

# Building 650 Demolition Project Update

Community Advisory Council  
April 8, 2021

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**BROOKHAVEN**  
NATIONAL LABORATORY



# Agenda

- Background
- Project Scope
- Pre-Demolition Activities
- Demolition Activities
- Monitoring Program/Results
- Next Steps

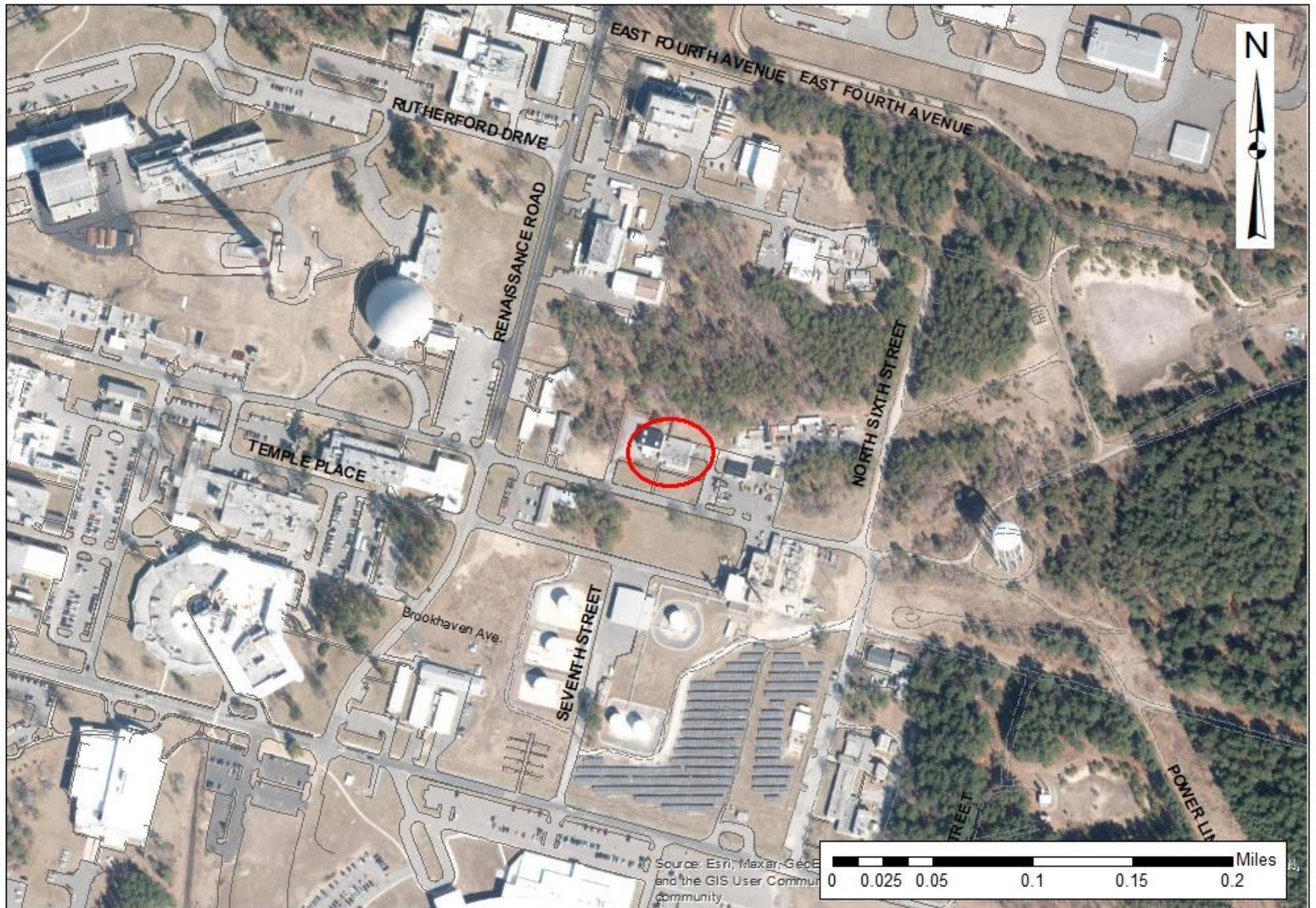
# Background

- Building 650 was known over the years as the Reclamation Facility and the Decontamination Facility/Hot Laundry.
- Used for cleaning of radioactive contaminated clothing and decontamination of heavy equipment in support of nuclear research operations at BNL.
- Started operations in 1959 and declared excess in 2000. Utilized for a limited amount of storage until 2014 when it was permanently shutdown.
- Environmental risks associated with Building 650 were reduced in accordance with the Records of Decision for Operable Units I and IV. Specific clean-up scope was included in AOC 6 (Building 650 Reclamation Facility Sump and Sump Outfall) and AOC 12 (Underground Storage Tanks).





# Building 650 Location





# Project Scope

## Project Cost:

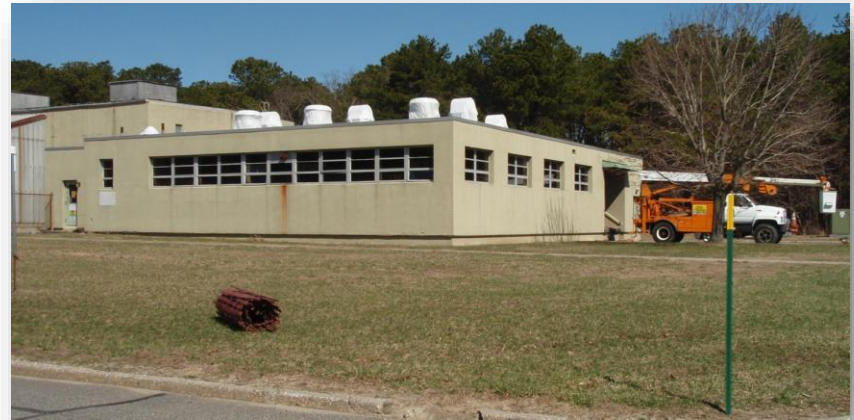
\$5 million (DOE-EM funded)

## Project Scope:

Characterization, removal of any remaining contaminated systems, fixing identified contamination, building demolition, waste packaging and waste disposal, and as-left radiological survey

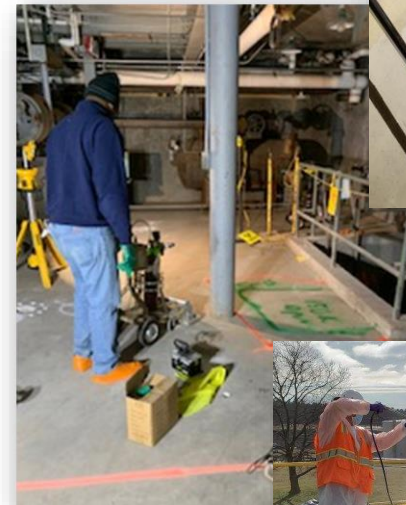
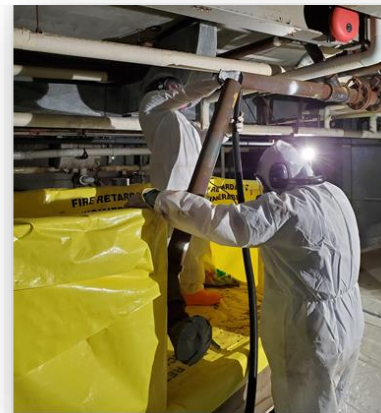
## Benefits:

Eliminate deferred maintenance and repair needs, reduce environmental, safety and health risks



# Pre-Demolition Activities

- Preparation and approval of Project Plans (Demo, Waste Management and final status survey plans)
- Asbestos abatement
- Removal of hazardous materials (e.g., lead, PCBs, mercury, cadmium, equipment liquids, such as oils)
- Removal of equipment (e.g., compressors, tanks, air handlers)
- Selective demolition/removal of radiologically-contaminated source terms:
  - Piping
  - Ductwork/Filters
  - Equipment
  - Concrete
- Radiological surveys
- Soil sampling
- Fixative application, as necessary



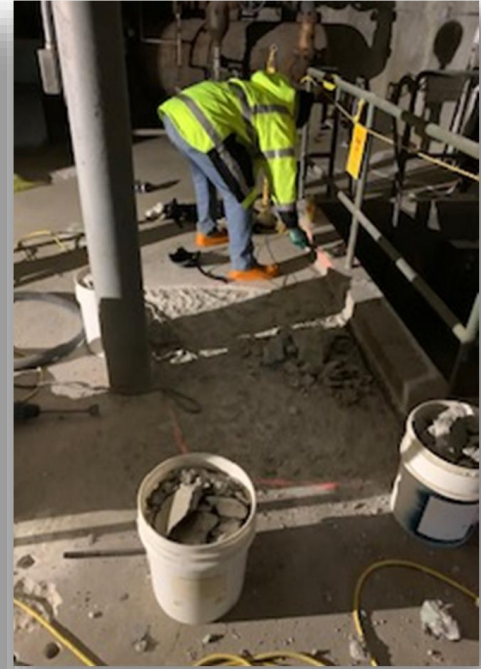


# Additional Pre-Demolition Photographs





# Additional Pre-Demolition Photographs



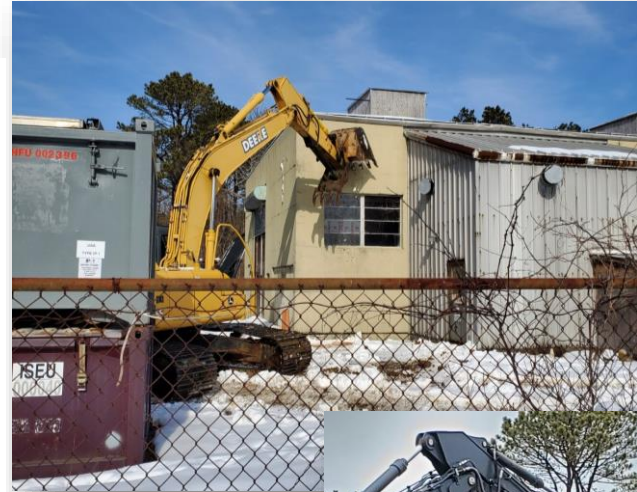


# Additional Pre-Demolition Photographs



# Demolition Activities

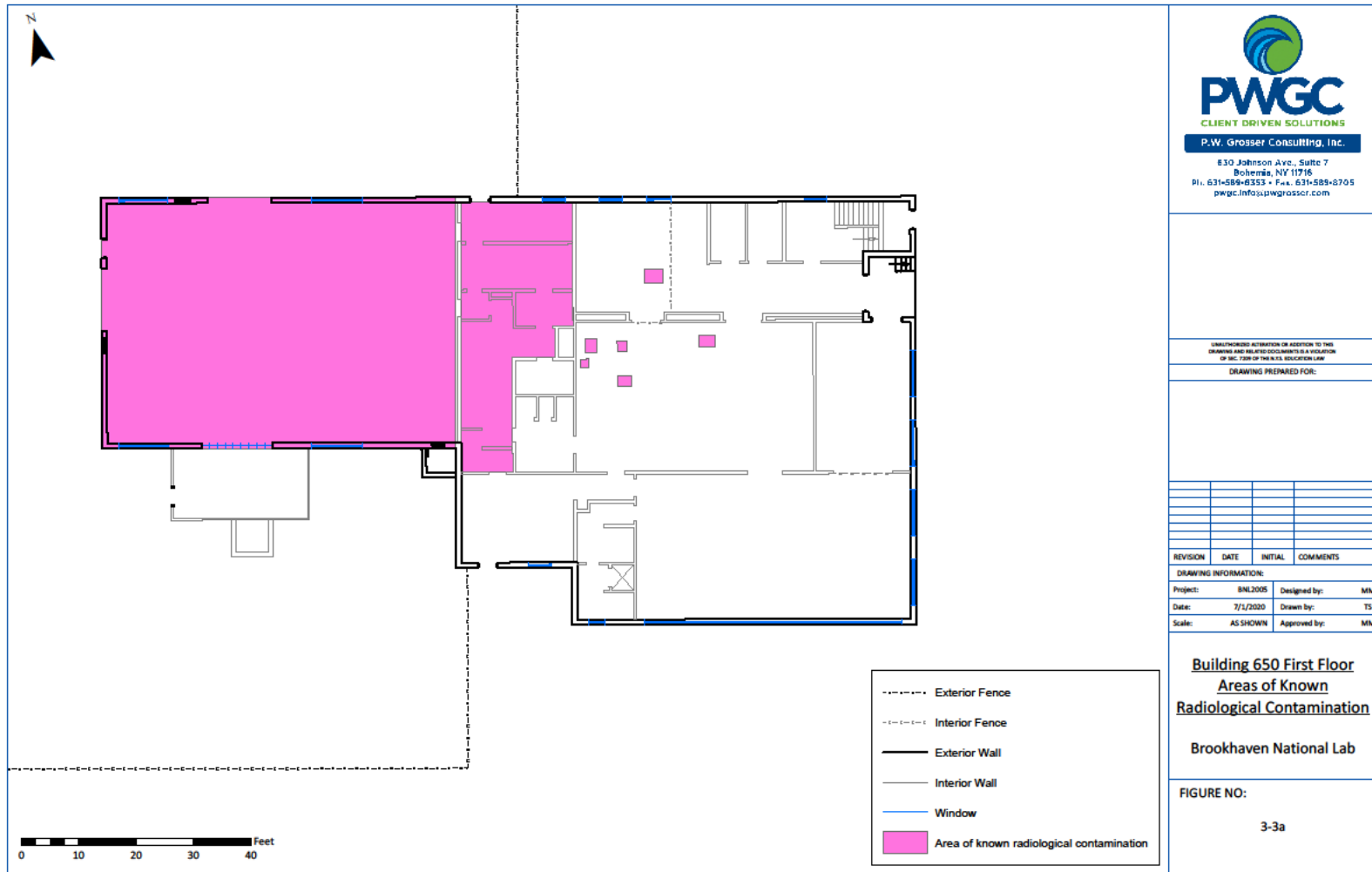
- Demolition accomplished using heaving equipment, including excavators (hydraulic shear/hammer) backhoes, cranes
- Demolition sequence was prepared with the goal of minimizing the risk of personal injury, damage to equipment and property, reducing potential for spreading contamination, and minimizing waste
- Both Industrial Hygiene (IH) and Radiological personal and air monitoring performed throughout







# Demolition Activities – Areas of Known Radiological Contamination




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DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS

**DRAWING INFORMATION:**

Project:	BNL2005	Designed by:	MM
Date:	7/1/2020	Drawn by:	TS
Scale:	AS SHOWN	Approved by:	MM

**Building 650 First Floor  
Areas of Known  
Radiological Contamination**

Brookhaven National Lab

**FIGURE NO:**  
3-3a



# Additional Demolition Photographs





# Additional Demolition Photographs





# Additional Demolition Photographs



# Industrial Hygiene Monitoring

## Contaminants of Concern: Silica, Lead, Cadmium

- 4 Silica area samples collected at the perimeter of work zone
- Individuals working within work zone sampled for Silica, Lead & Cadmium (daily)
  - Individuals equipped with respirators

### Occupational Exposure Limits applicable to DOE Facilities

Analyte Name	OSHA Action Level	8-hr Time Weighted Average	
		OSHA PEL	ACGIH TLV
	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>
Silica, Respirable Crystalline [R]	25	50	25
Cadmium	2.5	5	2
Lead	30	50	50

### Exposure Limit Organizations

ACGIH: American Conference of Governmental Industrial Hygienists

OSHA: Occupational Safety & Health Administration

Monitoring Pump



- All Silica (Worker & Perimeter) Results were below the detectable limit
  - Highest Si result using worst case (equipment detection limit) =  $<.864 \text{ ug/m}^3$
- All Cadmium Results were below the detectable limit
  - Highest result using worst case (equipment detection limit) =  $<.004 \text{ ug/m}^3$
- Lead Results ranged from non-detectable to a max. value of =  $0.133 \text{ ug/m}^3$



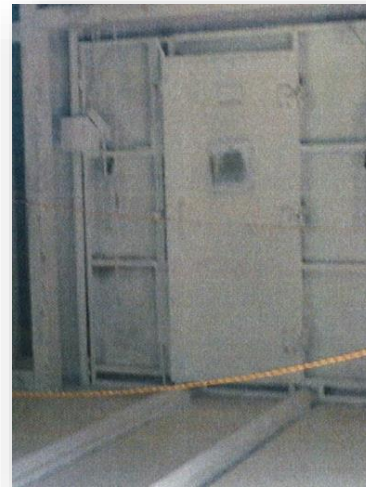
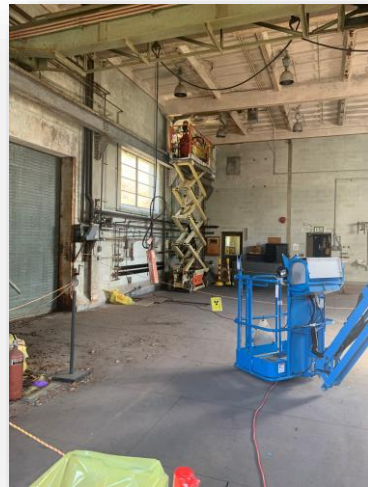
# Radiological Monitoring

*Primary Radionuclides of Concern: Cs-137, Sr-90, Am-241, Pu-239/240, U-235/238*

## Pre-Demo Contamination Control Activities:

- Scabbling contaminated concrete
- Removing contaminated systems
- Applying fixative to contain contamination

### Concrete Scabbling, Duct Removal, & Fixative



## Survey Results:

- No loss of radiological controls and no spread of contamination
- No personnel contamination events

# Radiological Monitoring

## Air Monitoring Information:

- 3 High Volume Air Samplers were positioned at the perimeter of work zone

### Air Monitoring Equipment & Placement (Radeco AVS-28)



## Air Monitoring Results:

- Consistent with pre-demo background measurements



# Next Steps

- Demolition of the at-grade floor slab (April)
- Removal of the equipment and debris from the basement (April)
- Demo the basement walls to 2-feet below grade (April)
- Backfill the basement (April)
- Walk-over survey (May)
- Removal of asphalt/curbing (May)
- Cut-back any utilities back to manholes (e.g., steam) (May)
- Site restoration (June)
- Transportation and disposal of the waste (June)
- Closeout report (July)