



SITE CERTIFICATION SUMMARY

This Site Certification Summary provides information about the **Windsor, Connecticut, Site**. The U.S. Department of Energy Office of Legacy Management is responsible for long-term stewardship of the site under the **Formerly Utilized Sites Remedial Action Program**.

Site Description and History

The Windsor, Connecticut, Site, formerly known as the Combustion Engineering (CE) Site, is located at 2000 Day Hill Road in Windsor, about 8 miles north of Hartford. The town of Windsor zoned the 612-acre site for general, higher-intensity industrial uses. Combustion Engineering (CE) acquired ownership of the property in the 1950s and maintains the property title. In the mid-1950s and early 1960s, certain buildings and areas of the Windsor site were used in support of the U.S. government's naval nuclear programs under contract with the U.S. Atomic Energy Commission (AEC). The site was used to research, develop, and manufacture nuclear fuel; to develop, design, and fabricate fuel-element subassemblies for submarines; and to construct and operate the S1C test reactor facility. In 1968, AEC-issued licenses authorized commercial fuel manufacturing activities at the Windsor site. The U.S. Nuclear Regulatory Commission amended and renewed these licenses several times, until April 2000 when Westinghouse bought CE. Westinghouse continued to service contaminated reactor components at the site until August 2001, when CE began decommissioning the site. Spilling and leaking from these operations and waste-disposal practices (e.g., incineration) contaminated various buildings, waste water lines, and some land.

Site Remediation Timeline

Early 1990s — CE discovered and investigated radiological contamination at the site and suspected that some residuals were the direct result of AEC processes.

1991 — CE provided information on residual radioactivity at the site to the U.S. Department of Energy (DOE).

1993 — Oak Ridge Institute for Science and Education surveyed portions of the site for radioactivity, which confirmed that radiological residuals were present in areas in Building 3 and the grounds north of Building 3, the Waste Storage Pad, the Drum Burial Pit, Site Brook and its associated bank, and the Industrial Drain Lines.

June 20, 1994 — DOE issued the *Authority Determination for the Combustion Engineering Site*, which stipulated that DOE had authority to conduct a remedial investigation and any subsequent remedial actions at the Windsor site under the Formerly Utilized Sites Remedial Action Program (FUSRAP) for Building 3, other facilities of areas associated exclusively with Building 3, and areas where radioactive contamination is exclusively highly enriched uranium.

October 13, 1997 — Congress transferred the responsibility to administer and execute FUSRAP and clean up sites contaminated by the nation's early atomic energy program from DOE to the U.S. Army Corps of Engineers (USACE).

April and May 1998 — USACE directed Science Applications International Corporation to perform a gamma walkover survey of the areas around Buildings 3/3A and 6, the Waste Storage Pad, the Drum Burial Pit, and areas along Site Brook.

1999 — USACE remediated the Rapaport Building as a vicinity property.

2004 — Characterization activities at most FUSRAP-designated areas concluded.

2005 through 2007 — CE conducted Final Status Surveys (FSSs) and submitted Final Status Survey Reports for the remediated portions of the site.

August 2007 — Because there was extensive commingling of FUSRAP-related materials with NRC-regulated materials, CE, NRC, USACE, and DOE agreed that CE would decommission the site pursuant to NRC regulations.

December 2007 — CE requested unrestricted release of a decommissioned 365-acre site parcel. This parcel did not include any FUSRAP areas.

2009 — Radiological remediation efforts at FUSRAP-designated areas (other than the Rapaport Building) began.

January 2009 — NRC authorized a partial site release for unrestricted use of 365 contiguous acres of the 612-acre facility after it was confirmed that the residual radioactivity met the radiological criteria for release for unrestricted use.

December 2011 — USACE completed remediation.

September 2013 — NRC terminated the final license for the site.

Remedial Action

Initially, USACE addressed the following FUSRAP-related constituents of concern (COCs) in site soils and on building surfaces:

- Total uranium:
 - Uranium-234.
 - Uranium-235.
 - Uranium-238.
- Thorium-232 (Th-232).
- Radium-226 (Ra-226).
- Cobalt-60 (Co-60).

During decommissioning, USACE identified Th-232 and Ra-226 within some portions of the Woods Area and the Drum Burial Pit due to the disposal of incineration wastes in those areas.

USACE began addressing the site in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); however, CE proceeded with decommissioning the site under NRC regulations to allow termination of the NRC license, as opposed to USACE completing the investigation, evaluation, and remediation in accordance CERCLA. USACE reviewed the remedial approach taken by CE and found it equivalent to the required CERCLA approach.

The remedy selected for the Windsor Site is referred to as Alternative SS3 — Excavation and Off-Site Disposal. The selected remedy involved excavation of contaminated soils, building demolition, off-site transportation of waste, and disposal at an appropriately permitted or licensed disposal facility. USACE determined that the NRC standards for decommissioning of licensed facilities, found in Title 10, Part 20, Section 1402, of the Code of Federal Regulations (10 CFR 20.1402), were relevant and appropriate for cleanup of FUSRAP-contamination in soils at the Windsor site. Under 10 CFR 20.1402, NRC accepts a facility for unrestricted use if residual radioactivity above background does not exceed a total effective dose equivalent of 25 millirem per year (mrem/yr) to the average member of the critical group. The state of Connecticut determined that a potential future dose of 19 mrem/yr was protective of human health and satisfied the requirements of its Remediation Standard Regulations.

The remedial action objectives for the FUSRAP areas were:

- Decontaminate and dismantle radiologically contaminated buildings and systems at Building 3 and Building 6 to prevent exposure to unacceptable levels of radiological contamination.
- Dismantle Buildings 3 and 6 to allow complete evaluation of contamination conditions in soil and drain lines beneath and next to the buildings.
- Prevent contaminants in vadose zone soil at concentrations exceeding the Connecticut Department of Energy and Environmental Protection (CTDEEP) Pollutant Mobility Criteria from contributing to groundwater contamination above concentrations of concern.
- Prevent human exposure to radiologically contaminated soil and sediment at the identified FUSRAP areas at levels exceeding derived concentration guideline levels (DCGL_w).
- Prevent human exposure to chemically contaminated soil and sediment at the FUSRAP-identified areas at concentrations exceeding cleanup levels based on CTDEEP Remediation Standard Regulations.
- Prevent human exposure to groundwater with contaminants exceeding the cleanup levels.

The selected remedy only addressed FUSRAP-related COCs and did not address any other hazardous substances that may have been present at the site. USACE, under FUSRAP, did not have the authority to assess the need or perform any actions related to other hazardous substances.

The original designation surveys and subsequent investigations by USACE and CE identified the following FUSRAP areas requiring remediation:

- Buildings 3 and 6.
- Drum Burial Pit.
- Equipment Storage Yard.
- Woods Area.
- Site Brook and Debris Piles.
- Industrial Waste Line.
- Clamshell Pile.

See the [Fact Sheet](#) or the [Site Closeout Report](#) for details of the remedial action.

Post-Remediation Sampling

Approved site-specific DCGL_w values for soil at the site were:

- 557 picocuries per gram (pCi/g) for total uranium.
- 5 pCi/g for Co-60.
- 4 pCi/g for Th-232.
- 5.5 pCi/g for Ra-226.

These DCGL_w values were derived to limit the future potential dose to the resident farmer to 19 mrem/yr. Building surface DCGL_w were 20,148 disintegrations per minute per 100 square centimeters (dpm/100 cm²) for total uranium and 6,980 dpm/100 cm² for reactor byproduct (Co-60).

Final Status Surveys

FSS is a process designed to determine whether concentrations of residual radioactivity comply with cleanup criteria. The Windsor site was divided into FSS units, and the following activities were implemented in some or all of the units:

- Gamma walkover scans were performed over accessible soil surfaces.
- Systematic (and some bias) surface soil samples were collected from within individual survey units.
- Samples were analyzed on-site via gamma spectroscopy.
- CTDEEP independently collected verification samples.
- USACE, CTDEEP, and NRC prepared, submitted, and approved seven FSS reports (Submittals 1-7).

Submittal 1 — Industrial Waste Lines

USACE created 15 survey units and collected 341 volumetric soil samples. Concentrations of residual radioactivity were found to be very minimal with a maximum total uranium result less than 2% of the DCGL_w (see Tables 1 and 2 in the [Data Summary Worksheet](#) on pages 5-9).

Submittal 2 — Building 3 High Bay

USACE created three survey units and collected and analyzed 94 direct static surface measurements and an equal amount of removable surface measurements from the wall, floor, ceiling, and roof surfaces. Residual radioactivity was found to be very minimal and essentially at background (see Table 3 in the [Data Summary Worksheet](#)).

Submittal 3 — Clamshell Pile, Drum Burial Pit, and Woods Area

USACE created 14 survey units and collected 373 volumetric soil samples. Survey unit average concentrations of residual radioactivity were found to be low with a maximum total uranium result less than 12% of the DCGL_w (see Tables 4-7 in the [Data Summary Worksheet](#)).

Submittal 4 — Building 3/6 Area

USACE created 11 survey units and collected 295 volumetric soil samples. Concentrations of residual radioactivity were found to be very minimal with a maximum total uranium result less than 14% of the DCGL_w (see Tables 8 and 9 in the [Data Summary Worksheet](#)).

Submittal 5 — Site Brook and Debris Piles

USACE created 13 survey units and collected 338 volumetric soil samples. Survey unit average concentrations of residual radioactivity were found to be low with a maximum total uranium result less than 57% of the DCGL_w (see Tables 10 and 11 in the [Data Summary Worksheet](#)).

Submittal 6 — Equipment Storage Yard

USACE created nine survey units and collected 171 volumetric soil samples. Survey unit average concentrations of residual radioactivity were found to be low with a maximum total uranium result less than 2% of the DCGL_w (see Tables 12 and 13 in the [Data Summary Worksheet](#)).

Submittal 7

Submittal 7 did not include any FUSRAP areas.

For a more detailed map of the site and sampling locations, see the [Site Overview Map](#) on page 10.

Current Site Conditions

The implemented remedy achieved the degree of cleanup and protection specified in the Selected Remedy Plan for the Windsor site for all pathways of exposure. No further response is needed to protect human health and the environment from the FUSRAP-related COCs. Since FUSRAP-eligible residual radiological concentrations remaining at the Windsor site allow for unlimited use and unrestricted exposure, no five-year reviews, land use controls, or operations and maintenance are required to maintain the protectiveness of the implemented remedies. The property has been redeveloped into a mixed-use community, including residential, commercial, and recreational facilities.

In January 2019, USACE transferred responsibility for long-term stewardship of the Windsor site to the DOE Office of Legacy Management (LM). The stewardship requirements and protocols are captured in the Long-Term Stewardship Plan for Completed FUSRAP Sites, which is available on the DOE Office of Legacy Management website (www.energy.gov/lm/windsor-connecticut-site).



ADDITIONAL INFORMATION

Documents related to FUSRAP activities at the Windsor, Connecticut, Site are available on the LM website at lmpublicsearch.lm.doe.gov/SitePages/default.aspx?sitename=Windsor.

For other information on site history or current long-term stewardship activities, please contact us at:

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Windsor, Connecticut, Site Certification Data Summary Worksheet

Thirteen tables in the Windsor Site Closeout Report provide evidence used to certify the site as clean.

When the tables refer to the "Site Closeout Report," that is the "Site Closeout Report for the Combustion Engineering Site, Windsor, CT" (dated December 2016).

FSSR Submittal 1, Summary Statistics for Total U1															
Table 1 in Attachment B of the Site Closeout Report															
Statistic	Survey Unit (CE-FSS)														
	41-01	41-02	41-03	42-01	42-02	42-03	42-04	42-05	42-06	42-07	42-08	43-01	43-02	43-03	43-04
Number of Samples	16	14	14	29	29	29	29	29	29	17	14	29	19	29	17
Arithmetic Mean	2.70	2.56	2.89	3.21	2.68	2.25	2.35	2.25	3.35	2.55	2.05	2.77	2.58	2.84	2.54
Standard Deviation	1.20	1.39	1.57	1.43	1.36	1.51	1.21	1.15	1.30	1.27	1.40	1.41	2.19	1.60	1.01
Standard Error of the Mean	0.30	0.37	0.42	0.26	0.25	0.28	0.22	0.21	0.24	0.31	0.37	0.26	0.50	0.30	0.24
Coefficient of Variation	0.44	0.54	0.54	0.44	0.51	0.67	0.51	0.51	0.39	0.50	0.68	0.51	0.85	0.56	0.40
Geometric Mean	2.70	2.66	2.77	3.14	2.51	2.48	2.22	2.08	3.06	2.27	1.72	2.53	2.69	2.42	2.36
Maximum	4.50	4.8	5.80	7.30	5.70	4.80	4.70	4.60	6.10	5.60	4.00	5.10	8.10	8.04	5.23
Median	2.90	2.60	3.30	3.20	2.70	2.60	2.30	2.00	3.30	2.30	2.45	2.80	2.80	2.53	2.49
Minimum	-0.10	-0.90	-0.10	-0.70	-0.90	-1.00	-1.00	-0.30	0.70	0.90	-0.60	-0.20	-1.00	-0.99	0.98
Range	4.60	5.70	5.90	8.00	6.60	5.80	5.70	4.90	5.40	4.70	4.60	5.30	9.10	9.03	4.25
UCL95 (median)	3.50	3.20	3.40	3.50	3.10	3.30	2.90	2.60	3.90	2.90	3.20	3.40	3.10	3.29	2.97
LCL95 (median)	1.80	1.60	1.50	2.70	2.10	1.50	1.70	1.80	2.60	1.80	0.50	1.90	1.00	0.99	1.81

Note: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
¹Final Status Survey Report, Submittal Number 1, ABB, July, 2011

FSSR Submittal 1, Summary Statistics for Co-601															
Table 2 in Attachment B of the Site Closeout Report															
Statistic	Survey Unit (CE-FSS)														
	41-01	41-02	41-03	42-01	42-02	42-03	42-04	42-05	42-06	42-07	42-08	43-01	43-02	43-03	43-04
Number of Samples	16	14	14	29	29	29	29	29	29	17	14	29	19	29	17
Arithmetic Mean	-0.01	0.00	-0.01	0.00	0.00	0.01	0.00	-0.01	0.01	-0.02	0.00	-0.01	0.00	0.00	0.01
Standard Deviation	0.05	0.03	0.07	0.04	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.03
Standard Error of the Mean	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Coefficient of Variation	-3.44	8.97	-5.35	-22.84	-14.69	3.69	14.86	-6.45	9.86	-2.35	-16.31	-4.28	-9.45	10.02	2.48
Geometric Mean	0.03	0.02	0.03	0.02	0.03	0.04	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.01
Maximum	0.07	0.06	0.07	0.11	0.07	0.08	0.06	0.09	0.10	0.07	0.07	0.06	0.06	0.12	0.10
Median	-0.02	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.01	-0.03	0.01	0.00	0.01	0.00	0.01
Minimum	-0.08	-0.06	-0.21	-0.09	-0.10	-0.09	-0.11	-0.10	-0.12	-0.10	-0.12	-0.15	-0.06	-0.09	-0.02
Range	0.15	0.11	0.28	0.20	0.18	0.17	0.17	0.18	0.21	0.17	0.19	0.21	0.12	0.21	0.12
UCL95 (median)	0.02	0.02	0.02	0.01	0.03	0.04	0.03	0.01	0.04	0.03	0.03	0.01	0.02	0.03	0.03
LCL95 (median)	-0.05	-0.02	-0.08	-0.02	-0.04	-0.01	-0.01	-0.02	-0.03	-0.06	-0.04	-0.03	-0.04	-0.02	-0.01

Note 1: The coefficient of variation statistics reported above are virtually meaningless since the measured activity for all survey units is at or near 0.00.
 Note 2: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
¹Final Status Survey Report, Submittal Number 1, ABB, July, 2011

FSSR Submittal 2, Scan Survey Results1									
Table 3 in Attachment B of the Site Closeout Report									
Survey Unit (CE-FSS)	Survey Unit Class	Percent of Survey Unit Surveyed (accessible floor)	Number of Elevated Locations Identified and Sampled	Building Scan Results					
				Recorded Background Reading (cpm)		Highest Scan Reading (gross cpm)		Highest Scan Reading (net cpm)	
				α	β	α	β	α	β
30-01	3	45	0	2	559	2	800	0	241
30-02	3	75	0	3	614	3	800	0	186
30-03	3	0	0	n/a	n/a	n/a	n/a	n/a	n/a

¹Final Status Survey Report, Submittal Number 2, Building 3 High Bay, ABB, September 2011

Windsor, Connecticut, Site Certification Data Summary Worksheet

FSSR Submittal 3, Summary Statistics for Total U1

Table 4 in Attachment B of the Site Closeout Report

Statistic	Survey Unit (CE-FSS)													
	35-01	35-02	36-01	36-02	38-01	38-02	38-03	38-04	38-05	39-01	39-02	39-03	39-04	40-01
Number of Samples	30	17	29	17	33	33	33	19	29	33	33	33	17	17
Arithmetic Mean	9.68	3.39	4.14	3.99	6.35	5.99	7.92	4.26	5.20	3.49	3.42	3.42	3.36	4.61
Standard Deviation	10.57	1.99	4.00	2.25	4.30	5.48	12.00	2.08	3.50	1.75	2.85	1.38	1.19	1.57
Standard Error of the Mean	1.93	0.48	0.74	0.54	0.75	0.95	2.09	0.48	0.65	0.30	0.50	0.24	0.29	0.38
Coefficient of Variation	1.09	0.59	0.97	0.56	0.68	0.91	1.52	0.49	0.67	0.50	0.83	0.40	0.35	0.34
Geometric Mean	5.45	2.52	3.46	3.37	5.31	4.79	4.88	3.66	3.84	3.18	2.73	3.37	3.10	4.35
Maximum	41.20	7.50	23.70	9.70	20.00	26.40	62.20	10.40	16.60	7.20	11.60	6.20	5.00	6.90
Median	4.65	3.80	3.00	3.30	5.30	4.40	3.90	4.10	4.30	3.10	2.90	3.10	3.50	4.20
Minimum	0.10	0.20	1.80	0.80	1.80	-0.70	1.70	0.30	0.10	-0.30	-1.00	-0.90	1.00	2.40
Range	41.10	7.30	21.90	8.90	18.20	27.10	60.50	10.10	16.50	7.50	12.60	7.10	4.00	4.50
UCL95 (median)	8.80	4.20	4.10	5.50	6.30	5.60	5.00	4.50	6.50	4.40	4.20	4.10	4.20	6.00
LCL95 (median)	2.90	1.80	2.60	2.80	4.50	3.20	3.10	3.10	3.40	2.50	2.90	2.80	3.20	3.20

Note: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 1Final Status Survey Report, Submittal Number 3, Burning Grounds, Drum Burial Pit, Woods Area, Building 2 Sanitary Waste Line, and Clam Shell Pile, ABB, December, 2011

FSSR Submittal 3, Summary Statistics for Co-601

Table 5 in Attachment B of the Site Closeout Report

Statistic	Survey Unit (CE-FSS)													
	35-01	35-02	36-01	36-02	38-01	38-02	38-03	38-04	38-05	39-01	39-02	39-03	39-04	40-01
Number of Samples	30	17	29	17	33	33	33	19	29	33	33	33	17	17
Arithmetic Mean	0.00	0.00	0.02	0.01	0.01	0.00	0.00	-0.01	0.00	-0.02	0.00	0.01	-0.02	0.00
Standard Deviation	0.04	0.05	0.03	0.05	0.06	0.04	0.04	0.04	0.05	0.06	0.04	0.05	0.07	0.04
Standard Error of the Mean	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
Coefficient of Variation	-16.56	-13.15	1.56	6.10	6.70	-21.71	-75.69	-6.80	22.99	-3.05	12.32	4.25	-3.12	12.45
Geometric Mean	0.03	0.04	0.02	0.03	0.04	0.02	0.03	0.02	0.02	0.02	0.02	0.04	0.05	0.02
Maximum	0.08	0.06	0.07	0.09	0.11	0.09	0.11	0.07	0.09	0.07	0.09	0.08	0.10	0.07
Median	0.01	-0.01	0.02	0.00	0.01	0.00	-0.01	0.01	0.00	-0.01	0.01	0.02	-0.02	0.01
Minimum	-0.09	-0.11	-0.04	-0.06	-0.11	-0.10	-0.07	-0.10	-0.08	-0.21	-0.10	-0.07	-0.15	-0.08
Range	0.17	0.17	0.11	0.15	0.22	0.19	0.18	0.17	0.17	0.28	0.19	0.14	0.25	0.14
UCL95 (median)	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.02	0.01	0.01	0.02	0.04	0.00	0.03
LCL95 (median)	-0.04	-0.03	0.01	-0.03	-0.02	-0.02	-0.02	-0.05	-0.03	-0.04	-0.01	-0.01	-0.06	-0.03

Note 1: The coefficient of variation statistics reported above are virtually meaningless since the measured activity for all survey units is at or near 0.00.
 Note 2: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 1Final Status Survey Report, Submittal Number 3, Burning Grounds, Drum Burial Pit, Woods Area, Building 2 Sanitary Waste Line, and Clam Shell Pile, ABB, December, 2011

FSSR Submittal 3, Summary Statistics for Ra-2261

Table 6 in Attachment B of the Site Closeout Report

Statistic	Survey Unit (CE-FSS)										
	36-01	36-02	38-01	38-02	38-03	38-04	38-05	39-01	39-02	39-03	39-04
Number of Samples	29	17	33	33	33	19	29	33	33	33	17
Arithmetic Mean	0.73	0.74	0.75	0.68	0.67	0.73	0.74	0.63	0.56	0.86	0.64
Standard Deviation	0.09	0.13	0.12	0.14	0.10	0.11	0.12	0.09	0.07	0.20	0.11
Standard Error of the Mean	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.01	0.03	0.03
Coefficient of Variation	0.12	0.17	0.16	0.20	0.14	0.15	0.16	0.15	0.13	0.23	0.17
Geometric Mean	0.73	0.73	0.74	0.66	0.66	0.72	0.73	0.62	0.56	0.84	0.63
Maximum	0.94	1.01	1.05	0.90	0.85	0.92	0.99	0.86	0.79	1.58	0.87
Median	0.73	0.70	0.74	0.67	0.68	0.73	0.76	0.64	0.56	0.80	0.66
Minimum	0.57	0.53	0.50	0.39	0.46	0.59	0.50	0.47	0.41	0.65	0.48
Range	0.37	0.48	0.55	0.51	0.39	0.33	0.49	0.39	0.38	0.93	0.39
UCL95 (median)	0.77	0.84	0.77	0.76	0.71	0.83	0.80	0.68	0.59	0.87	0.71
LCL95 (median)	0.67	0.67	0.68	0.59	0.64	0.64	0.68	0.57	0.53	0.74	0.54

Note: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 1Final Status Survey Report, Submittal Number 3, Burning Grounds, Drum Burial Pit, Woods Area, Building 2 Sanitary Waste Line, and Clam Shell Pile, ABB, December, 2011

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FSSR Submittal 3, Summary Statistics for Th-2321

Table 7 in Attachment B of the Site Closeout Report

Statistic	Survey Unit (CE-FSS)										
	36-01	36-02	38-01	38-02	38-03	38-04	38-05	39-01	39-02	39-03	39-04
Number of Samples	29	17	33	33	33	19	29	33	33	33	17
Arithmetic Mean	0.86	0.88	0.92	0.75	0.84	0.87	0.92	0.99	0.80	1.08	0.85
Standard Deviation	0.07	0.16	0.14	0.13	0.13	0.11	0.13	0.27	0.21	0.26	0.14
Standard Error of the Mean	0.01	0.04	0.02	0.02	0.02	0.03	0.03	0.05	0.04	0.04	0.03
Coefficient of Variation	0.08	0.18	0.16	0.18	0.15	0.13	0.15	0.27	0.26	0.24	0.16
Geometric Mean	0.86	0.87	0.91	0.74	0.83	0.86	0.91	0.96	0.78	1.05	0.84
Maximum	1.00	1.17	1.34	1.07	1.03	1.04	1.20	1.81	1.41	2.01	1.15
Median	0.86	0.91	0.90	0.78	0.84	0.87	0.94	0.95	0.82	0.99	0.81
Minimum	0.71	0.58	0.65	0.48	0.55	0.63	0.66	0.53	0.38	0.75	0.61
Range	0.29	0.59	0.69	0.59	0.48	0.41	0.54	1.28	1.03	1.26	0.54
UCL95 (median)	0.90	0.99	0.91	0.81	0.94	0.93	0.97	1.05	0.87	1.12	0.96
LCL95 (median)	0.81	0.78	0.87	0.71	0.76	0.81	0.87	0.87	0.75	0.95	0.79

Note: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 1Final Status Survey Report, Submittal Number 3, Burning Grounds, Drum Burial Pit, Woods Area, Building 2 Sanitary Waste Line, and Clam Shell Pile, ABB, December, 2011

FSSR Submittal 4, Summary Statistics for Total U1

Table 8 in Attachment B of the Site Closeout Report

Statistic	Survey Unit (CE-FSS)										
	03-01	03-02	03-03	03-04	03-05	03-06	06-04	06-05	06-06	06-07	06-08
Number of Samples	29	29	29	29	29	17	29	29	29	29	17
Arithmetic Mean	2.60	2.80	2.88	2.33	4.61	1.46	4.34	3.62	3.28	2.84	6.92
Standard Deviation	1.07	1.11	1.14	0.87	4.35	1.38	4.82	3.10	1.58	1.57	17.58
Standard Error of the Mean	0.20	0.19	0.21	0.16	0.81	0.33	0.90	0.58	0.29	0.29	4.26
Coefficient of Variation	0.41	0.36	0.40	0.38	0.94	0.94	1.11	0.86	0.48	0.55	2.54
Geometric Mean	2.34	2.80	2.60	2.15	3.60	1.36	3.48	2.97	2.63	2.91	2.78
Maximum	4.80	4.60	5.70	4.20	22.30	4.10	24.00	15.80	5.90	5.90	75.00
Median	2.60	2.60	2.80	2.20	3.70	1.30	3.20	2.80	3.70	2.60	3.00
Minimum	0.40	-0.40	0.60	0.40	0.40	-1.50	-0.60	1.10	0.20	-0.20	0.20
Range	4.40	5.00	5.10	3.80	21.90	5.60	24.60	15.80	5.70	6.10	74.80
UCL95 (median)	3.00	3.36	3.60	2.50	4.30	2.60	3.80	3.20	3.80	3.50	3.70
LCL95 (median)	2.10	2.20	2.20	1.80	2.90	0.50	2.50	2.20	2.60	2.30	2.40

Note 1: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 Note 2: The higher standard deviation and coefficient of deviation presented for Survey Unit 06-08 (as compared with the other Survey Units) can be explained by the single outlier result of 75 pCi/g, significantly below the DCGL_w of 557 pCi/g.
 1Final Status Survey Report, Submittal Number 4, Building Complexes 3 & 6, ABB, December 2011

Windsor, Connecticut, Site Certification Data Summary Worksheet

FSSR Submittal 4, Summary Statistics for Co-601												
Table 9 in Attachment B of the Site Closeout Report												
Statistic	Survey Unit (CE-FSS)											
	03-01	03-02	03-03	03-04	03-05	03-06	06-04	06-05	06-06	06-07	06-08	
Number of Samples	29	29	29	29	29	17	29	29	29	29	17	
Arithmetic Mean	0.01	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.00	
Standard Deviation	0.06	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.06	0.05	0.05	
Standard Error of the Mean	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	
Coefficient of Variation	4.49	2.96	4.66	13.95	55.95	2.23	9.26	5.03	9.93	-26.7	154.2	
Geometric Mean	0.04	0.03	0.03	0.03	0.02	0.03	0.03	0.01	0.03	0.03	0.03	
Maximum	0.11	0.07	0.08	0.07	0.11	0.07	0.09	0.06	0.14	0.07	0.10	
Median	0.03	0.01	0.02	-0.01	0.00	0.02	0.01	0.01	0.01	0.01	-0.01	
Minimum	-0.15	-0.04	-0.10	-0.05	-0.06	-0.04	-0.07	-0.05	-0.16	-0.09	-0.07	
Range	0.26	0.11	0.17	0.12	0.17	0.12	0.16	0.11	0.29	0.17	0.17	
UCL95 (median)	0.04	0.03	0.03	0.02	0.01	0.04	0.02	0.02	0.04	0.03	0.02	
LCL95 (median)	-0.02	-0.01	-0.01	-0.02	-0.03	-0.01	-0.02	-0.01	-0.02	-0.03	-0.02	

Note 1: The coefficient of variation statistics reported above are virtually meaningless since the measured activity for all survey units is at or near 0.00.
 Note 2: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 †Final Status Survey Report, Submittal Number 4, Building Complexes 3 & 6, ABB, December 2011

FSSR Submittal 5, Summary Statistics for Total U1													
Table 10 in Attachment B of the Site Closeout Report													
Statistic	Survey Unit (CE-FSS)												
	26-09	33-01	33-02	33-03	33-04	33-05	33-06	33-07	33-08	33-09	34-01	42-09	42-10
Number of Samples	14	17	29	17	29	17	18	17	30	30	30	29	18
Arithmetic Mean	3.35	2.08	28.99	15.45	22.33	9.48	6.33	5.19	13.34	25.89	13.15	2.33	4.12
Standard Deviation	1.72	2.93	31.06	17.86	24.59	9.79	14.28	4.73	17.85	59.94	16.44	1.25	4.57
Standard Error of the Mean	0.46	0.71	5.77	4.33	4.57	2.37	3.37	1.15	3.26	10.94	3.00	0.23	1.08
Coefficient of Variation	0.51	1.40	1.07	1.16	1.10	1.03	2.25	0.91	1.34	2.31	1.25	0.53	1.11
Geometric Mean	2.89	2.61	15.18	7.38	13.39	5.50	3.29	3.93	7.69	10.02	8.52	1.80	3.94
Maximum	5.70	9.90	102.60	53.90	105.40	30.70	62.90	19.70	93.10	317.90	77.50	4.40	16.70
Median	3.20	2.10	12.20	5.80	16.60	5.70	2.65	3.80	8.15	9.05	9.25	2.40	3.10
Minimum	1.00	-4.20	1.90	0.40	2.50	-2.90	-0.30	1.40	-0.10	-4.40	2.00	0.10	-2.40
Range	4.70	14.10	100.70	53.50	102.90	33.60	63.20	18.30	93.20	322.30	75.50	4.30	19.10
UCL95 (median)	5.10	2.60	34.70	20.70	21.50	17.30	3.90	4.90	14.20	15.10	10.90	3.10	5.90
LCL95 (median)	1.60	0.70	6.20	2.80	6.60	2.30	1.80	2.50	4.10	3.60	4.20	1.30	1.10

Note: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 †Final Status Survey Report, Submittal Number 5, Site Brook, Goodwin Pond, Debris Pile, and Industrial Waste Line Outfalls, ABB, March, 2012

FSSR Submittal 5, Summary Statistics for Co-601													
Table 11 in Attachment B of the Site Closeout Report													
Statistic	Survey Unit (CE-FSS)												
	26-09	33-01	33-02	33-03	33-04	33-05	33-06	33-07	33-08	33-09	34-01	42-09	42-10
Number of Samples	14	17	29	17	29	17	18	17	30	30	30	29	18
Arithmetic Mean	0.01	0.06	0.03	0.06	0.02	0.01	0.01	0.01	0.01	0.02	0.02	-0.01	0.00
Standard Deviation	0.04	0.12	0.04	0.06	0.06	0.05	0.05	0.04	0.04	0.05	0.06	0.05	0.05
Standard Error of the Mean	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Coefficient of Variation	6.99	1.90	1.48	0.90	2.90	4.24	3.37	4.57	4.40	2.74	2.44	-7.15	13.38
Geometric Mean	0.02	0.04	0.04	0.06	0.04	0.04	0.04	0.03	0.02	0.03	0.04	0.03	0.03
Maximum	0.05	0.51	0.14	0.15	0.16	0.10	0.08	0.08	0.07	0.13	0.12	0.08	0.09
Median	0.01	0.03	0.04	0.07	0.03	0.00	0.03	0.01	0.02	0.02	0.02	-0.02	0.00
Minimum	-0.08	-0.03	-0.07	-0.07	-0.14	-0.07	-0.07	-0.06	-0.06	-0.12	-0.13	-0.13	-0.09
Range	0.13	0.54	0.21	0.22	0.30	0.17	0.16	0.14	0.13	0.25	0.25	0.21	0.18
UCL95 (median)	0.04	0.08	0.05	0.09	0.04	0.04	0.05	0.05	0.03	0.03	0.06	0.03	0.06
LCL95 (median)	-0.04	0.00	0.00	0.02	-0.01	-0.01	-0.03	-0.03	-0.02	0.00	-0.01	-0.03	-0.05

Note 1: The coefficient of variation statistics reported above are virtually meaningless since the measured activity for all survey units is at or near 0.00.
 Note 2: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.
 †Final Status Survey Report, Submittal Number 5, Site Brook, Goodwin Pond, Debris Pile, and Industrial Waste Line Outfalls, ABB, March, 2012

Windsor, Connecticut, Site Certification Data Summary Worksheet

FSSR Submittal 6, Summary Statistics for Total U1

Table 12 in Attachment B of the Site Closeout Report

Statistic	Survey Unit (CE-FSS)								
	23-02	23-03	23-04	23-05	23-06	23-07	23-08	25-02	25-03
Number of Samples	17	29	17	17	29	17	14	17	14
Arithmetic Mean	2.98	2.78	3.49	2.49	4.11	3.03	2.10	1.67	1.96
Standard Deviation	1.22	1.05	0.67	0.72	1.91	1.20	1.25	1.83	1.01
Standard Error of the Mean	0.30	0.19	0.16	0.17	0.36	0.29	0.33	0.44	0.27
Coefficient of Variation	0.41	0.38	0.19	0.29	0.47	0.40	0.60	1.10	0.52
Geometric Mean	2.77	2.55	3.43	2.38	3.72	2.75	1.74	2.20	1.62
Maximum	6.50	4.70	4.60	3.70	8.40	6.30	4.30	3.50	4.00
Median	2.90	2.60	3.50	2.40	3.70	2.90	2.25	2.40	2.25
Minimum	1.20	0.50	2.50	1.10	1.80	0.50	-0.20	-2.20	0.30
Range	5.30	4.20	2.10	2.60	6.60	5.80	4.50	5.70	3.70
UCL95 (median)	3.50	3.20	3.90	3.00	4.80	3.60	2.70	3.20	2.50
LCL95 (median)	2.30	2.20	2.80	2.00	2.60	2.40	0.40	0.40	0.80

Note: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.

1Final Status Survey Report, Submittal Number 6, Equipment Storage Yard and Small Pond, ABB, April, 2012

FSSR Submittal 6, Summary Statistics for Co-601

Table 13 in Attachment B of the Site Closeout Report

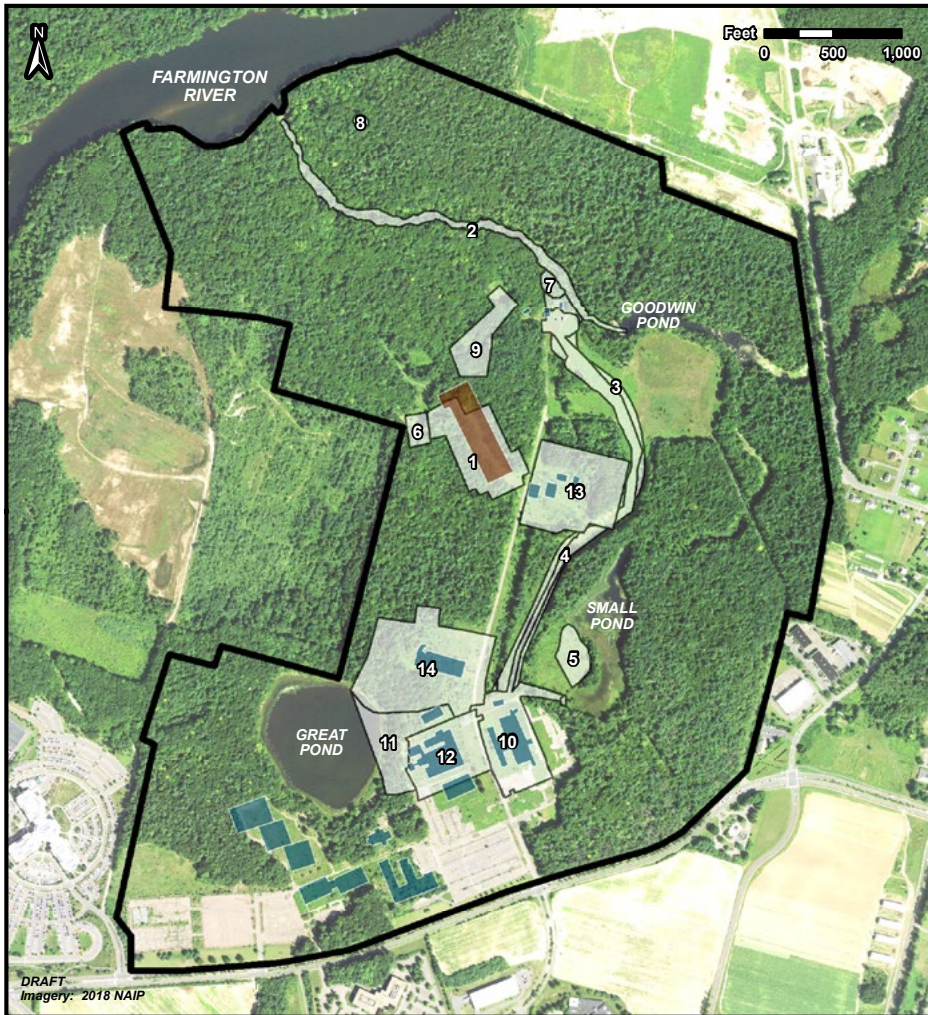
Statistic	Survey Unit (CE-FSS)								
	23-02	23-03	23-04	23-05	23-06	23-07	23-08	25-02	25-03
Number of Samples	17	29	17	17	29	17	14	17	14
Arithmetic Mean	0.00	0.00	0.02	0.00	-0.01	0.00	0.02	0.00	0.00
Standard Deviation	0.05	0.04	0.04	0.03	0.04	0.03	0.04	0.05	0.03
Standard Error of the Mean	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Coefficient of Variation	-11.09	-8.97	2.32	-8.43	-5.33	55.02	2.41	16.72	71.65
Geometric Mean	0.02	0.02	0.04	0.02	0.03	0.02	0.03	0.03	0.01
Maximum	0.08	0.07	0.08	0.06	0.07	0.05	0.07	0.11	0.06
Median	0.00	0.00	0.02	0.00	-0.01	0.00	0.02	0.01	0.00
Minimum	-0.13	-0.07	-0.05	-0.05	-0.09	-0.05	-0.04	-0.10	-0.05
Range	0.21	0.14	0.13	0.10	0.16	0.10	0.12	0.21	0.11
UCL95 (median)	0.02	0.14	0.04	0.02	0.02	0.03	0.05	0.03	0.01
LCL95 (median)	-0.03	-0.03	-0.01	-0.03	-0.03	-0.02	-0.03	-0.01	-0.01

Note 1: The coefficient of variation statistics reported above are virtually meaningless since the measured activity for all survey units is at or near 0.00.

Note 2: All statistics reported above with the exception of the Number of Samples, the Standard Error of the Mean, and the Coefficient of Variation are in units of pCi/g.

1Final Status Survey Report, Submittal Number 6, Equipment Storage Yard and Small Pond, ABB, April, 2012

Windsor, Connecticut, Site Map



U.S. DEPARTMENT OF ENERGY
OFFICE OF LEGACY MANAGEMENT

Work Performed by
Navarro Research & Engineering, Inc.
Under DOE Contract Number DE-LM0000421

Windsor, CT, Site

- Former Building Footprints
 - Waste Storage Pad Area
 - Combustion Engineering Site Features
 - 1 ... Woods Area*
 - 2 ... Site Brook*
 - 3 ... Pipelines
 - 4 ... Waste Lines* and WWTP Area
 - 5 ... Equipment Storage Yard*
 - 6 ... Drum Burial Pit*
 - 7 ... Debris Pile*
 - 8 ... Clamshell Pile*
 - 9 ... Burning Grounds
 - 10 ... Buildings 3 and 6* Areas
 - 11 ... Building 6A Complex
 - 12 ... Building 5 Complex
 - 13 ... Building 2 Complex
 - 14 ... Building 17 Complex
 - FUSRAP Site Boundary
- *Required remediation

DATE PREPARED: December 9, 2019

FILE NAME: WIN_Map

C:\Users\spinelm\Desktop\WIN\WIN_Map.mxd 12/9/2019 Source: Site Closeout Report for the Combustion Engineering Site, Windsor, CT (USACE); Site-Specific Transition Plan for the Windsor, Connecticut, FUSRAP Site