

Ms. Sara Forster
United States Nuclear Regulatory Commission
Region III- Division of Nuclear Materials Safety
2443 Warrensville Road, Suite 210
Lisle, Illinois 60532-4325

Subject: Attachment 8 for the Termination of "Possession and Storage Only – Standby" License:
Lincoln University (License Number: 24-16097-01/Docket Number: 030-10534/Mail Control
Number: 576306)

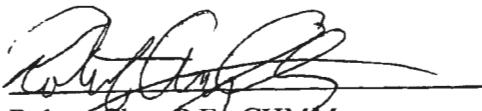
Date: April 5, 2017

Dear Ms. Forster,

Lincoln University is submitting the final sampling results required for the termination of our radiation program. All results observed fulfill the requirements for the area to be considered for unrestricted use based on a TEDE < 0.25 mSv/year limit found in 10 CFR 20.1402

If you require additional information or have any questions please contact Dr. Tumen Wuliji via phone at (573) 681-5377 or e-mail (wulijit@lincolnu.edu) or Robert Clay via phone at (573) 681-5497 or e-mail (clayr2@lincolnu.edu).

Sincerely,


Robert Clay, P.E., CHMM
Lincoln University

Attachment:

Attachment 8: Final LSC sample results from Foster Hall Room B6 and Sampling Diagrams

***Attachment 8: Final LSC sample results
from Foster Hall Room B6 and
Sampling Diagrams***

QUALIFICATIONS OF SITE SCREENING

Lincoln University's license fall under a Group 2 License for the purposes of decommissioning. The University can demonstrate compliance with [10 CFR 20.1402](#) (Radiological criteria for unrestricted use) using the screening methodology. The residual radioactivity on building surfaces (e.g., walls, floors, ceilings) is surficial and non-volumetric. Contamination is undetermined Lincoln University assumes for screening purposes that 100% of surface contamination is removable, therefore screening level values criteria will be decreased by a factor of 10). The screening criteria are not being applied to surfaces such as buried structures (e.g., drainage or sewer pipes) or equipment within the building.

No research with radioactive material has been conducted since 2009 and all remaining byproduct materials were placed into storage in Foster Hall Room B6 and remained there until disposal by the Model Waste Management Procedures listed in NUREG 1556 Volume 7. The only room sampled for decommissioning is B6. The following rooms Foster Hall B15 and 325 were removed from the license during the partial decommissioning action in Amendment 15. (See Attachment 7 for "Previous sampling results for B6, B15, and 325").

DATA QUALITY OBJECTIVE

Eight wipe samples were taken by the RSO and EHS officer using 100cm² wipe test to determine transferrable contamination from the surface of floors and counter top of Foster Hall Room B6 listed in the license. Eleven additional samples were also taken in the hallways and an adjoining lab to confirm that radiation levels are below background and screening levels in other areas of the building. These Eight samples were taken with filter paper disks and counted using a Liquid Scintillation Counter (LSC). The LSC was used to check for H³ activity levels (since the containers holding I¹²⁵ were never opened until disposal and P³² and S³⁵ were never purchased or received under Amendment 14 and 15.) *Please note that the lab also checked samples for the presence of I¹²⁵ and Cs¹³⁴ even though it was not required and that all of the samples were found to be < 200 DPM for those radionuclides.*

All LSC results for H³ were compared against the look up table screening values found in the [NUREG 1757, Vol. 1 Rev. 2](#) (Appendix B., Table B.1) "Acceptable License Termination Screening Values of Common Radionuclides for Building-Surface Contamination".

All other known radioactive material (RAM) and nuclear accelerated radioactive material (NARM) and naturally occurring radioactive material (NORM) used under the license was removed from the University on November 3, 2011 prior to the license renewal ([Amendment 13](#)) and program modification in [Amendment 14](#).

RESULTS

All results were under (200) dpm

5 orders of magnitude < H-3 reduced screening value

All values observed will fulfill the requirements for the area to be considered for unrestricted use based on a TEDE < 0.25 mSv/year limit found in [10 CFR 20.1402](#) for the radionuclides in question.

SCREENING VALUES OF COMMON RADIONUCLIDES FOR BUILDING-SURFACE CONTAMINATION LEVELS

Radionuclide	Screening Values (dpm/100 cm ²)
H ³	1.20E+07

Please Note screening level has been reduced by a factor of 10 for assumption 100% removal of decontamination.

March 28, 2017

Robert Clay, P.E., CHMM
 Lincoln University Police Department
 Lincoln University
 820 Chestnut Street
 Jefferson City, MO 65101


Dear Mr. Clay

R. M. Wester and Associates, Inc. received 19 wipes taken at Lincoln University and analyzed them on March 27th and 28th, 2017. These wipes were analyzed for the presence of Iodine-125 (I-129 standard, 68.9% efficiency) and gross gamma (Cs-137 standard, 47.4% efficiency) using a Perkin Elmer Wizard I480 gamma scintillation analyzer (SN 4800614, calibration checked daily) and for the presence of tritium/beta (H-3 standard, 60.6% efficiency) using a Beckman Coulter LS 6500 liquid scintillation counter (SN 465979, calibration checked daily). All wipes were at or below MDA (Minimum Detectable Activity).

Wipe Results						
Sample	I-125		Gross Gamma		Gross Beta	
	Activity (dpm)	Activity (μCi)	Activity (dpm)	Activity (μCi)	Activity (dpm)	Activity (μCi)
1	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
2	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
3	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
4	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
5	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
6	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
7	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
8	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
9	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
10	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
11	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
12	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
13	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
14	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
15	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
16	≤ 120	≤ 5.41 e-5	≤ 174	≤ 7.86 e-5	≤ 80.4	≤ 3.62 e-5
17	≤ 1201	≤ 5.41 e-6	≤ 174	≤ 7.86 e-6	≤ 80.4	≤ 3.62 e-6
18	≤ 120	≤ 5.41 e-7	≤ 174	≤ 7.86 e-7	≤ 80.4	≤ 3.62 e-7
19	≤ 120	≤ 5.41 e-8	≤ 174	≤ 7.86 e-8	≤ 80.4	≤ 3.62 e-8

Thank you for choosing R. M. Wester and Associates for your radiation safety needs. Feel free to contact me if you have questions about this report or any other radiation safety questions.

Sincerely,
 R. M. Wester and Associates, Inc.


 Kenneth Barnes
 Health Physicist

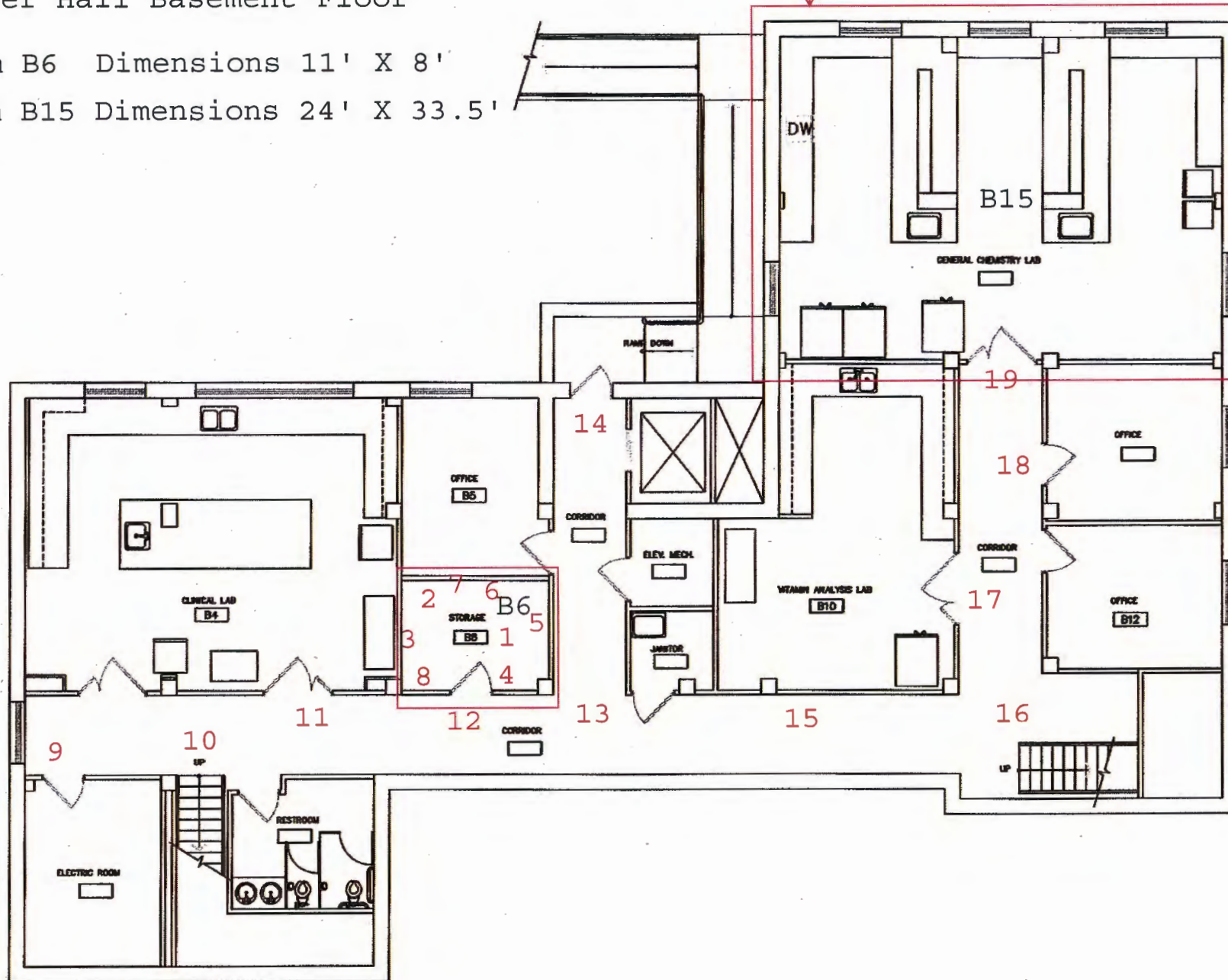
Final Wipe Sampling for Decommissioning March 23, 2017

Foster Hall Room B15 was removed from License in Amendment 15 (Partial Decommissioning Action)

Foster Hall Basement Floor

Room B6 Dimensions 11' X 8'

Room B15 Dimensions 24' X 33.5'



Montoya, Brenda

From: Forster, Sara
Sent: Wednesday, April 05, 2017 3:51 PM
To: Montoya, Brenda; Pavon, Sandy; Sandrik, Lauren
Subject: FW: Results from Wipe Samples for the Lincoln University Radiation Program Decommissioning
Attachments: Attachment 8 Closure Cover letter (April 5, 2017) Update Draft.pdf

Could you please scan this in and return to me. It is additional information to CN593055. Thank you!

From: Clay, Robert [mailto:ClayR2@lincolnu.edu]
Sent: Wednesday, April 05, 2017 1:52 PM
To: Forster, Sara <Sara.Forster@nrc.gov>
Cc: Wuliji, Tumen <WulijiT@lincolnu.edu>
Subject: [External_Sender] Results from Wipe Samples for the Lincoln University Radiation Program Decommissioning

Hello Ms. Forster

Here are the results from the wipe samples.

I am still waiting on a date for chase to pick up the remaining material.

Thanks,

Robert



Robert A. Clay, P.E., CHMM
Hazardous Materials Compliance Officer/
Clery Act Coordinator
Lincoln University Police Department
Lincoln University
820 Chestnut Street
Jefferson City, Mo 65101

Phone: 573-681-5497

E-mail: Clayr2@lincolnu.edu

EHS Webpage: <https://bluetigerportal.lincolnu.edu/web/environmental-health-and-safety/ehs>

Clery Act Webpage: <https://bluetigerportal.lincolnu.edu/web/police-department/clery-act>