of pipe insulation	~90 feet into Tunnel section B (from the southern end) along the east wall	~ 800 total LF on 10" steam line directly applied to and metal jacket in north-south tunnel section and continuing sections to termination at B147	None detected
05-PI5-10A		B121 near southwest corner, at west entry into tunnel C, on 8" vertical steam line branch		None detected
05-PI5-11A		Tunnel section A, 1 st section off of tunnel section B heading toward B147; ~ center of this section under manhole cover		None detected

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APPENDIX D

CONFIRMED & ASSUMED ASBESTOS-CONTAINING MATERIALS

Limited Asbestos Survey

Steam Bypass B147 to B121 ■ Dayton VAMC

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**APPENDIX D****CONFIRMED & ASSUMED ASBESTOS-CONTAINING MATERIALS***

Project: Install Steam Line Bypass B147 to B121
Dayton VAMC; 4100 West Third Street, Dayton, Ohio

SAMPLE NUMBERS	DESCRIPTION	MATERIAL LOCATION(S)	PERCENT & TYPE ASBESTOS	NESHAP CLASSIFICATION	CONDITION	ESTIMATED QUANTITY
01-PI1-01, 02-MJ-04, and 02-MJ-06	White / tan block pipe insulation under metal jacket with associated white / gray pipe fitting insulation	In B121: on 8" steam lines (and branches) extending from approximately middle of room, along south wall, to west tunnel section A entrance	20% chrysotile & 10% amosite (pipe insulation): 15% chrysotile & 7.8% crocidolite (pipe fitting insulation)	RACM (friable)	Good (intact with protective jackets)	~ 150 total linear feet (including fitting insulation)
05-PI1-14, 05-PI1-15, and 05-PI1-16	White / gray block pipe insulation (has no metal jacket)	On abandoned 2" steam line, along west wall in tunnel section B	20% amosite & 8.3% chrysotile	RACM (friable)	Fair (has scattered sections of damage)	~ 550 linear feet
N/A Assumed	Valve gaskets on all subject steam lines included in the project	(assumed present)	Assumed ACM	Category I non-friable	Assumed good (intact)	~ 36 count
N/A Assumed	Pipe insulation (specific type unknown)	Abandoned direct bury steam lines between B147 and B121 (assumed present)	Assumed ACM	RACM (friable)	Unknown	~1,300 total linear feet

* Specific to limitations of project areas and TSI materials

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APPENDIX E

ASBESTOS LABORATORY ANALYTICAL DATA

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150245	Description / Location:	White Block Pipe Insulation	
Client No.:	01-PI1-01		B121 Along South Wall, Near West Tunnel	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
20	Chrysotile	None Detected	None Detected	70
10	Crocidolite			

Lab No.:	5150246	Description / Location:	White Block Pipe Insulation	
Client No.:	01-PI1-02		B121 Along South Wall, ~Middle Of Room	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	3	Synthetic	96
		3	Fibrous Glass	

Lab No.:	5150247	Description / Location:	Yellow Block Pipe Insulation	
Client No.:	01-PI1-03		A121 Along South Wall, East ~20' Of ~Middle Of Rm	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	5	Synthetic	95

Lab No.:	5150248	Description / Location:	White Pipe Fitting Insulation	
Client No.:	02-MJ-04		B121 Near Entrance To West Tunnel, Close To Clg	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
15	Chrysotile	None Detected	None Detected	PC 77.2
PC 7.8	Crocidolite			

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**


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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: E. Smith

Approved By: 

Date: 10/22/2013

Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150249	Description / Location:	Lt.Grey Pipe Fitting Insulation	
Client No.:	02-MJ-05		B121AlongSWall,E~20'Of~MiddleRm,Vertical	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	3	Fibrous Glass	97

Lab No.:	5150250	Description / Location:	Tan Pipe Fitting Insulation	
Client No.:	02-MJ-06		B121AlongSWall,~MiddleOfRoom,Vertical	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
10	Chrysotile	10	Fibrous Glass	80

Lab No.:	5150251	Description / Location:	Lt.Tan Block Pipe Insulation	
Client No.:	03-PI-07		~80'IntoN-STunnelSectionAlongEWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	2	Cellulose	96
		2	Hair	

Lab No.:	5150252	Description / Location:	Lt.Tan Block Pipe Insulation	
Client No.:	03-PI-08		~150'IntoN-STunnelSectionAlongEastWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	2	Cellulose	96
		2	Hair	

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150253	Description / Location:	Lt.Tan Block Pipe Insulation	
Client No.:	03-PI-08		~540'IntoN-STunnelSectionAlongEastWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	2	Cellulose	96
		2	Hair	

Lab No.:	5150254	Description / Location:	Off-White Block Pipe Insulation	
Client No.:	03-PI-10		~10'FromTerminationOfTunnelWallToB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	10	Cellulose	83
		7	Hair	

Lab No.:	5150255	Description / Location:	Lt.Grey Pipe Fitting Insulation	
Client No.:	04-MJ1-11		NorthEndOfN-STunnelSectionWhereItTurnsE	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	7	Fibrous Glass	93

Lab No.:	5150256	Description / Location:	Grey Pipe Fitting Insulation	
Client No.:	04-MJ1-12		1stE-WTunnelSectionOffN-STunnelSection	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	9	Fibrous Glass	90
		1	Cellulose	

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**
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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150257	Description / Location:	Grey Pipe Fitting Insulation	
Client No.:	04-MJ1-13		~6'FromTerminationOf Tunnel Wall To B147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	7	Fibrous Glass	93

Lab No.:	5150258	Description / Location:	Grey Block Pipe Insulation	
Client No.:	05-PI1-14		~80' Into N-S Tunnel Along West Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
10	Amosite	None Detected	None Detected	90

Lab No.:	5150259	Description / Location:	White Block Pipe Insulation	
Client No.:	05-PI1-15		~200' Into N-S Tunnel Along West Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
20	Amosite	None Detected	None Detected	PC 71.7
PC 8.3	Chrysotile			

Lab No.:	5150260	Description / Location:	Off-White Block Pipe Insulation	
Client No.:	05-PI1-16		~450' Into N-S Tunnel Along West Wall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
20	Amosite	None Detected	None Detected	80

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150261	Description / Location:	Black Tar Paper; A/W BlockPipeInsulation	
Client No.:	06-PI3-17		B121NearSWCorner, AtEntryToTunnel	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	70	Cellulose	30

Lab No.:	5150262	Description / Location:	Black Tar Paper; A/W BlockPipeInsulation	
Client No.:	06-PI3-18		B121NearSWCorner, AtEntryToTunnel	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	70	Cellulose	30

Lab No.:	5150263	Description / Location:	Black Tar Paper; A/W BlockPipeInsulation	
Client No.:	06-PI3-19		~2'FromTerminationOfTunnelWallToB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	65	Cellulose	35

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150264	Description / Location:	Tan/Silver Insulation	
Client No.:	07-PI4-20		E-W Tunnel Section, ~125 In From B121	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	75	Cellulose	20
		5	Fibrous Glass	

Lab No.:	5150264	Description / Location:	Clear Glue/Mastic	Layer No.:	2
Client No.:	07-PI4-20		E-W Tunnel Section, ~125 In From B121		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	Trace	Fibrous Glass	100	

Lab No.:	5150265	Description / Location:	Tan/Silver Insulation	
Client No.:	07-PI4-21		E-W Tunnel Section, ~125 In From B121	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	80	Cellulose	10
		10	Fibrous Glass	

Lab No.:	5150266	Description / Location:	Tan/Silver Insulation	
Client No.:	07-PI4-22		N-S Tunnel Section, ~10 In From E-W Section	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	97	Cellulose	3

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150267	Description / Location:	Yellow Insulation	
Client No.:	08-PI5-23		B121NearWTunnelEntrance,On6"SteamLine	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Fibrous Glass	None Detected

Lab No.:	5150267	Description / Location:	Lt.Tan Mastic	Layer No.:	2
Client No.:	08-PI5-23		B121NearWTunnelEntrance,On6"SteamLine		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	3	Fibrous Glass	97	

Lab No.:	5150268	Description / Location:	Yellow Insulation	
Client No.:	08-PI5-24		E-W Tunnel, ~100 Into Tunnel From B121	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Fibrous Glass	None Detected

Lab No.:	5150268	Description / Location:	White Mastic	
Client No.:	08-PI5-24		E-W Tunnel, ~100 Into Tunnel From B121	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	1	Fibrous Glass	99

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	10/22/2013
	611 Lunken Park Drive	Report No.:	317301
	Cincinnati OH 45226	Project:	DaytonVAMC; B147-B121SteamBypa
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5150269	Description / Location:	Yellow Insulation	
Client No.:	08-PI5-25		E-W Tunnel, ~180 Into Tunnel From B121	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	100	Fibrous Glass	None Detected

Lab No.:	5150269	Description / Location:	White Mastic	Layer No.:	2
Client No.:	08-PI5-25		E-W Tunnel, ~180 Into Tunnel From B121		
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>	
None Detected	None Detected	1	Fibrous Glass	99	

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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Analysis Performed By: E. Smith

Date: 10/22/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	11/5/2013
	611 Lunken Park Drive	Report No.:	318382
	Cincinnati OH 45226	Project:	DVAMC B147-B121 SteamBypass
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5160887	Description / Location:	White Block Pipe Insulation	
Client No.:	03-PI-01A		~90'IntoN-S TunnelSectionAlong EWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	5	Cellulose	95

Lab No.:	5160888	Description / Location:	White Block Pipe Insulation	
Client No.:	03-PI-02A		~275'IntoN-STunnelSection AlongEWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Synthetic	100

Lab No.:	5160889	Description / Location:	Off-White Block Pipe Insulation	
Client No.:	03-PI-03A		~540'IntoN-STunnelSection AlongEWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Cellulose	100

Lab No.:	5160890	Description / Location:	White Block Pipe Insulation	
Client No.:	03-PI-04A		1stE-WSec.OffN-STunnelHeadingTowardsB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Synthetic	100

Accreditations:	NIST-NVLAP No. 101165-0	NY-DOH No. 11021	AIHA-LAP, LLC No. 100188
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Analytical Method:	EPA 600/R-93/116, by Polarized Light Microscopy
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Analysis Performed By:	V. Smith
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Approved By:	
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Date:	11/5/2013
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Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	11/5/2013
	611 Lunken Park Drive	Report No.:	318382
	Cincinnati OH 45226	Project:	DVAMC B147-B121 SteamBypass
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5160891	Description / Location:	Off-White Block Pipe Insulation	
Client No.:	03-PI-05A		~20' From TerminationOf TunnelWallToB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	2	Cellulose	98

Lab No.:	5160892	Description / Location:	Grey Pipe Fitting Insulation	
Client No.:	04-MJ1-06A		NEndOfN-STunnelSec.WhereItTurnsEToB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	5	Cellulose	95
		Trace	Synthetic	

Lab No.:	5160893	Description / Location:	White/Grey Pipe Fitting Insulation	
Client No.:	04-MJ1-07A		1stE-WTunnelSectionOffN-STunnelSection	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	Trace	Cellulose	99
		Trace	Synthetic	
		1	Mineral Wool	

Lab No.:	5160894	Description / Location:	White Pipe Fitting Insulation	
Client No.:	04-MJ1-08A		~6'FromTerminationOfTunnel WallToB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	2	Cellulose	98
		Trace	Synthetic	

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: V. Smith

Date: 11/5/2013

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	11/5/2013
	611 Lunken Park Drive	Report No.:	318382
	Cincinnati OH 45226	Project:	DVAMC B147-B121 SteamBypass
		Project No.:	N1137167

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	5160895	Description / Location:	Brown Paper; Under Metal Jacket Of Pipe	
Client No.:	05-PI5-09A		~90'IntoN-STunnelSectionAlongTheEWall	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Cellulose	2

Lab No.:	5160896	Description / Location:	Brown Paper; Under Metal Jacket Of Pipe	
Client No.:	05-PI5-10A		B121 Near SW Corner	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Cellulose	2

Lab No.:	5160897	Description / Location:	Brown Paper; Under Metal Jacket Of Pipe	
Client No.:	05-PI5-11A		1stE-WSectionOffN-STunnelHeadingToB147	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	98	Cellulose	2

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

*This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government
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Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: V. Smith

Date: 11/5/2013

Chain of Custody

–Bulk Asbestos–

Contact Information

Client Company: Terracon Consultants, Inc.
Office Address: 611 Lunken Park Drive
City, State, Zip: Cincinnati, OH 45226
Fax Number: n/a
Email Address: jatussey@terracon.com

Project Number: 1137167
Project Name: B147-B121 Steam Bypass
Primary Contact: Joe Tussey
Office Phone: 513 321-5816
Cell Phone: 513 332-5034

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

- ☒ PLM: Point Counting
 - ☐ PC: via ELAP 198.1
 - ☒ PC: 400 Points
 - ☐ PC: 800 Points *
 - ☐ PC: 1600 Points *

- ☒ PLM: Instructions for Multi-Layered Samples
 - ☒ Analyze and Report All Separable Layers per EPA 600
 - ☐ Report Composite for Drywall Systems per NESHAP
 - ☐ Report All Layers and Composite Where Applicable
 - ☐ Only Analyze and Report Specifically Noted Layer

- ☐ PLM: Analyze Until Positive (Positive Stop)
 - ☐ AUP: by Homogenous Area as Noted
 - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
 - ☐ PLM: Friable via EPA 600 2.3
 - ☐ If <1% by PLM, to TEM via 198.4 *
 - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material *** (Dust, Wipe, Tape)
 - ☐ Soil or Vermiculite Analysis
 - ☐ CARB 435

Special Instructions:

* Additional charge and turnaround may be required ** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory

Turnaround Time

Preliminary Results Requested Date: Wed. Oct. 23, 2013

☐ Verbal ☒ Email ☐ Fax

Specific date / time
☐ 10 Day ☐ 5 Day ☐ 3 Day ☒ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization): Terracon Date: Oct. 18, 2013 Time: _____
Received (Name / iATL): _____ Date: _____ Time: _____
Sample Login (Name / iATL): _____ Date: _____ Time: _____
Analysis(Name(s) / iATL): Joe Tussey Date: 10/22/2013 Time: _____
QA/QC Review (Name / iATL): _____ Date: 10/22/2013 Time: _____
Archived / Released: _____ QA/QC InterLAB Use: _____ Date: _____ Time: _____

FedEx Office
RECEIVED
OCT 21 2013

SUSPECT ACM BULK SAMPLE LOG

Page 1 of 2

Date: Field date – October 17, 2013

Inspector: Joe Tussey, CHMM

Client: Heapy Engineering

Project: Dayton VAMC; B147 – B121 Steam Bypass Project

Proj. #: N1137167

Terracon

611 Lunken Park Drive
Cincinnati, Ohio 45226
(513) 321.5816

Sample Number	Description	Sample Location	Material Location(s)	Comments / Results
01-PI1-01	White / tan block pipe insulation under metal jacket	B121 along south wall, near west tunnel	~200 total LF on 8" steam line with metal jacket in B121 (continuation of line from west tunnel)	5150245
01-PI1-02		B121 along south wall, ~ middle of room		5150246
01-PI1-03		B121 along south wall, east ~ 20 feet of ~ middle of room		5150247
02-MJ-04	White / gray pipe fitting insulation	B121 near entrance to west tunnel, close to ceiling	~ 36 fittings on 8" steam line with metal jacket in B121 (associated with samples 01-03 above)	5150248
02-MJ-05		B121 along south wall, east ~ 20 feet of ~ middle of room, vertical branch		5150249
02-MJ-06		B121 along south wall, ~ middle of room, vertical branch		5150250
03-PI-07	White / gray block pipe insulation under metal jacket	~80 feet into north-south tunnel section (from the southern end) along the east wall	~ 800 total LF on 10" steam line under metal jacket in north-south tunnel section and continuing sections to termination at B147	5150251
03-PI-08		~150 feet into north-south tunnel section (from the southern end) along the east wall		5150252
03-PI-08		~540 feet into north-south tunnel section (from the southern end) along the east wall		5150253
03-PI-10		~ 10 feet from termination of tunnel wall to B147		5150254
04-MJ1-11	Gray pipe fitting insulation	At north end of north-south tunnel section where it turns east toward B147	~ 36 fittings on 10" steam line with metal jacket in tunnel north-south tunnel section and continuing sections to termination at B147	5150255
04-MJ1-12		First east – west tunnel section off of north-south tunnel section (at far east end of this section)		5150256
04-MJ1-13		~ 6 feet from termination of tunnel wall to B147		5150257
05-PI1-14	White / gray block pipe insulation (no metal jacket)	~ 80 feet into north-south tunnel along west wall	~550 linear feet along west wall in north – south tunnel section (has ~10ft damaged section toward northern end)	5150258
05-PI1-15		~ 200 feet into north-south tunnel along west wall		5150259
05-PI1-16		~ 450 feet into north-south tunnel along west wall (damaged area)		5150260
06-PI3-17	Outer black tar paper covering block pipe insulation	B121 near southwest corner, at entry to tunnel on 8" vertical steam line branch	~50 total linear feet; appear present in B121 on pipe before entrance into west tunnel, and at tunnel termination into B147	5150261
06-PI3-18		B121 near southwest corner, at entry to tunnel on 8" vertical steam line branch		5150262
06-PI3-19		~ 2 feet from termination of tunnel wall to B147 on 10" steam line over block insulation		5150263

SUSPECT ACM BULK SAMPLE LOG

Page 2 of 2

Date: Field date – October 17, 2013

Inspector: Joe Tussey, CHMM

Client: Heapy Engineering

Project: Dayton VAMC; B147 – B121 Steam Bypass Project

Proj. #: N1137167

Terracon

611 Lunken Park Drive
Cincinnati, Ohio 45226
(513) 321.5816

Sample Number	Description	Sample Location	Material Location	Comments / Results
07-PI4-20	White/silver/tan paper covering over fiberglass insulation	East-west tunnel section, ~125 in from B121 on 8" steam line under metal jacket	~460 total linear feet under metal jacket on 8" steam line and 4" condensate line along north wall in east-west tunnel section, and extends ~10 feet into north-south tunnel section on 10" steam line	5150264
07-PI4-21		East-west tunnel section, ~125 in from B121 on 8" steam line under metal jacket		5150265
07-PI4-22		North-south tunnel section, ~10 in from east-west section to the north on 8" steam line under metal jacket near valve		5150266
08-PI5-23	White mastic on fiberglass insulation ends	B121 near west tunnel entrance, on 6" steam line along south wall	Various locations throughout tunnel on lines insulated with fiberglass, but primarily on 6" steam line along south wall of east-west tunnel section off of B121	5150267
08-PI5-24		East-west tunnel, ~100 into tunnel from B121, 6" steam line along south wall		5150268
08-PI5-25		East-west tunnel, ~180 into tunnel from B121, 6" steam line along south wall		5150269

Chain of Custody

—Bulk Asbestos—

Contact Information

Client Company: Terracon Consultants, Inc.
Office Address: 611 Lunken Park Drive
City, State, Zip: Cincinnati, OH 45226
Fax Number: n/a
Email Address: jtussey@terracon.com

Project Number: N1137167
Project Name: DVAMC B147-B121
Primary Contact: Joe Tussey
Office Phone: 513 321-5816
Cell Phone: 513 332-5034

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- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

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- ☒ PC: 400 Points
- ☐ PC: 800 Points *
- ☐ PC: 1600 Points *

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- ☐ Only Analyze and Report Specifically Noted Layer

PLM: Analyze Until Positive (Positive Stop)

- ☐ AUP: by Homogenous Area as Noted
- ☐ AUP: by Material Type as Noted

PLM: NOB via 198.6

- ☐ PLM: Friable via EPA 600 2.3
- ☐ If <1% by PLM, to TEM via 198.4 *
- ☐ If <1% by PLM, Hold for Instructions

PLM: Non-Building Material *** (Dust, Wipe, Tape)

- ☐ Soil or Vermiculite Analysis
- ☐ CARB 435

EMAILED
11/6/13 DSM 9:08

Special Instructions:

* Additional charge and turnaround may be required

** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory

Turnaround Time

Preliminary Results Requested Date: NOV. 6, 2013

Specific date / time

- ☐ 10 Day ☐ 5 Day ☐ 3 Day ☒ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization): JTussey/Terracon

Date: 11-1-13

Time: Fedex drop 4:30

Received (Name / iATL): Uss

Date: 11/4/13

Time: 11/4/13

Sample Login (Name / iATL): Uss

Date: 11/5/13

Time: 11/5/13

Analysis(Name(s) / iATL): Uss

Date: 11-5-13

Time: 11-5-13

QA/QC Review (Name / iATL): Uss

Date: 11-5-13

Time: 11-5-13

Archived / Released: _____ QA/QC InterLAB Use: _____

Date: _____

Time: _____

NOV - 2 2013

SUSPECT ACM BULK SAMPLE LOG

Page 1 of 1

Date: Field date – November 1, 2013
Inspector: Joe Tussey, CHMM
Client: Heapy Engineering
Project: Dayton VAMC; B147 – B121 Steam Bypass Project
Proj. #: N1137167

Terracon

611 Lunken Park Drive
 Cincinnati, Ohio 45226
 (513) 321.5816

Sample Number	Description	Sample Location	Material Location(s)	Comments / Results
03-PI-01A	White block pipe insulation under metal jacket	~90 feet into north-south tunnel section (from the southern end) along the east wall	~ 800 total LF on 10" steam line under metal jacket in north-south tunnel section and continuing sections to termination at B147 (there are 2 apparent layers of this white block insulation under the metal jacket)	5160887
03-PI-02A		~275 feet into north-south tunnel section (from the southern end) along the east wall		5160888
03-PI-03A		~540 feet into north-south tunnel section (from the southern end) along the east wall		5160889
03-PI-04A		1 st east-west section off of north-south tunnel heading toward B147; ~ center of this section under manhole cover		5160890
03-PI-05A		~ 20 feet from termination of tunnel wall to B147		5160891
04-MJ1-06A	Gray (top layer) and white (bottom layer) pipe fitting insulation	At north end of north-south tunnel section where it turns east toward B147	~ 36 fittings on 10" steam line with metal jacket in tunnel north-south tunnel section and continuing sections to termination at B147	5160892
04-MJ1-07A		First east – west tunnel section off of north-south tunnel section (at far west end of this section)		5160893
04-MJ1-08A		~ 6 feet from termination of tunnel wall to B147 (under manhole cover)		5160894
05-PI5-09A	Paper under metal jacket of pipe insulation	~90 feet into north-south tunnel section (from the southern end) along the east wall	~ 800 total LF on 10" steam line directly applied to and metal jacket in north-south tunnel section and continuing sections to termination at B147	5160895
05-PI5-10A		B121 near southwest corner, at entry to tunnel on 8" vertical steam line branch		5160896
05-PI5-11A		1 st east-west section off of north-south tunnel heading toward B147; ~ center of this section under manhole cover		5160897