Aliquippa, Pennsylvania, Site

U.S. DEPARTMENT OF ENERGY | Legacy Management

SITE CERTIFICATION SUMMARY

This Site Certification Summary provides information about the **Aliquippa, Pennsylvania, 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 Aliquippa, Pennsylvania, Site (formerly the Aliquippa Forge Site) is located at 100 First Street along the Ohio River in West Aliquippa, Pennsylvania. The site covers 8 acres in a mixed industrial/residential area. In 1948 and 1949, Vulcan Crucible Steel Company operated a uranium-rolling process for the U.S. Atomic Energy Commission (AEC). Vulcan received uranium billets, formed them into rods, and boxed and shipped them to other facilities. Prior to remediation, the site contained 10 buildings, an office trailer, a metal shed, two water towers, a cooling tower, and a small water basin. As of publication of the Certification Docket, the Beaver County Corporation owns the facility.

Front of remediated building at the Aliquippa site (September 2005).

Site Remediation Timeline

1978 — Argonne National Laboratory conducted a radiological survey and identified radioactive contamination exceeding U.S. Department of Energy (DOE) guidelines in and around Building 3.

August 1983 — The site was designated for remediation under the Formerly Utilized Sites Remedial Action Program (FUSRAP).

December 1987 — Bechtel National Inc. (BNI) conducted a limited radiological characterization survey that revealed 14 areas of contamination in and around Building 3.

1988 — BNI conducted interim remedial activities to allow restricted use of the buildings by Aliquippa Forge, Inc.

May and June 1992 — The Oak Ridge Institute of Science and Education (ORISE) performed a radiological survey of Buildings 3 and 8 and outdoor area along the western side of Building 3.

July through October 1993 — ORISE performed additional site characterization.

September 1994 — All remedial action at the site was completed.

June 1995 — A hazard assessment for radioactive contamination at the site was published, which established supplemental limits for the roof panel joints, the area between the purlins and roof panels, and the concrete pedestals in Building 3.

October 30, 1996 — DOE published the notice of cleanup certification for the site in the Federal Register.

November 1996 — DOE published the Certification Docket for the remedial action performed at the Aliquippa site.

Certification Docket Contents

The Certification Docket documents the successful decontamination of radioactively contaminated areas inside Buildings 3 and 8 and an outdoor area along the western side of Building 3 at the Aliquippa Forge site. The docket consists of documents supporting DOE certification that conditions at the Aliquippa site are in compliance with current radiological guidelines and standards determined to be applicable to the property, and that future use of the property without radiological restrictions will not result in any significant radiological hazard to the general public as a result of the past activities of DOE or its predecessor agencies.

Remedial Action

Remedial activities at the Aliquippa, Pennsylvania, Site were performed from June 1993 through September 1994 as part of FUSRAP. See Fact Sheet for details.

FUSRAP objectives for the site were to:

- Identify and evaluate sites used to support former Manhattan Engineer District and AEC nuclear development activities.
- Remove or otherwise control contamination on sites identified as contaminated above current DOE guidelines.
- Achieve and maintain compliance with applicable criteria for the protection of human health and the environment.
- Certify the site for use without radiological restrictions after remediation.

Roof system where supplemental limits were applied at the Aliquippa site (September 2005).

Post-Remediation Sampling

As decontamination of various portions of the site was completed, post-remedial action surveys were performed to ensure that decontamination efforts were successful in meeting DOE cleanup criteria. Survey techniques used during the post-remediation surveys included direct (nontransferable and transferable) surface contamination measurements, walkover gamma scans, exposure-rate measurements, and soil sampling.

Building 3

Analytical results of post-remedial action surveys indicated that the levels of radioactivity in the remediated areas (except for the west bay area roof panels and three concrete pedestals) are in compliance with applicable DOE cleanup guidelines for residual radioactive contamination. A hazard assessment justified the establishment of supplemental limits for the roof panel joints, the area between the roof panels and purlins containing contaminated dust and debris, and the three concrete support pedestals in Building 3. The exposure risk to workers and members of the public was very low relative to the high cost of performing remedial action.

Following confirmation that remediation was complete, no residual contamination above DOE guidelines was detected in any area of Building 3, except for the material evaluated and discussed in the hazard assessment. Although some direct beta/gamma results for individual isolated areas were above the average guideline of 5,000 disintegrations per minute (dpm)/100 square centimeters (cm^2), they were below DOE guidelines when averaged with the other measurements over the surrounding 1 m^2 area, as directed by DOE's verification and certification protocol. All direct beta/gamma results were below the maximum DOE guideline of 15,000 dpm/100 cm^2.

Building 8

Post-remedial activities included measuring direct and transferable contamination on remediated surfaces in Building 8, including in the tool room, the mezzanine, and the brick floor room. Measurements detected no residual contamination above DOE guidelines in any of the areas remediated.

Exterior Areas

Walkover surface scans and analysis of soil samples from outside of Building 3 indicate that the exterior areas met established DOE cleanup criteria.

For more detailed results of the post-remediation sampling, see the Site Certification Data Summary Worksheet on pages 4-5. For a detailed map of the site and sampling locations, see the Site Overview Map on page 6.

In October 1997, the responsibility to remediate contaminated sites under FUSRAP transferred from the DOE to the U.S. Army Corps of Engineers. Because the remedial activities at the Aliquippa site took place before October 1997, residual contamination guidelines from DOE Order 5400.5, *Radiation Protection of the Public and the Environment* Chg 2, were met.

Current Site Conditions

DOE reviewed all surveys to determine whether the remedial action was successful. Based on this review, DOE determined radiological conditions to be in compliance with DOE decontamination criteria and standards to protect health, safety, and the environment. DOE certified the site as being appropriate for future use without radiological restrictions. DOE has been responsible for long-term stewardship of the Aliquippa site since 1997. 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/aliquippa-pennsylvania-site).

ADDITIONAL INFORMATION

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

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

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Aliquippa, Pennsylvania, Site Certification Data Summary Worksheet

Four tables referenced in the Aliquippa Certification Docket provide the evidence used to certify the site as clean.

When the tables refer to the "Post-Remedial Action Report," that is the "Post-Remedial Action Report for the Aliquippa Forge Site, Aliquippa, Pennsylvania" (dated May 1996).

Exterior Excavation Post-Remedial Action Gamma Radiation Exposure Rates

Table 4-1 in the Post-Remedial Action Report

Coordinates		
East	North	Exposure Rate (µR/h)[a]
-3.0	35.0	9.0
-8.0	35.0	8.8
-3.0	30.0	9.1
-8.0	30.0	8.7
-3.0	25.0	9.4
-5.0	25.0	9.2
-8.0	25.0	9.6
-3.0	20.0	9.3
-8.0	20.0	9.1

[a]Results are indistinguishable from background (approximately 10.1 µR/h)

Results from Soil Samples Collected from Elevated Reading Locations

Table 4-4 in the Post-Remedial Action Report

	Coordinates			
Location Number	East	North	Grid Location	Concentration[a] [pCi/g ± (sigma)²] Uranium-238
1	8.0	0	1A	12.90 ± 2.60
2	3.0	8.3	1A	9.00 ± 0.39
3	2.8	4.0	1A	9.10 ± 0.14
4	11.3	4.8	1B	3.90 ± 1.50
5	10.5	9.3	1B	10.20 ± 0.03
6	14.5	2.3	1B	13.70 ± 1.50
7	3.5	18.0	2A	13.50 ± 0.57
8	6.5	19.0	2A	4.00 ± 0.38
9	6.0	16.5	2A	30.40 ± 4.00
10	6.0	12.5	2A	13.90 ± 0.03
11	0.8	19.0	2A	26.50 ± 1.70
12	3.0	14.0	2A	36.60 ± 1.70
13	2.0	11.0	2A	11.80 ± 0.63
14	10.0	10.5	2B	13.90 ± 1.30
15	12.0	14.0	2B	31.40 ± 1.60
16	10.5	15.5	2B	20.80 ± 2.10
17	11.5	19.5	2B	16.50 ± 1.50
18	14.5	18.3	2B	8.40 ± 1.20
19	0.5	29.5	3A	29.20 ± 2.80
20	4.5	26.0	3A	14.70 ± 1.90
21	1.7	21.0	3A	21.30 ± 3.10
22	7.5	25.0	3A	5.10 ± 0.77
23	9.5	20.5	3A	7.10 ± 1.60
24	10.0	20.5	3B	36.50 ± 3.10
25	15.5	23.5	3B	28.80 ± 2.20
26	14.8	25.8	3B	15.80 ± 2.00
27	4.0	33.5	4A	25.30 ± 1.10
28	7.0	34.5	4A	5.60 ± 0.56
29	9.0	37.0	4A	29.30 ± 1.10
30	10.8	32.0	4B	33.20 ± 6.70
31	12.0	35.5	4B	18.50 ± 0.61
32	14.0	37.0	4B	14.40 ± 0.90
33	11.0	39.0	4B	12.70 ± 3.20
34	2.3	43.0	5A	2.80 ± 0.71
35	3.0	40.0	5A	30.60 ± 0.70
36	6.0	49.0	5A	33.50 ± 1.20
37	3.5	48.0	5A	21.00 ± 3.60
38	11.0	44.3	5B	35.00 ± 0.83
39	10.5	45.3	5B	25.10 ± 3.00
Guideline (above background)				50

[a]Results include background, 1.4 pCi/g.

Soil Composite Verification Samples

Table 4-2 in the Post-Remedial Action Report

	Concentration (pCi/g ± 2 sigma)[a]		
Sample Location	Uranium-238	Radium-226	Thorium-232
Mica pit in Building 3	2.70 ± 1.90	1.10 ± 0.08	1.30 ± 0.13
Western exterior of Building 3	12.30 ± 3.20	-	0.61 ± 0.15
Western exterior of Building 3	7.60 ± 3.70	-	0.60 ± 0.14
Brick floor room	< 2.80	-	1.00 ± 0.48
Grid 1A - Building 3	< 2.70	< 0.84	0.68 ± 0.40
Grid 1B - Building 3	6.10 ± 1.90	0.93 ± 0.09	0.72 ± 0.36
Grid 2A - Building 3	13.40 ± 3.30	0.88 ± 0.27	1.30 ± 0.10
Grid 2B - Building 3	9.90 ± 2.00	0.90 ± 0.23	1.10 ± 0.01
Grid 3A - Building 3	< 7.40	1.70 ± 0.29	1.10 ± 0.34
Grid 3B - Building 3	12.00 ± 3.20	1.20 ± 0.83	0.92 ± 0.61
Grid 4A - Building 3	< 7.60	0.88 ± 0.18	1.90 ± 2.10
Grid 4B - Building 3	< 6.80	0.73 ± 0.12	1.40 ± 0.98
Grid 5A - Building 3	12.60 ± 7.70	0.76 ± 0.10	1.00 ± 0.87
Grid 6A - Building 3	11.51 ± 1.15	0.95 ± 0.26	< 0.85
Surface guideline (above background)[b]	50	5	5
Subsurface guideline (above background)[c]	50	15	15

[a]Results include background.

[b]First 15 cm (6 in.) of soil below the surface.

[c]Any 15-cm- (6-in.-) thick soil layer below the surface layer.

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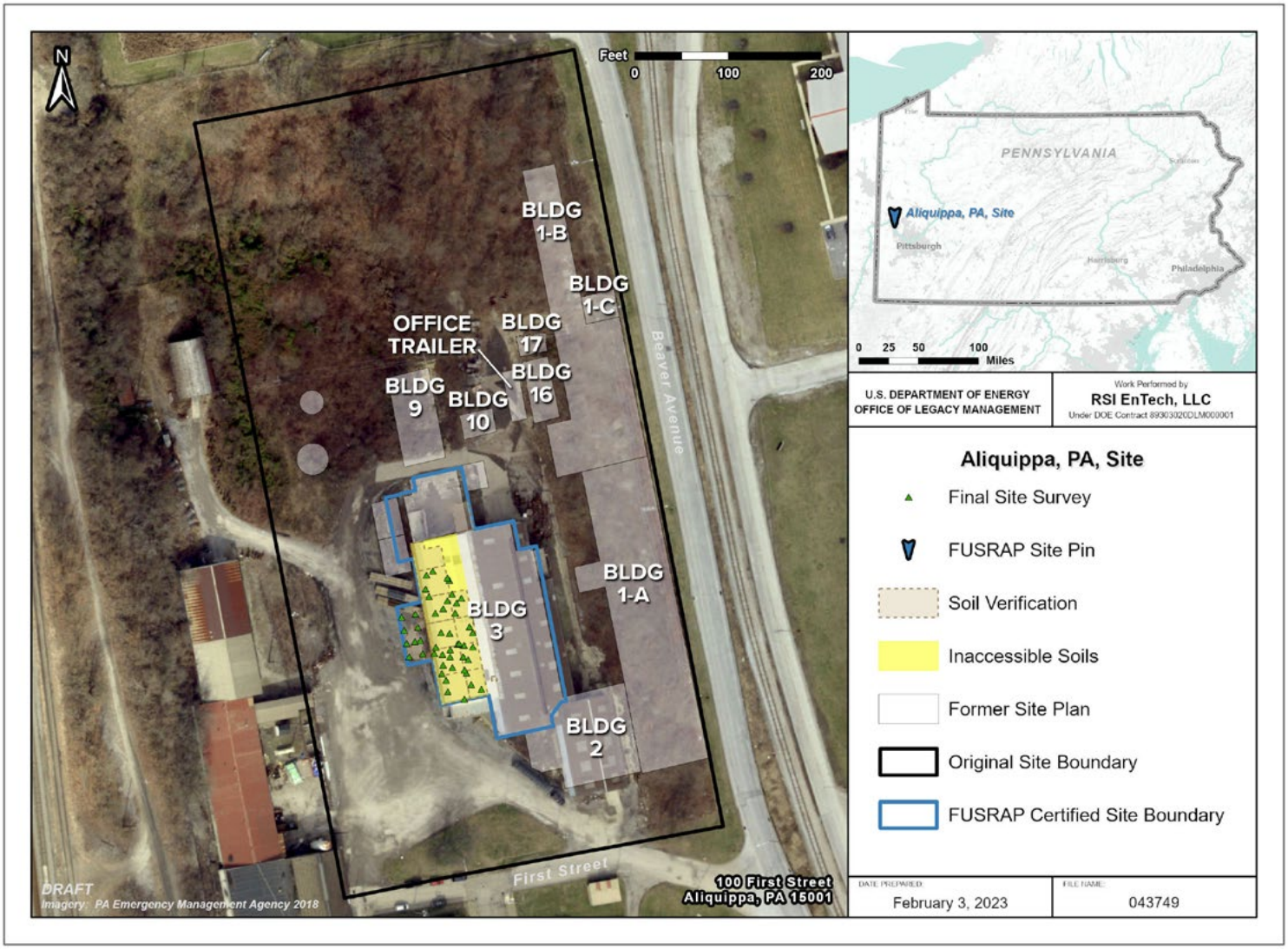
Aliquippa, Pennsylvania, Site Certification Data Summary Worksheet

Summary of Post-Remedial Action Radiological Survey Results for the Aliquippa Forge Site									
Table 4-3 in the Post-Remedial Action Report									
		Direct Surface Contamination				Transferable Contamination			
		Alpha		Beta/Gamma[a]		Alpha		Beta/Gamma	
Location	Area	Sample Activity Range[b] (dpm/100 cm²)	Number of Measurements	Sample Activity Range[b] (dpm/100 cm²)	Number of Measurements	Sample Activity Range[b] (dpm/100 cm²)	Number of Measurements	Sample Activity Range[b] (dpm/100 cm²)	Number of Measurements
Bldg 3									
	Superstructure	26 - 387	102	B - 3,893	102	B - 18	46	B - 81	46
	Truss #1	B - 211	95	B - 1,210	95	B - 9	95	B - 69	95
	Truss #2	B - 122	95	B - 2,712	95	B - 15	3	10 - 49	3
	Truss #3	B - 290	95	B - 2,219	95	B - 9	8	B - 34	8
	Truss #4	B - 1,086	95	B - 5,090	95	B - 76.3	89	B - 171.8	89
	Truss #5	B - 1,157	95	B - 4,833	95	2 - 31	16	B - 88	16
	Truss #6	B - 3,415	95	B - 10,964	95	B - 131	58	B - 175	58
	Truss #7	27 - 510	44	B - 1,783	44	B - 9	7	B - 32	7
	Truss #8	23 - 516	44	B - 5,348	44	2 - 33	26	16 - 150	26
	Truss #9	2 - 1,255	44	B - 10,054	44	B - 86	23	B - 258	23
	Truss #10	64 - 1,019	44	52 - 5,199	44	B - 55	35	B - 283	35
	Truss #11	B - 1,015	95	B - 13,001	95	B - 71	32	B - 125	32
	Truss #12	B - 1,586	58	B - 3,631	58	B - 15	14	B - 62	14
	Truss #13	B - 1,604	58	B - 952	58	8	1	3	1
	Truss #14	11 - 483	14	B - 599	14	-	-	-	-
	Purlins between trusses								
	1 & 2	B - 112	109	B - 1,254	109	B	1	4	1
	2 & 3	B - 169	109	B - 1,362	109	B	2	B	2
	3 & 4	B - 885	109	9 - 5,385	109	B - 39.4	105	B - 135.1	105
	4 & 5	B - 434	109	B - 8,588	109	B - 43	20	B - 88	20
	5 & 6	B - 1,019	82	B - 4,938	82	B - 18	31	B - 78	31
	6 & 7	6 - 653	82	B - 4,020	82	B - 15	8	B - 45	8
	7 & 8	B - 1,311	82	B - 5,430	82	B - 18	28	B - 63	28
	8 & 9	B - 2,231	82	B - 7,779	82	2 - 69	56	B - 235	56
	9 & 10	B - 2,570	82	B - 6,810	82	B - 35	66	B - 201	66
	10 & 11	B - 949	82	30 - 5,027	82	B - 43	57	B - 193	57
	11 & 12	B - 345	82	B - 2,931	82	2 - 42	45	B - 150	45
	12 & 13	B - 1,549	81	B - 6,191	81	B - 18	5	B - 68	5
	13 & 14	B - 882	81	B - 881	81	-	-	-	-
	West Wall								
	Bay #1	B - 79	18	B - 730	18	-	-	-	-
	Bay #2	B - 123	18	B - 730	18	-	-	-	-
	Bay #3	B - 105	18	B - 691	18	-	-	-	-
	Bay #4	B - 180	18	B - 1,229	18	6	1	B	1
	Bay #5	-	-	877 - 8,362	10	-	-	-	-
	Bay #6	B - 91	18	B - 1,690	18	6	1	B	1
	Bay #7	B - 234	18	B - 2,803	18	9 - 14	2	26 - 36	2
	Bay #8	B - 127	18	B - 2,151	18	3 - 12	2	B - 26	2
	Bay #9	2 - 145	18	B - 2,803	18	1 - 20	4	B - 97	4
	Bay #10	B - 91	18	B - 1,536	18	B	1	B	1
	Bay #11	B - 109	18	B - 1,920	18	9	1	22	1
	West Cutter Pit Equipment	B - 450	63	B - 1,753	63	5 - 8	3	9 - 47	3
	East Bay Floor	B - 403	2,357	B - 4,636	2,357	B - 23	641	B - 84	641
Bldg 8									
	South Wall	B - 106	41	B - 2,059	41	B - 11	7	1 - 96	7
	Floor	B - 189	29	B - 880	29	-	-	-	-
	West Generator Pit	B - 148	61	B - 3,207	61	B - 27	24	B - 139	24
	East Generator Pit	B - 179	62	B - 3,864	62	2 - 14	10	B - 120	10
	West Generator Wheel	B - 93	12	671 - 2,722	12	2 - 15	10	-	-
	East Generator Wheel	B - 35	12	B - 1,514	12	5 - 8	2	43 - 81	2
	Basement	B - 91	15	152 - 2,034	15	B - 5	9	B - 61	9
	Tool Room	B - 150	99	B - 3,140	99	B - 11	26	B - 90	26
	Mezzanine Floor	6 - 135	111	B - 931	111	-	-	-	-
	Brick Floor Room Walls & Overheads	B - 296	53	B - 2,685	53	B - 17	18	B - 90	18

[a]Although some individual beta/gamma measurements exceeded the average direct surface contamination criterion of 5000 dpm/100 cm², none exceeded the criterion when averaged over a 1-m² (10.75-ft²) area.

[b]A "B" indicates that the result was equal to or less than the instrument background. (Typical instrument backgrounds: 30 and 500 dpm/100 cm² for direct alpha and beta/gamma, respectively; and 5 and 55 dpm/100 cm² for the transferable alpha and beta/gamma, respectively).

Aliquippa, Pennsylvania, Site Map



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