



RADIOLOGICAL SURVEY PLAN FOR BUILDING 70 DEBRIS PILE

(August 8, 2025)

The purpose of this Radiological Survey Plan (Plan) is to outline the radiological surveys planned for the Building 70 debris pile to determine any potential health and safety (H&S) concerns associated with the material; and to assess potential disposal options. This Plan references the following two tables:

- 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 and Perma-Fix standard operating procedure RP-104, *Radiological Surveys*
- 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. These criteria are based on guidance contained in 6 NYCRR Part 363-7.1 (o). The radioactivity thresholds set forth in the table are derived from site-specific background data collected during pre-demolition surveys. Specifically, the upper limit for acceptability is the mean of the background data set plus two standard deviations of the mean ($M_B + 2SD$).

During pre-demolition surveys of Building 100, which were completed between June 24 and July 2, 2025, Perma Fix collected some limited surface radioactivity measurements on and around the debris pile. Those measurements included gamma radiation exposure rates and gross alpha/beta direct and removable surface contamination measurements.

The results of that survey did not indicate any imminent H&S concerns. Gamma exposure rates ranged from 4-8 micro-roentgens per hour (uR/hr) which is consistent with ambient background levels. The surface contamination measurements were all well below the *Acceptable Surface Contamination Levels* (Table 1). While the survey did not include 100% of the material, the results do provide a reasonable level of confidence that direct contact with this material would not result in measurable radiation exposures to any members of the general public, or any measurable radiological impacts to the environment.

During the start of Building 100 demolition activities, the following steps will be implemented by Perma-Fix to further evaluate the debris pile from a disposal standpoint.

- Additional surface contamination measurements will be collected for comparison to the *Unrestricted Disposal Criteria* (Table 2). The average concentration criteria will be applied for this comparison. If the average concentration is above the release criteria, a reasonable effort will be made to size reduce the impacted item. However, no mechanical/abrasive decontamination will be performed. The debris pile will be spread out by mechanical means to provide direct access to material that was not accessible during the pre-demolition survey in June-July 2025. Dust suppression will be applied as necessary to minimize potential airborne radioactivity concerns.



- During debris handling and demolition activities, Langan field personnel will perform continuous, real-time community air monitoring at upwind and downwind perimeters of the site for particulates (dust) and/or volatile organic compounds (as necessary), in general accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). The site perimeter will be monitored continuously for fugitive dust emissions by visual observations and instrumental measurement. Visual observations of fugitive dust emissions and exceedances of dust or VOC levels will immediately be brought to the attention of the demolition contractor and dust suppression will be employed. Implementation of dust suppression controls will be the responsibility of the demolition contractor.
- Radiological survey data will be collected using similar instrument make/model types as those used during the pre-demolition survey.
 - Ludlum Model 2360/43-93 instrument sets will be used for direct surface contamination measurements.
 - Removable surface contamination swipes will be analyzed on Ludlum Model 3030 dual scintillation sample counters.
 - Exposure rates will be measured using a Thermo-RadEye or Ludlum Model 19.
 - Gross gamma measurements of adjacent ground surfaces using Ludlum Model 2221 coupled with Ludlum 44-10 2-inch x 2-inch sodium iodide (NaI) detector sets.
- Samples will be collected for offsite isotopic analysis to support alternate disposal waste acceptance criteria if surface contamination measurements are confirmed to be above the Unrestricted Disposal Criteria in Table 2.
 - Analytical method will be by gamma spectroscopy for NORM constituents.
- Demolition debris that meets the Unrestricted Disposal Criteria in Table 2 will be disposed at **110 Sand Company**, a NYS Title D landfill, located at 136 Spagnoli Road in Melville, NY. If radioactivity concentrations in the debris pile exceed the Unrestricted Disposal Criteria in Table 2, that material will be managed separately and alternate disposal options will be evaluated based on field screening and analytical results, including one of several Pennsylvania solid waste disposal facilities authorized to receive low level concentrations of NORM/TENORM.

Table 1
Acceptable Surface Contamination Levels

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
New York State Unrestricted Disposal Criteria¹

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

¹ These criteria are based on guidance contained in New York State Code 6 NYCRR 382.83 and are derived from site-specific background data collected during pre-demolition surveys.