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Revision 0

Action Memorandum for Decontamination, Deactivation, Decommissioning, and Demolition (D4) Activities for 200 East Tier 2 Buildings/Structures

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

U.S. DEPARTMENT OF ENERGY

Richland Operations Office

P.O. Box 550
Richland, Washington 99352

Approved for Public Release;
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Signature Sheet

Signature sheet for the Action Memorandum covering decontamination, deactivation, decommissioning, and demolition (D4) activities for 200 East Area Tier 2 buildings/structures at the U.S. Department of Energy's Hanford Site. This action is conducted by the U.S. Department of Energy with the approval of the Washington State Department of Ecology.

Rich Holten
Acting Assistant Manager for the Central Plateau
U.S. Department of Energy, Richland Operations Office

2/17/11
Date

Signature Sheet

Signature sheet for the Action Memorandum covering decontamination, deactivation, decommissioning, and demolition (D4) activities for 200 East Area Tier 2 buildings/structures at the U.S. Department of Energy's Hanford Site. This action is conducted by the U.S. Department of Energy with the approval of the Washington State Department of Ecology.

Having considered the extent to which the Action Memorandum, DOE/RL-2010-102, *Action Memorandum for 200 East Area Tier 2 Buildings/Structures*, could be inconsistent with the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* processes or could alter schedules set forth in Appendix D of the *Hanford Federal Facility Agreement and Consent Order*; Ecology et al., 1989a), the Washington State Department of Ecology approves pursuant to Section 7.2.4 of the *Hanford Federal Facility Agreement and Consent Order Action Plan* Ecology et al., 1989b).

Rick Bond

Rick Bond
Nuclear Waste Program
Washington State Department of Ecology

2-17-11
Date

Executive Summary

This Action Memorandum documents the selected alternative to perform decontamination, deactivation, decommissioning, and demolition (D4) of Hanford Site buildings/structures pursuant to the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement; Ecology et al, 1989a),[1] and identified as Tier 2 buildings/ structures (e.g., 209E Critical Mass Laboratory) in the *Hanford Federal Facility Agreement and Consent Order Action Plan* (Tri-Party Agreement Action Plan; Ecology et al, 1989b).[2] These buildings/structures are chemically and/or radiologically contaminated and require a *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA)[3] response action because of their potential for substantial threat of release of hazardous substances. Tier 1 buildings/structures (e.g., PUREX and B Plant Canyons) are generally large, heavily shielded metal and concrete structures containing tanks, heavily shielded gloveboxes or hot cells, underground vaults, piping, etc., that are integral to the building structure, that pose a threat of release of hazardous substances to the environment during disposition. Tier 1 buildings/structures will be dispositioned under CERCLA as either a remedial action or a removal action, coordinated with closure of *Resource Conservation and Recovery Act of 1976*[4] treatment, storage, and/or disposal units, as needed. The scope of this Action Memorandum encompasses Tier 2 buildings/structures present in the 200 East Area on the Central Plateau of the Hanford Site. Appendix A lists the buildings/structures included within the scope of this non-time-critical removal action (NTCRA).

Preparation of this Action Memorandum has been performed in accordance with CERCLA, as amended by the *Superfund Amendments and Reauthorization Act of 1986*,[5]

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[1] Ecology, EPA, and DOE, 1989a, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. Available at: http://www.hanford.gov/?page=81.

[2] Ecology, EPA, and DOE, 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. Available at: http://www.hanford.gov/?page=82.

[3] *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601, et seq., Pub. L. 107-377, December 31, 2002. Available at: http://epw.senate.gov/cercla.pdf.

[4] *Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq. Available at: http://epw.senate.gov/rcra.pdf.

[5] *Superfund Amendments and Reauthorization Act of 1986*, 42 USC 103, et seq. Available at: http://www.epa.gov/superfund/policy/sara.htm.

and in accordance with 40 *Code of Federal Regulations* 300.[6] This action is consistent with the joint U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA) policy (DOE and EPA, 1995),[7] which establishes the CERCLA NTCRA process as an approach for decommissioning. This approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selecting the decommissioning alternative. An Administrative Record has been established to record information used to support the selected alternative and provide documentation of decisions and the progress of the removal action.

This NTCRA is consistent with the overall cleanup objectives established through the Tri-Party Agreement (Ecology et al, 1989a). Completion of the NTCRA will place the identified buildings/structures in a condition protective of human health and the environment. Buildings/structures include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of waste that will require disposal include, but are not limited to, solid waste, low-level or transuranic radioactive waste, beryllium, asbestos, heavy metals, and polychlorinated biphenyl waste.

An engineering evaluation/cost analysis (EE/CA) was prepared and released for public comment. The EE/CA provided an evaluation of alternatives to accomplish D4 of 200 East Area Tier 2 buildings/structures. Comments received during the public comment period were considered and are included in Appendix C, "Public Comments Received during the Comment Period."

Three alternatives were considered for the disposition of Tier 2 buildings/structures:

- **Alternative 1: No Action.** This alternative assumes all short-term and long-term maintenance of the buildings/structures is terminated, and the buildings/structures would be abandoned without any further action.
- **Alternative 2: Continued Surveillance and Maintenance with Future Decontamination, Deactivation, Decommissioning, and Demolition (D4) of**

[6] 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*. Available at: http://www.access.gpo.gov/nara/cfr/waisidx_10/40cfr300_10.html.

[7] DOE and EPA, 1995, *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, U.S. Department of Energy and U.S. Environmental Protection Agency, Washington, D.C. Available at: http://www.epa.gov/fedfac/pdf/decommissioning_doe.pdf.

Buildings/Structures. This alternative includes a 10-year period of surveillance and maintenance for all buildings/structures. After 10 years, a 5-year period of D4 (assumed for cost comparison purposes) and associated waste disposal activities would commence, and surveillance and maintenance (S&M) activities would continue for those buildings/structures for which D4 has not yet begun.

- **Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures.** This alternative consists of near-term D4 of the buildings/structures and associated waste disposal. This assumes a 5-year period of D4 (assumed for cost comparison purposes) during which S&M activities would continue for those buildings/structures for which D4 has not yet commenced.

The actual implementation period for D4 of Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and the operational missions of the buildings/structures.This approach enables D4 to start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.

The selected removal action alternative in this Action Memorandum is Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures. The first Tier 2 building/structure to undergo D4 will be the 209E Building in fiscal year (FY) 2011 due to accelerated priority funding. Alternative 3 meets the proposed removal action objectives, and meets applicable or relevant and appropriate requirements. Implementation of Alternative 3 will focus on early risk reduction through strategic acceleration of D4 activities at high-priority facilities. Alternative 3 will take advantage of the current availability of existing contractor work force, and provide a safe and stable configuration that is environmentally sound. Alternative 3 can be implemented in a manner that contributes to the efficient performance of future long-term remedial actions consistent with Tri-Party Agreement goals.

For contaminated waste generated during D4 activities, DOE, Washington State Department of Ecology, and EPA agree that to facilitate cost-effective, environmentally protective and efficient disposal, the Environmental Restoration Disposal Facility will be the preferred disposal location for waste meeting the facility waste acceptance criteria.

Buildings/structures will be demolished to slab-on-grade in order to minimize infiltration of precipitation to underlying soils. Below-grade structures will be evaluated on a case-by-case basis, using a graded approach, to determine the appropriate disposition. In buildings/structures that have basements, equipment and components will be removed and the area stabilized, as appropriate, for radiological/hazardous constituents. The basements will subsequently be backfilled with clean materials to grade. In most cases, tanks that reside under a building/structure will remain and be addressed under future removal/remedial actions. In all scenarios, if contamination is found and deemed to be a near-term threat, slabs and/or below-grade structures (i.e., foundation walls, etc.) will be removed as part of this action in order to protect human health and the environment, as well as reduce future S&M costs. If remaining contamination is not deemed to be a near-term threat, slabs and/or below-grade structures will be stabilized to prevent migration of contamination, and final remediation will be deferred to a future action by adding the site to the Tri-Party Agreement Action Plan, Appendix C, in accordance with RL-TPA-90-0001, *Tri-Party Agreement Handbook Management Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)."

Likewise, if evidence of contamination to surrounding soils is encountered during D4 activities, those soils would be excavated and disposed at an appropriate Hanford Site or offsite disposal facility in accordance with the waste acceptance criteria of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, DOE would consult with the lead regulatory agency and determine whether to address the residual contamination within the scope of this NTCRA, or implement temporary measures as part of this action and defer final action to the remedial investigation and remedy selection process by adding the site to the WIDS database via the TPA-MP-14 process.

A number of existing waste sites either associated with the buildings/structures addressed herein, or in the vicinity, are not within the scope of this NTCRA. Such waste sites (including pipelines) are or will be addressed in other cleanup decisions.

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Terms

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
AM	Action Memorandum
ARAR	applicable or relevant and appropriate requirement
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
D4	decontamination, deactivation, decommissioning, and demolition
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
FY	fiscal year
NCP	*National Oil and Hazardous Substances Pollution Contingency Plan*
NEPA	*National Environmental Policy Act of 1969*
NHPA	*National Historic Preservation Act of 1966*
NRHP	National Register of Historic Places
NTCRA	non-time-critical removal action
OMB	Office of Management and Budget
PCB	polychlorinated biphenyl
RAO	removal action objective
RAWP	removal action work plan
RCRA	*Resource Conservation and Recovery Act of 1976*
ROD	record of decision
S&M	surveillance and maintenance
SAP	sampling and analysis plan
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*

Tri-Party Agreement Action Plan	*Hanford Federal Facility Agreement and Consent Order Action Plan*
TRU	transuranic
TRUM	TRU mixed
TSCA	*Toxic Substances Control Act of 1976*
WIDS	Waste Information Data System

1 Statement of Basis and Purpose

This Action Memorandum (AM) documents the selection of the preferred alternative, Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/ Structures. The first Tier 2 building/structure to undergo D4 will be the 209E Building in fiscal year (FY) 2011 due to accelerated priority funding.

For cost comparison purposes, a 5-year period of D4 was assumed in the EE/CA. However, the actual implementation period for D4 of Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures.

This AM has been prepared in accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), as amended by the *Superfund Amendments and Reauthorization Act of 1986*, and consistent with Executive Order 12580, *Superfund Implementation*, and the "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP) (40 CFR 300). This removal action is consistent with the remedial action objectives of previous records of decision (RODs) and supports the overall cleanup objectives established through *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al, 1989a).

The *Hanford Federal Facility Agreement and Consent Order Action Plan* (Tri-Party Agreement Action Plan) (Ecology et al, 1989b), Section 8.1.3, establishes a process for determining which buildings/ structures on the Central Plateau should be dispositioned using CERCLA. Buildings/structures identified for disposition pursuant to the Tri-Party Agreement Action Plan, Section 8.1.3, are categorized as either Tier 1 or Tier 2. The buildings/structures addressed by the scope of this AM include those that are chemically and/or radiologically contaminated, but are not designated as Tier 1. Tier 2 buildings/ structures (e.g., 209E Critical Mass Laboratory) are addressed in the Tri-Party Agreement Action Plan as chemically and/or radiologically contaminated buildings/structures that require a CERCLA response action because of their potential for substantial threat of release of hazardous substances. Tier 1 buildings/ structures (e.g., PUREX and B Plant Canyons) are generally large, heavily shielded metal and concrete structures containing tanks, heavily shielded gloveboxes or hot cells, underground vaults, piping, etc., that are integral to the building structure, that pose a threat of release of hazardous substances to the environment during disposition. Appendix A lists the buildings/structures within the scope of this AM.

The non-time-critical removal action (NTCRA) documented in this AM is consistent with the joint DOE and U.S. Environmental Protection Agency (EPA) *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (DOE and EPA, 1995), that establishes the CERCLA NTCRA process as the preferred approach for disposition of surplus DOE facilities. Under this policy, this type of removal action may be taken when DOE determines that the action will prevent, minimize, stabilize, or eliminate a risk to human health and the environment. DOE is authorized to evaluate, select, and implement the removal action that DOE determines is most appropriate to address the potential risk posed by the release or threat of release of hazardous substances. This policy states in part:

> *Although the full range of CERCLA response actions may be applicable to decommissioning activities, NTCRAs (non-time-critical removal actions) should be used for decommissioning, consistent with this Policy. The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This often will eliminate the need for the more thorough analysis of alternatives required for remedial actions. NTCRA requirements provide greater flexibility to develop decommissioning plans that are appropriate for the circumstances presented. Statutory time and dollar limits on removal actions do not apply to removal actions conducted by DOE, which*

increases the scope of projects that may be addressed by DOE removal action. Most importantly, NTCRAs usually will provide benefits to worker safety, public health, and the environment more rapidly and cost effectively than remedial actions. For these reasons, DOE may exercise removal action authority to conduct decommissioning whenever such action is authorized by CERCLA, the NCP, and Executive Order 12580.

Performance of this removal action will place the Tier 2 buildings/structures in a configuration that is protective of human health and the environment. Without action, these buildings/structures pose a threat of release of hazardous substances to the environment. As the lead agency, DOE has determined that a removal action is an appropriate means to mitigate and/or eliminate the threat of release of hazardous substances from the Tier 2 buildings/structures. The Washington State Department of Ecology (Ecology) concurs that a NTCRA is warranted to place these buildings/structures in a configuration that is protective of human health and the environment. This NTCRA will, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action, as required by the NCP (40 CFR 300.415(d), "Removal Action").

In DOE's *National Environmental Policy Act of 1969* (NEPA) program (DOE O 451.1B Chg 2, *National Environmental Policy Act Compliance Program*, Section 5.a.(13)), DOE adopted a policy to "Incorporate NEPA values, such as analysis of cumulative, off-site, ecological, and socioeconomic impacts, to the extent practicable, in DOE documents prepared under the Comprehensive Environmental Response, Compensation, and Liability Act." A discussion of NEPA values is included in Section 5.7 of this document.

Removal actions taken pursuant to this AM will be conducted in accordance with the *Hanford Site Tri-Party Agreement Public Involvement Community Relations Plan* (Ecology et al, 2002), and public participation requirements established in the NCP (40 CFR 300.415(n)) and any applicable DOE policies. Following approval of this AM, multiple removal action work plans (RAWPs) and sampling and analysis plans (SAPs) will be developed to cover one or more of the Tier 2 buildings/structures included within the scope of this NTCRA. The issuance of RAWPs and SAPs will reflect the goal of having each package represent the scope of actions that will be taken over a 1- or 2-year implementation period as resources allow. RAWPs and SAPs will be developed considering environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. As the lead regulatory agency for this action, Ecology will approve the RAWPs and SAPs. The SAPs will also be submitted to EPA for approval.

A 30-day comment period was held from (November 22, 2010, through December 27, 2010) for public review of the EE/CA that provided an analysis of the alternatives considered for this NTCRA. Public comments received during the comment period, and DOE and Ecology responses to these comments can be found in Appendix C of this document. The description of the removal action provided in the following sections will provide additional clarification for some of the expressed concerns.

DOE may need to disposition other Hanford Site buildings/structures with similar characteristics, contaminants, and complexity to those identified in Appendix A. Any future Tier 2 candidate buildings/ structures identified within the 200 East Area will be evaluated in accordance with the Tri-Party Agreement Action Plan, Section 8.1.4 (Ecology et al, 1989b), for potential addition to the scope of this NTCRA. Buildings/structures determined to qualify as Tier 2 will be added to Appendix J of the Tri-Party Agreement Action Plan and this AM. If buildings/structures are added or deleted from the scope of this NTCRA, concurrence from the lead regulatory agency would first be obtained, and documentation would be placed in the Administrative Record for this NTCRA identifying the building or structure and

explaining why it is being added to or deleted from the NTCRA; Appendix J of the Tri-Party Agreement Action Plan would be revised to address the change.

Waste materials generated during D4 activities may include, but are not limited to: radiologically and/or chemically contaminated structural and construction materials such as wood, metal, roofing, siding, gypsum, concrete block, and equipment such as pumps, pipes, tanks, containers, boilers, compressors, ductwork, and electrical components. The preferred location for disposal of waste is the Environmental Restoration Disposal Facility (ERDF). However, waste treatment and/or disposal may take place at other facilities that are on the Hanford Site or that are offsite (e.g., Waste Isolation Pilot Plant) and have been authorized by their respective EPA regional offices in accordance with the NCP (40 CFR 300.440, "Procedures for Planning and Implementing Off-Site Response Actions") as suitable to receive waste from CERCLA sites.

2 Background and Facility Descriptions

This chapter provides summary background information and a description of the area where D4 activities will occur, and additional information relevant to the scope of this NTCRA. This section also provides a summary of the hazardous substances that could be encountered while conducting D4 activities.

2.1 Site Description and Background

The buildings/structures in the scope of this NTCRA are located in an industrial area of the Hanford Site. Figure 1 shows the 200 East Area of the Central Plateau on the Hanford Site. Appendix A presents a list and descriptions of the Tier 2 buildings/structures addressed by this NTCRA.

2.1.1 Physical Setting

The Hanford Site lies east of the Cascade Mountains and has a semi-arid climate caused by the rain shadow effect of the mountains. Climatological data are monitored at the Hanford Meteorological Station, which is located between the 200 East and 200 West Areas, and other locations throughout the Hanford Site. The range of average daily maximum temperatures vary from an average winter high of 2°C (35°F) in late December and early January to 35°C (95°F) in late July (PNNL 6415, *Hanford Site National Environmental Policy Act [NEPA] Characterization*). Most precipitation occurs during late autumn and winter, with more than half of the annual amount occurring from November through February.

2.1.2 Anticipated Future Land Use

Proposed alternatives for future land use have been described in the *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (DOE/EIS-0222-F). Land use designations, including Industrial, Industrial Exclusive, and Preservation, were adopted in the 1999 DOE ROD (64 Federal Register 61615, "Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement"). A *Supplement Analysis: Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (DOE/EIS-0222-SA-01) and an amended ROD issued in 2008 (73 Federal Register 55824, "Amended Record of Decision for the Hanford Comprehensive Land-Use Plan Environmental Impact Statement") supported the conclusions and clarified the decisions published in the 1999 ROD. The Future Site Uses Working Group (Drummond, 1992, *The Future for Hanford: Uses and Cleanup: The Final Report of the Hanford Future Site Uses Working Group*) and the Exposure Scenario Task Force (HAB, 2002, *Report of the Exposure Scenarios Task Force)* also are sources for additional guidance on land use.

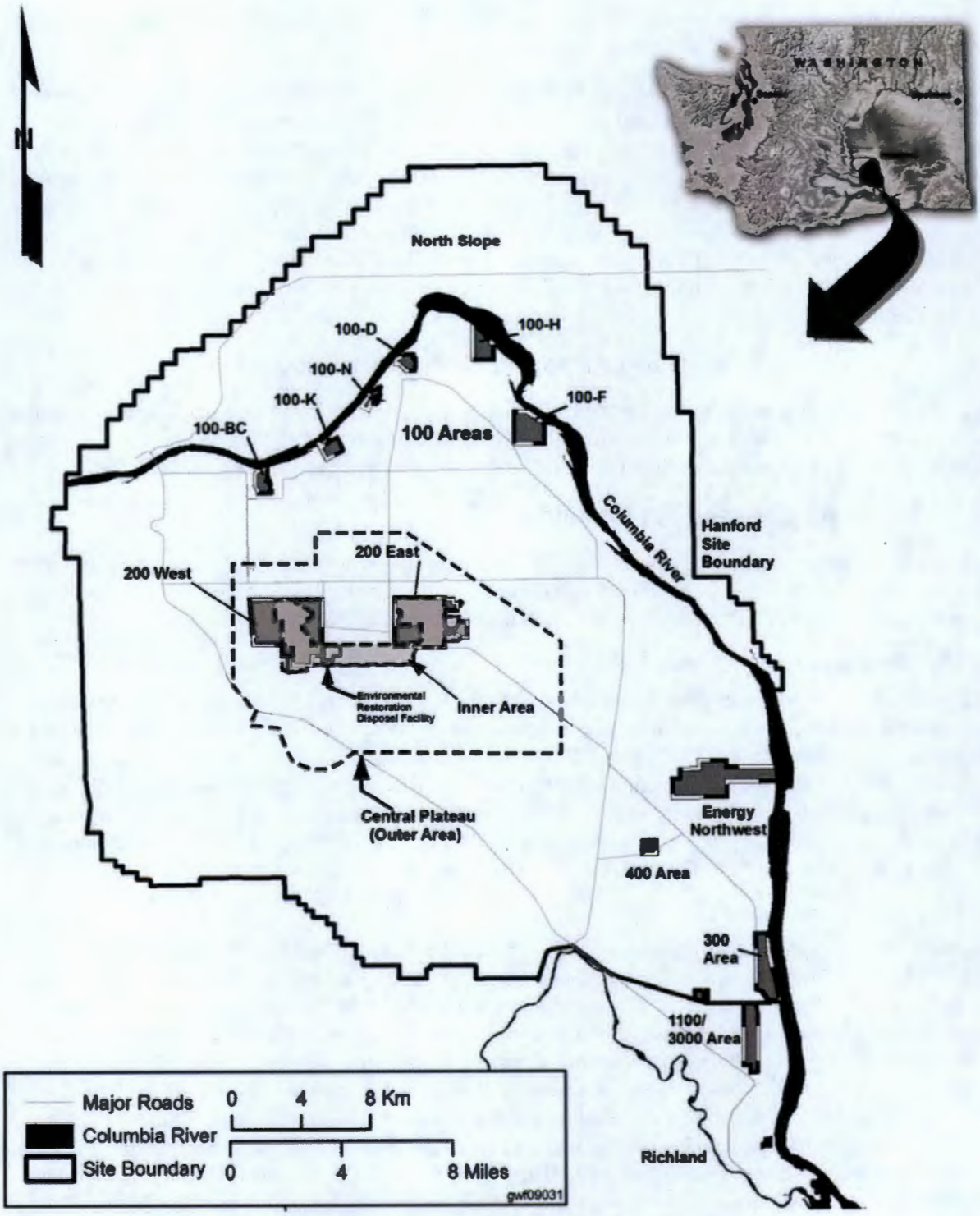

Figure 1. Hanford Site and 200 East Area on the Central Plateau

2.2 Previous Closure/Cleanup Activities at the Hanford Site

Various soil and groundwater investigations have been conducted within the 200 East Area on the Central Plateau of the Hanford Site. For more information on these investigations, see DOE/RL-2006-20, *The Second CERCLA Five-Year Review Report for the Hanford Site*. However, none of these investigations were related to the buildings/structures addressed by this NTCRA.

3 Threat to Public Health, Welfare, and/or the Environment

Contaminants addressed by this AM include both radioactive and chemical hazardous substances. The Tier 2 buildings/structures included in the scope of this AM are expected to be contaminated with hazardous substances used or generated during Hanford Site operations and waste management activities. Resources such as historic information, process knowledge, radiological survey reports, occurrence reports, assessment reports, personnel interviews, characterization reports, vulnerability assessments, inspections, walkdowns, and knowledge of construction and other materials will be used to characterize the nature and extent of remaining hazardous substances (e.g., within equipment, piping/drains, and so forth) to facilitate D4 and associated waste disposal, as well as to document post-demolition conditions for future decision-making. Sampling will be performed as part of this NTCRA in accordance with a regulator-approved SAP.

To the extent practicable, hazardous substances, including bulk chemicals that are no longer in use, have been, or will be, removed from the buildings/structures during routine surveillance and maintenance (S&M) activities. Although some asbestos was previously removed from the buildings/structures, some still contain friable and nonfriable asbestos insulation, siding, and ductwork. In general, the buildings/structures may contain, but are not limited to, one or more of the following materials:

- Polychlorinated biphenyls (PCBs)
- Beryllium
- Lead paint and lead shielding
- Mercury switches, gauges, and thermometers
- Mercury or sodium vapor lights
- Incandescent light bulbs
- Used oil from motors and pumps
- Emergency light batteries
- Refrigerants
- Other heavy metals (e.g., arsenic, cadmium, chromium, etc.)
- Other chemicals (e.g., solvents, process chemicals, etc.)

The main radionuclide contaminants associated with these Tier 2 buildings/structures include, but are not limited to, uranium-234, uranium-235, uranium-238, plutonium-239/240, americium-241, and mixed fission products such as strontium-90, cesium-137, cobalt-60, europium-152, europium-154, and europium-155. Tritium may also be found within building exit signs. The majority of contaminants are found in the form of adherent films and residues within the buildings/structures.

As noted previously, the Tier 2 buildings/structures addressed by this NTCRA are contaminated with hazardous substances due to past use for, or associated with, radiological and chemical processing activities. Some of these buildings/structures contain significant inventories of hazardous substances that would present an increased threat to human health and the environment if not addressed.

For example, contamination within the 209E Building consists of both radiological and chemical hazardous substances. The radiological contamination consists primarily of plutonium and uranium isotopes. Waste contaminated with plutonium or uranium isotopes, or derived from process activities that occurred within the building is expected to designate as transuranic (TRU) [or TRU mixed (TRUM)] waste. This waste is expected to be found in process equipment (e.g., process tanks and vessels) and ancillary equipment (e.g., hoods and piping).

Building structural debris and rubble that exhibit lower levels of radiological contamination are expected to designate as low-level waste. Some low-level waste may also designate as mixed waste and may require treatment prior to disposal.

Other 200 East Area Tier 2 buildings/structures (e.g., 212A, 212B, 276C, etc.) associated with fuel reprocessing facilities (i.e., B Plant and PUREX) are expected to be contaminated with elevated levels of mixed fission products.

Additional information regarding levels of radiological and chemical contaminants will be gathered throughout the D4 process in conjunction with regulator-approved SAPs and removal action work plan(s). This information will be used to properly characterize and designate D4 waste to ensure the waste is properly packaged, transported, and in compliance with the receiving facilities' waste acceptance criteria.

The radiological contamination and the asbestos-containing material (ACM) remaining in these Tier 2 buildings/structures present a sufficient threat of release to the environment under a continued S&M scenario to justify a NTCRA.

4 Endangerment Determination

Controls are currently in place for the Hanford Site to limit unauthorized entrance. Furthermore, only authorized and trained personnel are allowed entry into areas where hazardous substances are present. As long as DOE retains control of these areas, site controls will prevent direct contact with and exposure to the hazardous substances. However, site controls will not prevent deterioration of the buildings/ structures and potential release of contaminants to the environment. Contaminants from any of the 200 East Area Tier 2 buildings/structures could be released directly to the environment through a fire, breach in a utility pipe, containment wall, roof, or building collapse as the buildings/structures age and deteriorate. Contaminants could also be released to the environment indirectly through biological vectors (e.g., rodents, insects, birds, and other organisms).

As the buildings/structures continue to age, the threat of release of hazardous substances increases with time, and containing these materials and preventing them from being released to the environment becomes more difficult. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. In some cases, removal of buildings/structures will accommodate access for remediation of identified waste sites. The potential exposure to human health and the environment, the potential threat of future releases, and the substantial risks associated with the hazardous substances in the buildings/structures addressed by this AM, justify use of removal action authority in accordance with the NCP (40 CFR 300.415(b)(2)). Therefore, actual and/or threatened releases of hazardous substances from these buildings/structures have the potential to present a threat to human health and/or the environment.

5 Proposed Action

The alternatives evaluated in the EE/CA (DOE/RL-2010-54, *Engineering Evaluation/Cost Analysis for 200 East Area Tier 2 Buildings/Structures*) are discussed in Section 5.2. The selected removal action is Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures. The first Tier 2 building/structure to undergo D4 will be the 209E Building in FY 2011 due to accelerated priority funding.

For cost comparison purposes, a 5-year period of D4 was assumed in the EE/CA. However, the actual implementation period for D4 of Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures.

Alternative 3 will ensure that any hazardous substances are placed in a protective and safe condition for the foreseeable future, without the need for ongoing S&M activities. Building/structure contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of waste that would require disposal include, but are not limited to, solid waste, low-level or TRU radioactive waste, beryllium, asbestos, heavy metals, and PCB waste.

The preferred location for disposal of waste is the ERDF. However, waste treatment and/or disposal may take place at other facilities that are on the Hanford Site or that are offsite (e.g., Waste Isolation Pilot Plant) and have been authorized by their respective EPA regional offices in accordance with the NCP (40 CFR 300.440) as suitable to receive waste from CERCLA sites.

Buildings/structures will be demolished to slab-on-grade in order to minimize infiltration of precipitation to underlying soils. Below-grade structures or portions thereof will be evaluated on a case-by-case basis, using a graded approach, to determine their disposition. In buildings/structures that have basements, equipment and components will be removed and the area stabilized, as appropriate for radiological and hazardous constituents. The basements will subsequently be backfilled with clean materials to grade. In most cases, tanks that reside under a building/structure (e.g., slab, basement or foundation) will remain and be addressed under future removal/remedial actions.

In all scenarios, remaining contamination deemed to be a near-term threat, will be stabilized to prevent migration of contamination in a manner that is protective of human health and the environment and final remediation will be deferred to a future action by adding the site to the Tri-Party Agreement Action Plan, Appendix C (Ecology et al, 1989b), in accordance with RL-TPA-90-0001, *Tri-Party Agreement Handbook Management Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)."

Likewise, if evidence of contamination to surrounding soils is encountered during D4 activities, those soils would be excavated and disposed at an appropriate Hanford Site or offsite disposal facility in accordance with the waste acceptance criteria of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, DOE would consult with the lead regulatory agency and determine whether to address the residual contamination within the scope of this NTCRA, or implement temporary measures as part of this action and defer final action to the remedial investigation and remedy selection process by adding the site to the WIDS database via the TPA-MP-14 process.

Existing waste sites (including pipelines) associated with the buildings/structures addressed herein, or in the vicinity, are not within the scope of this NTCRA. Such waste sites are or will be addressed in other cleanup decisions.

The selected alternative meets the proposed removal action objectives (RAOs), meets applicable or relevant and appropriate requirements, provides for early risk reduction through acceleration of D4 activities, utilizes current availability of existing contractor work force, and provides a safe and stable configuration that is environmentally sound. DOE also considers Alternative 3 to contribute to the efficient performance of future long-term remedial actions consistent with Tri-Party Agreement goals.

5.1 Removal Action Objectives

The RAOs for this NTCRA are to perform D4 in a manner that will, to the extent practicable, support the long-term and final cleanup goals for the 200 Area National Priorities List. The RAOs developed to complete this scope are:

- RAO 1: Protect human and ecological receptors from exposure to contaminants above acceptable exposure levels.
- RAO 2: Reduce/eliminate the inventory of hazardous/radioactive substances.
- RAO 3: Facilitate and, to the extent practicable, be consistent with anticipated remedial actions at the Hanford Site, while expediting actions to reduce the Hanford Site footprint.
- RAO 4: Prevent adverse impacts to cultural resources and threatened or endangered species, and minimize wildlife habitat disruption.
- RAO 5: Safely treat, as appropriate, and dispose of waste streams generated.
- RAO 6: Reduce or eliminate the need for future S&M activities.

It should be noted that the numbering of these RAOs does not signify ranking or prioritization.

5.2 Engineering Evaluation/Cost Analysis

The EE/CA (DOE/RL-2010-54) is available through the Administrative Record for this NTCRA. The following sections describe the alternatives evaluated in the EE/CA (http://www5.hanford.gov/arpir/?content=findpage&AKey=0084169).

5.2.1 Alternative 1: No Action

Under Alternative 1, it is assumed that the buildings/structures would be abandoned without any further action. S&M activities would be discontinued and degradation would continue indefinitely. Alternative 1 is not consistent with DOE obligations under federal law to protect human health and the environment; therefore, this alternative cannot be considered viable and is not considered further in this EE/CA, but is included for comparative purposes only in the cost analysis. Although Alternative 1 would not have an associated implementation cost under this analysis, it is understood that taking no action would ultimately result in cost to DOE. Under Alternative 1, access is assumed to be unrestricted. Potential radiological hazards would continue to exist because controls to prevent access would not be maintained. Initial risks of Alternative 1 to the environment are minimal, provided no significant weather or fire events occur. Risks over time are expected to increase, as deterioration progresses and structural integrity is compromised. The potential for adverse consequences would increase as hazardous substance exposure increases. This alternative is used as a baseline for comparison only.

5.2.2 Alternative 2: Continued Surveillance and Maintenance with Future Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures

Under Alternative 2, S&M activities would continue for the next 10 years. After 10 years, a 5-year period of D4 and associated waste disposal activities would commence; S&M activities would continue as needed. S&M activities would include access control, periodic monitoring for potential radiological contamination and other hazards, maintenance, and general visual inspections. Additionally, limited decontamination and application of fixatives would occur to control the spread of contamination. Alternative 2 would merely result in a delay of the start of D4 activities and would require expenditures for the continued S&M, and periodic inspections over the interim period.Under Alternative 2, S&M activities are expected to continue for the next 10 years. After 10 years, a 5-year period of D4 (assumed for cost estimating comparison) and associated waste disposal activities are expected to commence; S&M activities will continue as needed. However, the actual implementation period for D4 of Tier 2 buildings/ structures is based on environmental risk, funding priority, funding, environmental risk, availability of trained resources, and operational missions of the buildings/structures. The first Tier 2 building/structure to undergo D4 will be the 209E Building in FY 2011 due to accelerated priority funding. Future implementation activities conducted pursuant to Alternative 2 will focus on early risk reduction at priority facilities consistent with available resources.

Continued S&M activities will include access control, periodic monitoring for potential radiological contamination and other hazards, maintenance, and general visual inspections. Additionally, limited decontamination and application of fixatives will occur to control the spread of contamination. This alternative includes the following primary D4 elements:

- Deactivate buildings/structures, as appropriate, by removing hazardous substances, as necessary from within and around the buildings/structures
- Plug or grout piping and/or drains entering or exiting buildings/structures below grade, as needed, to prevent potential pathways to the environment
- Decontaminate, fix contamination, and isolate systems, as needed
- Remove equipment
- Demolish each building/structure to grade or below, as appropriate
- Deactivate remaining below-grade structures (e.g., basements, utilities), remove, and/or fill void spaces
- Characterize the nature and extent of remaining hazardous substances (e.g., within buildings/ structures including, but not limited to, equipment, piping/drains, etc.) to facilitate D4 and associated waste disposal, as well as to document post-demolition conditions for future decision-making
- Backfill subgrade structures with controlled density fill, clean fill, or other suitable material
- Package and ship waste to the ERDF (or other approved Hanford Site or offsite disposal facility) for treatment (as needed) and disposal
- Stabilize the area (e.g., backfill, contour, revegetate, etc.) as needed
- Initiate the waste site evaluation process for components such as slabs or soil contamination areas that may potentially require further work under a separate response action

5.2.3 Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures

Alternative 3 consists of near-term D4 of the buildings/structures and associated waste disposal. This assumes a 5-year period (for cost estimate comparison purposes) of D4 during which S&M activities will be ongoing. Alternative 3 will ensure that any hazardous substances are placed in a protective and safe condition for the foreseeable future, without the need for ongoing S&M activities. This alternative includes the following primary D4 elements:

- Deactivate buildings/structures, as appropriate, by removing hazardous substances, as necessary, from within and around the buildings/structures
- Plug or grout piping and/or drains entering or exiting buildings/structures below grade, as needed, to prevent potential pathways to the environment
- Decontaminate, fix contamination, and isolate systems, as needed
- Remove equipment
- Demolish each building/structure to grade or below, as appropriate
- Deactivate remaining below-grade structures (e.g., basements, utilities), remove, and/or fill void spaces
- Backfill subgrade structures with uncontaminated controlled density fill or other suitable material
- Package and ship waste to the ERDF (or other approved Hanford Site or offsite disposal facility) for treatment (as needed) and disposal
- Characterize the nature and extent of remaining hazardous substances (e.g., within areas including, but not limited to, equipment, piping/drains, etc.) to facilitate D4 and associated waste disposal, as well as to document post-demolition conditions for future decision-making
- Stabilize the area (e.g., backfill, contour, revegetate, etc.) as needed
- Initiate the waste site evaluation process for components such as slabs or soil contamination areas that may potentially require further work under a separate response action

Demolition will require the use of heavy equipment (e.g., excavator with various attachments). Other standard industry practices for demolition will also be used (e.g., mechanical saws, cutting torches, or explosives). Below-grade structural components such as basements will preferentially be left intact (with penetrations secured or blanked), and backfilled with inert material, as appropriate. If warranted, below-grade structures and/or related equipment may be removed to facilitate other D4 activities surrounding the area or as deemed necessary by DOE to support overall cleanup goals and priorities.

Buildings/structures will be demolished to slab-on-grade in order to minimize infiltration of rainwaterprecipitation to underlying soils. Below-grade structures or portions thereof will be evaluated on a case-by-case basis, using a graded approach, to determine their disposition. In buildings/structures with basements, equipment and components will be removed and the area stabilized, as appropriate for radiological and hazardous constituents. The basements will subsequently be backfilled with clean materials to grade. In most cases, tanks that reside under a building/structure (e.g., slab, basement, or foundation) will remain and be addressed under future removal/remedial actions.

In all scenarios, remaining contamination deemed to be a near-term threat, will be stabilized to prevent migration of contamination in a manner that is protective of human health and the environment and final remediation will be deferred to a future action by adding the site to the Tri-Party Agreement Action Plan, Appendix C (Ecology et al, 1989b), in accordance with RL-TPA-90-0001.

Likewise, if evidence of contamination to surrounding soils is encountered during D4 activities, those soils would be excavated and disposed at an appropriate Hanford Site or offsite disposal facility in accordance with the waste acceptance criteria of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, DOE would consult with the LRA and determine whether to address the residual contamination within the scope of this NTCRA, or implement temporary measures as part of this action and defer final action to the remedial investigation and remedy selection process by adding the site to the WIDS database via the TPA-MP-14 process. The ERDF is the preferred disposal location because the ERDF is an engineered facility that provides a high degree of protection to human health and the environment. Historically, it has been shown that this disposal option is more cost effective than disposal at other waste disposal sites. Construction and disposal of hazardous substances from throughout the Hanford Site into the ERDF was authorized using a separate CERCLA ROD (EPA, 1995, *Record of Decision U.S. DOE Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington*). The ERDF is designed to meet technological requirements for *Resource Conservation and Recovery Act of 1976* (RCRA) landfills, including standards for a double liner, a leachate collection system, leak detection, monitoring, and a final cover. However, waste treatment and/or disposal may take place at other facilities that are on the Hanford Site or that are offsite and have been authorized by their respective EPA regional offices in accordance with the NCP (40 CFR 300.440) as suitable to receive waste from CERCLA sites.

5.3 Compliance with Environmental Regulations, Including those that are Applicable or Relevant and Appropriate Requirements

Section 121 of CERCLA requires the CERCLA federal lead agency to ensure that substantive applicable or relevant and appropriate requirements (ARARs) from federal and state laws and regulations are incorporated into the agency's design and operation of its removal and remedial actions. DOE is the CERCLA lead agency for this NTCRA. Under the Tri-Party Agreement, the lead regulatory agency will evaluate how effective the NTCRA decision documented in the AM will be in protecting human health and the environment when the removal action has been completed, during the lead regulatory agency's consideration of follow-on remedial actions. Through this process, the risks described in this document will be mitigated in a timely manner.

Appendix B delineates ARARs that have been identified for this NTCRA. These ARARs are consistent with ARARs for long-term remedial actions for the Hanford Site. The selection of ARARs is based on the following key assumptions:

- D4 will involve removal activities that have the potential to emit radionuclide and/or criteria/toxic contaminants. The federal *Clean Air Act of 1990* and the "Washington Clean Air Act" (RCW 70.94), require regulation of radioactive air pollutants. Implementing regulations found in "National Emission Standards for Hazardous Air Pollutants" (40 CFR 61.92, "Standard") set limits for radionuclide emissions, which cannot exceed those amounts that will cause any member of the public to receive an effective dose equivalent of 10 mrem/yr or greater due to emissions from the Hanford Site. Methods will be employed, as prescribed under state and federal regulations, to maintain the impact of these air emissions to as low as reasonably achievable (ALARA) levels. Methods will be employed, as prescribed under state and federal regulations, to reduce the impact of these air emissions.

- Waste generated during D4 may contain paint that contains PCBs. PCB-containing light ballasts will be disposed in an appropriate disposal facility. Other PCB contamination, if encountered, will also be disposed at an appropriate disposal facility, unless decontamination is determined appropriate and feasible. If encountered, such waste may trigger substantive requirements of "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions" (40 CFR 761), *Toxic Substances Control Act of 1976* (TSCA). Lead-contaminated paint also may be removed, which will be subject to the substantive requirements of WAC 173-303, "Dangerous Waste Regulations."

- ACM, which is both friable and nonfriable, will be encountered during performance of the NTCRA. Friable or regulated ACM is subject to specific asbestos regulations and is acceptable for disposal at the ERDF. Regulated asbestos will be removed and disposed of as required by "National Emission Standards for Hazardous Air Pollutants" (40 CFR 61.150, "Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations").

- Beryllium may be encountered during performance of the NTCRA. If encountered, beryllium may be subject to the substantive requirements of "National Emission Standards for Hazardous Air Pollutants" (40 CFR 61.32, "Emission Standard") or WAC 173-460, "Controls for New Sources of Toxic Air Pollutants."

- Section 106 of the *National Historic Preservation Act of 1966* (NHPA), as amended, requires agencies to consider the impact of undertakings on properties listed or eligible for listing in the National Register of Historic Places (NRHP) and to consult with the State Historic Preservation Officer and other interested parties when impacts are likely. It also requires federal agencies to invite the Advisory Council on Historic Preservation to participate in consultation when impacts may be adverse. The NHPA Section 106 process has been tailored to meet the unique needs of the Hanford Site. Section 110 of the NHPA directs federal agencies to establish programs to find, evaluate, and nominate eligible properties to the NRHP, including previously unidentified historic properties that may be discovered during the implementation of a project (36 CFR 800, "Protection of Historic Properties"). In addition, the *Archaeological Resources Protection Act of 1979*, as amended, provides for the protection and management of archaeological resources on federal lands. Procedures and strategies to tailor these requirements to the unique needs of the Hanford Site are described in DOE/RL-98-10, *Hanford Cultural Resources Management Plan*. DOE/RL-98-10 is implemented through a Programmatic Agreement among DOE, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation. Alternative 3 complies with DOE/RL-98-10 and the Programmatic Agreement.

- DOE is required to review, as guidance, the most current U.S. Fish and Wildlife Service list for threatened and endangered plant and animal species. DOE determined that none of the alternatives will impact any threatened and endangered species and also determined that formal consultation with the U.S. Fish and Wildlife Service is not required for this action.

5.4 Cultural Resources

A NHPA, Section 106, cultural resource review is conducted to address D4 activities. The D4 activities will be performed in areas that are extensively disturbed by past construction activities. Before field activity begins, each building/structure requiring documentation is evaluated for: (1) the type of documentation required for each building and structure (Historic Property Inventory Form or Expanded Historic Property Inventory Form); and (2) the status of that documentation. In addition, as appropriate, walkthroughs of the buildings/structures are conducted before demolition to finalize all mitigation

requirements. Cultural resource review documentation for any specific building/structure is finalized before D4 activities begin. Tagged artifacts, if identified, are removed for long-term curation prior to the start of D4 activities. At the time of removal, assessments are made regarding options and feasibility of long-term curation of tagged artifacts.

Hanford Site buildings/structures were evaluated for their NRHP eligibility as part of DOE/RL-97-56, *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan*. Some buildings/structures were determined to be contributing properties to the Manhattan Project/Cold War Era Historic District with mitigation in the form of documentation required. DOE/RL-97-56 also requires that walkthroughs be completed of these buildings/structures to identify artifacts that are of educational and interpretive value.

5.5 Ecological Resources

The land area around the buildings/structures addressed by this NTCRA has been disturbed from building and parking lot construction activities. Because most of the proposed action will occur in areas that have previously been disturbed, the potential for effects on sensitive ecological resources is expected to be minimal. Ecological reviews will be carried out before work begins to identify areas where there is a potential for adverse impacts to sensitive or rare biological resources, consistent with existing routine procedures (DOE/RL-95-11, *Ecological Compliance Assessment Management Plan*).

The buildings/structures have the potential to support nesting by migratory birds and communal roosting/hibernation areas for bats; therefore, surveys must be conducted at each building/structure prior to commencement of D4 activities. Project engineers will consult with the ecological compliance staff well in advance of planned D4 activities to allow for sufficient surveys. If nesting migratory birds are observed, D4 activities will be delayed until after the end of the nesting season. If surveys are conducted prior to nesting, and prior year nesting of migratory birds is evident, appropriate measures consistent with the *Migratory Bird Treaty Act of 1918* will be considered before D4 activities commence. All actions taken will be consistent with the provisions of the *Migratory Bird Treaty Act of 1918*. Many of the buildings/structures also have the potential to provide roosting or hibernation habitat for various species of bats. Communal roost sites for many bat species are considered a high conservation priority for the Washington Department of Fish and Wildlife. Surveys for bats will be performed at each building/structure prior to commencement of D4 activities using standard procedures identified by qualified bat biologists, and appropriate mitigation will be developed in consultation with qualified bat biologists.

No plant or animal species listed as threatened or endangered under the federal *Endangered Species Act of 1973*, or candidates for such protection, are known to be in the vicinity of the buildings/structures slated to undergo D4. Very little native or natural habitat is present in the vicinity of the buildings/structures slated to undergo D4.

However, care will be taken to avoid or minimize damage to any native vegetation, especially shrubs that are in the vicinity of the buildings/structures. Workers will also be directed to avoid all wildlife that may be found in and around the buildings/structures.

Impacts on ecological resources will continue to be mitigated in accordance with DOE/RL-96-32, *Hanford Site Biological Resources Management Plan*, and DOE/RL-96-88, *Hanford Site Biological Resources Mitigation Strategy*.

5.6 Compliance with Disposal Facility Waste Acceptance Criteria

Waste generated through implementation of Alternative 3 will be dispositioned at appropriate Hanford Site or offsite waste disposal facilities, in accordance with the waste acceptance criteria of those facilities. The ERDF is the preferred disposal location for waste meeting ERDF waste acceptance criteria and will be considered to be "onsite"[1] for management and/or disposal of waste from activities addressed in this document.

The ERDF is engineered to meet appropriate RCRA technological requirements for landfills. Hazardous, mixed, low-level, asbestos, and TSCA waste can be accepted for disposal at the ERDF (WCH-191, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*). It is expected that most of the waste generated during D4 activities will be disposed onsite at the ERDF. If TRU waste and/or spent nuclear fuel are found during the implementation of this NTCRA, they may be transported, as appropriate, to other facilities that are on the Hanford Site or that are offsite (e.g., Waste Isolation Pilot Plant) and have been authorized by their respective EPA regional offices in accordance with the NCP (40 CFR 300.440) as suitable to receive waste from CERCLA sites.

If aqueous waste is generated and determined to be low-level waste or designated as dangerous or mixed waste, it may be transported to the 200 Area Effluent Treatment Facility (ETF) for treatment, followed by discharge under the Washington State waste discharge program. The ETF is a RCRA-permitted unit authorized to treat aqueous waste streams generated on the Hanford Site and dispose of these streams at a designated state-approved land disposal site in accordance with applicable requirements.

Treatment of waste may be necessary before disposal at the ERDF, and containerized waste could be stored at the ERDF while the waste is awaiting treatment. Liquid waste from this removal action that is sent to the ETF will be treated separately from non-CERCLA sources, to maintain its identity as CERCLA removal action waste, and any treatment residues that meet ERDF waste acceptance criteria (WCH-191) can be disposed at the ERDF.

Residuals from treatment of waste originating from activities addressed in this AM can be disposed at the ERDF, providing the treatment residuals meet ERDF waste acceptance criteria. The D4 activities to be performed under this NTCRA may generate waste packages exceeding the Class C criteria established for waste regulated by the Nuclear Regulatory Commission. If a waste package does exceed the Class C criteria, a special performance assessment will be performed and reviewed by the regulatory agencies to ensure no unacceptable risks are associated with disposal at the ERDF. Alternately, Class C waste may be evaluated for disposal at another disposal facility on the Hanford Site.

5.7 Other Considerations

In accordance with DOE O 451.1B Chg 2, DOE CERCLA documents are required to incorporate NEPA values (e.g., analysis of cumulative, offsite, ecological, and socioeconomic impacts) to the extent practicable.

Table 1 describes the NEPA values (i.e., resource area and relevant NEPA considerations) most relevant to and potentially affected by the actions taken place under this NTCRA.

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[1] CERCLA Section 104(d)(4) states that where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, the facilities can be treated as one for purposes of CERCLA response actions. Consistent with this, the Hanford buildings/structures and ERDF are considered to be "onsite" for purposes of Section 104 of CERCLA, and waste may be transferred between the facilities without requiring a permit. This determination is affirmed by this Action Memorandum.

Table 1. NEPA Values Evaluation

NEPA Values	Description	Evaluation
Transportation	Considers impacts of the proposed action on local traffic and traffic in the surrounding region.	Implementation of Alternative 3 is expected to only produce short-term impacts on local traffic. A majority of the impact will be associated with increased truck traffic associated with Alternative 3, when transporting waste to the ERDF. Transportation impacts associated with transport of contaminated material to the ERDF were considered in DOE/RL-93-99, *Remedial Investigation and Feasibility Study Report for the Environmental Restoration Disposal Facility*, as part of the evaluation of short-term effectiveness and implementability. NEPA values specifically associated with the ERDF were addressed in DOE/RL-94-41, *NEPA Roadmap for the Environmental Restoration Disposal Facility Regulatory Package*. See the discussion of cumulative impacts for a perspective of transportation to the ERDF.
Air Quality	Considers potential air quality concerns associated with emissions generated during the proposed action.	Airborne releases associated with Alternative 3 are expected to be minor with the use of appropriate work controls (e.g., filtered ventilation, containment, and dust suppression including use of fixatives). Any potential for airborne release of contaminants during the NTCRA will be controlled in accordance with DOE radiation control and air pollution control ARARs, to minimize emissions of air pollutants, and protect the public and the environment. Operation of trucks and other diesel-powered equipment for the selected alternative is expected in the short term to introduce quantities of sulfur dioxide, nitrogen dioxide, particulates, and other pollutants to the atmosphere, typical of similar-sized construction projects. These releases are not expected to cause any air quality standards to be exceeded and dust generated during removal activities will be minimized by watering or other dust control measures (as needed). Vehicular and equipment emissions will be controlled and mitigated in compliance with the substantive standards for air quality protection that apply to the Hanford Site.
Natural, Cultural, and Historical Resources	Considers impacts of the proposed action on wildlife, wildlife habitat, archeological sites and artifacts, and historically significant properties.	Impacts on ecological resources will continue to be mitigated in accordance with DOE/RL-96-32, *Hanford Site Biological Resources Management Plan* and DOE/RL-96-88, *Hanford Site Biological Resources Mitigation Strategy*, and with the applicable standards of all relevant biological species protection regulations. Appropriate ecological reviews will be conducted before implementing field activities.

Table 1. NEPA Values Evaluation

NEPA Values	Description	Evaluation
		Because most of the buildings/structures either have already been disturbed or minimal soil disturbance is expected, it is anticipated that only isolated artifacts will be encountered during project activities under the selected alternative. Implementation of DOE/RL-98-10, *Hanford Cultural Resources Management Plan*, and consultation with area Tribes will help ensure appropriate mitigation to avoid or minimize any adverse cultural or historical resource effects and address any relevant concerns. Potential impacts to cultural and historical resources that may be encountered during the short-term activities associated with implementing Alternative 3 of the NTCRA will be mitigated through compliance with the appropriate substantive requirements of the *National Historic Preservation Act of 1966* and other ARARs related to cultural preservation. As appropriate, a cultural resource review will be conducted before implementing field activities.
Socioeconomic Impacts	Considers impacts pertaining to employment, income, other services (e.g., water and power utilities), and the effect of implementation of the proposed action on the availability of services and materials.	The selected alternative is within the scope of current U.S. Department of Energy, Richland Operations Office, environmental restoration activities and will have minimal impact on the current availability of services and materials. This work is expected to be accomplished largely using employees from the existing contractor workforce. Even if the removal activities create additional service sector jobs, the total expected increase in employment is expected to be less than 1 percent of the current employment levels. The socioeconomic impact of the project will contribute to the continuing overall positive employment and economic impacts on eastern Washington communities.
Environmental Justice	Considers whether the proposed response actions will have inappropriately or disproportionately high and adverse human health or environmental effects on minority or low-income populations.	Per Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, DOE seeks to ensure that no group of people bears a disproportionate share of negative environmental consequences resulting from proposed federal actions. The proposed activities associated with buildings/structures will not disproportionately affect any member of the public; therefore, the actions do not have the potential for high and disproportional adverse impacts on minority or low-income groups.

Table 1. NEPA Values Evaluation

NEPA Values	Description	Evaluation
Cumulative Impacts (Direct and Indirect)	Considers whether the proposed action could have cumulative impacts on human health or the environment when considered together with other activities locally, at the Hanford Site, or in the region.	The concern is associated directly with the targeted area. Because of the temporary nature of the activities and their remote location, cumulative impacts on air quality or noise with other Hanford Site or regional construction and cleanup projects will be minimal. When equipment at a site is found to be contaminated with hazardous substances in concentrations presenting a material threat to human health and the environment, that threat will be mitigated. The net anticipated effect could be a positive contribution to cumulative environmental effects at the Hanford Site through disposal of hazardous substances into a facility, such as the ERDF, that has been designed and legally authorized to safely contain such contaminants. The buildings/structures removed under Alternative 3 will meet ERDF waste acceptable criteria as described in WCH-191, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*. Waste generated during the proposed activities will be manageable within the capacities of existing facilities. For perspective, the ERDF received more than 700,000 tons of waste in calendar year 2008 and more than 430,000 tons in calendar year 2007. Radiological contamination is expected to be within the acceptance criteria levels for ERDF disposal. The ERDF received approximately 22,500 Ci in calendar year 2008 and approximately 13,000 Ci in calendar year 2007. It is expected that the total amount of waste generated for disposal in the ERDF for this NTCRA is approximately 473,098 tons. Over the 5-year expected duration of this NTCRA, an average of approximately 95,000 tons/year will be disposed of at the ERDF. This volume is still small when compared with the 700,000 tons disposed in the ERDF in calendar year 2008.
Mitigation	Considers whether, if adverse impacts cannot be avoided, response action planning should minimize them to the extent practicable. This value identifies required mitigation activities.	Compliance with the substantive requirements of the ARARs will mitigate potential environmental impacts on the natural environment, including migratory birds and endangered species. DOE has also established policies and procedures for the management of ecological and cultural resources when actions might affect such resources (DOE/RL-96-32; DOE/RL-96-88; DOE/RL-98-10). Cultural resource and biological species reviews/ surveys are undertaken that also provide suggested mitigation activities to ensure adverse effects associated with implementing the actions are minimized or avoided. Health and safety procedures, documented in a Health and Safety Plan established by Hanford Site contractors, will mitigate risks to workers from the NTCRA.

Table 1. NEPA Values Evaluation

NEPA Values	Description	Evaluation
Irreversible and Irretrievable Commitment of Resources	Considers the use of nonrenewable resources for the proposed response action and the effects or resource consumption on future generations. (When a resource [e.g., minerals, water, wetland] is used or destroyed and cannot be replaced within a reasonable amount of time, its use is considered irreversible.)	For Alternative 3, normal usage of resources during S&M and D4 activities, such as fuel and water, will be irreversibly used.

6 Project Costs

Cost estimates were prepared for the alternatives evaluated in the EE/CA (DOE/RL-2010-54). The estimates were prepared in accordance with *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA 540-R-00-002), along with DOE's *Cost Estimating Guide* (DOE G 430.1-1).

Table 2 presents the cost estimate for the selected alternative, starting from a present-day, nondiscounted cost, also called constant dollars. Nondiscounted costs are not affected by general price inflation (i.e., they represent "units of stable purchasing power"); thus, the cost of a particular product or service will be the same in Year 0, Year 1, Year 2, and so forth. The nondiscounted cost essentially assumes that the work is performed today. Because nondiscounted costs do not reflect the changing value of money over time, presentation of this information under CERCLA is for information purposes only, not for response action alternative selection purposes.

Consistent with guidance from EPA and the U.S. Office of Management and Budget (OMB), present-worth analysis is used as the basis for comparing costs of cleanup alternatives under the CERCLA program (OMB Circular No. A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs"). A discount rate (OMB Circular No. A-94) is applied for cost estimates that span multiple years, making it possible to evaluate expenditures associated with alternatives that occur during different periods (EPA 540-R-00-002). Because of the time-dependent value of money, future expenditures are not considered directly equivalent to current expenditures. The present-worth cost method shows the amount required at the initial point in time (i.e., in the current year) to fund activities occurring over the life of the alternative. Present-worth analysis assumes that the funding set aside at the initial point in time increases in value as time goes on, similar to how money placed in a savings account gains in value because of interest paid on the account. Although the federal government typically does not set aside funds in this manner, the present-worth analysis is specified under CERCLA as the approach for establishing a common baseline to evaluate and compare alternatives that have costs occurring at different times, although actual costs could vary. While the funds might not actually be set aside, the present-worth costs were considered directly comparable for evaluating the costs of the alternative.

The information in the cost estimate is based on the best available information regarding the anticipated scope of the removal action alternatives. Changes in the cost elements are likely to occur because of new information and data collected during preparation and performance of the removal action. Consistent with EPA guidance, this is an order of magnitude engineering cost estimate that was developed to be within -30 percent to +50 percent of actual project cost.

The reported estimates are based on costs derived using Remedial Action Cost Estimate Requirement (RACER)™ 2010, Version 10.3 (Earth Tech, Inc., 2009) and actual pricing information obtained from historical experience, vendor quotes, CH2M HILL Plateau Remediation Company estimates, and standard commercial databases, such as RS Means (*Building Construction Cost Data* [Means, 2010a]), *Environmental Cost Handling Options Solution (ECHOS) Cost Data Book* (Delta Technologies Group, 1995), *Facilities Construction Cost Data* (Means, 2007), and *Heavy Construction Cost Data* (Means, 2010b).

Table 2 presents the present-worth and nondiscounted cost estimates for the selected alternative.

Table 2. Summary of Cost Estimates for the Selected Alternative

Alternative	Nondiscounted Cost	Net Present-Worth Cost
Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures	$62,273,000	$61,730,000

Notes: Accuracy range of the cost estimate is expected to be -30 percent to +50 percent. No sensitivity analyses were performed and the following factors could impact the costs: (1) levels of contamination; (2) amount and type of equipment in the buildings; and (3) differing structural design.

7 Project Schedule

This NTCRA is expected to begin with D4 activities upon issuance of this AM. The first Tier 2 building/structure to undergo D4 will be the 209E Building in FY 2011 due to accelerated priority funding. The remaining buildings/structures will be scheduled for D4 based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures.

As discussed in Section 1, the intent of this AM is to allow the inclusion or exclusion of 200 East Area Tier 2 buildings/structures to the scope of the NTCRA, as appropriate, with Ecology concurrence. Because of the possibility that the scope may expand to accommodate additional buildings or structures, the schedule for completion of the NTCRA will extend until completion of D4 activities for all buildings/structures designated as Tier 2. A project schedule(s) will be included in the appropriate removal action work plan(s).

8 Expected Change in the Situation Should Action Be Delayed or Not Taken

The expected change to the D4 of Tier 2 buildings/structures should action be delayed, or not taken, would be that the buildings/structures would remain under administrative and Hanford Site access control, as they are today. However, as the buildings/structures continue to age, the threat of substantial release of hazardous substances increases with time, and containing these materials and preventing them from being released to the environment becomes more difficult. The S&M activities required to confine the

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hazardous substances may increase the risk of potential exposure to personnel. If the action was delayed, continued expenditures for S&M costs would accrue during the time interval elapsed until final D4 activities are performed.

9 Statutory and Regulatory Authority

The proposed NTCRA is being undertaken by DOE, as the lead agency, pursuant to CERCLA, Section 104(a), and Executive Order 12580, as recognized by Section 7.2.4 of the Tri-Party Agreement Action Plan (Ecology et al, 1989b). In accordance with NCP (40 CFR 300.415(j)) and DOE guidance, onsite removal actions conducted under CERCLA are required to meet ARARs to the extent practicable considering the exigencies of the situation. DOE will comply with the ARARs as set forth in Appendix B.

10 Enforcement

The NTCRA is being undertaken by DOE, as the lead agency, pursuant to CERCLA, Section 104(a), and Executive Order 12580, as recognized by Section 7.2.4 of the Tri-Party Agreement Action Plan (Ecology et al, 1989b). In accordance with NCP (40 CFR 300.415(j)) and DOE guidance, onsite removal actions conducted under CERCLA are required to meet ARARs to the extent practicable considering the exigencies of the situation. DOE will comply with the ARARs as set forth in Appendix B.

11 Recommendation

This decision document represents the selected removal action for the Tier 2 buildings/structures in the 200 East Area on the Central Plateau of the Hanford Site in Richland, Washington, and was developed in accordance with CERCLA, as amended by the *Superfund Amendments and Reauthorization Act of 1986*, and is not inconsistent with the NCP (40 CFR 300). Conditions at the site meet NCP (40 CFR 300.415(b)(2)) criteria for a removal action. This decision is based on the alternatives evaluated in the EE/CA (DOE/RL-2010-54) and is available in the Administrative Record for this project.

The selected removal action alternative is Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures. The selected alternative meets the RAOs, meets ARARs, provides for early risk reduction through strategic implementation, acceleration of priority D4 activities as resources allow, utilizes current availability of the existing contractor workforce, and provides a safe and stable configuration that is environmentally sound. Completion of the NTCRA for Tier 2 buildings/structures will be accomplished with the development of completion reports. The completion reports will provide NTCRA summary information, including building/structure name, waste generation and disposal information, and end state.

12 Public Participation

The public participation period for the EE/CA (DOE/RL-2010-54) was from November 22, 2010, through December 27, 2010. A public notice was published in the Tri-City Herald newspaper on November 21, 2010. The notice was posted in public reading rooms in Richland, Seattle, and Spokane, Washington, and Portland, Oregon. An announcement was provided to the Hanford Advisory Board on November 22 through December 27, 2010. Appendix C includes letters regarding the EE/CA received during the comment period.

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Appendix A

Central Plateau 200 East Area Tier 2 Buildings/Structures Descriptions

Terms

AOG	ammonia off gas
ASD	ammonia scrubber discharge
CSL	chemical sewer line
HEPA	high efficiency particulate air
PDD	process distillate discharge
PR	product recovery
PUREX	Plutonium Uranium Extraction (Plant)
RM	radiation monitor
RR	Railroad
SCD	steam condensate discharge
SWL	sanitary water line
SWP	special work permit
TEDF	Treated Effluent Disposal Facility
WESF	Waste Encapsulation and Storage Facility

A Building/Structure List

Table A-1 lists those 200 East Area Tier 2 buildings/structures in the scope of this non-time-critical removal action.

Table A-1. 200 East Area Tier 2 Building/Structure List

Building/Structure ID	Building/Structure Title	Estimated Waste Quantity (tons)
203A	Acid Pump House	9,778
206A	Vacuum Acid Fractionator Building	4,148
209E	Critical Mass Laboratory (including the 296P031 Stack)	12,581
212A	Fission Product Loadout Station	2,918
212B	Fission Product Loadout, Cask Transfer Building	25,244
213A	Fission Product Load-in Station	1,792
216A	Valve Control Facility	18
221BB	Process Steam and Condensate Building	878
221BC	SWP Change House	464
221BD	Laundry Storage Building	1,365
221BF	Air Dryer Building	144
221BK	B Plant Canyon Exhaust Instrumentation Building	2,988
222B	Office Building/Laboratory	4,929
225BA	K1 Filter Pit Encapsulation Facility	386
225BB	K3 Filter Pit Encapsulation Facility	39
225BF	WESF Tanker Loadout Station	331
225E	TEDF Pump Station 2	1,583
241C80I	Cesium Loadout Facility	3,478
241CR271	Cold Chemical Makeup Building	2,986
241CX40	Grout Removal Building	413
242B	Radioactive Particle Research Laboratory	3,708
242BL	Cask Loading Building	1,400
252AB	Electrical Substation	3,425
252AC	Electrical Substation	126
2707AR	Sludge Vault Change House	1,551

Table A-1. 200 East Area Tier 2 Building/Structure List

Building/Structure ID	Building/Structure Title	Estimated Waste Quantity (tons)
2711A	Air Compressor Building	987
2716B	RM Checkout Station, RR Tunnel	646
271B	B Plant Support Building	76,482
271CR	Control Building	416
276A	Cold Solvent Storage Building, R Cell	294
276C	Solvent Handling Building	27,368
291AB	Exhaust Air Sampler House	10
291AC	Exhaust Air Sampler House	10
291AD	Filter Pit and Stack	415
291AE	Filter Cell No. 4	4,463
291AH	AOG Sample Station	144
291AK	Tunnel Spray Enclosure and Caissons	47
291AR	Exhaust Air Filter Stack Building	79
291B	Exhaust Fan Control House and Sand Filter	212
291BA	Exhaust Air Sample House	8
291BB	Instrument Building, A and B Filters	283
291BC	A and B Filters	3,217
291BD	C Filter and Instrument Building	268
291BF	D Filter	115
291BG	D Filter Instrument Building	283
291BH	Instrument Building, E Filter	20
291BJ	B Plant Instrument Building, F Filter	272
291BK	Instrument Building, E and F Filters	223
292AA	PR Stack Sample House	274
292AB	PUREX Gases Effluent Monitoring Building	8,296
293A	Off Gas Treatment Facility	1,383
294A	Off Gas Treatment and Monitoring Station	194
295A	ASD Sample Station	219

Table A-1. 200 East Area Tier 2 Building/Structure List

Building/Structure ID	Building/Structure Title	Estimated Waste Quantity (tons)
295AA	SCD Sample and Pumpout Station	157
295AB	PDD Sample Station	442
295AC	CSL Sample Station	223
295AD	SWL Sample Station	366
Total Estimated Waste Quantity		**214,489**

A1.1 Building/Structure Descriptions

This section provides a brief description and history, if available, for each of the buildings/structures listed in Table A-1.

203A Acid Pump House. The 203A storage area is a 37.5 m (123 ft) by 31.4 m (103 ft) by 1.8 m (6 ft) high, reinforced-concrete, diked area surrounding storage tanks used for uranyl nitrate hexahydrate and other acidic solutions. The area is located north of the 202A Building and the 211A liquid chemical tank farm. The area is isolated from utilities and other structures that remained at the end of deactivation. Adjacent to this diked area is the 203A Building, which is a 14.3 m (47 ft) by 4.9 m (16 ft) by 3.7 m (12 ft) high, reinforced-concrete structure used to house pumps and the control room for the 203A storage tanks. A rail car and truck loading/unloading station is located on the west side of this area. To the east of the 203 A area is a 11.0 m (36 ft) by 7.6 m (25 ft) by 6.1 m (20 ft) high metal building used to store empty metal drums. The building is constructed of concrete and is approximately 1,342 m^2 (14,448 ft^2).

206A Vacuum Acid Fractionator Building. The 206A Vacuum Acid Fractionator Building houses the vacuum fractionators and associated equipment used for concentrating nitric acid from the Plutonium Uranium Extraction (PUREX) and UO_3 Plants. The 206A Building is a reinforced-concrete structure located at the northwest corner of U Cell. The outside dimensions are 8 m (28 ft) by 11 m (35 ft) by 14 m (46.5 ft) above grade at its maximum height. Inside the building, a pit containing the condensate tank extends 3 m (10 ft) below grade.

209E Critical Mass Laboratory and 296P031 Stack. The 209E Critical Mass Laboratory is located west of the 201C Process Building. The Critical Mass Laboratory is an L-shaped concrete block structure. One wing houses offices, control room shops, and common facilities. The other wing houses an equipment room, change room, mixing laboratory, and a two-story reactor hall. The reactor hall is heavily shielded.

Criticality experiments were conducted in the Critical Mass Room from 1960 to 1983 using plutonium nitrate and enriched uranium solutions. Criticality research was also conducted with solid special nuclear materials and fuels such as plutonium blocks, uranium blocks and slabs, and fuel assemblies from the Fast Flux Test Facility and other reactors. This building is approximately 834 m^2 (8,979 ft^2) and includes the 296P031 Stack.

212A Fission Product Loadout Station. The 212A Fission Product Loadout Station was used for delivering or withdrawing liquid radioactive waste to or from the PUREX Plant. The 212A Building is located along the south wall of the 202A Building and is constructed of metal. A roll-up door for entry of trucks transporting casks or tank trailers is located in the west end of the building. This metal building is approximately 59 m^2 (640 ft^2).

212B Fission Product Loadout, Cask Transfer Building. The 212B Fission Product Loadout, Cask Transfer Building was used for loading and unloading fission products from shielded transfer casks. The building is a sheet-metal-covered, steel-frame structure, 23 m (76 ft) long by 15 m (49 ft) wide, and 11 m (35 ft) at the highest point. The building includes a truck lock, a cask handling and surveillance room, and an underground operating gallery and cell, and attached laundry storage and change rooms. This building is approximately 512 m^2 (5,221 ft^2).

213A Fission Product Load-In Station. The 213A Fission Product Load-In Station is a corrugated steel building that was used for loading liquid waste for transport from shipping casks to the PUREX Plant. The 213A Building was also used for temporary storage of contaminated dry waste. This building is 48 m^2 (521 ft^2).

216A Valve Control Facility. The 216A Valve Control Facility is located near the 202A Building and includes an above-ground reinforced-concrete stair access and underground reinforced-concrete sample and valving pit. Two underground steel tanks are also associated with this facility. The calculation includes the volumes of the two steel tanks. The bottom of the lowest tank is 8 m (26 ft) below grade. This building is approximately 41 m^2 (440 ft^2).

221BB Process and Steam Condensate Building. The 221BB Process and Steam Condensate Building is located on the south side of the 221B Building between the R-13 and R-15 stairwells. The 221BB Building consists of a below-grade concrete vault (referred to as the condensate pit) and an above-grade metal building.

The condensate pit is constructed of poured concrete and has a length of 5.28 m (17 ft), a maximum width of 1.83 m (6 ft), and a depth of 2.59 m (8.5 ft). On top of the pit is a steel-frame construction building with metal sides and roof. The building is approximately 2.15 m from the south exterior wall of the 221B Building. The metal building is approximately 7 m (22 ft) long by 7.7 m (25 ft) wide. The 7.7 m (25 ft) wall is parallel to the south exterior wall of the 221B Building.

221BC Special Work Permit (SWP) Change House. The 221BC SWP Change House is a reinforced-concrete block building associated with the B Plant Complex. The building has a one-ton monorail crane along the west side. This building is approximately 70 m^2 (756 ft^2).

221BF Process Condensate Effluent Discharge Facility. The 221BF Process Effluent Discharge Facility is located in the southwest portion of the B Plant Complex. The 221BF Process Condensate Effluent Discharge Facility is a below-grade concrete vault. The vault is divided into a sample room, a monitor room, and a tank room.

The overall dimensions of the vault are 11 m (36 ft) long by 11 m (36 ft) wide by 8.2 m (27 ft) deep. An above-grade stair building is 4.5 m (15 ft) long by 1.68 m (5.5 ft) wide and 2.4 m (7.87 ft) high. The stair building is of steel frame and sheet metal construction.

222B Laboratory. The 222B Laboratory, located directly southeast of the 222B Building, was used from 1945 until 1952 for laboratory analysis in support of the B Plant Bismuth Phosphate Fuel Processing. Various small-scale experiments were performed inside the facility. This facility disposed of liquid waste to the 216-B-6 Reverse Well and the 216-B-10A Crib. This building is approximately 694 m^2 (7,474 ft^2).

225E Treated Effluent Disposal Facility (TEDF) Pump Station 2. The 225E TEDF Pump Station 2 is a pre-engineered metal building and underground two-level reinforced-concrete pump pit. The facility pumps liquid waste to the TEDF. This building is approximately 9 m^2 (96 ft^2).

241C801 Cesium Load-Out Facility. The 241C801 Cesium Load-Out Facility was built in 1962. When the facility was in operation, cesium-rich waste from tank 241C103 was pumped to an ion exchanger on a trailer. The cesium-depleted waste was returned to tank 241C102. The purpose was to provide load-out capability of cesium, which was independent of the PUREX Plant, thus freeing fission product equipment in PUREX to be devoted to other programs. The building has a total area of approximately 77 m^2 (832 ft^2) and consists of three parts: the load-out room, the operating room, and the valve pit room. The building is reinforced-concrete, partially below grade, with a metal upper section and roof.

241CR271 Cold Chemical Makeup Building. The 241CR271 Building is located adjacent to the 271CR building. The building has an office, an electrical room, a laboratory, a cell, and a tank room. The tank room houses Tank 5-1 used for adding chemicals for waste processing. The tank was removed in approximately 1968. The structure has been used as a storage shed since the late 1960s. The floor and sink drains located in the structure drain to crib 216C8, except for a sink drain in the laboratory area that is routed to the French drain. This building is approximately 210 m^2 (2,256 ft^2).

241CX40 Grout Removal Building. The 241CX40 Grout Removal Building is a temporary wood building covering the 241CX72 tank and houses machinery for extracting grout from the 241CX72 tank. The building is associated with the 241CX72 tank and the Semi-Works Facility and is approximately 101 m^2 (1,086 ft^2).

242B Radioactive Particle Research Laboratory. The 242B Radioactive Particle Research Laboratory contains the 242B Evaporator and is located immediately south of the 241B Tank Farm. The facility consists of the evaporator reinforced-concrete building and an attached control metal building. This facility disposed of liquid waste to the 216B11A and 216B11B Reverse Wells and the 216B37 Trench. The building is approximately 285 m^2 (3,067 ft^2).

252AB Electrical Substation. The 252AB Electrical Substation is associated with the PUREX Facility and is approximately 135 m^2 (1,454 ft^2). Substation 252AB supplies 1,500 kVA of electrical power to each of two busses, which in turn provide power to the operating and standby canyon exhaust fans, the 292-AB stack monitoring building, the 291AE No. 4 Filter Building, the 291 A1 monitoring system, and the 217A skid for surveillance and monitoring.

252AC Electrical Substation. The 252AC Electrical Substation is a skid-mounted modular substation associated with the PUREX Facility. The 252-AC station is powered from either of the two 1,500-kVA busses through an automatic transfer switch and supplies 750 kVA of electrical power to dedicated surveillance lighting throughout the PUREX Facility. This building is approximately 4.7 m^2 (51 ft^2).

271B B Plant Support Building. The 271B B Plant Support Building is a concrete and concrete block three-story building with basement and penthouse over the stair tower and a penthouse over the elevator. This building is approximately 2,309 m^2 (24,857 ft^2).

271CR Control Building. The 271CR Control Building consists of: (1) a mechanical equipment room that houses an air compressor, receiver vessel, air dryer and filters, and a water heater; (2) a control room that houses the electrical distribution equipment (panel boards and motor control center) and the control/ alarm panels; and (3) an operator area that houses a lunch room, shower, locker room, and toilet. The operator area is no longer used by operations personnel. The equipment in this building is non operational except for the control/alarm panel and the electrical distribution equipment. The control/alarm panels

have operational instruments that monitor the tank waste temperatures and liquid levels. This building is approximately 185 m^2 (1,988 ft^2).

276A Cold Solvent Storage Building. The 276A Cold Solvent Storage Building associated with the PUREX Plant ventilation system. The 276A Building (R-cell) is a 19.8 m (65 ft) by 7 m (23 ft) by 10.7 m (35 ft) high concrete structure (vault), built below grade, with removable concrete cover blocks extending above grade to form the building roof. R-cell provided organic solvent decontamination and storage. Currently, R-cell is accessed through the 202A sample gallery (R-cell centrifuge platform) or through the Product Recovery (PR) corridor (R-cell vault floor). This building is approximately 29 m^2 (314 ft^2).

276C Solvent Handling Building. The 276C Solvent Handling Building contained equipment and tanks for the treatment and storage of process solvents used in the 201C Process Building operations. The 276C Solvent Handling Facility is a four-story structure extending approximately 14 m (46 ft) above grade with a total floor area of approximately 213 m^2 (2,300 ft^2). The building is steel framed with metal siding, concrete floors, and a concrete roof. All of the exposed steel framework is covered with 3 cm (1 in.) of heat-resistant plaster.

Equipment used for solvent treatment was located on the first level. The chemical additional tanks were located on the second-level mezzanine. Head tanks and storage tanks for clean solvents were located on the third and fourth levels. Removable panels on the top two levels allowed large equipment to be removed from the building. The head tanks delivered organic feeds by gravity to the 201C Process Building. In addition, a large heating, ventilation, and air conditioning unit was located on the second level. The power control room was attached to the south side of the building. Contamination in the 276C Building was limited to a diluent vessel on the third floor and in the filter housings.

291AE Filter Cell No. 4. The 291AE Filter Cell No. 4 is an above-ground building associated with the PUREX Plant ventilation system. The 291AE No. 4 filter building is a 37.5 m (123 ft) by 12.5 m (41 ft) by 5.2 m (17 ft) reinforced-concrete building, which houses 10 modular filter units, each with upstream and downstream isolation dampers. A typical modular filter unit consists of a stainless-steel housing containing an inlet damper, an in-place filter testing assembly, a four-by-three array of high efficiency particulate air (HEPA) filters, an in-place filter-testing assembly, and an outlet damper. During the S&M phase, three filter arrays will remain in operation, with one remaining in reserve. The remaining filter arrays are not generally ready to be placed into service.

Two reinforced-concrete air ducts are located below the 291AE Building, parallel to each other and running in the north south direction. The west duct is an inlet air duct connected to the underground air duct from the deep-bed Filter No. 2. The east duct is the discharge air duct from the HEPA filter units and connects with the above-ground, reinforced-concrete exhaust air plenum. Attached to the south side of the building is a 7.3 m (24 ft) by 3.7 m (12 ft) by 2.7 m (9 ft) high metal building, which houses the mechanical and electrical equipment and is the entrance vestibule for the 291AE Building. This building is approximately 471 m^2 (5,076 ft^2).

291AK Tunnel Spray Enclosure and Caissons. The 291AK Tunnel Spray Enclosure is a small metal frame building associated with the PUREX Plant, located under the 202A stair. This building also contains two caissons for access piping to spray the 202A exhaust air plenums. This building is approximately 3 m^2 (32 ft^2).

291AR Exhaust Air Filter Stack Building. The 291AR Exhaust Air Filter Stack Building is a vault, a partially above-grade, and partially below-grade structure associated with the 244AR Building. This building is approximately 13 m^2 (143 ft^2).

291B Exhaust Fan Control House and Sand Filter. The 291B Building consists of air filter systems, ventilation equipment, and an exhaust stack. It is located east of the 222B Building and south of the 221B Building. The retired 291B HEPA filters are located in underground vaults in the 291B area, which is located approximately 46 to 61 m (150 to 200 ft) south of the east end of the 221B Canyon. The vaults are reinforced concrete, with steel filter frames inside. The vaults are covered by approximately 1 m (3.1 ft) of soil and gravel and are bermed with soil and gravel on three sides. The east end has a vacant vault (F vault) east of and adjacent to the last in-service filter (E filter). The A, B, C, D, and E filters were equipped with multiple banks of HEPA filters, and some filters were also equipped with one or more banks of pre-filters. The filters and vaults have been isolated and abandoned in place.

The equipment contained within this complex is used to collect and filter air from the 221B Building before discharging it to the exhaust stack. Radioactive contaminants were present in the exhaust air as a result of various dissolving steps during the fuel processing. This building is approximately 30 m^2 (330 ft^2).

291BH Instrument Building, E Filter. The 291BH Instrument Building is an above-ground concrete shear wall building associated with the B Plant Canyon ventilation system. This building is 2.3 m^2 (25 ft^2).

292AA PR Stack Sample House. The 292AA PR Stack Sample House is a small steel building containing instrumentation associated with the plutonium recovery stack at the PUREX Plant. This building is approximately 11 m^2 (117 ft^2).

292AB PUREX Gases Effluent Monitoring Building. The 292AB PUREX Gases Effluent Monitoring Building is a steel-braced frame building containing monitoring instrumentation associated with the PUREX Plant ventilation system. The 292AB Building is a 10.7 m (35 ft) by 6.1 m (20 ft) by 7.6 m (25 ft) two-story metal building. The second floor is constructed on metal grate, with a metal plate over approximately 80 percent of the floor area. The building is an enclosure for stack sampling equipment. This building is approximately 142 m^2 (1,531 ft^2)

293A Off Gas Treatment Facility. The 293A Off Gas Treatment Facility is a concrete building containing off gas scrubber equipment for treating PUREX Plant off gases. The building is approximately 83 m^2 (899 ft^2).

295AA Steam Condensate Discharge (SCD) Sample and Pumpout Station. The 295AA SCD Sample and Pumpout Station is a small steel building that supported PUREX Plant operations. This building was originally designated as 216Z9D in 200 West, at the Plutonium Finishing Plant. The building was salvaged in 1983 and installed as 295AA at PUREX in 1985. This building is approximately 8 m^2 (85 ft^2).

Typical Light Steel Frame Building. These buildings are pre-engineered and/or prefabricated with transverse rigid frames, and are usually one story. The roof and walls consist of insulated steel roof and wall panels. The frames are designed often with tapered beam and column sections built up of light plates. The frames are built in segments and assembled in the field with bolted or welded joints. Interior walls are usually metal studs, and gypsum wallboard partitions. Buildings that fall into this generic category include the following:

- **221BD Laundry Storage Building.** The 221BD Laundry Storage Building is part of the B Plant Complex and is approximately 56 m^2 (608 ft^2).
- **221BK B Plant Canyon Ventilation Instrument Building.** The 221BK B Plant Canyon Ventilation Instrument Building is associated with the B Plant Canyon ventilation system and is approximately

114 m^2 (1,230 ft^2). The B Plant Canyon exhaust system is monitored and controlled from a programmable logic controller located in the 221BK Building.

- **225BF Air Dryer Building.** The 225BF Air Dryer Building is associated with the WESF ventilation system and is approximately 12 m^2 (128 ft^2).
- **242BL Cask Loading Building.** The 242BL Cask Loading Building was built in 1963 to facilitate the transfer of radioactive materials to and from the 242B Facility. The building is a typical steel light frame structure associated with the 241B Tank Farm and is approximately 45 m^2 (480 ft^2).
- **2707AR Sludge Vault Change House.** The 2707AR Sludge Vault Change House is associated with the PUREX Facility and is approximately 61 m^2 (659 ft^2).
- **2711A Air Compressor Building.** The 2711A Air Compressor Building is associated with the PUREX Facility and is approximately 37 m^2 (400 ft^2).
- **2716B Radiation Monitor (RM) Checkout Station, Railroad (RR) Tunnel.** The 2716B RM Checkout Station, RR Tunnel is associated with the B Plant Complex and is approximately 22 m^2 (240 ft^2).
- **291BC "A and B" Filters Building.** The 291BC "A and B" Filters Building is associated with the B Plant Canyon ventilation system and is 84 m^2 (901 ft^2).
- **291BD "C" Filter and Instrument Building.** The 291BD Filter and Instrument Building is associated with the B Plant Canyon ventilation system and is 12 m^2 (137 ft^2).
- **291BF "D" Filter**. The 291BF "D" Filter Building is a typical steel light frame structure associated with the B Plant Canyon ventilation system, and includes the fourth filter vault and supporting instrument building. This building is 6 m^2 (64 ft^2).
- **291BG "D" Filter Instrument Building.** The 291BG "D" Filter Building is a typical steel light frame structure associated with the B Plant Canyon ventilation system. This building includes the compressor building, fifth filter vault, and supporting instrument building. This building is 11 m^2 (126 ft^2).
- **291AD Filter Pit and Stack.** The 291AD Filter Pit and Stack is associated with the PUREX Facility and is approximately 16 m^2 (173 ft^2).
- **291BB Instrument Building, "A and B" Filters.** The 291BB Instrument Building is associated with the B Plant Canyon ventilation system and is approximately 13 m^2 (144 ft^2).
- **291BJ B Plant Instrument Building, "F" Filter.** The 291BJ B Plant Instrument Building is a typical steel light frame structure associated with the B Plant Canyon ventilation system and is approximately 13 m^2 (144 ft^2).
- **291BK Instrument Building, "E and F" Filters.** The 291BK Instrument Building is associated with the B Plant Canyon exhaust system pressure monitoring. This building is approximately 9.29 m^2 (100 ft^2).
- **291AH Ammonia Off Gas (AOG) Sample Station.** The 291AH AOG Sample Station is associated with the PUREX Plant process ventilation system. This building is approximately 6 m^2 (64 ft^2).

- **294A Off Gas Treatment and Monitoring Station.** The 294A Off Gas Treatment and Monitoring Station is a small steel building associated with the PUREX Plant process ventilation system. This building is approximately 9 m^2 (96 ft^2).

- **295A Ammonia Scrubber Discharge (ASD) Sample Station.** The 295A ASD Sample Station contains instrumentation for monitoring of ASD effluent associated with PUREX Plant process operations. This building is approximately 9 m^2 (96 ft^2).

- **295AB Process Distillate Discharge (PDD) Sample Station.** The 295AB PDD Sample Station is a small steel building that supported PUREX Plant operations. This building is approximately 18 m^2 (192 ft^2).

- **295AC Chemical Sewer Line (CSL) Sample Station.** The 295AC CSL Sample Station is a small steel building that contains instrumentation associated with the PUREX Plant chemical sewer system. This building is approximately 9 m^2 (96 ft^2).

- **295AD Sanitary Water Line (SWL) Sample Station.** The 295AD SWL Sample Station is a small steel building that contains instrumentation associated with the PUREX Plant sanitary water system. This building is approximately 13 m^2 (144 ft^2).

Typical Light Wood Frame Building. These buildings are generally wood, light frame structures containing repetitive framing by wood joists on wood studs. Loads are light and spans are small. Exterior walls are usually sheathed with plank siding, stucco, plywood, gypsum board, particle board, or fiberboard. Interior partitions are sheathed with plaster or gypsum board. Roofing is asphalt shingles, composition or built-up roofing system. Buildings that fall into this generic category include the following:

- **291AB Exhaust Air Sampler House.** The 291AB Exhaust Air Sampler House is associated with the PUREX Plant ventilation system and is approximately 4 m^2 (46 ft^2).

- **291AC Exhaust Air Sampler House.** The 291AC Exhaust Air Sampler House is associated with the PUREX Plant ventilation system and is approximately 4 m^2 (46 ft^2).

Typical Reinforced Structure. These structures are typically cast-in-place concrete beams or columns, and could include below-grade construction or basements. These buildings/structures normally have exterior walls that exceed 0.3048 m (12 in.) in thickness, and are heavily reinforced on minimal centerline spacing. Interior walls will vary depending on bearing and nonbearing requirements. Floor and roof framing system consists of cast-in-place concrete slabs with concrete beams, one-way joists, two-way waffle joists, or flat slabs. Buildings that fall into this generic category include the following:

- **225BA K1 Filter Pit Encapsulation Facility.** The 225BA K1 Filter Pit Encapsulation Facility is associated with the WESF ventilation system and is approximately 59 m^2 (638 ft^2).

- **225BB K3 Filter Pit Encapsulation Facility.** The 225BB K3 Filter Pit Encapsulation Facility is associated with the WESF ventilation system and is approximately 121 m^2 (1,302 ft^2).

- **291BA Exhaust Air Sample House.** The 291BA Exhaust Air Sampler House is associated with the B Plant Canyon ventilation system and is approximately 4 m^2 (48 ft^2).

Appendix B

Applicable or Relevant and Appropriate Requirements

Terms

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
ALARACT	as low as reasonably achievable control technology
ARAR	applicable or relevant and appropriate requirements
BACT	best available control technology
BARCT	best available radionuclide control technology
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
D4	decontamination, deactivation, decommissioning, and demolition
DOE	U.S. Department of Energy
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
LLW	low-level waste
NCP	"National Oil and Hazardous Substances Pollution Contingency Plan"
NTCRA	non-time-critical removal action
ODS	ozone depleting substance
PCB	polychlorinated biphenyl
RACM	regulated asbestos containing material
RACT	reasonably available control technology
RCRA	*Resource Conservation and Recovery Act of 1976*
ROD	record of decision
T-BACT	Best Available Control Technology for Toxics
TRU	Transuranic
TSCA	*Toxic Substances Control Act of 1976*

B1 Identification of Applicable or Relevant and Appropriate Requirements for the 200 East Area Tier 2 Buildings/Structures

Implementation of the selected alternative will be designed to comply with the applicable or relevant and appropriate requirements (ARARs) cited in this section to the extent practicable. ARARs are defined to include only substantive requirements of environmental standards. ARARs do not include administrative requirements, including requirements to obtain any federal, state, or local permits (40 CFR 300.400(e), "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP), "General"; 42 USC 9621(e), "Comprehensive Environmental Response, Compensation, and Liability," "Cleanup Standards").

The ARARs listed in this appendix are the ARARs that U.S. Department of Energy (DOE) proposes for implementation of the recommended alternative. These ARARs were selected based on knowledge regarding the hazardous substances within the Tier 2 buildings/structures. Because the selected alternative will result primarily in waste generation and potential for air emissions, the key ARARs identified for the alternatives considered include waste management standards, standards controlling releases to the environment, standards for protection of natural resources, and safety and health standards.[1] The ARARs are discussed generally in the following sections and are documented in detail in Tables B-1 and B-2.

Table B-1. Identification of Potential Federal Applicable or Relevant and Appropriate Requirements and To Be Considered for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
***Clean Air Act of 1990*; 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants"**			
40 CFR 61.92, "Standard"	ARAR	This regulation sets a limit for the combined radionuclide emissions from a DOE facility (site). The emissions cannot exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr.	The buildings/structures to be addressed under this NTCRA will contain radioactive constituents. Potential emissions from work under the NTCRA will be performed in accordance with this standard.

[1] Worker safety and health standards are not environmental standards per se and, therefore, not potential ARARs. Instead, compliance with applicable safety and health regulations is required external to the CERCLA ARAR process. However, due to the nature and importance of these standards, a discussion of the safety and health requirements is included in this appendix.

Table B-1. Identification of Potential Federal Applicable or Relevant and Appropriate Requirements and To Be Considered for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
40 CFR 61.145, "Standard for Demolition and Renovation" Specific subsections: 40 CFR 61.145(a)(1), (a)(2), and (a)(5), 40 CFR 61.145(c) 40 CFR 61.150(a) through (c), "Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations"	ARAR	These standards apply to demolition activities, including the removal of RACM. The standards of 40 CFR 61.145(a)(1), (a)(2), and (a)(5), are used to determine when the requirements of 40 CFR 61.145(c) apply to demolition activities. The standards of 40 CFR 61.150(a) through (c) are used to control asbestos emissions during collection, processing, packaging, and transport of any asbestos-containing waste material.	Some buildings/structures addressed under the NTCRA could contain asbestos. The substantive provisions of 40 CFR 61.145(c) will be complied with in accordance with 40 CFR 61.145(a)(1), (a)(2), and (a)(5) for the D4 of that contain RACM under this NTCRA. The substantive provisions of 40 CFR 61.150(a) through (c) will be met during activities that involve collection, processing, packaging, and transport of asbestos-containing waste material under the NTCRA.
Archeological and Historic Preservation Act of 1974			
Archeological and Historic Preservation Act of 1974, 16 USC 469a-1 – 469a-2(d) 40 CFR 6.301(c), "Procedures for Implementing the National Environmental Policy Act and Assessing the Environmental Effects Abroad of EPA Actions," "Applicant Requirements"	ARAR	These laws apply to activities that could cause the loss of any archaeological or historic data. This act mandates preservation of the data and does not require protection of the actual site.	Based on past identification of archeological and historic sites at the Hanford Site, the substantive requirements of this act are potentially applicable to and will be complied with for actions under the NTCRA that might disturb these sites. This requirement is location-specific.
National Historic Preservation Act of 1966			
National Historic Preservation Act of 1966 36 CFR 800, "Protection of Historic Properties" 40 CFR 6.301(b) Executive Order 11593, *Protection and Enhancement of the Cultural Environment* 36 CFR 65, "National Historic Landmarks Program" 36 CFR 60, "National Register of Historic Places"	ARAR	The *National Historic Preservation Act of 1966* requires that historic properties are appropriately considered in planning federal initiatives and actions. These laws also require federal agencies to consider the impacts of their undertaking on cultural properties through identification, evaluation and mitigation processes, and consultation with interested parties.	Based on past identification of cultural and historic sites at the Hanford Site, these types of sites could be encountered during NTCRA activities. The substantive requirements of this act are potentially applicable to and will be complied with for actions that might disturb these types of sites. This requirement is location-specific.

Table B-1. Identification of Potential Federal Applicable or Relevant and Appropriate Requirements and To Be Considered for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
Native American Graves Protection and Repatriation Act of 1990			
Native American Graves Protection and Repatriation Act of 1990 43 CFR 10, "Native American Graves Protection and Repatriation Regulations"	ARAR	These provisions establish federal agency responsibility for discovery of human remains, associated and unassociated funerary objects, sacred objects, and items of cultural patrimony.	Based on Hanford Site history, these types of sites could be encountered during the NTCRA. Substantive requirements of this act are potentially applicable if remains and sacred objects are found during NTCRA activities and will require Native American Tribal consultation in the event of discovery. This requirement is location-specific.
Endangered Species Act of 1973			
Endangered Species Act of 1973,16 USC 1531 et seq., subsection 16 USC 1536(c) 50 CFR 402, "Interagency Cooperation—Endangered Species Act of 1973, as Amended" 40 CFR 6.302(h), "Responsible Official Requirements" *Migratory Bird Treaty Act of 1918*	ARAR	These laws and implementing regulations prohibit actions by federal agencies that are likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification or critical habitat.	The NTCRA will be implemented where such species could be encountered. Substantive requirements of this act are potentially applicable if threatened or endangered species are identified in areas where NTCRA activities will occur. If the NTCRA is within critical habitat or buffer zones surrounding threatened or endangered species, mitigation measures must be taken to protect the resource in accordance with substantive requirements of these laws and regulations. This requirement is location-specific.
40 CFR 82, "Protection of Stratospheric Ozone"			
40 CFR 82.156, "Protection of Stratospheric Ozone," "Required Practices" 40 CFR 82.158, "Standards for Recycling and Recovery Equipment" 40 CFR 82.161, "Technician Certification"	ARAR	The provisions of 40 CFR 82.156 specify standards for evacuation of refrigerant from appliances to a recovery or recycling machine prior to disposal. The procedures and processes of 40 CFR 82.158 apply to recycling and recovery of ODS. 40 CFR 82.161 requires appropriate certification for workers who recover or recycle ODS.	Some buildings/structures addressed under the NTCRA could include appliances. Appliances identified for disposal under the NTCRA may include the recycling or recovery of ODS that will be conducted in accordance with the applicable substantive requirements and work practices. These requirements are action-specific.

Table B-1. Identification of Potential Federal Applicable or Relevant and Appropriate Requirements and To Be Considered for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
Toxic Substances Control Act of 1976 **(TSCA); 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions"**			
40 CFR 761.50(b)1, 2, 3, 4, and 7; (c), "Applicability" 40 CFR 761.60(a), (b), and (c), "Disposal Requirements" 40 CFR 761.61, "PCB Remediation Waste" 40 CFR 761.62, "Disposal of PCB Bulk Product Waste" 40 CFR 761.79, "Decontamination Standards and Procedures"	ARAR	These regulations apply to the storage and disposal of PCB waste including liquid PCB waste, PCB items, PCB remediation waste, PCB bulk product waste, and PCB/ radioactive waste at concentrations equal to or greater than 50 ppm. These regulations also provide options for decontamination of materials contaminated with PCBs.	Some buildings/structures addressed under the NTCRA could include various forms of PCB waste, including, but not limited to, PCB items, PCB liquids, and PCB articles, and/or containers that will be managed in accordance with the substantive requirements of these standards if encountered and or generated during the NTCRA.

Table B-2. Identification of Potential State Applicable or Relevant and Appropriate Requirements for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
Regulations Pursuant to the *Solid Waste Management, Recovery, and Recycling Act of 1969* (RCW 70.95)			
WAC 173-303-016, "Dangerous Waster Regulations," "Identifying Solid Waste"	ARAR	This regulation applies for determining which materials are and are not solid waste. This determination is used to establish which wastes are subject to the designation procedures of WAC 173-303-070(3).	Solid waste will be generated during the NTCRA. Substantive requirements of these regulations are potentially applicable because they define how to determine which materials are subject to the designation regulations. Specifically, materials that are generated for removal from the CERCLA site during the NTCRA will be evaluated using the procedures for identifying solid waste to ensure proper management. This requirement is action-specific.

Table B-2. Identification of Potential State Applicable or Relevant and Appropriate Requirements for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
WAC 173-303-070(3), "Designation of Dangerous Waste"	ARAR	This regulation applies for the evaluation of solid waste to determine if such waste is designated as dangerous or mixed waste. Solid waste that designates as dangerous or mixed waste are subject to management and disposal standards of WAC 173-303.	There is potential for generating solid waste during D4 that designates as dangerous or mixed waste. Substantive requirements of these regulations are potentially applicable to such solid waste if generated or encountered during the NTCRA. Specifically, solid waste generated for removal from the CERCLA site during this NTCRA will be evaluated using the dangerous waste designation procedures to ensure proper management. This requirement is action-specific.
WAC 173-303-071, "Excluded Categories of Waste"	ARAR	This regulation lists waste categories that are excluded from management in accordance with the requirements of WAC 173-303.	There is potential for generating materials during D4 that will qualify for management under the substantive provisions of these regulations, which will be used as appropriate during the NTCRA. This requirement is action-specific.
WAC 173-303-073 , "Conditional Exclusion of Special Wastes"	ARAR	This regulation provides for management of waste that poses a relatively low hazard to human health and the environment. The standards provide for management of special waste with a level of protection that is intermediate between dangerous and nondangerous solid waste.	There is potential for generating materials during D4 that will qualify for management under the substantive provisions of these regulations, which will be used as appropriate during the NTCRA. This requirement is action-specific.
WAC 173-303-077, "Requirements for Universal Waste"	ARAR	This regulation provides alternate reduced standards for certain solid waste (i.e., batteries, mercury-containing equipment, and lamps) as described in WAC 173-303-573, "Standards for Universal Waste Management."	The potential exists for generating materials during D4 that will qualify for management under the substantive provisions of these regulations, which will be used as appropriate during the NTCRA. This requirement is action-specific.
WAC 173-303-120, "Recycled, Reclaimed, and Recovered Wastes"	ARAR	This regulation describes requirements for recycling materials that are solid waste and dangerous.	The potential exists for generating solid waste during D4 that will designate as dangerous that may be recycled.

Table B-2. Identification of Potential State Applicable or Relevant and Appropriate Requirements for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
WAC 173-303-140(4), "Land Disposal Restrictions"	ARAR	This regulation establishes state standards for land disposal of dangerous waste and incorporates by reference the federal land disposal restrictions of 40 CFR 268, Land Disposal Restrictions," that are applicable to solid waste designated as dangerous or mixed waste in accordance with WAC 173-303-070(3).	The potential exists for generating solid waste during D4 that will designate as dangerous or mixed waste and further require treatment prior to land disposal. The substantive requirements of this regulation are potentially applicable to dangerous and/or mixed waste that is generated or encountered during the NTCRA. Specifically, dangerous and/or mixed waste generated and removed from the CERCLA site during the NTCRA for land disposal (e.g., at the ERDF or other approved disposal facility) will be evaluated for determination of applicable land disposal restrictions at the point of waste generation. This requirement is action-specific.
WAC 173-303-170(3), "Requirements for Generators of Dangerous Waste."	ARAR	This regulation establishes standards for the temporary management of waste that designates as dangerous or mixed waste.	Waste may be generated during the NTCRA that needs to be temporarily accumulated or stored under the NTCRA. Substantive requirements of these regulations will be used for management of materials generated and/or encountered during the NTCRA. WAC 173-303-170(3) includes by reference the substantive provisions of both the satellite accumulation standards of WAC 173-303-200, "Accumulating Dangerous Waste On-Site," and the standards for management in containers under WAC 173-303-630, "Use and Management of Containers," and tanks under-640, "Tank Systems." This requirement is action-specific.
WAC 173-350-300(2), "Solid Waste Handling Standards," "On-Site Storage, Collection and Transportation Standards"	ARAR	This regulation describes requirements for management of nondangerous, nonradioactive solid waste.	There is potential for generating nondangerous, nonradioactive solid waste during D4.

Table B-2. Identification of Potential State Applicable or Relevant and Appropriate Requirements for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
General Regulations for Air Pollution Sources, WAC 173-400, "General Regulations for Air Pollution Sources," and WAC 173-460, "Controls for New Sources of Toxic Air Pollutants"			
Washington Clean Air Act of 1967, RCW 70.94, "Washington Clean Air Act," and RCW 43.21A, "Department of Ecology" WAC 173-400, "General Regulations for Air Pollution Sources" Specific subsection: WAC 173-400-040(3) and (8), "General Standards for Maximum Emissions"	ARAR	These laws and regulations require all sources of air contaminants to meet standards for visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, sulfur dioxide, concealment and masking, and fugitive dust. Requires use of RACT.	There is potential for fugitive emissions during D4 under the NTCRA. Substantive requirements of the general standards for control of fugitive emissions will be applied as appropriate to minimize the generation of fugitive dust during D4 activities. These requirements are action-specific.
Specific subsection: WAC 173-400-113, "Requirements for New Sources in Attainment or Unclassifiable Areas"	ARAR	This regulation applies to new and modified sources and requires controls to minimize the release of associated criteria and toxic air emissions. Emissions are to be minimized through application of BACT.	It is unlikely that the substantive provisions in this regulation will be triggered during the NTCRA. However, substantive requirements of this regulation potentially will be applicable to removal actions performed at the site if a treatment technology that emits regulated air emissions were necessary during the implementation of the NTCRA. This requirement is action-specific.
WAC 173-460, "Controls for New Sources of Toxic Air Pollutants" Specific subsections: WAC 173-460-060, "Control Technology Requirements" WAC 173-460-150, "Table of ASIL, SQER and de Minimis Emission Values"	ARAR	These regulations apply for determination of *de minimis* emission values and for establishment of control technology as appropriate for new or modified toxic air pollutant sources likely to increase toxic air pollutant emission. Requires T-BACT and demonstration that emissions of TAP will not endanger human health or safety.	It is not expected that work performed under the NTCRA will trigger standards for T-BACT. However, substantive requirements of these regulations potentially will be applicable to removal actions performed at the site, if a treatment technology that emits toxic air emissions were necessary during the implementation of the NTCRA. These requirements are action-specific.

Table B-2. Identification of Potential State Applicable or Relevant and Appropriate Requirements for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
WAC 246-247, "Radiation Protection—Air Emissions"			
WAC 246-247, "Radiation Protection—Air Emissions" WAC 246-247-040(3) and (4), "General Standards"	ARAR	These regulations require all new construction and significant modifications of emission units to utilize BARCT and require all existing emission units and nonsignificant modifications to utilize ALARACT in controlling emissions to the environment.	Radionuclide contamination will be encountered during D4 under the NTCRA. Substantive requirements of this standard will be potentially applicable to activities that will involve fugitive, diffuse and/or point source emissions of radionuclides to the ambient air, such as demolition and excavation of radioactively contaminated structures and/or soils and operation of exhausters and vacuums, performed during the NTCRA. These requirements are action-specific.
WAC 246-247-075, "Monitoring, Testing and Quality Assurance" Specific subsections: WAC 246-247-075(1), (2), (3), (4), (6), (8), and (11)	ARAR	These regulations establish the monitoring, testing, and quality assurance requirements for radioactive air emissions from radionuclide air emission sources. These regulations also include requirements for continuous sampling. Periodic sampling (grab samples) occurs in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. These regulations also provide for the waste site owner or operator to use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures as approved by the lead agency. Emissions from nonpoint and fugitive sources of airborne radioactive material will be measured. Measurement techniques may include, but are not limited to sampling, calculation, smears, or other reasonable method for identifying emissions as determined by the lead agency.	There is a potential for generating fugitive, diffuse, and/or point source emissions during the NTCRA. Substantive requirements of this standard are potentially applicable because fugitive and nonpoint source emissions of radionuclides to the ambient air may result from activities, such as demolition and excavation of radioactively contaminated structures and operation of exhausters and vacuums, performed during the NTCRA. These requirements are action-specific.

Table B-2. Identification of Potential State Applicable or Relevant and Appropriate Requirements for the Removal Action

ARAR Citation	ARAR	Requirement	Rationale for Consideration
WAC 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides"			
WAC 173-480-040, "Ambient Standard"	ARAR	Requires that emissions of radionuclides in the air will not cause a maximum effective dose equivalent of more than 10 mrem/yr to the whole body to any member of the public.	The buildings/structures to be addressed under this NTCRA will contain radioactive constituents. Potential emissions from work under the NTCRA will be performed in accordance with this standard.
WAC 173-480-050(1), "General Standards for Maximum Permissible Emissions"	ARAR	This regulation establishes general standards for all radionuclide emission units and requires emission units to meet WAC 246-247 requiring every reasonable effort to maintain radioactive materials in effluents to unrestricted areas, ALARA. The regulation indicates that control equipment of sites operating under ALARA will be defined as RACT and ALARA control technology.	The potential for fugitive and diffuse emissions due to demolition and excavation and related activities potentially will require efforts to minimize those emissions by meeting WAC 246-247. This requirement is action-specific and potentially applicable.
WAC 173-480-060, "Emission Standards for New and Modified Emission Units"	ARAR	Requires that construction, installation, or establishment of a new air emission unit will utilize BARCT.	The potential for fugitive and diffuse emissions due to demolition and excavation and related activities potentially will require efforts to minimize those emissions by meeting WAC 246-247. This requirement is action-specific and potentially applicable.
WAC 173-480-070(2), "Emission Monitoring and Compliance Procedures"	ARAR	Requires that procedures specified in WAC 246-247 or approved specifically by the regulatory agency will be used to determine compliance with the 10 mrem/yr standard for dose to any member of the public. Compliance is determined by calculating the dose to members of the public at the point of maximum annual air concentration in an unrestricted area where any member of the public may be.	The potential for radionuclide emissions from some activities under the NTCRA such as fugitive and diffuse emissions during demolition and excavation and related activities will be performed in compliance with the public dose standard during the NTCRA. This requirement is action-specific.

B1.1 Waste Management Standards

A variety of waste streams will be generated under the selected removal action alternative. It is anticipated that the majority of the waste will be determined to be low-level waste (LLW). However, quantities of transuranic (TRU), dangerous or mixed waste, polychlorinated biphenyl (PCB) waste, and asbestos-containing material (ACM) could also be generated. The great majority of the waste will be in a solid form. However, some liquid waste might be generated.

Radioactive waste is managed by DOE under the authority of the *Atomic Energy Act of 1954*.

The identification, storage, treatment, and disposal of hazardous waste and the hazardous component of mixed waste are governed by the *Resource Conservation and Recovery Act of 1976* (RCRA). The State of Washington, which implements RCRA requirements under WAC 173-303, "Dangerous Waste Regulations," has been authorized to implement most elements of the RCRA program. The dangerous waste standards for generation and storage apply to the management of any dangerous or mixed waste generated by decontamination, deactivation, decommissioning, and demolition (D4) activities. Treatment standards for dangerous or mixed waste subject to RCRA land disposal restrictions are specified in WAC 173-303-140, "Land Disposal Restrictions," which incorporates 40 CFR 268, "Land Disposal Restrictions," by reference.

The management and disposal of PCB waste are governed by *Toxic Substances Control Act of 1976* (TSCA), and regulations at 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions." The TSCA regulations contain specific provisions for PCB waste, including PCB waste that contains a radioactive component. PCBs also are considered underlying hazardous constituents under RCRA and, thus, could be subject to WAC 173-303 and 40 CFR 268 requirements.

Removal and disposal of asbestos and ACM are regulated under the *Clean Air Act of 1990* (40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," Subpart M, "National Emission Standard for Asbestos"). These regulations provide for special precautions to prevent environmental releases or exposure to personnel of airborne emissions of asbestos fibers during removal actions.

Waste that is determined to be LLW that meets Environmental Restoration Disposal Facility (ERDF)[2] acceptance criteria will preferentially be disposed at the ERDF, because the ERDF is an engineered facility that provides a high degree of protection to human health and the environment. In addition, previous engineering evaluation/cost analysis (EE/CAs) for other Hanford Site work have shown that this disposal option is more cost effective than disposal at other disposal sites. Construction of the ERDF was authorized using *a Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) record of decision (ROD) (EPA, 1995, *Record of Decision U.S. DOE Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington*). The ERDF is designed to meet minimum technological requirements for a hazardous waste landfill, including standards for a double liner, leachate collection system, leak detection, monitoring, and a final cover. Alternate potential disposal locations may be considered when the non-time-critical removal action (NTCRA) occurs if a suitable and cost effective location is identified. Any potential alternate disposal location will be evaluated for appropriate performance standards to assure that it is adequately protective of human health and the

[2] CERCLA Section 104(d)(4) states that where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, the facilities can be treated as one for purposes of CERCLA response actions. Consistent with this, the Hanford buildings/structures and ERDF are considered to be "onsite" for purposes of Section 104 of CERCLA, and waste may be transferred between the facilities without requiring a permit. This determination is affirmed by this Action Memorandum.

environment. Waste treatment and/or disposal may take place at other facilities that are on the Hanford Site or that are offsite (e.g., Waste Isolation Pilot Plant) and have been authorized by their respective U.S. Environmental Protection Agency (EPA) regional offices in accordance with the NCP (40 CFR 300.440) as suitable to receive waste from CERCLA sites.

Waste designated as dangerous or mixed waste will be treated as appropriate to meet land disposal restrictions and ERDF acceptance criteria, and disposed at the ERDF. Applicable packaging and pre transportation requirements for dangerous or mixed waste generated by the NTCRA will be identified and implemented before movement of any waste.

Some of the aqueous waste determined to be LLW or designated as dangerous or mixed waste will be transported to 200 Area Effluent Treatment Facility (ETF) for treatment and disposal. The ETF is a RCRA-permitted unit authorized to treat aqueous waste streams generated on the Hanford Site and dispose of these streams at a designated state-approved land disposal facility in accordance with applicable requirements.

Waste designated as nonliquid PCB waste likely will be disposed at the ERDF, depending on whether it meets the waste acceptance criteria. PCB waste that does not meet ERDF waste acceptance criteria will be retained at a PCB storage area meeting the requirements for TSCA storage and will be transported for future disposal at an appropriate disposal facility.

Removal and disposal of asbestos and ACM are regulated under the Clean Air Act (40 CFR 61, Subpart M). The substantive provisions of these regulations provide for special precautions to prevent environmental releases or exposure to personnel of airborne emissions of asbestos fibers during removal actions. In situations where removal of regulated asbestos-containing material (RACM) is impractical or infeasible prior to demolition, emission controls similar to those addressed by EPA's Alternative Asbestos Control Method[3] will be used. Such work will include use of fixatives on accessible RACM surfaces and use of fixatives and water on contaminated soil and equipment as needed to minimize airborne particulate. Demolition waste will also be adequately wetted during demolition, staging, and load-out activities. In addition, standard industry practices will be used in all phases of the work to control fugitive emissions. Asbestos and ACM will be removed, packaged as appropriate, and disposed in the ERDF. Asbestos and ACM will be removed, packaged as appropriate, and disposed in the ERDF.

The selected alternative can be performed in compliance with the waste management ARARs. Waste streams will be evaluated, designated, and managed in compliance with the ARAR requirements. Before disposal, waste will be managed in a protective manner to prevent releases to the environment or unnecessary exposure to personnel.

B1.2 Standards Controlling Emissions to the Environment

The selected removal action alternative has the potential to generate both radioactive and nonradioactive airborne emissions.

Radiological Air Emissions. The federal *Clean Air Act of 1990* and the "Washington Clean Air Act," (RCW 70.94), require regulation of radioactive air pollutants. Implementing regulations found in 40 CFR 61.92, "Standard," set limits for radionuclide emissions from the DOE Hanford Site, which cannot exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem/yr. This requirement will be applicable to any aspects of the NTCRA with the potential to emit radionuclides to unrestricted areas. Verification of compliance with this standard is

[3] USEPA (2008) "Comparison of the Alternative Asbestos Control Method and the NESHAP Method from Demolition of Asbestos-Containing Buildings," Publication No. EPA/600/R-08/094.

required by the state implementing regulation at WAC 173-480-070, "Ambient Air Quality Standards and Emission Limits for Radionuclides," "Emission Monitoring and Compliance Procedures." Radioactive air emissions are to be controlled through the use of best available radionuclide control technology or as low as reasonably achievable control technology where economically and technologically feasible (WAC 246-247 040(3)] and -040(4), "Radiation Protection—Air Emissions," "General Standards," and associated definitions). To address the substantive aspect of these potential requirements, best or reasonably achieved control technology will be addressed by ensuring that applicable emission control technologies (those successfully operated in similar applications) are used when economically and technologically feasible (i.e., based on cost/benefit). If it is determined that there are substantive aspects of the requirement for control of radioactive airborne emissions once ARARs are finalized, then controls will be administered as appropriate using the best methods from among those that are reasonable and effective. Several of the buildings/structures to be removed may require continuous emissions monitoring or an approved alternative monitoring method, to ensure timely response to elevated airborne emissions of radionuclides (WAC 246-247-035, "National Standards Adopted by Reference for Sources of Radionuclide Emissions").

B1.3 Criteria/Toxic Air Emissions

WAC 173-400, "General Regulations for Air Pollution Sources," and WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," establish requirements emissions of criteria/toxic air pollutants. The primary source of emissions resulting from this NTCRA will be fugitive particulate matter. In accordance with WAC 173-400-040(3) and (8), "General Standards for Maximum Emissions," reasonable precautions must be taken to: (1) prevent the release of air contaminants associated with fugitive emissions resulting from demolition, materials handling, or other operations; and (2) prevent fugitive dust from becoming airborne from fugitive sources of emissions.

The use of treatment technologies that result in emissions of toxic air pollutants that would be subject to the substantive applicable requirements of WAC 173-460 are not anticipated to be a part of this NTCRA.

Treatment of some waste encountered during the NTCRA may be required to meet ERDF waste acceptance criteria. In most cases, the type of treatment anticipated will consist of solidification/ stabilization techniques such as macroencapsulation or grouting, and WAC 173-460 will not be considered an ARAR because it will not result in the emission of toxic air pollutants. If more aggressive treatment is required that will result in the emission of regulated air pollutants above de minimis emission values in WAC 173-460-150, "Table of ASIL, SQER and de Minimis Emission Values," the substantive requirements of WAC 173-400-113(2), "Requirements for New Sources in Attainment or Unclassifiable Areas," and WAC 173-460-060 "Control Technology Requirements," will be evaluated to determine applicability and satisfied if determined to be ARAR.

Emissions to the air will be minimized during implementation of the NTCRA through use of standard industry practices such as the application of water sprays and fixatives. These techniques are considered to be reasonable precautions to control fugitive emissions as required by the regulatory standards of WAC 173-400-040(3) and (8).

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Appendix C

Public Comments Received during the Comment Period

Terms

AMP	air monitorin plan
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
D4	decontamination, deactivation, decommissioning, and demolition
DOE	U.S. Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
NCP	*National Oil and Hazardous Substances Pollution Contingency Plan*
NHPA	*National Historic Preservation Act of 1966*
NTCRA	non-time-critical removal action
OMB	U.S. Office of Management and Budget
RAWP	remedial action work plan
RCRA	*Resource Conservation and Recovery Act of 1976*
RL	U.S. Department of Energy, Richland Operations Office
S&M	surveillance and maintenance
SAP	sampling and analysis plan
TPA	Tri-Party Agreement; *Hanford Federal Facility Agreement and Consent Order*
TRU	transuranic
TSD	treatment, storage, and/or disposal
WMP	waste management plan

C1 Responsiveness Summary

C1.1 Introduction

The purpose of this Responsiveness Summary is to summarize and respond to public comments received on the *200 East Area Tier 2 Buildings/Structures Engineering Evaluation/Cost Analysis (EE/CA)* that was provided for public comment on November 22, 2010.

The Tri-Party Agreement (TPA) agencies [the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology)] announced the issuance of the EE/CA in the Tri-City Herald and sent a notice to about 1,500 people on an electronic distribution list. A 30-day public comment period was held to allow the public the opportunity to read, review and submit comments on the EE/CA. The document evaluates alternatives for removing 57 excess chemically and/or radiologically contaminated buildings/structures in the 200 East Area of the Hanford Site. These activities are conducted under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA).

C1.2 Public Involvement

A newspaper advertisement was placed in the Tri-City Herald on November 21, 2010, announcing the availability of the EE/CA and the start of the public comment period. Approximately 2,250 copies of a fact sheet describing the EE/CA addendum were mailed out or sent electronically. The TPA agencies held a public comment period from November 22 through December 27, 2010. No requests were received for a public meeting. No public meeting was held.

C1.3 Comments and Responses

During the public comment period, eight individuals provided written comments, five of which indicated that they supported Alternative 3. One commenter questioned using onsite disposal for building/structure debris. Another commenter had concerns regarding additional public involvement for documents prepared after the action memorandum; leaving below grade contamination in place for a future action; and presentation of the cost data associated with the alternatives. Similar comments were received from the Confederated Tribes and Bands of the Yakama Nation.

DOE and Ecology selected the removal action Alternative 3: Near-Term Decontamination, Deactivation, Decommissioning, and Demolition (D4) of Buildings/Structures. The actual implementation period for D4 of Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.

C2 Comments and Responses to the Engineering Evaluation/Cost Analysis for 200 East Area Tier 2 Buildings/Structures

Commenter 1:

Jeanne Raymond

Comment 1: I am puzzled about the action plan that calls for onsite disposal. The goal of the cleanup is not to keep it onsite, but to get rid of it. Where this would go to, seems to be a problem for the DOE. This option seems to imply that it would remain onsite. This does not explain how the disposal would occur, nor for what duration. The threat of contamination has always been the motivator behind the cleanup. What are the long term remedial actions to which you refer?

Part of the analysis of the site has always been the problem that cleanup is a cost to human health and resources that is so egregious, that no more nuclear products would be produced. Finally, the realization is coming to the DOE. Now it is necessary to let the public know, of the danger of the present and future nuclear products, transportation, and disposal.

Does the preferred cleanup still have risks of contamination? What are these risks? What are the ramifications?

Response to Comment 1: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. The actions to be taken will result in a reduction of risk through S&M, followed by D4 performed in accordance with priority funding, environmental risks, availability of trained resources and operational missions of the buildings/structures. These actions will complement work that will be done under the TPA for cleanup of Hanford waste sites (i.e., soil and groundwater contamination). Wastes generated from the actions discussed in the EE/CA will be managed and disposed in accordance with applicable substantive standards as discussed in Section 6.1 and Appendix B of the EE/CA.*

It should be noted that 'onsite', as used in the EE/CA, refers to the ERDF, not the site of the building or structure undergoing D4. The ERDF is the preferred disposal location because it is an engineered facility that provides a high degree of protection to human health and the environment. Historically it has been shown that this disposal option is more cost effective than disposal at other waste disposal sites. Construction of the ERDF was authorized using a separate CERCLA ROD (EPA, 1995, Record of Decision U.S. DOE Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington). The ERDF is designed to meet minimum technological requirements for Resource Conservation and Recovery Act of 1976 (RCRA) landfills, including standards for a double liner, a leachate collection system, leak detection, monitoring, and a final cover. However, waste treatment and/or disposal may take place at other facilities that are on the Hanford Site or that are offsite and have been authorized by their own EPA regional offices in accordance with the "National Oil and Hazardous Substances Pollution Contingency Plan," (NCP) (40 CFR 300.440, "Procedures for Planning and Implementing Off-Site Response Actions") as suitable to receive waste from CERCLA sites. Additional information regarding the ERDF may be found at the following internet site:

www.hanford.gov/page.cfm/ERDF

Commenter 2:

Ted Grudowski

Comment 2: Expressing my opinion that Alternative 3 is the best choice.

Response to Comment 2: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. DOE and Ecology currently plan to implement Alternative 3 with D4 of the 209-E bulding beginning in fiscal year 2011. The implementation period forD4 of the remaining Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued surveillance and maintenance status until funding for D4 is provided.*

Commenter 3:

Mike Conlan
Redmond, WA

Comment 3: Alternative 3 is the best alternative shown.

Response to Comment 3: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. DOE and Ecology currently plan to implement Alternative 3, with D4 of the 209-E building beginning in fiscal year 2011. The implementation period for D4 of the remaining Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.*

Commenter 4:

Marion Moos

Comment 4: I support Alternate 3.

Response to Comment 4: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. DOE and Ecology currently plan to implement Alternative 3, with D4 of the 209-E building beginning in fiscal year 2011. The implementation period for D4 of the remaining Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.*

Commenter 5:

Judy Pigott
Seattle, WA

Comment 5: For over a dozen years I've been receiving information on the Tri-Party Agreement agencies' and others' work at Hanford, from DOE, as well as from Hanford Challenge and Government Accountability Project, among others. I'm heartened to read that Cleanup Alternative 3 is the preferred one, and my only concern is that the timeline seems long. Delays have taken too long already, and any more delay only adds to the environmental degradation and cost.

Thank you for reading this.

Response to Comment 5: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. DOE and Ecology currently plan to implement Alternative 3, with D4 of the 209-E building beginning in fiscal year 2011. The implementation period for D4 of the remaining Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.*

Commenter 6:

Nancy Kroening
Phoenix, AZ

Comment 6: I am so glad these actions will be taken, finally! Thanks for the information!

Response to Comment 6: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. DOE and Ecology currently plan to implement Alternative 3, with D4 of the 209-E building beginning in fiscal year 2011. The implementation period for D4 of the remaining Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.*

Commenter 7:

Richard Smith

Introductory Comment 7: This EE/CA appears to be well-written and well-organized, and contains most of the information one would like to see about the buildings and structures that are the subjects of this report. There are a few omissions and some statements that I take issue with, as discussed below.

Response to Introductory Comment 7: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA.*

Comment 7a: It is inferred (but not stated) that each building or structure will have its own set of Action Memos, RAWPs, WMPs, AMPs, and SAPs prepared. However, other than the Lead Regulatory Agency, no public will be allowed to those documents for review prior to implementation. Most of these buildings and structures are sufficiently straight-forward tasks that no further public review may be reasonable. However, there are several facilities (e.g., 209E Critical Mass Laboratory) that are sufficiently complex and probably contain sufficient radioactive contaminants that the planned approach to D4 would be of interest to the public.

Response to Comment 7a: *The EE/CA review has been conducted in accordance with the Hanford Site Tri-Party Agreement Public Involvement Community Relations Plan (Ecology et al, 2002), public participation requirements established in the NCP (40 CFR 300.415(n), "Removal Action"), and DOE policies. DOE plans to develop a single action memorandum, then will develop multiple RAWPs, WMPs, AMPs, and SAPs based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. After concurrence/approval by regulators, these documents will be available for public reading. In addition, public involvement will be solicited for future remedial actions associated with the building slabs and/or contaminated soil remaining after D4 of the building/structures.*

Comment 7b: I take exception to the idea that slabs on grade should be left in place until some future time. Unless adequate beneath-slab characterization has been done to prove that contaminants are not present beneath the slabs (and the below-grade structures), it is imprudent to leave the slabs and below-grade structures. It is probably more cost-effective to simply remove those building elements at the same time the walls and roofs are removed, using the observational approach, than to perform an adequate beneath-grade characterization. Additionally, the idea that leaving a slab in place inhibits moisture infiltration into the soil seems rather unlikely unless a water collection system is installed to receive the runoff. Again, careful characterization would probably be more costly than slab or below-grade structure removal.

Response to Comment 7b: *As stated in Section 1.1 of the EE/CA, if contamination is encountered on remaining slabs and/or below-grade structures, RL will consult with the lead regulatory agency and determine whether to address the residual contamination within the scope of this NTCRA, or implement temporary measures as part of this action, and/or defer final action to the remedial investigation and remedy selection process by adding the site to the Hanford Federal Facility Agreement and Consent Order Action Plan (Tri-Party Agreement Action Plan; Ecology et al, 1989), in accordance with RL-TPA-90-0001, Tri-Party Agreement Handbook Management Procedures, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)."*

Discussion has been added to the AM describing the use of a graded approach to evaluate the disposition of contaminated slabs and/or below-grade structures. If contamination is found and deemed to be a near-term threat, slabs and/or below-grade structures will be removed or stabilized to prevent migration of contamination as part of this action to protect human health and the environment. Final remediation may be deferred to a future action by adding the site to the Tri-Party Agreement Action Plan, Appendix C, in accordance with RL-TPA-90-0001, Tri-Party Agreement Handbook Management Procedures, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)."

The work for below-grade buildings/structures will be addressed in greater detail in the RAWP(s) based on unique hazards and associated potential near-term and future threats.

Comment 7c: I was unable to find the criteria used to select buildings/structures for the Tier 2 treatment, nor could I identify which (if any) of the references contained those criteria. It would seem appropriate that those criteria would be presented up front in the document.

Response to Comment 7c: *The term, "Tier 2" as discussed in Section 1 of the EE/CA is taken from the Tri-Party Agreement Action Plan (Ecology et al, 1989) and refers to those buildings/structures that are chemically and/or radiologically contaminated and require a CERCLA response action because of their potential for substantial threat of release of hazardous substances. Tier 2 buildings/structures do not include Tier 1 buildings/structures (e.g., PUREX or B Plant Canyons), which are generally large, heavily shielded metal and concrete structures containing tanks, heavily shielded gloveboxes or hot cells, underground vaults, piping, etc., that are integral to the building structure.*

Comment 7d: It would seem appropriate to include in the descriptions of the buildings/structures some indication of the types of contaminants present and the levels of radioactive exposure to be encountered during the D4 activities in each building/structure.

Response to Comment 7d: *Section 2.3 of the EE/CA provides a general list contaminants expected to be encountered in the Tier 2 buildings/structures based on process knowledge. For those buildings/ structures that are more complex and likely to contain higher levels of chemical and radiological contaminants (e.g., 209E Critical Mass Laboratory), additional information regarding these*

contaminants, if available, has been added to the Action Memorandum. In addition, the work for the buildings/structures will be addressed in greater detail in RAWPs based on unique hazards and associated potential near-term and future threats.

In addition, supplemental information regarding levels of radiological and chemical contaminants will be gathered throughout the D4 process in conjunction with an approved Sampling and Analysis Plan(s) and Removal Action Work Plan(s). This information will be used to properly characterize and designate D4 waste to ensure the waste is properly packaged, transported, and managed in compliance with the receiving facilities' waste acceptance criteria.

Comment 7e: All of the discussion about "constant dollars" versus "discounted dollars" was basically nonsense. While OMB and EPA require that discounted dollars be presented in the cost analyses, those numbers are not useful for comparing the actual cost of performing an action today versus performing that action sometime in the future because the DOE does not forward- fund projects beyond the current budget year. Thus, there are no funds arising from investment of today's appropriations for future expenditure. However, it would make sense to appropriately escalate estimates made in today's dollars for actions that are performed in the future.

Response to Comment 7e: *As noted in Section 5.3 of the EE/CA, the cost estimates presented for each alternative were prepared consistent with EPA guidance and the U.S. Office of Management and Budget (OMB). Based on this guidance, present-worth analysis is used as the basis for comparing costs of cleanup alternatives under CERCLA programs. A discount rate is applied for cost estimates spanning multiple years, making it possible to evaluate expenditures associated with alternatives that occur during different periods. Present-worth analysis assumes that the funding set aside at the initial point in time increases in value as time goes on, similar to how money placed in a savings account gains in value because of interest paid on the account. Although the federal government typically does not set aside funds in this manner, the present-worth analysis is specified under CERCLA as the approach for establishing a common baseline to evaluate and compare alternatives that have costs occurring at different times, although actual costs could vary. While the funds might not actually be set aside, the present-worth costs are considered directly comparable for evaluating the costs of the alternative.*

Commenter 8:

Confederated Tribes and Bands of the Yakama Nation
Toppenish, WA

Introductory Comment 8: The Yakama Nation ERWM Program supports the goal of removal and disposal of the 200 East Area Tier 2 buildings/structures. However, it is the position of the Yakama Nation that the Engineering Evaluation/Cost Analysis (EE/CA) that has been prepared to evaluate the removal of these buildings/structures is incomplete and inadequate. The Yakama Nation ERWM Program has identified the following areas of concern.

Response to Introductory Comment 8: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. The EE/CA was prepared in accordance with the "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP) (300.415(b)(4)(i)), "Removal Action") and associated guidance.*

Comment 8a: Protection of cultural resources: Section 106 reviews must be conducted and tribal participation and consultation for each site.

Response to Comment 8a: *As addressed in Table 5-4, Section 6.1, and Appendix B, a National Historic Preservation Act of 1966 (NHPA) Section 106 cultural resource review will be conducted to address D4*

activities. Prior to field activities, each building/structure requiring documentation would be evaluated for: (1) the type of documentation required for each building and structure (Historic Property Inventory Form or Expanded Historic Property Inventory Form); and (2) the status of that documentation. In addition, as appropriate, walkthroughs of the buildings/structures would be conducted before demolition to finalize all mitigation requirements.

Comment 8b: Projected costs are uncertain given the current levels of site characterization, the limited description of individual tasks/D-4 actions, and lack of radiological inventories. It is unclear whether adequate funding exists to complete all work indicated throughout the 5 year workscope.

Response to Comment 8b: *DOE and Ecology agree and currently plan to implement Alternative 3, with D4 of the 209-E building beginning in fiscal year 2011. The implementation period for D4 of the remaining Tier 2 buildings/structures is based on environmental risk, funding priority, availability of trained resources, and operational missions of the buildings/structures. Based on these factors, D4 will start in the near term on those buildings/structures that are higher risk and have received early funding, while those that are not funded will remain in a continued S&M status until funding for D4 is provided.*

Comment 8c: It is unclear whether costs removal of below-grade structures was included in this EE/CA. The appropriateness of the decision to leave below-grade structures or portions is questionable. Leaving tanks or associated ancillary equipment in place is unacceptable.

Response to Comment 8c: *The information in the cost estimate does not include the cost of removal of below-grade structures. Changes in the cost elements are likely to occur because of new information and data collected during preparation and performance of the removal action. Consistent with EPA guidance, the cost estimate for Alternative 2 is an order of magnitude engineering cost estimate that was developed to be within -30 percent to +50 percent of actual project cost.*

If contamination is encountered on remaining slabs or underground structures, RL will consult with the lead regulatory agency and determine whether to address the residual contamination within the scope of the removal action, or implement temporary measures as part of this action, and/or defer final action to the remedial investigation and remedy selection process by adding the site to the TPA Action Plan, Appendix C (Ecology et al, 1989), in accordance with RL-TPA-90-0001.

Discussion has been added to the Action Memorandum describing the use of a graded approach to evaluate the disposition of contaminated slabs and/or below-grade structures. If remaining contamination is deemed to be a near-term threat, slabs and/or below-grade structures will be removed as part of this action to protect human health and the environment, as well as reduce S&M costs. If remaining contamination is deemed to not be a near-term threat, slabs and/or below-grade structures will be stabilized to prevent migration of contamination, and final remediation will be deferred to a future action. In either scenario, contamination remaining on slabs and/or below-grade structures will be stabilized or removed prior to completion of D4 activities associated with this action.

Comment 8d: It is unclear whether cost estimates include treatment, off-site transportation, or storage costs. Details of the disposition of any TRU wastes are inadequate. Hanford onsite storage of TRU waste or Greater than Class C is unacceptable.

Response to Comment 8d: *The cost estimates presented in Section 5.3 of the EE/CA include all aspects of D4, including treatment (as required), storage, transportation, and disposal costs. Disposition of any TRU or Greater than Class C waste generated during D4 activities will be addressed in the waste management portion of a DOE and Ecology-approved Removal Action Work Plan, to be developed prior to commencement of field activities.*

Comment 8e: It is unclear whether wastes from these D-4 activities affect projected ERDF dangerous waste limits and if any additional radionuclides or dangerous wastes placed in ERDF aggravate the projected exceedances of drinking water limits.

Response to Comment 8e: *Prior to acceptance of waste at the ERDF, waste shipping information is evaluated to ensure that the waste meets the acceptance criteria for disposal. The process for developing compliant waste shipping papers includes the following: receipt of analytical results, designation, profiling, and compliant disposal paperwork. The designation process ensures that the waste will be profiled for the appropriate disposal facility. Waste profiling provides information concerning each waste stream. The designation and profiling are conducted in accordance with the substantive requirements of WAC 173-303-070, "Dangerous Waste Regulations," "Designation of Dangerous Waste," specifically WAC 173-303-070(3). Dangerous waste will be evaluated for applicable land disposal restrictions in accordance with WAC 173-303-140, "Land Disposal Restrictions." Cumulative impacts from disposal of the wastes to the ERDF are addressed in Table 5-4 (page 5-12) of the EE/CA.*

Waste that does not meet the ERDF waste acceptance criteria can be sent to an appropriate onsite or offsite facility. Shipments will go offsite only to those TSD facilities that have been authorized to receive CERCLA waste shipments by their respective EPA Regional Offices, under the NCP Off-Site Rule, 40 CFR 300.440.

Closing Comment 8: The Yakama Nation ERWM Program recommends DOE/RL prepare and document in a new engineering evaluation of the proposed action that addresses our concerns listed above and include detailed cost estimates relative to unplanned instances of unexpected levels of radionuclides or additional removal actions.

Response to Closing Comment 8: *Thank you for taking the time to review and comment on the alternatives described in the subject EE/CA. Under CERCLA, EE/CAs are not typically revised. Instead, public comment and susequent changes are addressed in the decision document - the Action Memo. The removal action proposed in the EE/CA is consistent with the joint DOE and EPA Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act, which establishes the CERCLA removal action process as the preferred approach for disposition of surplus DOE facilities. Under the joint policy, DOE is authorized to evaluate, select, and implement the removal action that DOE determines is most appropriate to address the potential risk posed by the release or threat of release of hazardous substances. Details associated with the work, including provisions for addressing potential contamination on slabs and/or below-grade, will be addressed in work plans and associated documents.*

C3 References

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*. Available at: http://www.access.gpo.gov/nara/cfr/waisidx_10/40cfr300_10.html.

300.415, "Removal Action."

300.440, "Procedures for Planning and Implementing Off-Site Response Actions."

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq., Pub. L. 107-377, December 31, 2002. Available at: http://epw.senate.gov/cercla.pdf.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. Available at: http://www.hanford.gov/?page=82.

Ecology, EPA, and DOE, 2002, *Hanford Site Tri-Party Agreement Public Involvement Community Relations Plan*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. Available at: http://www.hanford.gov/files.cfm/crp.pdf.

EPA, 1995, *Record of Decision, U.S. DOE Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, U.S. Department of Energy, and Washington State Department of Ecology. Available at: http://www2.hanford.gov/arpir/?content=findpage&AKey=D196041064.

National Historic Preservation Act of 1966, 16 USC 470, et seq. Available at: http://www.nps.gov/history/local-law/nhpa1966.htm.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq. Available at: http://epw.senate.gov/rcra.pdf.

RL-TPA-90-0001, 2007, *Tri-Party Agreement Handbook Management Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)," Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: http://www.hanford.gov/files.cfm/TPA-MP14.pdf.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, Olympia, Washington. Available at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303.

303-070, "Designation of Dangerous Waste."

303-140, "Land Disposal Restrictions."

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