



The Ins and Outs of a TSCA Self-Implemented Cleanup Including PCB Bulk Product Waste

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Project Background

- ▼ HydroGeoLogic, Inc. (HGL) conducted a self-implemented cleanup of Toxic Substances Control Act (TSCA)-level polychlorinated biphenyls (PCBs) between 2017 and 2019.
- ▼ The site was a remote secure facility in central Alaska.
- ▼ The project also included demolition of multiple unused buildings.
- ▼ This presentation will explore what a TSCA self-implemented cleanup is and the major challenges that were encountered during execution.



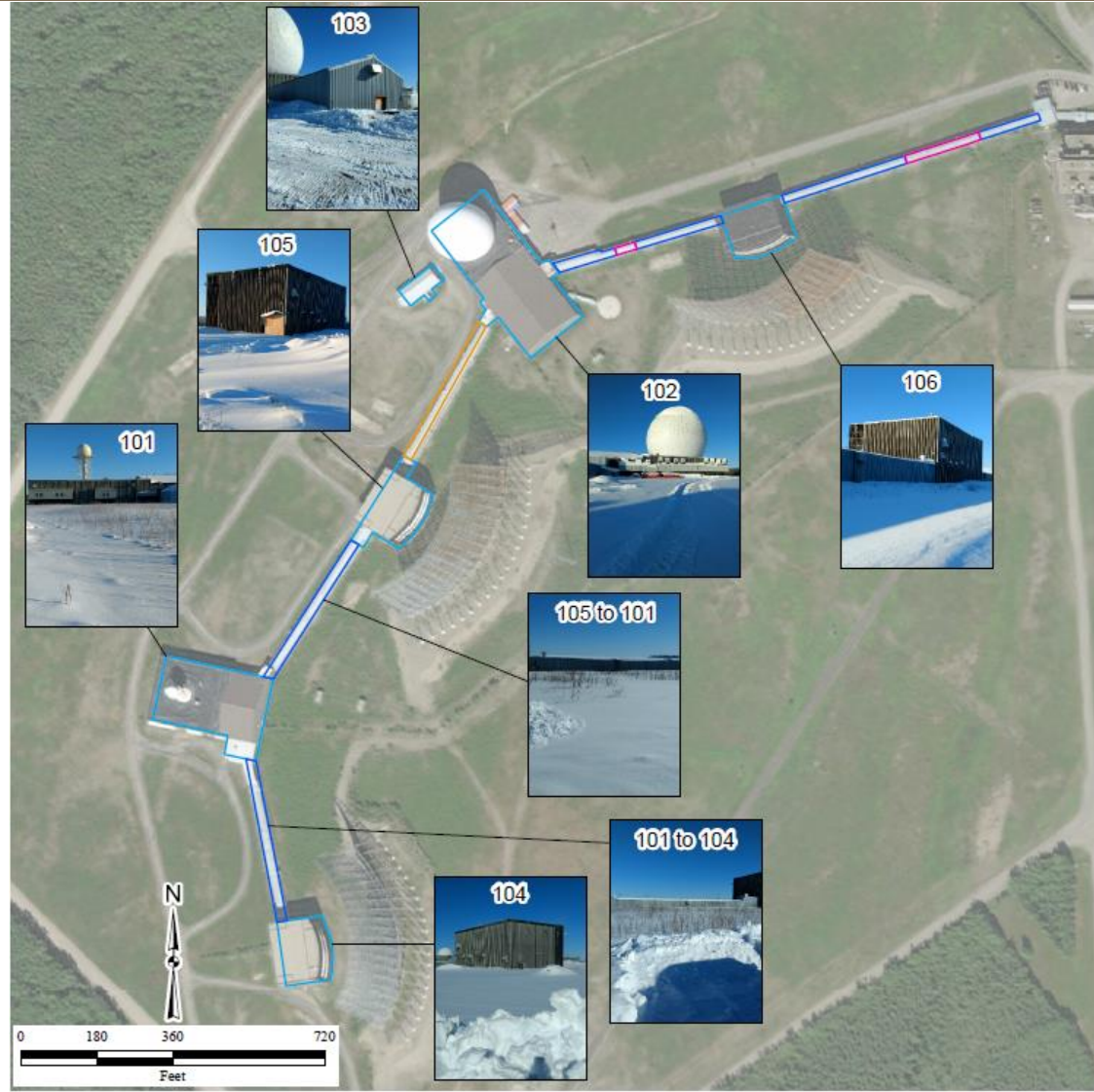
Project Background



Project Background

▼ Structures included:

- 40,000 ft² radar transmitter building
- 58,000 ft² radar transmitter and computer building
- Three 14,000 ft² scanner buildings
- 2,200 ft of utilidor
- 4,000 ft² warehouse building



Project Background

▼ Activities included:

- Abatement of PCB-laden paint from concrete foundations;
- Remediation of PCB oil spills from concrete foundations;
- Post-abatement/remediation verification sampling;
- Equipment removal and demilitarization;
- Asbestos-containing material (ACM) abatement;
- Other regulated material (ORM) abatement;
- Structure demolition;
- Waste segregation, transportation, and disposal; and
- Post-demolition characterization sampling.

TSCA Regulations

- ▼ TSCA self-implemented cleanups are regulated under 40 CFR 761.61(a).
- ▼ Entities performing self-implemented cleanups are required to:
 - Perform adequate site characterization;
 - Provide proper notification to EPA and state regulators;
 - Meet required cleanup levels;
 - Ensure proper waste disposal;
 - Verify the cleanup through sampling;
 - Implement land use control restrictions as necessary; and
 - Provide for cleanup documentation and record-keeping.

TSCA Regulations

- ▼ Disposal of PCB bulk product waste is regulated under 40 CFR 761.62(b), but what is PCB bulk product waste?
- ▼ In 2012, EPA published a reinterpretation regarding PCB-contaminated building materials:
 - Specifically defined “bulk product waste” and “remediation waste” to allow for accelerated and more cost-effective cleanups.
 - Defined as non-liquid bulk wastes or debris from the demolition of buildings and other man-made structures manufactured, coated, or serviced with PCBs.
 - Includes paint, caulking, mastic, sealants, or adhesives containing PCBs >50 parts per million (ppm).

2016 Site Characterization

- ▼ The client purportedly performed a TSCA characterization of the site for PCBs in 2016.
 - Total of 96 bulk PCB samples (wood, paint, concrete, etc.).
 - Total of 332 wipe PCB samples (oil, dirt, paint on equipment).
- ▼ Characterization also included estimation of amounts of ACM and ORM.

2016 Site Characterization

▼The 2016 sampling did not follow TSCA requirements (Subparts N and O):

TSCA Requirement	2016 Characterization
3-meter (10 ft) grid size for porous material (concrete) or 1.5-meter (5 ft) grid size for porous material (concrete) to be left in place	40 ft grid for buildings larger than 1,000 ft ² 20 ft grid for buildings less than 1,000 ft ²
Requires minimum of 3 samples per cleanup site or waste location, and no set maximum number of samples	Collected 3 samples per building of concrete, regardless of the number of spills/stained areas per building
Minimum of 3 and maximum of 9 sub-samples per composite sample	Between 2 and 20 sub-samples per composite
Requires sample locations to be marked	Several sample locations not provided on figures
Concrete sampling standard operating procedure recommends 0.5-inch sample depth	Concrete samples collected over 3-inch depth

2016 Characterization

▼PCBs

- Based on the 2016 sampling, a total of 52 items were classified as PCB remediation waste, including:
 - Oil-stained compressors,
 - Oil-stained metal waveguides,
 - Oil-stained radar antenna equipment,
 - Oil-stained drywall,
 - Painted steel, and
 - Oil-stained flooring (vinyl tile, wood, concrete).

2016 Characterization

▼ The 2016 characterization report logic used to determine remediation waste, bulk product waste, and clean debris was flawed:

- The report included any PCB with a concentration $>50\text{ppm}$ as remediation waste even if it met the bulk product waste definition.
- The report assumed that all oil/grease at the site contained PCBs and assumed that non-porous items could not be cleaned before disposal.
- Insufficient concrete sampling led to the conclusion that most of concrete was clean ($<1\text{ ppm PCBs}$).



2016 Characterization vs Actuals

▼ACM:

- A total of 113 different buildings materials were identified in 2016 as being ACM.
- Six new materials were identified during abatement that were ACM and two materials resampled and characterized as non-ACM.
- A total of 24 building materials had increased quantities between 19% and 8,000%.

2016 Characterization vs Actuals

▼ORM

- A total of 54 different items were identified in 2016 as being ORM.
- One new item was identified and two of the listed items were not identified during abatement.
- A total of eight items had increased quantities between 160% and 200%.

Project Execution - Remediation

- ▼ During execution, EPA approved the following remediation techniques:
 - High efficiency particulate air vacuuming of loose paint chips.
 - Removal of oil from non-porous surfaces using cleaner and rags.
 - Scabbling of paint/oil staining from concrete to be left in place.
- ▼ Paint chips, rags, and scabbled paint/concrete were then containerized, characterized and disposed of as PCB remediation waste.

Project Execution - Remediation



Project Execution - Demolition

▼ EPA approved the following demolition assumptions:

- ACM and ORM abatement were completed prior to structure demolition;
- All paint in the facility contained PCBs and met the definition of bulk product waste;
- Only non-stained, non-painted debris was considered clean construction and demolition (C&D) waste; and
- Stained concrete was assumed to be remediation waste with concentrations <50 ppm.



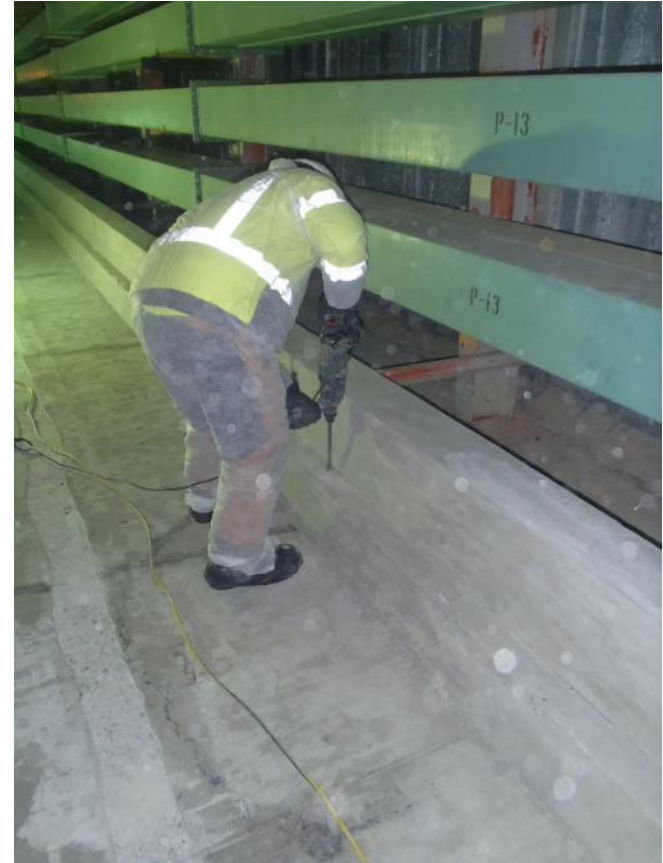
Project Execution - Demolition

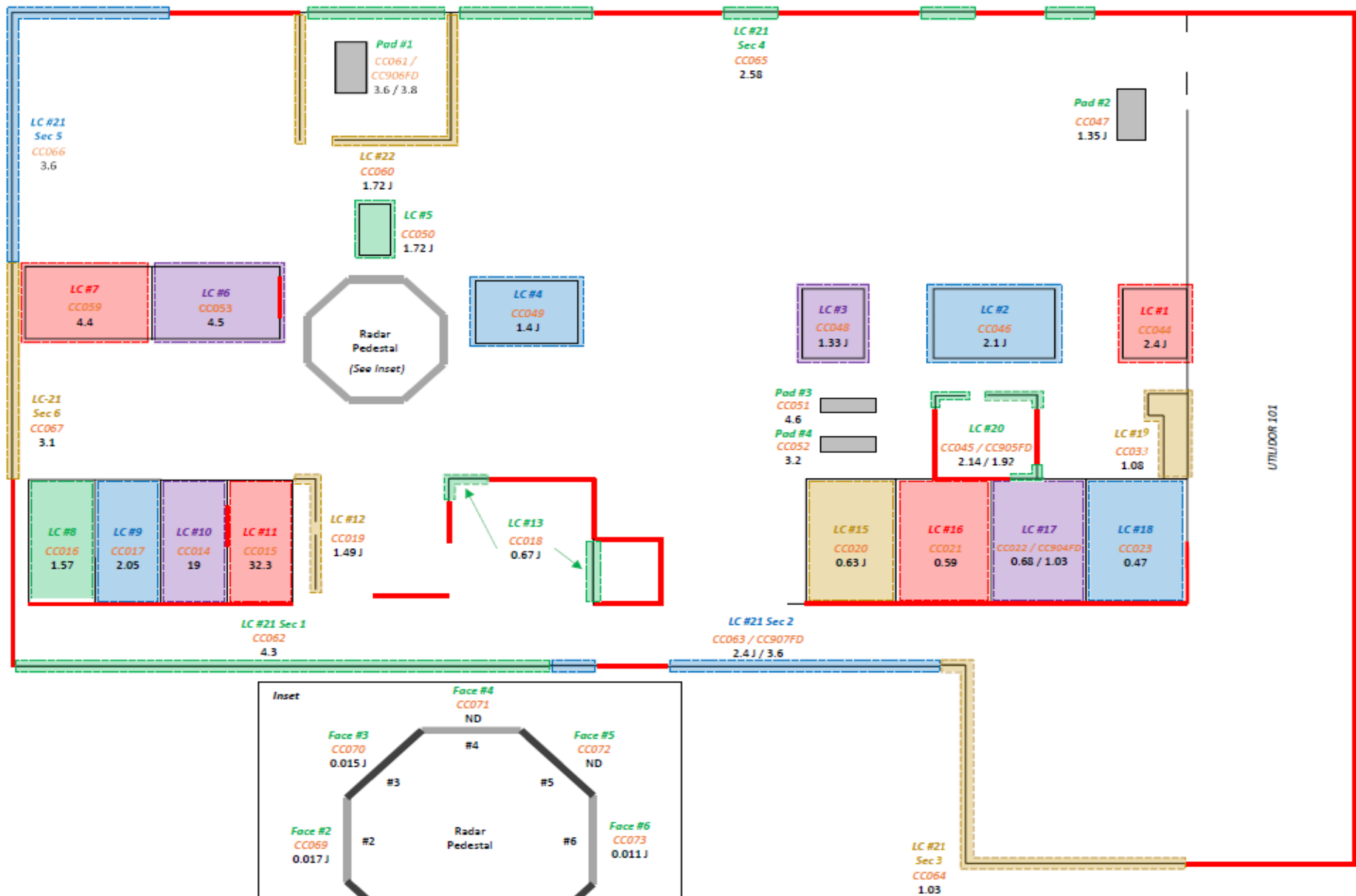


Project Execution – Additional Sampling

- ▼ Based on uncertainties in the characterization data, HGL completed additional characterization sampling of concrete slated for demolition in 2019:
 - Total of 114 concrete samples were collected
 - 44 samples contained PCBs <1 ppm (disposal limit within Alaska)
 - 70 samples contained PCBs >1 ppm
 - None of the samples contained PCBs >50 ppm
- ▼ HGL confirmed that the concrete slated for demolition and disposal required out of state disposal as non-hazardous waste (not a TCSA waste).

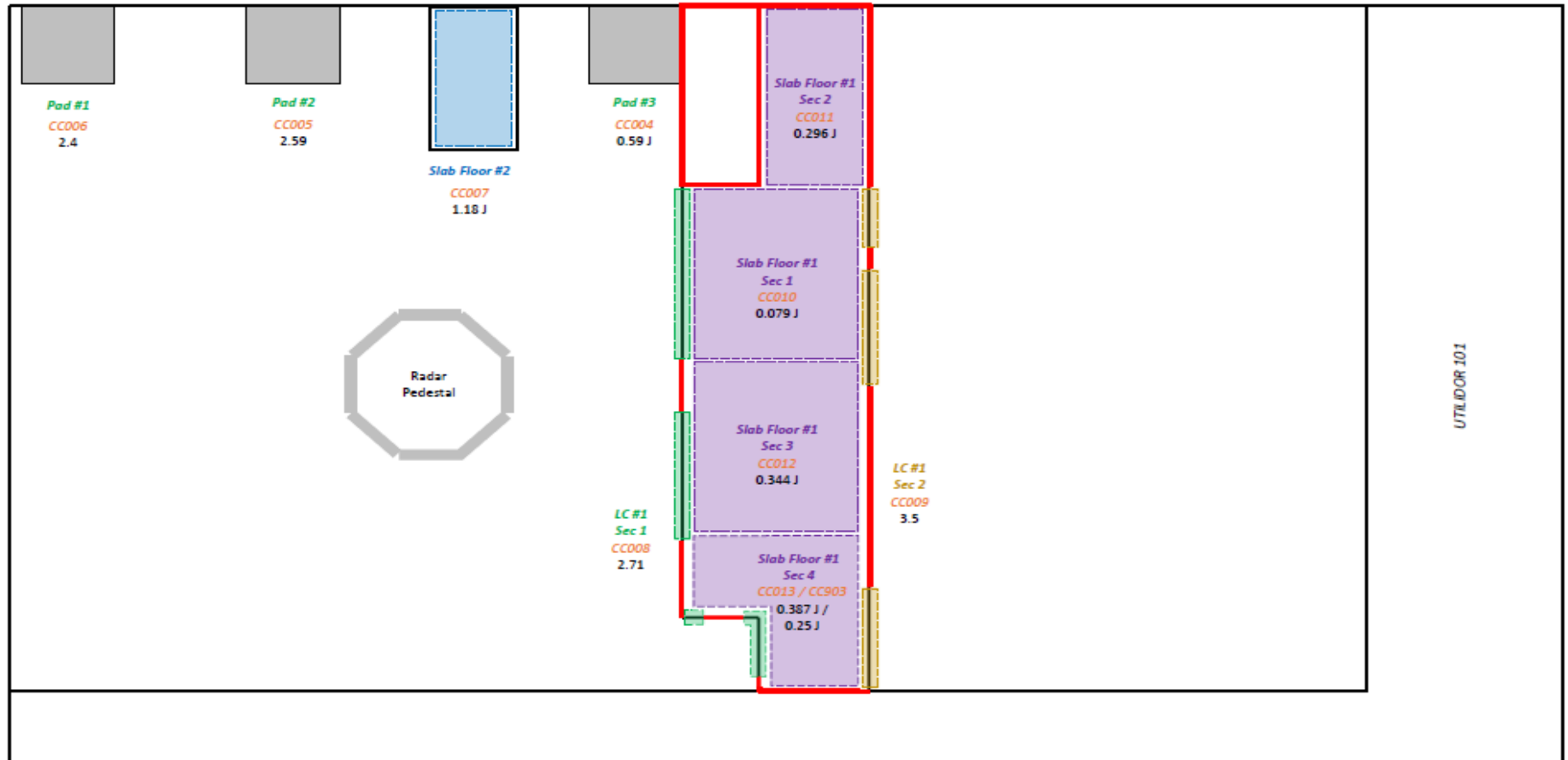
Project Execution – Additional Sampling



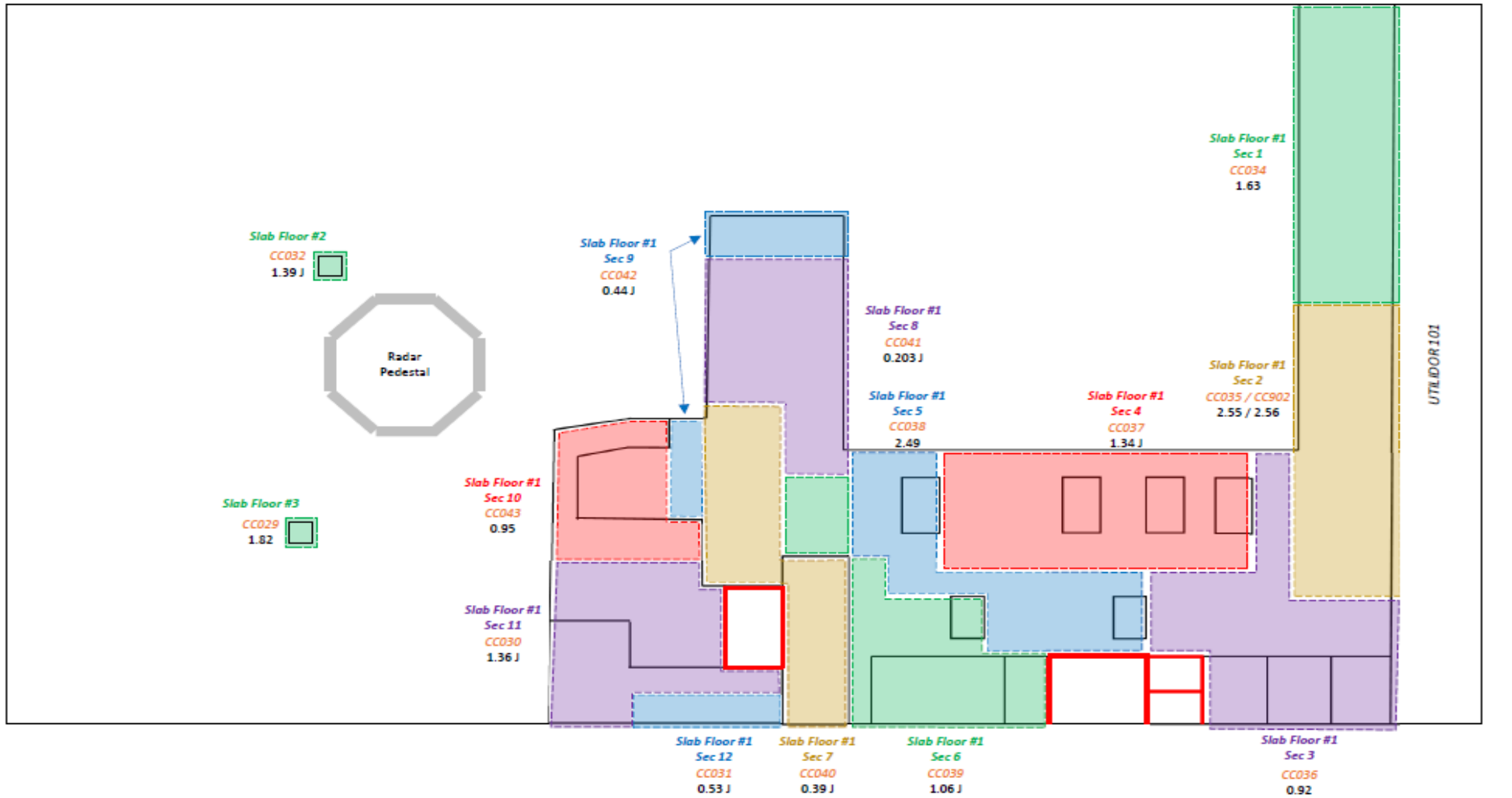


Building 101 – First Floor

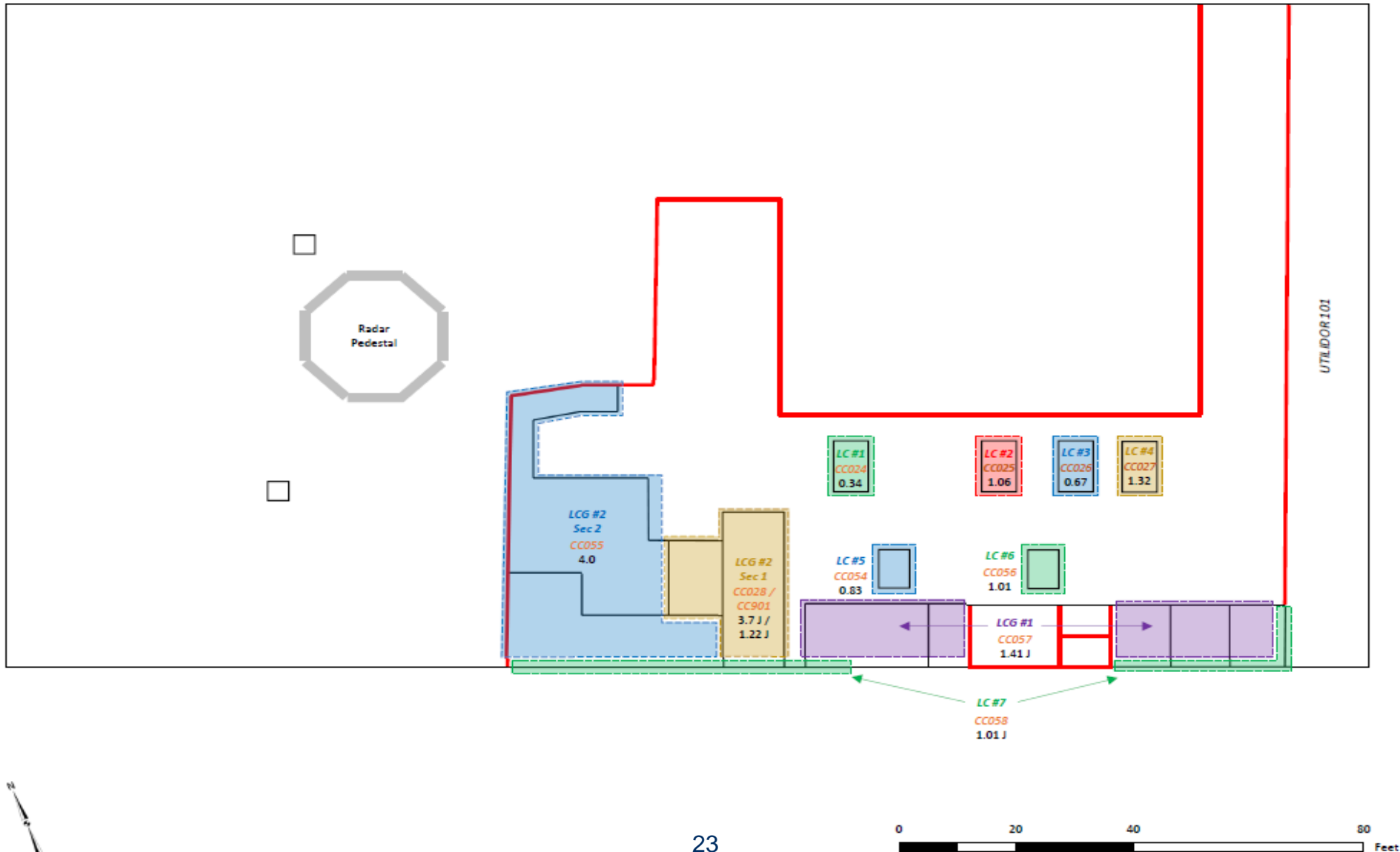
Building 101 - Mezzanine



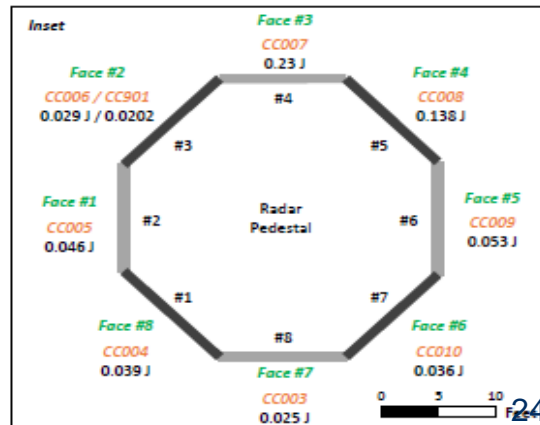
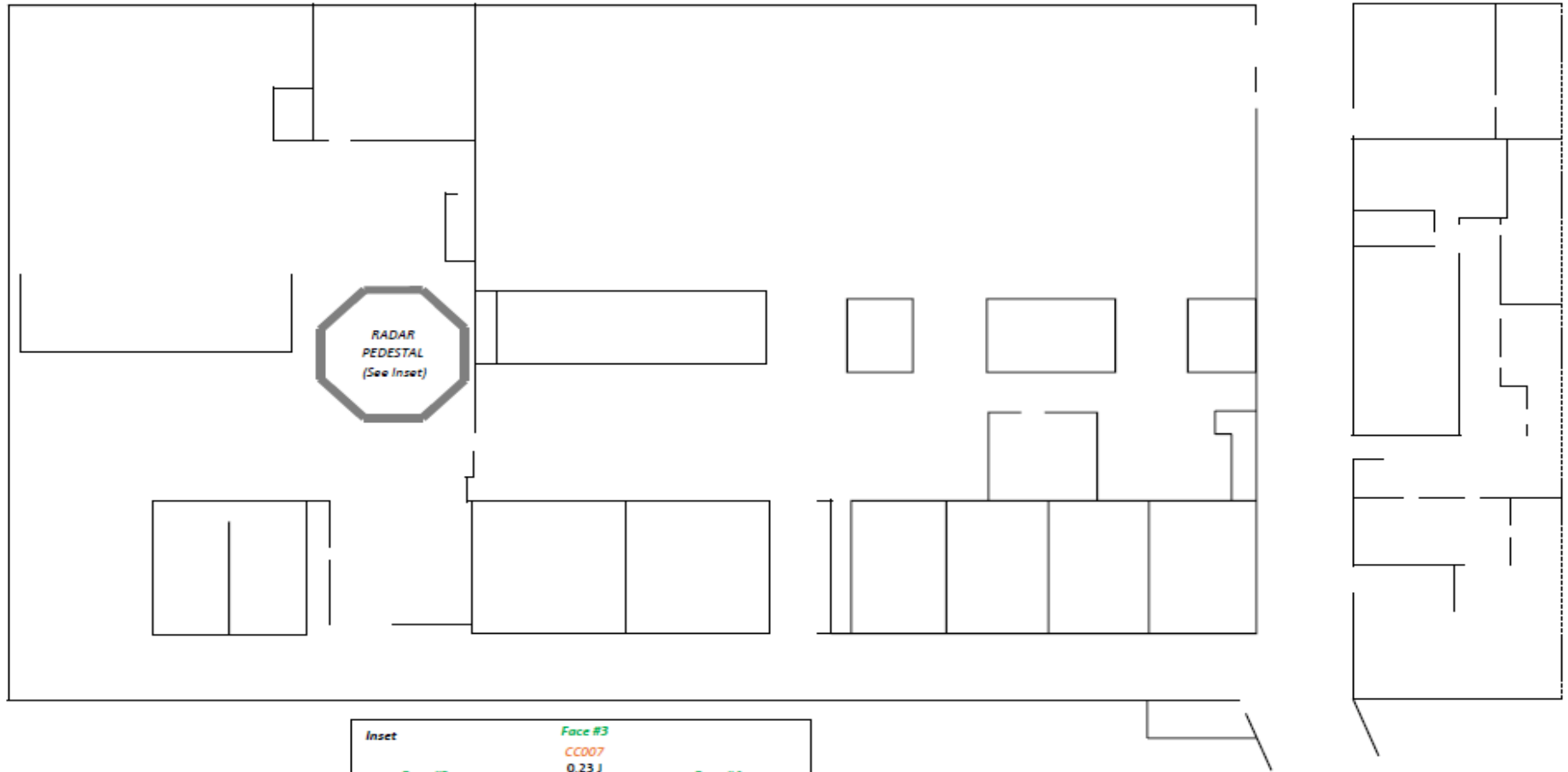
Building 101 – Second Floor



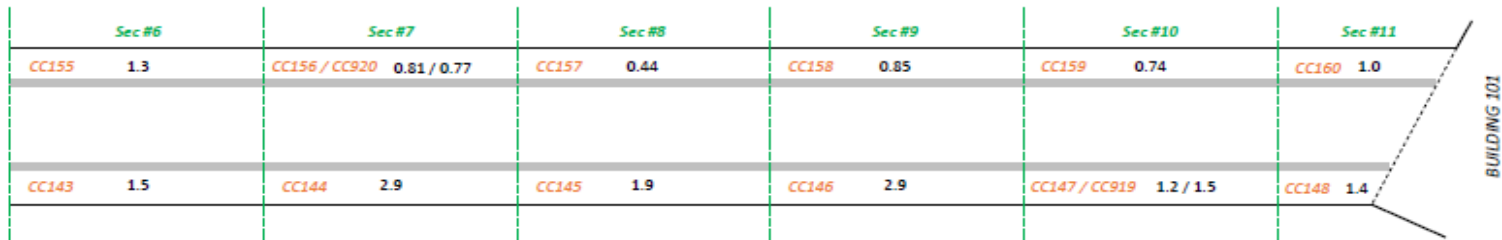
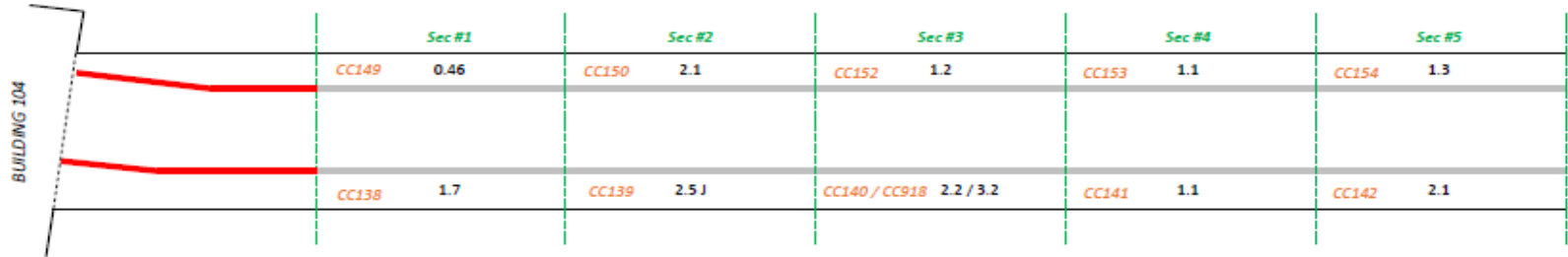
Building 101 – Second Floor



Building 102 – Radar Pedestal Base



Utilidor Curbing



Project Execution – Waste Segregation

- ▼ One key factor in the successful execution of the project was waste segregation and tracking.
- ▼ Due to the various types of materials for disposal, multiple facilities were used:
 - C&D-
 - Denali Borough Landfill, Healy, Alaska
 - ACM-
 - Canaday Homestead Monofill, Salcha, Alaska
 - PCB Bulk Product Waste-
 - Columbia Ridge Landfill, Arlington, Oregon
 - PCB Remediation Waste-
 - Chemical Waste Management Landfill, Arlington, Oregon
 - US Ecology, Beatty, Nevada

Project Execution – Waste Segregation

▼ Additional Disposal Facilities:

- Non-PCB Oil/Wastewater-
 - NRC Alaska, Anchorage, Alaska
- Recycling-
 - Central Recycling Services, Anchorage, Alaska
 - Arctic Fire and Safety, Fairbanks, Alaska

▼ Important to have a strong waste manager.

▼ Improper segregation can lead to:

- Material being incorrectly manifested and disposal in the wrong landfill.
- Regulatory violations and efforts to retrieve the material for proper disposal.

Project Execution – Waste Segregation



Project Execution – Waste Totals

▼ The following waste totals were generated during the project:

- PCB Bulk Product Waste
 - 18,422 tons of building debris and concrete in 1,039 containers
- PCB Remediation Waste
 - 19 containers of remediation waste, including:
 - 141 drums (55-gal) of paint chips, rags, and concrete debris
 - 7 totes (350-gal) of wastewater and waste oil
 - 80 tons of contaminated soil
 - 110,000 gallons of uncontaminated wastewater
- C&D Waste
 - 293 tons of uncontaminated debris

Project Execution – Waste Totals

▼ The following waste totals were generated during the project (cont'd):

- Recycled Materials
 - 176 tons of aluminum, lead, and stainless steel
 - 90 fire extinguishers
- ACM
 - 6,061 bags of friable ACM
 - 4,578 bags of non-friable ACM
- ORM
 - 7 containers including 743 batteries, 1,279 fluorescent ballasts and 4,500 blubs, and 151 mercury containing items

Project Execution – Post-Demolition Sampling

▼ The foundations of the buildings were always planned to be left in place and covered with soil.

- This reduced the amount of concrete debris for removal.
- In-place closure was based on 2016 characterization sampling showing the unstained concrete contained <1 ppm PCBs.
- Regulators required post-demolition characterization sampling prior to covering.



Project Execution – Post-Demolition Sampling

▼ Post-demolition sampling:

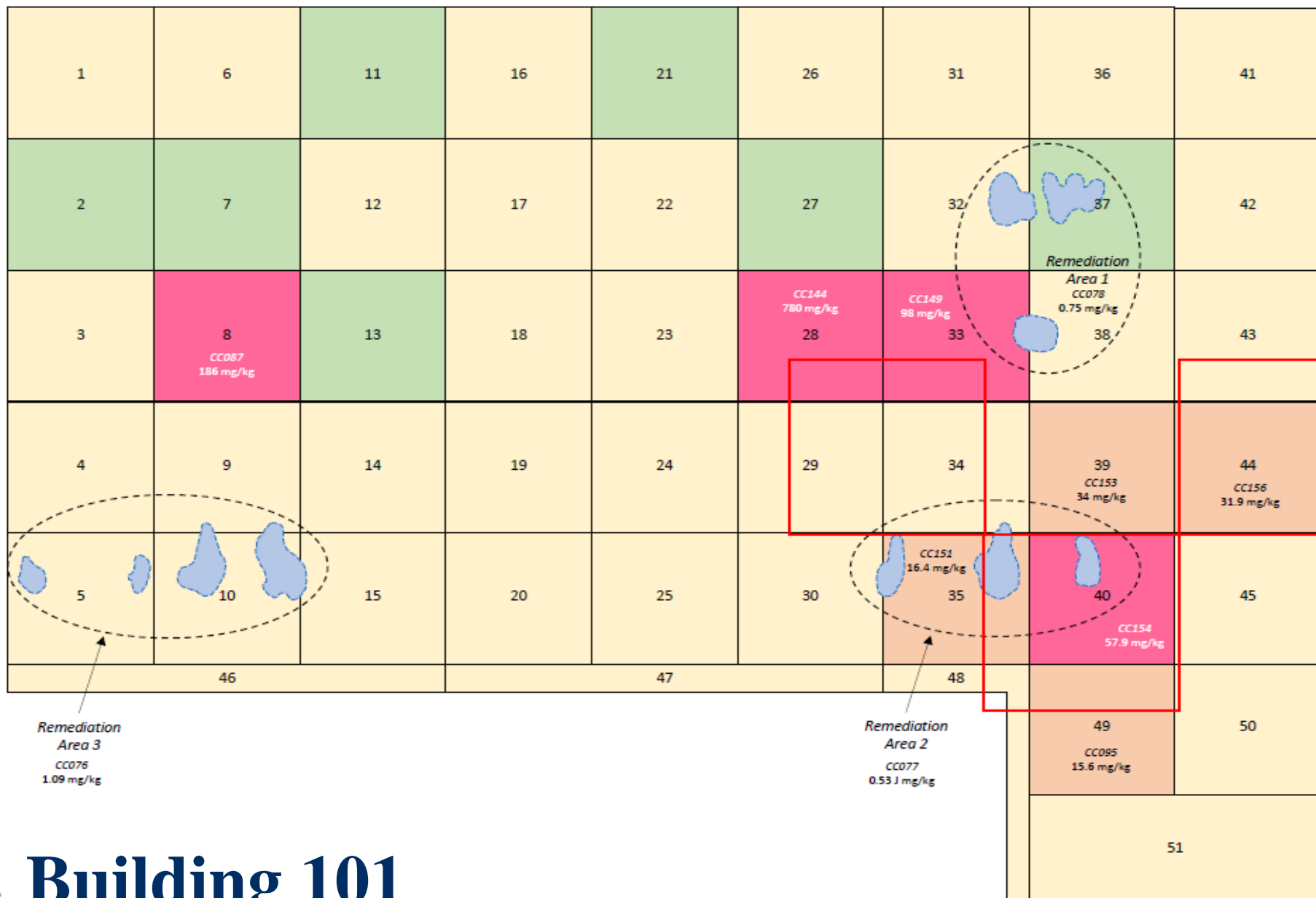
- Composite sampling of foundation top surfaces
 - 9-point composites over either 900 ft² or 1,800 ft² grids
 - Samples collected from 0.5-inch depth
- Discrete sampling of foundation vertical edges
 - Sample locations every 100 ft
 - Two sample depths per location: 1/8-inch depth and 1/8- to 3/4-inch depth
 - Soil samples adjacent to vertical sample locations

Project Execution – Post-Demolition Sampling



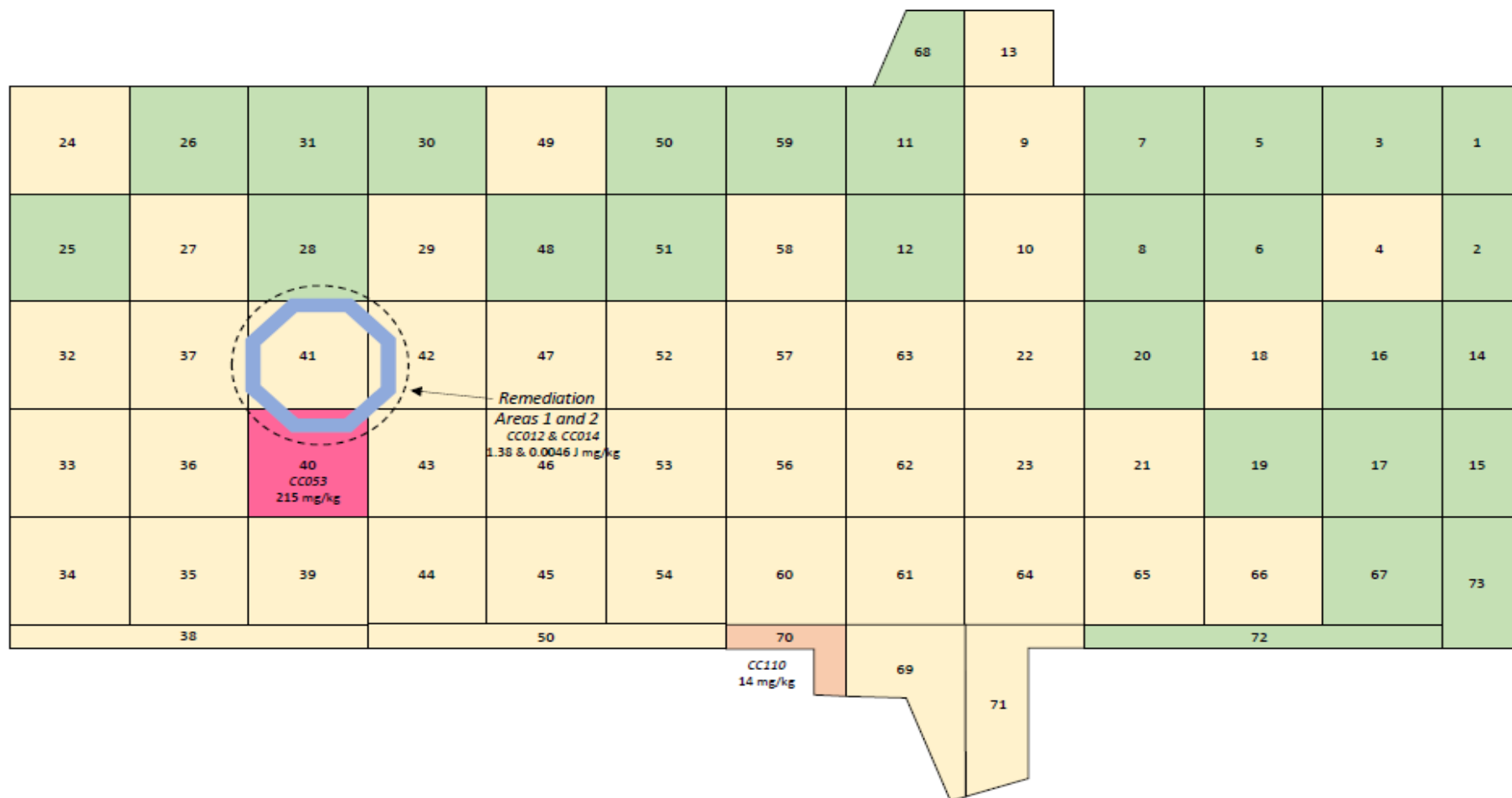
Project Execution – Post-Demolition Sampling

- ▼ Total of 600 samples collected and 350 samples analyzed.
- ▼ Samples compared to the approved cleanup level of 10 ppm for PCBs.
 - Building 104, 105, 106 plus all utilidors were <10 ppm.
 - Building 103 two edge samples >10 ppm.
 - Buildings 101 and 102 had surface samples >10 ppm and >50 ppm.

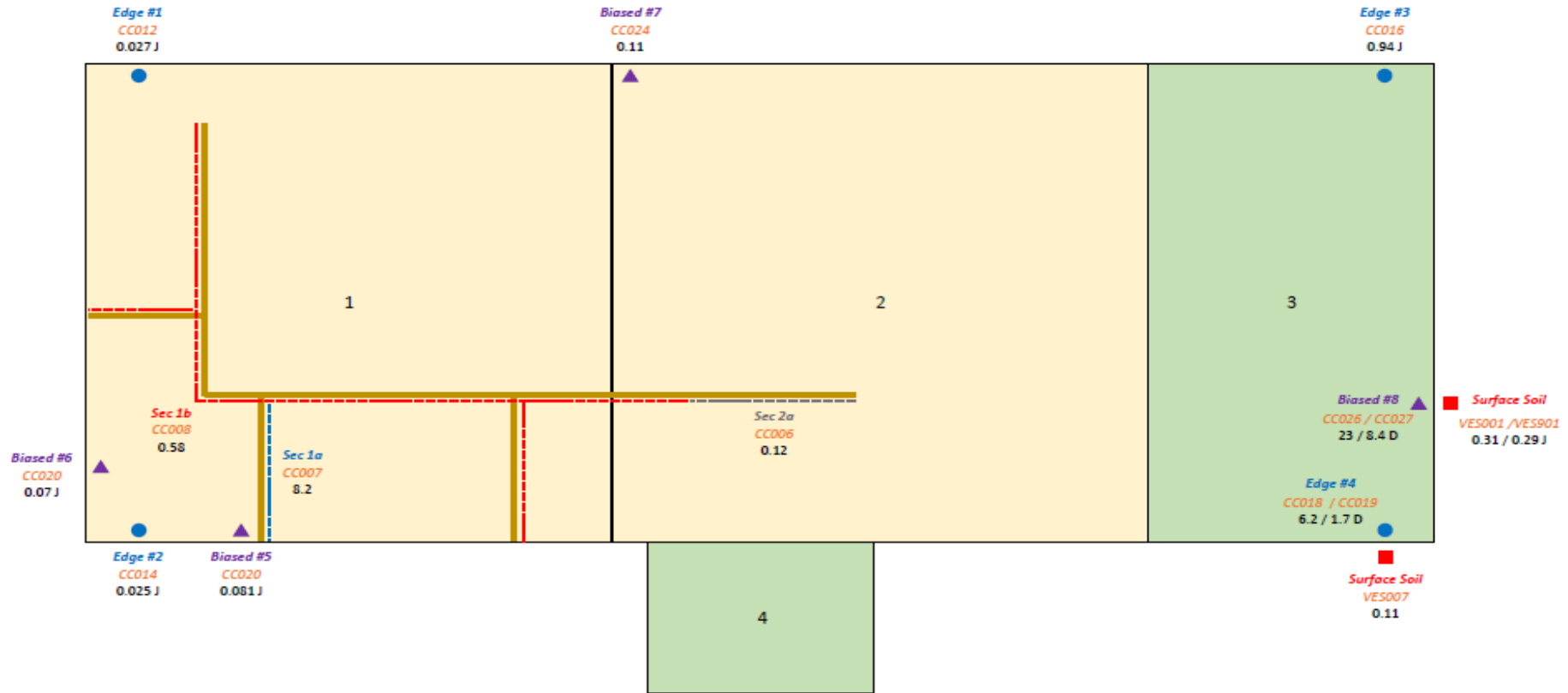


Building 101

Building 102



Building 103



Site Closure

▼ HGL was able to quickly compile the sampling data and request and negotiate interim closure:

- B101 and B102 sample grids >10 ppm covered with plastic, slabs covered with soil, and grids >10 ppm marked with surveying flags for follow-on remediation.
- B103 slab covered with soil and two edge sample locations marked with surveying flags for follow-on remediation.
- B104, B105, B106, U645 slabs covered with soil.
- All covers are temporary, final cover design and implementation to be completed under separate contract.



Site Closure



Questions?