

Table 2. Potential Release Sites

IHSS Group	Old Operable Unit No.	Current Operable Unit	Description	IHSS/PAC/UBC Site	Area (ft ²)	Historical Notes
	OU 8	IA	Solvent Spills West of Building 730	700-118.1	246	Carbon tetrachloride overflows and line leaks
	OU 14	IA	Radioactive Site 700 Area No.1	700-131	7,072	Fire and explosion resulting in soil contamination
	OU 8	IA	Radioactive Site West of Buildings 771/776	700-150.2(S)	27,113	Airborne and tracked contamination from fire, cleanup, and rain
	OU 8	IA	Radioactive Site South of Building 776	700-150.7	18,589	Airborne and tracked contamination from fire, cleanup, and rain
	N/A	IA	French Drain North of Buildings 776/777	700-1100	1,567	Possible pathway for contamination from explosion and fire
	OU 9	IA	Tank 9 – Two 22,500-Gallon Concrete Laundry Tanks			Potential leaks and overflows
	OU 9	IA	Tank 10 – Two 4,500-Gallon Process Waste Tanks			Potential leaks and overflows
	OU 9	IA	Tank 18 – OPWL – Concrete Laundry Waste Lift Sump	000-121		Potential leaks and overflows
	OU 8	IA	Solvent Spills North of Building 707	700-118.2	633	Tank leaks and rupture
	OU 8	IA	Sewer Line Overflow	700-144(N)	1,710	Pressurized sewer line breaks and overflows
	OU 8	IA	Sewer Line Overflow	700-144(S)	2,330	Pressurized sewer line breaks and overflows
	N/A	IA	Transformer Leak South of Building 776	700-1116	356	Dielectric fluid leak to pad, gravel, and soil
	OU 8	IA	Radioactive Site Northwest of Building 750	700-150.4	394	Leaks and backups of stored decontamination fluid
700-4	N/A	IA	UBC 771 – Plutonium and Americium Recovery Operations	UBC 771	97,553	Fire, sewer line breaks, process waste line leaks
	N/A	IA	UBC 774 – Liquid Process Waste Treatment	UBC 774	15,776	Tank overflows, drain breaks
	OU 8	IA	Radioactive Site West of Buildings 771/776	700-150.2(N)	27,113	Fire, explosion, tank overflows
	OU 8	IA	Radioactive Site 700 North of Building 774 (Area 3) Wash Area	700-163.1	18,613	Contaminated equipment wash area
	OU 8	IA	Radioactive Site 700 Area 3 Americium Slab	700-163.2	2,270	Buried contaminated Americium slab 8'x8'x10"
	OU 9	IA	Abandoned Sump Near Building 774 Unit 55.13 T-40	700-215	960	Mixed waste storage tank
	OU 8	IA	Hydroxide Tank, KOH, NaOH Condensate	700-139(N)(b)	342	Overflows/spills from aboveground KOH/NaOH tanks
	OU 9	IA	30,000-Gallon Tank (68)	700-124.1	1,133	Overflows/leaks from tank
	OU 9	IA	14,000-Gallon Tank (66)	700-124.2		Overflows/leaks from tank
	OU 9	IA	14,000-Gallon Tank (67)	700-124.3		Overflows/leaks from tank
	OU 9	IA	Holding Tank	700-125		Tank overflows
	OU 9	IA	Westernmost Out-of-Service Process Waste Tank	700-126.1	383	Below-grade leaks/overflows
	OU 9	IA	Easternmost Out-of-Service Process Waste Tank	700-126.2	370	Below-grade leaks/overflows
	OU 9	IA	Tank 8 – OPWL – East and West Process Tanks	000-121		Potential leaks and overflows
	OU 9	IA	Tank 12 – OPWL – Two Abandoned 20,000-Gallon Underground Concrete Tanks	000-121		Potential leaks and overflows

Table 2. Potential Release Sites

IHSS Group	Old Operable Unit No.	Current Operable Unit	Description	IHSS/PAC/UBC Site	Area (ft ²)	Historical Notes
	OU 9	IA	Tank 12 – OPWL – Two Abandoned 20,000-Gallon Underground Concrete Tanks	000-121		Potential leaks and overflows
	OU 9	IA	Tank 28 – Two 1,000-Gallon Concrete Sumps	000-121		Potential leaks and overflows
	OU 9	IA	Tank 40 – Two 400-Gallon Underground Concrete Tanks	000-121		Potential leaks and overflows
900-1	N/A	IA	UBC 991 – Weapons Assembly and R&D	UBC 991	59,849	Potential line leaks/valve vault breaches and overflows
	OU 8	IA	Radioactive Site Building 991	900-173	5,970	Small spills and equipment wash area
	OU 8	IA	Radioactive Site 991 Steam Cleaning Area	900-184	4,125	Equipment cleaning area
	N/A	IA	Building 991 Enclosed Area	900-1301	3,939	Possible leaks from waste containers/material storage
	N/A	IA	PAC 900-1307, Explosive Bonding Pit	900-1307		Soil beneath and around building slab and pit
900-2	OU 2	BZ	Oil Burn Pit No. 2	900-153	6,403	Oil contaminated with uranium was burned in two parallel trenches
	OU 2	BZ	Pallet Burn Site	900-154	3,152	Wooden pallet burn area
900-3	OU 10	IA	904 Pad, Pondcrete Storage	900-213	127,334	Spillage and rainwater runoff of stored pondcrete/salterete
900-4&5	OU 10	IA	S&W Building 980 Contractor Storage Facility	900-175	5,819	Leaks and spills from drum storage
	N/A	IA	Gasoline Spill Outside Building 980	900-1308	356	Gas overflow during filling
900-11	OU 2	BZ	903 Pad	900-112	146,727	Leaks and spills from drum storage
	OU 2	BZ	Hazardous Disposal Area	900-140	65,498	Reactive metal destruction and disposal site
	OU 2	BZ	East Firing Range	SE-1602	465,173	Dispersal of lead and depleted uranium from routine weapons firing
NE/NW	OU 10	BZ	Property Utilization and Disposal (PU&D) Yard – Drum Storage	174a	4,342	Leaks and spills from RCRA drum storage
	N/A	BZ	OU 2 Treatment Facility	NE-1407	356	Leaks and spills from process operations
	N/A	BZ	Trench T-12 Located at OU 2 East Trenches	NE-1412	7,449	Disposal of sanitary waste sludge and flattened drums

*Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Draft
Modification 2*

IHSS Group	Old Operable Unit No.	Current Operable Unit	Description	IHSS/PAC/UBC Site	Area (ft²)	Historical Notes
	N/A	BZ	Trench T-13 Located at OU 2 East Trenches	NE-1413	5,090	Disposal of sanitary waste sludge and flattened drums
	N/A	BZ	North Firing Range	NW-1505	117,748	Currently in use
NE-1	OU 6		Pond A-1	142.1	39,294	Received wastewater effluent from the IA spill control
	OU 5		Pond C-2	142.11	168,524	Received discharge from the South Interceptor Ditch (SID)
	OU 6		Pond A-2	142.2	61,373	Received wastewater effluent from the IA spill control
	OU 6		Pond A-3	142.3	122,909	Received wastewater effluent from the IA
	OU 6		Pond A-4	142.4	254,102	Received wastewater effluent from the IA
	OU 6		Pond A-5	142.12	12,256	Received wastewater effluent from the IA
	OU 6		Pond B-1	142.5	11,396	Flow-through retention pond, received treated sanitary effluent and process waste
	OU 6		Pond B-2	142.6	33,761	Flow-through retention pond, received treated sanitary effluent and process waste
	OU 6		Pond B-3	142.7	18,422	Flow-through retention pond, received treated sanitary wastewater effluent discharge
	OU 6		Pond B-4	142.8	11,731	Flow-through retention pond, received treated sanitary effluent and process waste
	OU 6		Pond B-5	142.9	129,515	Flow-through retention pond, received treated sanitary effluent and process waste
	OU 5		Pond C-1	142.1	39,294	Retention and monitoring pond, received sanitary sewage discharge and runoff from the 903 Pad Area
NE-2	OU 2	BZ	Trench T-7	111.4	15,565	Disposal of sanitary waste sludge
SW-1	OU 5		Ash Pit 1	133.1	13,960	Disposal of combustible waste ash and noncombustible trash
	OU 5		Ash Pit 2	133.2	26,624	Disposal of combustible waste ash and noncombustible trash
	OU 5		Ash Pit 4	133.4	10,749	Disposal of combustible waste ash and noncombustible trash
	OU 5		Concrete Wash Pad	133.6	35,274	Deposition of potentially contaminated ash
	N/A	BZ	Recently identified ash pit (also referred to as TDEM-2)	SW-1702	5,588	Disposal of combustible waste ash, depleted uranium and metallic debris
	OU 2	BZ	Ryan's Pit (Trench 2)	109	261	Disposal of VOCs and drum carcasses

Table 3. Applicable or Relevant and Appropriate Requirements

Requirement	Citation	Compliance Strategy	Excavate	Stabilize or Treat
- Emission Monitoring and Test Procedures	61.93	Radionuclide emission measurements will be made at all release points that have a potential to discharge radionuclides into the air that could cause an effective dose equivalent (EDE) to the most impacted member of the public in excess of 1 percent of the standard (0.1 mrem/yr).	X	X
- Compliance and Reporting	61.96	Site personnel perform radionuclide air emission assessments on all new and modified sources. Appropriate notifications are submitted for sources with calculated controlled emissions that exceed 0.1 mrem/yr EDE.	X	X
Clean Water Act (CWA), Colorado Basic Standards and Methodologies for Surface Water	40 CFR 131, 138 5 CCR 1002-31	Surface water quality will be monitored in accordance with RFCA Attachment 5 requirements.	X	X
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•				
•				
National Pollutant Discharge Elimination System (NPDES) Regulations	40 CFR 122, 125	Compliance with current Site Storm Water Management Plan will constitute field compliance with FWPCA.	X	X
• Best Management Practices (BMP) Program	.104			
Endangered Species Act (ESA)	50 CFR 402	Identify and minimize early in the planning stage of an action any potential conflicts between the action and federally listed species.	X	

Requirement	Citation	Compliance Strategy	Excavate	Stabilize or Treat
<p>Migratory Bird Treaty</p>	<p>50 CFR 10</p>	<p>Prevent or minimize contact with listed birds and nests. Consult with the responsible RFETS ecologist.</p>	<p>X</p>	
<p>Solid Waste Disposal Act (RCRA) Colorado Hazardous Waste Act (CHWA) Solid Waste Disposal Sites and Facilities</p> <ul style="list-style-type: none"> • Definitions 	<p>6 CCR 1007-2 Section 1.2</p>	<p>Soil generated during remediation will be characterized. Contaminated soil will then be placed in containers for offsite disposition. If contaminated soil is not immediately shipped to a waste disposal facility, waste will be managed onsite in accordance with substantive requirements.</p>	<p>X</p>	
<p>Identification and Listing of Hazardous Waste</p>	<p>6 CCR 1007-3, Part 261</p>	<p>All remediation waste will be characterized to determine a hazardous waste classification.</p>	<p>X</p>	<p>X</p>
<p>Generator Standards</p> <ul style="list-style-type: none"> • Hazardous Waste Determinations • Hazardous Waste Accumulation Areas 	<p>6 CCR 1007-3 Part 262 262.11 262.34(a) (i)(ii)(iv) excluding A&B); (a)(4); (c)(1)</p>	<p>Waste characteristics will be determined. Waste will be staged onsite in appropriate storage facilities.</p>	<p>X</p>	
<p>Contingency Plan and Emergency Procedures</p> <ul style="list-style-type: none"> • Purpose and Implementation • Emergency Coordinator • Emergency Procedures 	<p>6 CCR 1007-3 Part 264, Subpart D .51 (b) .55 .56 (a-i)</p>	<p>Emergencies such as fire, explosion, or release of hazardous waste will be mitigated immediately. A designated employee will be responsible for coordinating emergency response actions.</p>	<p>X</p>	<p>X</p>
<p>Manifest System, Record Keeping, and Reporting</p> <ul style="list-style-type: none"> • Operating Record • Record Keeping 	<p>6 CCR 1007-3, Part 264, Subpart E 264.73 264.74</p>	<p>Use of WEMS and compliance with RFETS disposal procedures will constitute compliance.</p>	<p>X</p>	<p>X</p>

health and the environment. The Notification will identify treatment, if any, chosen for each IHSS Group.

Routine remediation of soil and buried debris will consist of excavation and offsite disposal, with offsite treatment as required to meet regulatory and receiver site requirements. Soil remediation through excavation was successful at Trench 1 (DOE 1999c), Trenches 3 and 4 (DOE 1996a), Ryan's Pit (DOE 1997a), and the Mound Site (DOE 1997b) at RFETS.

Engineering and administrative controls will be implemented prior to and during excavation and treatment activities to control the spread of radiological and hazardous contaminants in accordance with job-specific work controls (Sections 6.2 and 9.0). Remediation activities will meet the substantive requirements of ARARs.

6.5.1 Excavation, Offsite Treatment, and Disposal

The remediation process for soil and associated debris is shown on Figure 14. Soil and associated debris with contaminant concentrations greater than RFCA soil ALs or as indicated by the Subsurface Soil Risk Screen will be excavated and disposed of offsite, with offsite treatment as necessary to meet regulatory or receiver site requirements. Soil and debris will be excavated with heavy machinery, including backhoes, front-end loaders, excavators, and vacuum systems. Cranes and other lifting equipment will be used for debris removal as necessary. All excavated soil and debris will be segregated by size, material type, and waste type. The waste will be transferred to rolloffs or other waste containers, managed onsite in accordance with substantive ARARs (Section 5.1.2), and dispositioned offsite. Soil and debris will be characterized to evaluate compliance with regulatory or receiver site requirements. Contaminated soil and debris that do not require treatment will be transferred to rolloffs or other waste containers, managed in accordance with substantive ARARs (Section 5.1.2), and dispositioned offsite.

After soil and debris with contaminant concentrations greater than RFCA soil ALs or as indicated by the Subsurface Soil Risk Screen are removed, the excavation will be backfilled with onsite or offsite soil that meets backfill criteria described in Section 6.11. The backfilled excavation will be stabilized and revegetated in accordance with Section 6.11.4.

6.5.2 Onsite Remediation

When the soil is contaminated with radionuclides, the following criteria shall be used:

Remediation of Soil

Onsite thermal desorption of soil to meet regulatory or receiver site requirements or for backfilling will be considered if it is shown to be expedient, economical, and protective of human health and the environment. Onsite backfilling of soil that has been treated through a thermal desorption process will be considered if the soil meets the criteria in the framework for conducting routine accelerated actions for contaminated soil (Figures 6 and 7). Onsite thermal desorption and offsite disposal may also be considered for VOC- and radionuclide-contaminated soil. Onsite thermal desorption was successfully

Table 8. RCRA-Regulated Units

IHSS Group Number	IHSS/PAC Number	RCRA Unit Number	RCRA Unit Description	ER Responsibility
000-4	PAC 000-504	374.3	NPWL	Close parts of this unit not covered by the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities (DOE 2001c)
000-4	PAC 000-504	374.3	Valve Vaults 1 – 20	Close unit
500-4	IHSS 117.2	18.03	Asphalt Pad – Parking Area East of Building 551	Remove asphalt, characterize asphalt and soil, remediate soil as necessary
700-8	IHSS 214	750.1/750.2	Asphalt Pads – 750 Pad	Remove asphalt, characterize asphalt and soil, remediate soil as necessary
900-3	IHSS 213	15	Asphalt Pad – 904 Pad	Remove asphalt, characterize asphalt and soil, remediate soil as necessary
N/A	N/A	1	Asphalt Pad, PACS 1 Container Storage	Remove asphalt, characterize asphalt and soil, remediate soil as necessary
N/A	N/A	10	Asphalt Pad, B561 Container Storage	Remove asphalt, characterize asphalt and soil, remediate soil as necessary
N/A	N/A	18.04	Gravel Area, South of Unit 14, Building 906 Waste Storage Facility	Characterize soil, remediate soil as necessary
N/A	N/A	21	Concrete Slabs – Building 788	Remove concrete, characterize concrete and soil, remediate soil as necessary
Interim Status Units				
N/A	N/A	18.01	Concrete Pad Associated with Remedial Action Decontamination Pad (RADP) Tanks	Remove concrete, characterize concrete and soil, remediate soil as necessary
N/A	N/A	48	Former Pondcrete Pump House Concrete Slab 308-A	Remove concrete, characterize concrete and soil, remediate soil as necessary

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in Part 268.45 of 6 Code of Colorado Regulations (CCR) 1007-3 (Table 1, Alternative Treatment Standards for Hazardous Debris).

If, after treatment, ER personnel determine the equipment or structure meets the standard for a clean debris surface and it does not exhibit a hazardous waste characteristic, it will no longer be considered a hazardous waste and will be managed as a solid waste. A "clean debris surface" is defined as a "surface that, when viewed without magnification, is free of all visible contaminated soil or hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and soil and waste in cracks, crevices, and pits is limited to no more than 5 percent of each square inch of surface area" (6 CCR 1007-3, Part 268.45).

In the event the standard is not met, the equipment or structure will be removed and managed as hazardous or mixed remediation waste. Treatment residuals generated from extraction and/or destruction technologies used in the closure of RCRA-regulated units will be characterized in compliance with 6 CCR 1007-3, Part 262.11, managed onsite in accordance with substantive ARARs (Section 5.1.2), and dispositioned offsite.

Unit Removal Without Onsite Treatment

RCRA Units that are not decontaminated to meet the clean closure standard or debris rule standard may be removed, size-reduced (if necessary), and packaged for offsite disposal. After the waste is shipped offsite, it may be stabilized or treated to meet regulatory or receiver site requirements. In the event this waste cannot be immediately shipped directly to an offsite facility, it will be stored in accordance with substantive ARARs (Section 5.1.2), and dispositioned offsite.

Closure Documentation

A closure certification will be prepared for each RCRA Unit by compliance staff. The closure certification will be submitted to CDPHE for review and concurrence within 60 days after completion of the associated closure activities.

RCRA Unit closure activities will be documented in the Closeout Report. Upon final closure of each RCRA-regulated unit, the Site's Master List of RCRA Units will be updated to reflect the new closure status of the unit, and the unit will be removed from the RCRA Part A and Part B Permits in accordance with the applicable hazardous waste regulations (6 CCR 1007-3, Section 100.63, Permit Modification at the Request of the Permittee).

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Original Title: Waste Lines

Decommissioning Requirements

All OPWL, sanitary sewers, and storm drains within 3 ft of the existing grade within a building footprint or to the nearest junction. All remaining pipelines will be cut off at the building footprint boundary, or the nearest junction outside the building footprint, and sealed with a watertight permanent seal. Pipeline termination points will be surveyed using traditional or Global Positioning System (GPS) surveying methods.

Develop a map of all pipeline and other utility terminations

Environmental Restoration Requirements

OPWL within 3 ft of the surface, will be removed. Surrounding soil with Pu and/or Am activities greater than RFCA soil ALs from OPWL leaks within 3 ft of the surface will be removed to a depth of 3 ft.

Soil associated with OPWL between 3 and 6 ft below the surface in areas with reported and suspected leaks will be characterized in accordance with the IASAP (DOE 2001a) at the leak location. Known and suspected OPWL leak and sampling locations are shown on Figure 18.

If the Pu and/or Am activity in soil associated with OPWL is greater than the values listed in Table 4 between 3 and 6 ft, an accelerated action will be triggered. After an accelerated action is triggered, soil will be removed to less than 1 nCi/g. For ALARA and stewardship considerations, limited additional remediation (one equivalent measure of soil) will be removed in an attempt to reduce Pu and/or Am contamination to below RFCA soil ALs.

OPWL left in place will be grouted or foamed to the extent feasible, where safe and practical.

OPWL valve vaults will be removed to a minimum depth of 6 ft below the surface. Valve vaults deeper than 6 ft below the surface will be removed to the extent practicable, in consideration of the following:

- Safety associated with confined spaces and deep excavations;
- Technical feasibility of laybacks and nearby structures; and
- Cost/benefit including whether the benefit to a WRW and environment (ecological receptors) justifies the cost of full removal.

Soil surrounding pipelines requiring excavation will be excavated, treated as necessary, and disposed offsite. Pipelines associated with contaminated soil will also be excavated. Pipelines that are not removed will be disrupted where feasible taking into account health and safety of the workers. Soil requiring remediation will be excavated with heavy machinery, including backhoes, front-end loaders, bulldozers, or vacuum systems. Cranes and other lifting equipment will be used for pipeline removal as necessary. All efforts will be made to eliminate confined