RADIOLOGICAL SURVEY RESULTS FOR BUILDING 70 DEBRIS PILE
September 5, 2025

On Tuesday September 9, 2025, Perma-Fix performed a survey of the Building 70 debris pile following the procedures outlined in its *Radiological Survey Plan for Building 70 Debris Pile*, dated August 8, 2025 ("Plan"). The purpose of the survey was to determine any potential health and safety (H&S) concerns associated with the material, and to assess potential disposal options. The survey results were compared against the criteria outlined in Tables 1 and 2 of the Plan, which are included below.

Table 1 - *Acceptable Surface Contamination Levels* provides the criteria used to assess the need for handling demolition debris with or without radiological controls, as identified in 12 NYCRR, Part 38.41.

Radioisotope	Average dpm/100 cm^2	Maximum dpm/100 cm^2	Removable dpm/100 cm^2
Uranium 238 + associated decay products	5,000	15,000	1,000
Natural Thorium	1,000	3,000	200
Beta-Gamma Emitters	5,000	15,000	1,000

Table 2 – *Unrestricted Disposal Criteria* provides the applicable limits for the wastes to be able to be accepted for disposal in New York State (NYS) Title D landfills.

Instrument Type	Applies to Area:	Alpha (dpm/100 cm^2)[a]			Beta (dpm/100 cm^2)[a]		
		Mean	SD	M_B+2SD	Mean	SD	M_B+2SD
2360 w/ 43-37-1	Concrete Floors[1]	5.9	2.9	11.7	630.8	33.2	697.1
2360 w/ 43-93	Concrete Block Walls[1]	11.2	11.1	33.4	1912.7	145.5	2203.6
2929 w/ 43-10-1	Smears	1.38	2.31	6.0	223.3	32.0	287.3

Survey Approach

The survey approach included the following steps.:

- The debris pile was spread out by mechanical means to provide direct access to the debris.
- Once the material was spread out, a gamma walkover survey was performed to quickly identify any areas or items exhibiting radioactivity levels in excess of background.
- Since no elevated areas were identified, a representative number of locations (10) were chosen to conduct surface contamination measurements. The measurements included both fixed and removable radioactivity measurements.
- Exposure rate measurements in units of micro-Roentgen per hour (uR/hr) were collected throughout effected area.

The survey was performed using the following instrument make/models. Instrument serial numbers, calibration dates, efficiencies, etc. are included on the attached Survey Form.

- Gamma walkover measurements were collected using Ludlum Model 2221 coupled with Ludlum 44-10 2-inch x 2-inch sodium iodide (NaI) detector.
- Surface contamination measurements were collected Ludlum Model 2360/43-93 instrument sets.
- Removable surface contamination swipes were analyzed onsite using Ludlum Model 3030 dual scintillation sample counters.
- Exposure rates were measured using a Thermo-RadEye.

Survey Results

The results indicate that the gamma radioactivity levels within the debris field were consistent with ambient background levels of 3,284 counts per minute (cpm); and 2 uR/hr. Gross gamma readings ranged from 2800-3900 cpm while exposure rates ranged between 1-3 uR/hr.

Surface contamination measurements collected directly from debris items were all below the **Table 1** *Acceptable Surface Contamination Levels,* and **Table 2** *Unrestricted Disposal Criteria* values.

Complete survey results are provided on the attached survey form HICK-09022025-005.

Conclusions

Based on the survey results, the Building 70 debris pile materials meet the *Unrestricted Disposal Criteria* in Table 2. The debris pile materials can be handled without radiological controls and are suitable for disposal at *110 Sand Company*, a NYS Title D landfill, located at 136 Spagnoli Road in Melville, New York.

Survey ID	HICK-09022025-005
Date Surveyed	9/2/2025
Survey Tech	A. Owens / J. Neal
Date Counted	9/2/2025
Count Room Tech	A. Owens
Survey Type	Release
Level of Posting	None

Item Surveyed	**Leftover Building Debris from Building 70 Demolition**
Contamination Limits	New York State Unrestricted Disposal Criteria[1]

Instrument Type	Applies to Area:	Alpha (dpm/100 cm²)[a] Mean	SD	M_S+2SD	Beta (dpm/100 cm²)[a] Mean	SD	M_S+2SD
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2360 w/ 43-93	Concrete Block Walls[1]	11.2	11.1	33.4	1912.7	145.5	2203.6
2929 w/ 43-10-1	Smears	1.38		2.31	223.3	32.0	287.3

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Parameters	***Gamma***			***Total Activity***		***Removable Activity***	
	CPM	µR/hr	µRem/hr	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Instrument Model	2221/44-10	Radeye		2360/43-93	2360/43-93	2929/43-10-1	2929/43-10-1
Instrument SN	152197	31071		287627/PR392913	287627/PR392913	155583/PR157824	155583/PR157824
Cal. Due Date	8/1/2026	4/15/26		8/22/2026	8/22/2026	8/25/2026	8/25/2026
Efficiency				20.88%	19.52%	34.58%	23.28%
Background Counts/Rate	3,284	2		8	695	1	275
PCF				1	1	N/A	N/A
Tb				5	5	10	10
Ts				1	1	1	1
MDCR				8	45	4	21
MDC				36	233	12	91

Notes

PCF = Probe Correction Factor
T_b = Background count time
T_s = Sample count time
R_b = Background count rate
Bcpm = Background cpm
MDCR = Minimum Detectable Count Rate (net cpm)
MDC = Minimum Detectable Concentration (dpm per 100cm²)

Total Activity
dpm = (cpm - Bcpm)/(eff * PCF)

Removable Activity
dpm = (cpm - Bcpm)/ eff
*dpm results are per 100cm²

No.	*Descriptions*	*cpm*	*µR/hr*	*µRem/hr*	***gross counts***	****dpm***	***gross counts***	****dpm***	***gross counts***	****dpm***	***gross counts***	****dpm***
1	See attached map for location	2800 - 3900	1 - 3		2	2	165	133	0	0	28	2
2	See attached map for location	2800 - 3900	1 - 3		3	7	188	251	0	0	33	24
3	See attached map for location	2800 - 3900	1 - 3		2	2	189	256	0	0	36	37
4	See attached map for location	2800 - 3900	1 - 3		0	-8	181	215	0	0	40	54
5	See attached map for location	2800 - 3900	1 - 3		8	31	191	266	1	3	31	15
6	See attached map for location	2800 - 3900	1 - 3		4	11	178	200	0	0	43	67
7	See attached map for location	2800 - 3900	1 - 3		4	11	192	272	0	0	36	37
8	See attached map for location	2800 - 3900	1 - 3		5	16	204	333	0	0	38	45
9	See attached map for location	2800 - 3900	1 - 3		3	7	174	179	0	0	27	-2
10	See attached map for location	2800 - 3900	1 - 3		6	21	212	374	1	3	40	54

Additional Comments: This survey was performed to determine the radiological condition of leftover building debris from previous building 70 demolition. The debris pile was spread out by excavator to provide direct access to material that was not accessible during the pre-demolition survey in June-July 2025. 20% of accessible areas were scanned with 2360/43-93 pair, with statics and smear locations being noted in the photos, as well as a gamma walkover with a 2221/44-10. Scan range during walkover was 2,800 - 3,900cpm. Dose rates were taken periodically and ranged from 1 - 3 uR/hr (including background). **All results were compliant with NY State Unrestricted Disposal Criteria.**

Surveyed by: Andre Owens Date: 9/2/2025 Reviewed by: Brian [illegible] Date: 9/3/2025

Survey Number	HICK-09022025-005
Date Surveyed	9/2/2025
Survey Tech	A. Owens / J. Neal
Date Counted	9/2/2025
Count Room Tech	A. Owens
Survey Type	Release
Level of Posting	None

Legend

1 Sample Location