Albany, Oregon, Site

U.S. DEPARTMENT OF ENERGY | Legacy Management

SITE CERTIFICATION SUMMARY

This Site Certification Summary provides information about the **Albany, Oregon, 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 Albany, Oregon, Site (formerly the Albany Research Center Site) is located at 1450 Queen Avenue SW, about 23 miles south of Salem, Oregon. The site consists of three main areas: the Albany Research Center (ARC), which comprises a number of buildings in the northern and central sections of the site; a 2-acre inactive biomass research facility that occupies the center of the site; and a 14-acre open area in the back of the site known as the "Back Forty." ARC was established in 1943 to investigate innovative approaches for developing strategic mineral resources in the United States, reducing costs for metallurgical manufacturing processes, developing materials to fight corrosion, and conducting other activities relevant to metallurgical research. ARC staff conducted various operations involving radioactive materials. From 1948 to 1956, the Bureau of Mines conducted work for the U.S. Atomic Energy Commission (AEC), which involved melting, machining, welding, and alloying thorium. ARC staff also performed additional work with uranium and thorium for the Energy Research and Development Administration, a predecessor agency of U.S. Department of Energy (DOE).

Radiological survey support work at the Albany, Oregon, Site, December 31, 1991 (DOE Digital Archive).

Site Remediation Timeline

June and July 1978 — A radiological assessment recommended decontaminating ARC property.

February and March 1984 — A radiological survey determined the actual levels of radioactive contamination in each area identified in 1978 and defined the locations and boundaries of above-guideline contamination.

June 1985 — After evaluating remedial action alternatives, DOE transported contaminated materials to the DOE Hanford disposal facility.

July 1987 through January 1988 — DOE conducted Phase I remedial action.

February 1988 — Collection of post-remedial action data was completed. Subsequent surveys identified additional areas of radioactive contamination exceeding guidelines.

August 1990 through April 1991 — Phase II remedial action was conducted.

February 23, 1993 — DOE published a notice of site cleanup certification in the Federal Register.

Certification Docket Contents

The Certification Docket documents the successful decontamination of radioactively contaminated areas remediated at ARC in 1987, 1988, 1990, and 1991. The docket consists of documents supporting DOE certification that conditions at the subject property are in compliance with radiological guidelines and standards determined to apply to the property. In addition, the certification docket provides documents certifying that the use of the property will not result in any measurable radiological hazard to the general public.

Remedial Action

As part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), DOE performed remedial activities at the Albany site from July 1987 to January 1988 (Phase I) and from

August 1990 to April 1991 (Phase II). See the Fact Sheet for details.

FUSRAP objectives for the site were to:

- Identify and assess all sites formerly utilized to support early Manhattan Engineer District/AEC nuclear work to determine whether further decontamination and/or control is needed.
- Decontaminate and/or apply controls to the sites, where needed, to permit conformance with current and applicable guidelines.
- Dispose of and/or stabilize all generated residues in an environmentally acceptable manner.
- Accomplish all work in accordance with appropriate landowner agreements and local and state environmental and land use requirements to the extent permitted by federal law and applicable DOE orders, regulations, standards, policies, and procedures.
- Certify, at the completion of the remedial action, that the radiological conditions of the sites comply with guidelines and that the sites are appropriate for future use.

Post-Remediation Sampling

Remedial Action — Phase I

During Phase I of remediation, DOE performed remedial action at 31 distinct ground areas and in portions of 11 buildings. Analytical results from walkover scans, soil samples, direct contact beta-gamma measurements, and removable alpha measurements taken after remediation indicated that no contamination in excess of DOE remedial action guidelines remained in the surveyed areas.

Areas in Buildings 17, 23, and 30, where post-remedial action samples were not taken, are adjacent to sections known to be contaminated and in need of future remediation. DOE identified a number of additional contaminated interior sections, not addressed by the 1987-1988 remedial action, requiring further remediation before meeting remedial action guidelines.

Remedial Action — Phase II

During Phase II of remediation, DOE removed radioactive contamination from five exterior areas and from portions of 15 buildings. DOE performed walkover gamma radiation scans, collected soil samples, and measured radiation exposure rate at exterior locations while also collecting direct and removable alpha- and beta-gamma measurements at interior locations. Analytical results from these radiological surveys indicated that the levels of residual radioactivity are in compliance with applicable DOE cleanup guidelines for radioactive contamination. During the remedial action work, DOE identified a few areas in Buildings 23 and 30 as being extremely difficult and expensive to clean up but also representing little or no risk to human health and the environment. DOE performed a hazard assessment to justify any remaining residual contamination above the DOE cleanup guidelines remaining after remedial action was completed, assuring stakeholders that this contamination would not pose a significant risk. DOE used conservative techniques to calculate the annual dose currently received by a hypothetical worker in Building 23 or Building 30 and to calculate the potential inhalation dose to a worker involved in future building demolition. The results of these calculations showed that potential present or future exposure to residual radioactive contamination in the buildings would be well below 100 millirem per year, which is the DOE standard for protection of the general public.

For more detailed results of the post-remediation sampling, see the Site Certification Data Summary Worksheet on pages 3-5. For a detailed map of the site and sampling locations, see the Site Overview Map on page 6.

Current Site Conditions

All remediated areas at the Albany site meet DOE guidelines or supplemental standards. The site conforms to all applicable radiological guidelines established for release of the property. DOE has been responsible for long-term stewardship of the Albany site since 1993. The stewardship requirements and protocols are captured in the FUSRAP Long-Term Surveillance and Maintenance Plan, which can be found on the DOE Office of Legacy Management (LM) website (www.energy.gov/lm/albany-oregon-site).

ADDITIONAL INFORMATION

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

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

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Albany, Oregon, Site Certification Data Summary Worksheet

Seven tables referenced in the Albany Certification Docket provide the evidence used to certify the site as clean.

When the tables refer to the "PRAR," that is the "Post-Remedial Action Report for the Albany Research Center, Albany, Oregon" (dated April 1989).

When the tables refer to the "PRARII," that is the "Post-Remedial Action Report for Phase II Work Conducted During 1990-1991 at the Albany Research Center, Albany, Oregon" (dated May 1992).

Radiological Survey Results for Buildings at the Albany Research Center[a]

Table 4-3 in PRAR

Location	Direct Readings: Alpha Activity (dpm/100 cm2) Average	Alpha Activity Maximum	Alpha Activity Minimum	Alpha Activity Number of Samples	Beta-Gamma Dose Rate[b] (mrad/h) Average	Beta-Gamma Dose Rate Maximum	Beta-Gamma Dose Rate Minimum	Beta-Gamma Dose Rate Number of Samples	Removable Alpha Activity (dpm/100 cm2) Average	Removable Alpha Activity Maximum	Removable Alpha Activity Minimum	Removable Alpha Activity Number of Samples
Building 4												
Room 107 (Owl Room)												
Floor	42	120	<40	293	0.01	0.03	<0.01	293	2	4	<2	291
East Wall	<50	<50	<50	60	0.01	0.01	<0.01	60	2	4	<2	60
West Wall	50	70	<50	59	0.01	0.02	<0.01	59	2	9	<2	60
North Wall	45	50	<40	45	<0.01	<0.01	<0.01	45	2	7	<2	45
South Wall	42	70	<40	45	<0.02	<0.02	<0.02	45	2	2	<2	45
Rafters	60	250	<40	40	0.01	0.02	<0.01	40	2	6	<2	40
Room 108												
Floor	50	100	<50	46	0.01	0.02	<0.01	46	2	3	<2	46
East Wall	<70	<70	<70	21	<0.02	<0.02	<0.02	21	2	2	<2	20
West Wall	<50	<50	<50	21	<0.01	<0.01	<0.01	21	3	11	<2	21
North Wall	<50	<50	<50	21	<0.02	<0.02	<0.02	21	2	3	<2	21
South Wall	<40	<40	<40	21	<0.01	<0.01	<0.01	21	2	3	<2	21
Room 109 (Bathroom)												
Floor	41	70	<40	45	0.02	0.02	<0.02	45	2	4	<2	44
East Wall	<50	<50	<50	17	<0.01	<0.01	<0.01	17	2	2	<2	21
West Wall	<40	<40	<40	19	<0.01	<0.01	<0.01	19	<2	<2	<2	19
North Wall	<50	<50	<50	24	<0.02	<0.02	<0.02	24	2	2	<2	24
South Wall	<50	<50	<50	24	<0.01	<0.01	<0.01	24	2	3	<2	24
Divider (Facing East)	<40	<40	<40	18	<0.01	<0.01	<0.01	18	<2	<2	<2	15
Divider (Facing West)	<50	<50	<50	15	<0.01	<0.01	<0.01	15	2	2	<2	15
Room 206												
Floor	<50	<50	<50	54	<0.01	<0.01	<0.01	54	2	6	<2	36
East Wall	<50	<50	<50	15	<0.01	<0.01	<0.01	15	2	2	<2	15
West Wall	52	70	<50	18	<0.01	<0.01	<0.01	18	<2	<2	<2	18
North Wall	<50	<50	<50	24	<0.01	<0.01	<0.01	24	2	2	<2	24
South Wall	<50	<50	<50	27	<0.01	<0.01	<0.01	27	2	3	<2	27
Building 5												
Machine Shop												
Floor	80	280	<70	315	0.02	0.03	<0.02	315	7	23	<5	315
South Wall	31	40	<30	53	0.01	0.02	<0.01	53	<5	<5	<5	53
South Wall Windows	54	220	<40	230	0.01	0.03	<0.01	230	3	13	<2	230
South Wall Windows Lower Channel	100	440	<40	65	<0.02	<0.02	<0.02	65	3	12	<2	78
South Wall Square Conduit Bottom of Windows	67	210	<30	48	<0.02	<0.02	<0.02	48	6	7	<6	19
2-in Conduit 2 m North of South Wall	120	610	<40	60	0.02	0.03	<0.02	60	4	16	<2	60
South Wall Top Window Channel	93	980	<30	90	0.02	0.02	<0.02	90	3	12	<2	90
Truss #2												
Top Beam	120	420	<30	22	<0.02	<0.02	<0.02	22	4	13	<2	22
Bottom Beam	130	580	<30	35	0.02	0.02	<0.02	35	3	17	<2	35
Diagonal Supports	73	230	<30	31	0.02	0.02	<0.02	31	2	4	<2	30
Lower Brace	41	110	<30	7	<0.02	<0.02	<0.02	7	4	9	<2	7
Truss #3												
Top Beam	77	130	<50	7	<0.02	<0.02	<0.02	7	6	11	<2	7
Bottom Beam	69	310	<50	30	0.02	0.02	<0.02	30	3	9	<2	30
Cross Member	<50	<50	<50	7	<0.02	<0.02	<0.02	7	3	4	<2	7
Light Fixture #2 Light Bank West of Truss #3	<50	<50	<50	6	<0.02	<0.02	<0.02	6	2	3	<2	7
Big Conduit West of Truss #3	55	130	<50	20	<0.02	<0.02	<0.02	20	2	2	<2	20
#1 Stringer	53	260	<40	40	0.02	0.02	<0.02	40	3	14	<2	40
#1 Roof Support Beam	36	70	<30	45	0.02	0.02	<0.02	45	3	12	<2	45
Building 19												
Laboratory Hood	130	600	<50	7	<0.02	<0.02	<0.02	7	6	14	<4	7
Building 27												
Room 102												
Floor	70	90	<70	87	0.02	0.03	<0.01	87	8	<11	<5	89
East Wall	<60	<60	<60	33	0.02	0.03	<0.02	33	5	6	<5	33
West Wall	70	80	<70	33	0.01	0.02	<0.01	33	<7	<7	<7	32
North Wall	71	90	<70	24	0.01	0.01	<0.01	24	<7	<7	<7	24
South Wall	73	120	<70	24	0.01	0.03	<0.01	24	6	<7	<5	24
Building 28												
Corridor	<40	<40	<40	8	<0.02	<0.02	<0.02	8	<4	<4	<4	8
Building 29												
Room 109												
Sink Drain	<20	<20	<20	3	<0.02	<0.02	<0.02	3	<4	<4	<4	2
Room 111												
Northeast Wall/Floor Interface Around Drain	51	60	<50	18	0.01	0.02	<0.01	18	4	6	<4	18
Building 30												
Fabrication Room												
1st E. Mezzanine	70	140	<40	60	<0.02	<0.02	<0.02	60	7	17	<5	60
2nd E. Mezzanine	60	320	<40	54	<0.02	<0.02	<0.02	54	7	14	<5	54
3rd E. Mezzanine	70	570	<40	50	0.02	0.03	<0.02	50	8	29	<6	50
Ductwork												
1st Mezzanine Southernmost	<40	<40	<40	5	<0.02	<0.02	<0.02	5	<4	<4	<4	5
1st Mezzanine Northernmost	<40	<40	<40	5	<0.02	<0.02	<0.02	5	<4	<4	<4	5
2nd Mezzanine	<40	<40	<40	5	<0.02	<0.02	<0.02	5	<4	<4	<4	5
3rd Mezzanine Southernmost	<40	<40	<40	5	<0.02	<0.02	<0.02	5	4	5	<4	5
3rd Mezzanine Northernmost	<40	<40	<40	5	<0.02	<0.02	<0.02	5	<4	<4	<4	5
HEPA Filters												
1st Mezzanine	95	260	<40	4	<0.02	<0.02	<0.02	4	<4	<4	<4	4
2nd Mezzanine	75	90	<40	5	<0.02	<0.02	<0.02	5	7	13	<4	5
3rd Mezzanine	46	60	<40	5	<0.02	<0.02	<0.02	5	5	8	<4	5
4th Mezzanine	62	150	<40	5	<0.02	<0.02	<0.02	5	8	26	<4	5
5th Mezzanine	43	50	<40	4	<0.02	<0.02	<0.02	4	5	9	<4	4
6th Mezzanine	<40	<40	<40	4	<0.02	<0.02	<0.02	4	7	12	<4	4
Building 31												
Room 1												
Floor	60	420	<30	225	0.02	0.03	<0.01	225	2	20	<2	225
East Wall	70	70	<70	50	<0.02	<0.02	<0.02	50	<2	<2	<2	50
West Wall	72	90	<70	42	0.02	0.02	<0.02	42	2	2	<2	45
North Wall	73	120	<70	40	0.02	0.03	<0.02	40	2	3	<2	40
South Wall	70	70	<70	45	<0.02	<0.02	<0.02	45	<2	<2	<2	45
Room 14												
Floor	61	350	<20	90	0.02	0.02	<0.02	90	4	8	<3	87
East Wall	87	400	<50	38	0.02	0.03	<0.02	38	<6	<6	<6	44
West Wall	68	270	<50	27	0.02	0.02	<0.02	27	<4	<4	<4	27
North Wall	63	280	<50	70	0.02	0.02	<0.02	70	4	<4	<4	79
South Wall	64	180	<50	38	<0.02	<0.02	<0.02	38	<5	<5	<5	40
Room 15												
Floor	76	320	<60	135	0.02	0.03	<0.02	135	<2	<2	<2	135
East Wall	78	120	<70	27	0.02	0.02	<0.01	27	2	4	<2	27
West Wall	85	200	<70	27	0.01	0.03	<0.01	27	2	6	<2	27
North Wall	120	440	<70	45	0.01	0.03	<0.01	45	2	7	<2	45
South Wall	84	331	<70	39	0.01	0.02	<0.01	39	2	2	<2	39
Mezzanine Stringers	76	220	<50	59	<0.02	<0.02	<0.02	59	3	9	<2	59
Heater Pipes	61	130	<50	118	<0.02	<0.02	<0.02	118	2	3	<2	118

[a]Background has been subtracted.

[b]The beta-gamma dose was calculated by subtracting background from the gross counts per minutes of the Geiger-Mueller counter and then dividing by the conversion factor (x mrad/h/cpm) for the device. To convert the beta-gamma dose rate in the table to beta-gamma activity, multiply the dose rate by the conversion factor for the devices used at the ARC, which ranged from a low of 1,438 cpm/mrad/h to a high of 1,818 cpm/mrad/h. Then, multiply this number by the area factor for the probe and the efficiency of the device, which ranged from a low of (38 dpm/100 cm2)/cpm to a high of (46 dpm/100 cm2)/cpm. An example case would be (0.03 mrad/h x 1,764 cpm/mrad/h) x (41 dpm/100 cm2)/cpm = 2,100 dpm/100 cm2. All beta-gamma data were evaluated using specific instrument response factors and the equivalent activity levels were determined to satisfy the remedial action criteria.

Post-Remedial Action Results for Soil at the Albany Research Center

Table 4-1 in PRAR

Grid Location	Concentration (pCi/g +/- 2 sigma)[a,b] Uranium-238	Radium-226	Thorium-232	Grid Location	Concentration (pCi/g +/- 2 sigma)[a,b] Uranium-238	Radium-226	Thorium-232
E 55 N 145	<9.0	3.3 ± 0.9	<2.0	E 215 N 225	<4.0	1.6 ± 0.4	3.1 ± 0.7
E 55 N 155	<7.0	1.4 ± 0.7	2.0 ± 1.0	E 215 N 225	<4.0	1.5 ± 0.4	2.3 ± 0.6
E 65 N 145	<8.0	1.0 ± 0.7	1.2 ± 0.8	E 215 N 410	<9.0	1.0 ± 0.7	2.0 ± 1.0
E 65 N 155	<11.0	2.4 ± 0.8	<2.0	E 224 N 387	<3.0	1.1 ± 0.3	1.4 ± 0.5
E 69 N 303	<7.0	0.6 ± 0.5	1.6 ± 0.8	E 225 N 175	6.0 ± 2.0	0.7 ± 0.2	0.9 ± 0.3
E 71 N 302	<3.0	0.8 ± 0.3	1.4 ± 0.5	E 225 N 185	<3.0	1.0 ± 0.3	2.1 ± 0.5
E 85 N 324	<6.0	1.4 ± 0.7	2.0 ± 1.0	E 225 N 195	<4.0	2.7 ± 0.5	1.8 ± 0.6
E 86 N 286	<9.0	0.9 ± 0.7	<2.0	E 225 N 205	<5.0	1.1 ± 0.3	1.4 ± 0.5
E 90 N 295	<7.0	1.0 ± 0.5	2.0 ± 1.0	E 225 N 225	<3.0	1.0 ± 0.3	2.0 ± 0.5
E 95 N 295	<8.0	1.1 ± 0.7	2.0 ± 1.0	E 229 N 357	<8.0	1.2 ± 0.7	1.0 ± 1.0
E 95 N 325	<9.0	1.3 ± 0.6	2.0 ± 1.0	E 235 N 175	<6.0	0.8 ± 0.3	1.6 ± 0.5
E 97 N 336	<10.0	1.5 ± 0.7	2.0 ± 1.0	E 235 N 185	<5.0	0.5 ± 0.2	0.9 ± 0.4
E 102 N 325	<8.0	0.8 ± 0.6	2.0 ± 1.0	E 235 N 195	<3.0	0.9 ± 0.3	2.0 ± 0.5
E 103 N 299	<9.0	1.7 ± 0.7	2.0 ± 1.0	E 235 N 205	<2.0	1.5 ± 0.4	2.3 ± 0.6
E 105 N 285	<3.0	0.9 ± 0.3	1.2 ± 0.5	E 235 N 215	<7.0	1.4 ± 0.4	2.7 ± 0.7
E 105 N 317	<9.0	1.2 ± 0.8	2.0 ± 1.0	E 235 N 225	<4.0	1.6 ± 0.5	2.7 ± 0.7
E 107 N 321	<10.0	1.1 ± 0.5	2.0 ± 1.0	E 235 N 357	<8.0	1.9 ± 0.7	2.0 ± 1.0
E 115 N 286	<8.0	1.3 ± 0.6	2.0 ± 1.0	E 235 N 362	<7.0	2.1 ± 0.9	1.0 ± 1.0
E 117 N 428	<9.0	0.7 ± 0.7	2.0 ± 1.0	E 239 N 435	<3.0	0.9 ± 0.3	1.0 ± 0.5
E 117 N 445	<11.0	1.1 ± 0.6	5.0 ± 2.0	E 239 N 498	<4.0	0.6 ± 0.2	0.5 ± 0.3
E 117 N 451	<10.0	1.4 ± 0.9	<2.0	E 239 N 502	<3.0	0.6 ± 0.3	2.6 ± 0.5
E 118 N 437	<8.0	0.9 ± 0.6	4.0 ± 2.0	E 242 N 362	<7.0	0.8 ± 0.6	3.0 ± 1.0
E 121 N 442	<8.0	1.0 ± 0.6	3.0 ± 1.0	E 243 N 357	<7.0	1.0 ± 0.7	1.4 ± 0.8
E 122 N 439	<9.0	1.4 ± 0.8	3.0 ± 2.0	E 243 N 495	<4.0	0.6 ± 0.2	1.0 ± 0.4
E 124 N 292	<9.0	0.7 ± 0.7	2.0 ± 1.0	E 245 N 427	<5.0	0.6 ± 0.3	1.3 ± 0.4
E 125 N 279	<5.0	0.7 ± 0.6	2.0 ± 1.0	E 245 N 435	<5.0	0.6 ± 0.3	0.8 ± 0.4
E 125 N 285	<3.0	0.9 ± 0.3	1.5 ± 0.4	E 245 N 485	<4.0	0.7 ± 0.2	1.0 ± 0.4
E 125 N 319	<8.0	1.1 ± 0.8	<1.0	E 245 N 505	<4.0	0.9 ± 0.2	4.1 ± 0.6
E 125 N 325	<4.0	1.1 ± 0.8	<1.0	E 245 N 511	<8.0	0.5 ± 0.3	6.0 ± 1.0
E 132 N 325	<4.0	2.1 ± 0.8	<1.0	E 247 N 463	<4.0	0.9 ± 0.2	0.5 ± 0.3
E 136 N 396	<7.0	1.0 ± 0.6	2.0 ± 1.0	E 249 N 445	<5.0	0.6 ± 0.2	0.9 ± 0.4
E 145 N 397	<9.0	0.9 ± 0.7	2.0 ± 1.0	E 249 N 455	<5.0	0.7 ± 0.3	0.8 ± 0.4
E 146 N 371	<8.0	0.7 ± 0.6	2.0 ± 1.0	E 251 N 463	<5.0	1.3 ± 0.3	2.2 ± 0.5
E 147 N 369	<7.0	0.8 ± 0.6	1.0 ± 1.0	E 253 N 294	<6.0	1.5 ± 0.6	2.0 ± 1.0
E 155 N 369	<7.0	<1.0	<1.0	E 255 N 427	<4.0	0.7 ± 0.2	1.1 ± 0.4
E 155 N 371	<7.0	1.0 ± 0.6	<1.0	E 255 N 435	<5.0	0.8 ± 0.3	1.1 ± 0.4
E 155 N 397	<7.0	1.3 ± 0.5	2.0 ± 1.0	E 255 N 445	<3.0	0.6 ± 0.2	1.6 ± 0.4
E 162 N 397	<8.0	0.7 ± 0.5	3.0 ± 2.0	E 255 N 455	<4.0	0.4 ± 0.2	0.7 ± 0.4
E 163 N 377	<7.0	1.1 ± 0.6	1.0 ± 1.0	E 255 N 465	<3.0	0.6 ± 0.3	1.3 ± 0.4
E 164 N 385	<9.0	1.9 ± 0.8	2.0 ± 1.0	E 257 N 349	<8.0	1.2 ± 0.6	<1.0
E 164 N 391	<7.0	0.5 ± 0.5	1.3 ± 0.9	E 257 N 355	<9.0	1.1 ± 0.5	3.0 ± 1.0
E 165 N 369	<9.0	1.2 ± 0.6	3.0 ± 1.0	E 259 N 305	<6.0	1.3 ± 0.7	3.0 ± 1.0
E 165 N 441	<5.0	0.7 ± 0.2	1.2 ± 0.4	E 261 N 355	<6.0	1.4 ± 0.7	4.0 ± 1.0
E 175 N 443	<3.0	0.9 ± 0.3	1.4 ± 0.5	E 261 N 435	<7.0	1.2 ± 0.3	5.0 ± 1.0
E 179 N 219	<10.0	1.4 ± 0.8	3.0 ± 2.0	E 261 N 445	<2.0	0.6 ± 0.2	0.8 ± 0.4
E 179 N 225	<7.0	2.2 ± 0.8	<2.0	E 261 N 455	<5.0	0.6 ± 0.3	0.7 ± 0.4
E 184 N 246	<3.0	0.6 ± 0.3	1.0 ± 0.5	E 262 N 307	<8.0	1.0 ± 0.5	1.0 ± 1.0
E 185 N 195	<5.0	0.5 ± 0.2	0.8 ± 0.4	E 262 N 338	<6.0	1.0 ± 0.6	3.0 ± 1.0
E 185 N 205	<4.0	0.7 ± 0.2	1.2 ± 0.4	E 262 N 345	<7.0	1.4 ± 0.7	2.0 ± 1.0
E 185 N 215	<3.0	1.0 ± 0.3	0.9 ± 0.4	E 265 N 429	<5.0	0.9 ± 0.2	1.1 ± 0.4
E 185 N 225	<4.0	1.7 ± 0.4	1.7 ± 0.5	E 265 N 515	<3.0	0.8 ± 0.2	2.3 ± 0.6
E 185 N 256	<3.0	0.7 ± 0.3	1.7 ± 0.5	E 275 N 395	<3.0	0.6 ± 0.3	0.9 ± 0.3
E 185 N 265	<3.0	0.7 ± 0.3	1.0 ± 0.4	E 275 N 515	<3.0	0.5 ± 0.2	3.1 ± 0.6
E 185 N 275	<3.0	0.5 ± 0.3	0.9 ± 0.5	E 275 N 535	<5.0	0.4 ± 0.2	0.9 ± 0.4
E 195 N 185	<4.0	0.5 ± 0.2	0.6 ± 0.3	E 285 N 525	<4.0	0.5 ± 0.2	0.7 ± 0.4
E 195 N 185	<4.0	0.5 ± 0.2	0.6 ± 0.3	E 285 N 535	<4.0	0.4 ± 0.2	0.7 ± 0.3
E 195 N 195	<3.0	0.8 ± 0.3	2.8 ± 0.6	Bldg 31 Room 1C	<2.0	0.8 ± 0.2	1.2 ± 0.4
E 195 N 205	<6.0	1.1 ± 0.3	2.5 ± 0.6	Bldg 31 Room 1C	<5.0	0.7 ± 0.2	0.9 ± 0.3
E 195 N 215	<3.0	1.1 ± 0.3	3.2 ± 0.6	Bldg 31 Room 1C	<2.0	0.6 ± 0.2	0.8 ± 0.4
E 195 N 225	<5.0	0.7 ± 0.6	3.0 ± 1.0	Bldg 31 Room 1C	<3.0	0.7 ± 0.2	1.5 ± 0.4
E 197 N 259	<3.0	1.0 ± 0.3	1.3 ± 0.5	Bldg 31 Room 1C	<4.0	0.8 ± 0.3	2.8 ± 0.6
E 198 N 249	<3.0	0.9 ± 0.3	1.6 ± 0.5	Bldg 31 Room 1C	<3.0	0.6 ± 0.2	0.6 ± 0.4
E 198 N 265	<3.0	0.7 ± 0.3	1.1 ± 0.4	Bldg 31 Room 1C	<2.0	0.9 ± 0.3	0.9 ± 0.4
E 198 N 275	<3.0	0.5 ± 0.3	1.2 ± 0.5	Bldg 31 Room 1C	<4.0	1.0 ± 0.3	1.6 ± 0.6
E 198 N 281	<3.0	0.6 ± 0.3	1.0 ± 0.5	Bldg 31 Room 1C	<3.0	0.7 ± 0.3	1.1 ± 0.5
E 201 N 249	<4.0	1.0 ± 0.3	1.3 ± 0.5	Bldg 31 Room 1C	<2.0	0.6 ± 0.2	0.7 ± 0.3
E 201 N 266	<2.0	0.8 ± 0.3	0.9 ± 0.4	Bldg 31 Room 1C	<6.0	0.6 ± 0.2	0.9 ± 0.4
E 201 N 275	<4.0	0.9 ± 0.3	1.8 ± 0.6	Bldg 31 Room 1C	<2.0	0.5 ± 0.2	1.1 ± 0.4
E 205 N 175	<6.0	0.7 ± 0.3	0.8 ± 0.4	Bldg 31 Room 1C	<2.0	0.7 ± 0.2	0.7 ± 0.3
E 205 N 185	<5.0	0.6 ± 0.2	0.4 ± 0.3	Bldg 31 Room 1C	<2.0	0.8 ± 0.2	1.3 ± 0.4
E 205 N 195	<5.0	0.8 ± 0.3	0.9 ± 0.4	Bldg 31 Room 1C	<3.0	0.6 ± 0.2	0.9 ± 0.3
E 205 N 205	<4.0	1.0 ± 0.4	2.6 ± 0.6	Bldg 31 Room 14	<6.0	1.0 ± 0.2	1.7 ± 0.4
E 211 N 301	<6.0	1.2 ± 0.6	2.0 ± 1.0	Bldg 31 Room 14	<6.0	0.7 ± 0.2	3.0 ± 1.0
E 212 N 255	<3.0	1.6 ± 0.3	1.2 ± 0.4	Bldg 27 Crawlspaced	<3.0	1.5 ± 0.4	2.3 ± 0.5
E 213 N 307	<6.0	0.7 ± 0.6	0.8 ± 0.7	Bldg 4 N-S Trench	<4.0	1.5 ± 0.4	1.4 ± 0.6
E 213 N 475	<4.0	0.7 ± 0.3	1.5 ± 0.5	Bldg 4 E-W Trench	<5.0	1.4 ± 0.6	1.0 ± 0.8
E 215 N 175	<6.0	0.6 ± 0.2	0.7 ± 0.3				
E 215 N 185	<5.0	1.1 ± 0.3	1.1 ± 0.5				
E 215 N 195	<3.0	1.7 ± 0.4	1.6 ± 0.6				
E 215 N 205	<4.0	1.3 ± 0.4	2.4 ± 0.6				
E 215 N 215	<4.0	1.2 ± 0.3	2.8 ± 0.5				

[a]Samples taken from bottom of excavation.

[b]Sample concentrations include background.

[c]Samples taken from soil that had surrounded the contaminated drain lines in Room 1, Building 31, to determine whether all contamination was contained within the drain lines.

[d]Sample taken from soil in the crawlspace beneath Building 27.

–continued to page 4–

–continued from page 3–

Albany, Oregon, Site Certification Data Summary Worksheet

Gamma Radiation Dose Rate Measurements for the Albany Research Center

Table 4-2 in PRAR

Grid Coordinates		Dose Rate[a] (mrem/yr)	Grid Coordinates		Dose Rate[a] (mrem/yr)
East	North		East	North	
70	303	0	206	225	0
71	302	10	212	301	0
85	324	6	213	307	0
86	286	6	213	475	0
90	295	1	215	179	14
95	325	6	215	185	6
96	295	0	216	195	0
97	336	8	216	205	0
103	325	5	216	215	0
104	299	0	216	225	0
105	285	0	216	410	0
105	317	0	224	386	0
108	321	0	225	179	9
115	286	0	225	185	0
116	451	0	225	226	0
117	428	0	226	195	0
117	445	0	226	205	0
118	437	0	226	215	0
122	440	0	229	356	0
124	292	0	235	179	6
125	285	0	235	185	0
125	325	0	235	216	0
126	279	0	235	362	7
126	319	0	236	195	0
132	325	0	236	205	0
136	396	13	236	225	0
146	397	13	236	357	0
148	369	9	238	498	10
148	371	8	238	502	1
156	369	8	239	435	9
156	371	9	241	500	6
156	397	15	242	362	16
161	397	0	243	493	0
164	377	8	244	357	7
164	385	13	244	507	0
164	391	8	245	427	15
166	369	14	245	435	8
167	441	0	245	481	0
176	443	0	245	511	0
180	225	0	248	463	6
183	276	0	250	444	18
184	246	0	250	455	15
185	205	0	253	294	0
185	215	0	255	427	26
185	256	0	256	435	16
186	197	0	256	445	16
186	225	0	256	455	15
188	262	1	256	465	0
190	271	0	257	349	17
195	195	0	257	355	16
195	205	0	259	305	0
195	215	0	261	444	15
196	225	0	262	307	7
197	184	0	262	338	13
198	257	0	262	345	22
198	265	0	262	355	15
198	275	0	262	435	18
198	282	0	265	513	14
202	255	0	266	429	14
205	179	5	273	513	11
205	185	1	274	395	26
206	195	0	278	538	9
206	205	0	282	528	2
206	215	0	282	535	13

[a]Background has been subtracted.

PIC Measurements in Buildings Following Remedial Action

Table 4-4 in PRARII

Building No.	Room/Area	Location within Room/Area	Exposure Ratea (µR/h)
1	306	N side	10.5
	119	Center	10.2
3	101	Center of SW corner	8.2
	101	Center of NE corner	9.1
	102	S side	6.7
	102	N side	7.1
	103	S side	7.8
	103	N side	8.1
4	103	Center of trench	7.8
	105	E trench	8.8
	105	W trench	7.2
	106	Center	9.2
	206	S wall	9.3
5	Machine Shop	E end	8.1
		Center	7.8
		Metal storage room	8.4
		Plumbing shop	8.3
		S of plumbing shop	8.8
17	10-A	NW corner	8.8
	Open storage	S trench W end	9.0
		S trench E end	7.8
		N trench W end	8.1
		N trench E end	7.9
	10	W end	8.3
		N center	8.1
		S center	8.8
		E end	8.1
	2nd floor	NW corner	9.0
		SW corner	8.8
	Attic	W end	6.9
		Center	7.1
	Storage room	W center	13.8
23	Crusher room	N side	10.1
		S side	10.2
		Above N	9.9
	Storage 2	W wall	8.7
		Basement tunnel	9.8
		W side	9.2
		Center	8.7
		NE	9.2
23	Basement tunnel	SE side	10.2
		Elevator shaft	10.1
	Lab 1	NW corner	11.4
		N center	10.6
		NE corner	11.7
		SW corner	8.5
		SE corner	9.3
		E center	8.8
		Thorium room	9.4
24	103	N center	8.0
		S center	8.2
	104	S center	7.4
		NW corner	8.9
	106	NE corner by sink	6.7
		Center	7.9
		South wall by panel	7.6
		SE corner	7.1
		NW corner	7.7
		SW corner	7.1
25	South end	Center	5.7
		SW corner	6.5
		NW corner	5.8
		N end center	6.2
	1st floor	NW corner	8.6
	smelter room	SW corner	10.4
		SE center	7.1
		NE center	7.2
26	103	Center of W side	8.9
28	Basement	N4 E8	9.4
		N10 E8	9.7
		N4 E16	8.6
		N10 E16	9.1
		N4 E24	8.4
		N10 E24	8.9
		N4 E32	8.2
		N10 E32	8.9
		N4 E40	9.2
		N10 E40	8.5
	Attic	Center	8.2
	15	S center	8.5
		N side	8.4
	Lab 3	Hallway	7.6
		Center	7.9
29	113	Center	7.8
	106	Center	7.9
	109	Center	8.2
	111	Center	8.9
30	Fabrication	SW corner	8.8
		NW corner	8.1
		SE corner	8.1
		NE corner	8.0
	Machine shop	Next to Baldwin press	7.8
31	3	Center	10.5
	2	Center	8.8
	Attic	S end	7.3
		N end	7.0
33	104	Next to remediated area	9.9
	103	Next to remediated area	10.0
34		Next to pedestal	12.6

[a]Exposure rate includes a background value of 11.4 µR/h.

–continued to page 5–

–continued from page 4–

Albany, Oregon, Site Certification Data Summary Worksheet

Analytical Results for Soil Following Remedial Action

Table 4-1 in PRARII

Area	Depth (ft)	Concentration[a] (pCi/g ± 2σ)		
		Uranium-238	Radium-226	Thorium-232
Area 1	0 - 0.5	<7.3	0.6	3.0
	0 - 1	<9.1	0.7	6.1
Area 2	0 - 6	1.5	0.6	3.6
	2	1.6	0.5	2.1
	2	2.1	0.5	1.3
	0 - 3	7.6	0.7	0.7
	0 - 3	3.4	0.7	3.3
	1	1.3	0.7	2.7
	0	<4.8	0.5	0.4
	0 - 6	4.8	0.7	4.7
Area 3	2	3.1	1.4	4.0
	2.5	1.0	0.7	2.1
	0.5 - 1	12	1.0	9.3
Area 4	0 - 0.5	6.8	2.7	4.1
Area 5	0 - 0.5	1.6	0.3	2.2

[a]Results include background values of 0.8 pCi/g for radium-226, 1.0 pCi/g for thorium-232, and 1.6 pCi/g for total uranium (0.8 pCi/g for uranium-238).

PIC Measurements in Exterior Areas Following Remedial Action

Table 4-2 in PRARII

Measurement Location	Exposure Rate[a] (µR/h)
Area 1	
N 20 E 80	9.2
N 05 E 100	8.6
Area 2	
N 24 E 5	9.2
N 70 E 5	10.2
N 55 E 7	9.9
E 07 N 24	12.4
E 11 N 24	9.9
E 19 N 24	10.2
Area 3	
N 13 W 23	8.7
Center of excavation	10.6
Area 4	7.5
Area 5	8.8

[a]Exposure rates include a background value of 11.4 µR/h.

Post-Remedial Action Surface Activity Measurements

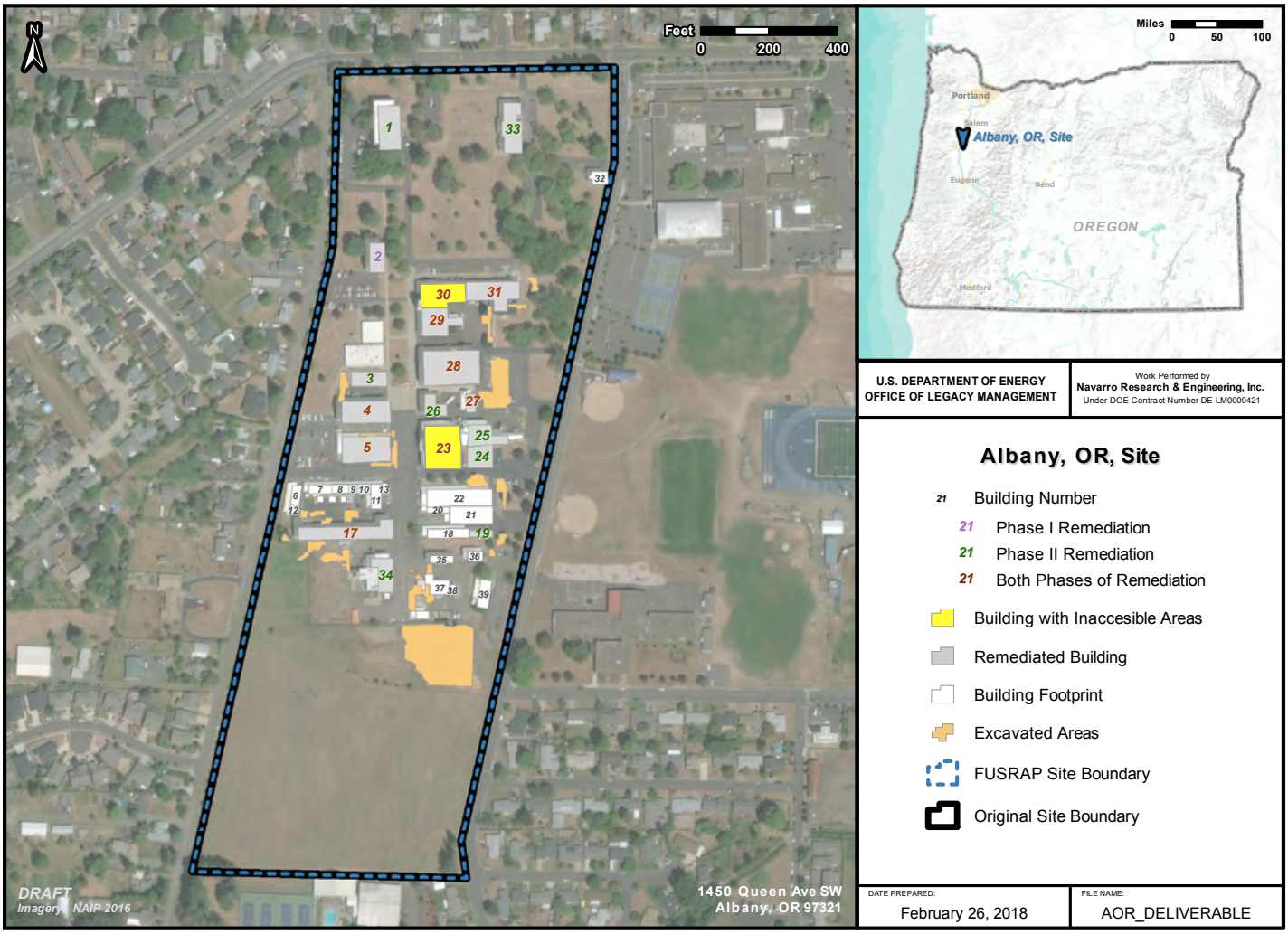
Table 4-3 in PRARII

Location	Fixed			Removable		
	Average	Minimum	Maximum[a]	Average	Minimum	Maximum[a]
Alpha (dpm/100cm²)						
Lime Pit	71	12	520	4	2	10
Building 3	34	24	49	5	3	11
Building 4	84	13	429	6	3	16
Building 5	43	9	458	4	2	22
Building 17	162	14	1519	7	2	68
Building 23	43	11	688	4	2	27
Building 24	51	25	279	4	2	16
Building 25	47	25	136	4	3	16
Building 26	40	16	146	5	3	10
Building 27	31	18	109	c	c	c
Building 28	47	9	542	4	2	13
Building 30	38	9	847	5	2	30
Building 31	108	18	1069	6	2	36
Beta/Gamma (dpm/100 cm²)						
Lime Pit	916	529	2562	74	63	129
Building 3	784	475	1013	66	63	106
Building 4	651	429	1299	74	61	126
Building 5	630	437	2642	74	59	132
Building 17	805	370	5650	75	57	148
Building 23	629	388	2378	74	59	163
Building 24	607	406	1096	74	59	128
Building 25	626	381	1826	69	61	129
Building 26	549	406	1188	73	62	132
Building 27	765	405	6029	b	b	b
Building 28	631	408	4647	74	58	137
Building 30	548	385	3505	76	58	137
Building 31	666	406	2232	75	60	134

[a]The guideline for maximum allowable residual surface contamination is three times the average guideline.

[b]Removable activity was not measured in Building 27.

Albany, Oregon, Site Map



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back to top