0071781

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

07-AMRC-0046

NOV 30 2006

Mr. P. L. Pettiette, President
Washington Closure Hanford, LLC
2620 Fermi Avenue
Richland, Washington 99354

Dear Mr. Pettiette:

CONTRACT NO. DE-AC06-05RL14655 – TRANSMITTAL OF APPROVED ACTION MEMORANDUM ASSOCIATED WITH ENGINEERING EVALUATION/COST ANALYSIS #3 FOR THE 300 AREA, DOE/RL-2005-87

A copy of the approved subject Action Memorandum is attached for your use. This document is being provided to support deactivation, decontaminating, decommissioning and demolition activities discussed in the approved baseline. If you have any questions, please contact me or your staff may call R. F. Guercia, Office of the Assistant Manager for the River Corridor, on (509) 376-5494.

Sincerely,

Stacie L. Sedgwick

Stacie L. Sedgwick
Contracting Officer

AMRC:RFG

Attachment

cc w/attach:
F. W. Bond, Ecology
A. L. Boyd, EPA
N. Ceto, EPA
S. L. Feaster, WCH
J. G. Fulton, WCH
D. H. Houston, WCH
W. S. Shingler, WCH
D. M. Yasek, WCH
Administrative Record, H6-08 (300-FF-2 file)

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ACTION MEMORANDUM #3 FOR THE 300 AREA FACILITIES

1.0 PURPOSE

The purpose of this action memorandum is to document approval of the non-time-critical removal action described herein for up to 110 buildings and structures (listed in Tables 1 and 2), most of which are in the southern portion of the 300 Area of the Hanford Site (Figure 1).

The removal action to be implemented for the buildings and structures (subsequently referred to as facilities[1]) in the 300 Area is outlined in the *Engineering Evaluation/Cost Analysis #3 for the 300 Area* (EE/CA) (DOE-RL 2005a), which was prepared by the U.S. Department of Energy (DOE). The EE/CA evaluated removal actions for 145 facilities located in the 300 Area. The preferred removal action identified in the EE/CA was to deactivate, decontaminate, decommission, and demolish (D4) the buildings.

Thirty of the proposed facilities have subsequently been removed from consideration under this action memorandum because the DOE has identified a long-term use for the facilities. Considerations for whether laboratory facilities will be addressed under this removal action or a separate action will be determined based on the threat to human health and the environment, the complexity of the removal action, and the differences in variables from those evaluated in the EE/CA.

The removal action minimizes the potential for a release of hazardous substances[2] from the facilities that could adversely impact human health and the environment, is protective of the site personnel and the environment, and contributes to the efficient performance of any remedial actions, including any future subsurface soil remediation.

A 30-day public comment and review period for the subject EE/CA was held from August 28 to September 29, 2006. The comment period was used to evaluate removal action alternatives for the facilities presented in the EE/CA as well as the facility specific information available in the Administrative Record. Comments received generally supported selection and implementation of the preferred removal alternative, which is to deactivate, decontaminate, decommission, and demolish the facilities. The comments and responses are provided in Appendix A.

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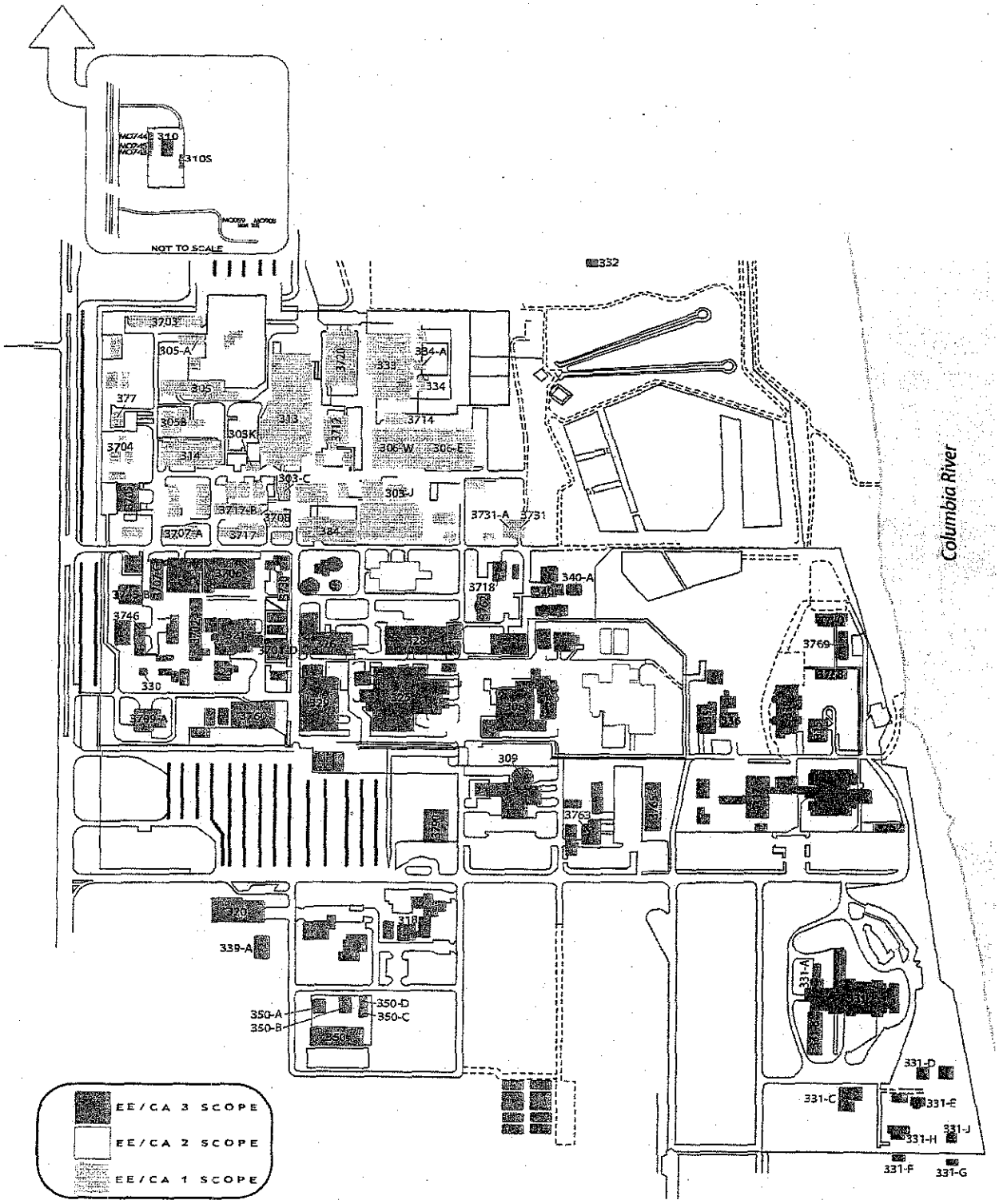
[1] The term "facility" is used generically to encompass all the contaminated or potentially contaminated surface and subsurface structures and buildings, including: foundations, above-ground utilities, fencing, piping, ducting, etc., associated with the facility.

[2] "Hazardous substances" means those substances defined by the *Comprehensive Environmental Response, Compensation and Liability Act of 1980*, Section 101(14), and includes both radioactive and chemical substances.

Figure 1. Scope of the Removal Action.



2.0 SITE CONDITIONS AND BACKGROUND

There are approximately 180 facilities currently located within the 300 Area Complex. Many of these facilities are empty, while other facilities are used to support research and development (R&D) or landlord activities in the 300 Area. Years of reactor fuel fabrication and laboratory operations in the 300 Area Complex have left many of the facilities contaminated.

In many cases, the facilities within the scope of this removal action overlie the waste sites in the 300-FF-2 Operable Unit (OU). Existing facility operations must be terminated or relocated; and D4 of the associated buildings often must be completed in order to obtain access to underlying and/or adjacent contaminated 300-FF-2 waste sites. Cleared geographical areas are also required for staging areas to support future remedial action operations.

2.1 BACKGROUND

In March 1943, construction of a nuclear fuel fabrication complex began at the Hanford Site in an area along the western bank of the Columbia River, approximately 12 km (7.5 mi) north of the city of Richland. This area was commonly referred to as the "300 Area." As a manufacturer of uranium fuel, the 300 Area housed the first essential step in the plutonium production process. Nuclear fuel was fabricated from uranium shipped in from offsite facilities. In addition to housing the Hanford Site fuel fabrication plants, the 300 Area was the center of much of the site R&D projects. In connection with these activities, chemical process laboratories, test reactors, and numerous ancillary support structures were constructed. The addition of new research and laboratory facilities continued into the 1960s and 1970s to support defense and energy research, waste management, biological sciences, and environmental sciences. The 300 Area continues to be an active industrial complex, housing many of the Hanford Site R&D facilities and analytical laboratories. Other operations in the 300 Area include waste management and disposal, facility transition, D4, and environmental cleanup.

In November 1989, the 300 Area was one of four areas on the Hanford Site that were placed on the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL) under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA). The 300 Area NPL site is subdivided into three OUs to address cleanup of the soil and groundwater contamination that resulted from past operations. The 300-FF-1 and 300-FF-2 OUs address contamination at liquid disposal sites, burial grounds, and include most of the soil waste sites in the 300 Area NPL site. The 300-FF-5 OU addresses groundwater contamination beneath burial grounds and other soil waste sites located within the geographical boundary of the 300 Area NPL site. Records of Decision (ROD) have been issued for all three of the 300 Area OUs and remedial actions are ongoing, but the RODs do not address the buildings and associated ancillary facilities addressed by this action memorandum.

In January 2005, the EPA and the U.S. Department of Energy, Richland Operations Office (DOE-RL) issued *Action Memorandum #1 for the 300 Area Facilities* (DOE-RL 2005b). The action memorandum established a non-time-critical removal action to deactivate, decontaminate, decommission, and demolish 72 buildings and structures located in the 300 Area Complex.

The buildings addressed in Action Memorandum #1 were grouped geographically to address the buildings and structures located north of Apple Street in the 300 Area.

In May 2006, the EPA and DOE-RL issued *Action Memorandum #2 for the 300 Area Facilities* (DOE-RL 2006). The action memorandum established a non-time-critical removal action to deactivate, decontaminate, decommission, and demolish the 324 Building, the 327 Building, and associated ancillary facilities. The buildings addressed in Action Memorandum #2 were grouped together because they are similar in size and complexity.

This action addresses the remaining buildings and structures (Tables 1 and 2) located in the 300 Area. If during characterization facilities are found to be free of, or contain de minimis levels[3] of, CERCLA hazardous substances, the facilities will be excluded from this CERCLA action and the removal action will be performed under DOE authority. The process for excluding facilities from the scope of this removal action will be outlined in the removal action work plan (RAWP).

Table 1. Summary of Contaminated Facilities. (2 Pages)

Facility	Name	Major Facilities[a]	Small Facilities[b]	Active Facility
307	Retention Basins		X	X[c]
308	Fuels Development Laboratory	X		
308A	Fuels Development Laboratory	X		
309	Plutonium Recycle Test Reactor (PRTR)	X		
315A	Backwash Disposal Pond		X	
315C	Backwash Lift Station & Sedimentation Pond		X	
320	Physical Sciences Laboratory	X		X[c]
321	Hydromechanical/Seismic Facility	X		X[c]
321B	Model Heat Loop	X		
321C	Core Pump Shelter	X		
321D	Seismic Testing Facility	X		
323	Mechanical Properties Laboratory	X		X[c]
326	Material Science Laboratory	X		X[c]
329	Chemical Sciences Laboratory	X		X[c]
335	Sodium Test Facility	X		
336	High-Bay Testing Facility	X		X[c]
340	Waste Neutralization Facility Structure	X		X[c]
340A	Waste Retention Building		X	X[c]
340B	Waste Loadout Building		X	X[c]

[3] De minimis is not a CERCLA defined term, but is used to convey the notion that there are some items with very low levels of CERCLA hazardous substances where the CERCLA process does not apply

Table 1. Summary of Contaminated Facilities. (2 Pages)

Facility	Name	Major Facilities[a]	Small Facilities[b]	Active Facility
3621-66	Petroleum Tank (Diesel) Replaces Tanks 3621-D		X	
3707F	Radiation Monitoring Building		X	X[c]
3709	Paint Shop		X	
3714	Soils Laboratory		X	
3717C	Materials Archive Building		X	
3718M	Sodium Storage Facility		X	
3727	Classified Vault		X	
3728	Geotechnical High-Bay	X		
3730	Gamma Irradiation Facility	X		X[c]
3745	Radiological Calibration and Standards	X		
3745A	Van de Graaff Electron Accelerator	X		
3745B	Van de Graaff Positive Ion Accelerator	X		
3746	Irradiation Physics Building	X		
3746A	Radiological Physics Building	X		
MO-265	Mobile Office		X	X[d]
MO-423	Mobile Office		X	X[d]
MO-905	Mobile Office		X[d]	

[a] Major facilities are the larger, multi-room structures, generally with significant radiological and/or chemical contamination.
[b] Small facilities are small structures, with one to three rooms, and generally with minor radiological and/or chemical contamination.
[c] Facility is actively being used as of the end of 2005 and will be designated as a surplus facility at a future date and will not immediately implement the CERCLA requirements of this removal action. They will fall under the requirements of the removal action (e.g., applicable or relevant and appropriate requirements) after the facilities are designated as surplus facilities.
[d] This facility is currently being used (and has been used) to count radioactive samples in support of CERCLA projects.

Table 2. Summary of Potentially Contaminated Facilities. (3 Pages)

Facility	Name	Major Facilities[a]	Small Facilities[b]	Active Facility
310	TEDF	X		X[c]
310S	Drum Storage Area		X	X[c]
310T1	Equalization Tank T1		X	X[c]
310T1A	Equalization Tank T1A		X	X[c]
310T2	Diversion Tank T2		X	X[c]
310T3	Diversion Tank T3		X	X[c]
310T7A	Clarifier T7A		X	X[c]
310T7B	Clarifier T7B		X	X[c]

Table 2. Summary of Potentially Contaminated Facilities. (3 Pages)

Facility	Name	Major Facilities[a]	Small Facilities[b]	Active Facility
310V	Valve Vault		X	X[c]
315	Filter Water Plant Building		X	
315B	Chlorine Storage Facility		X	
315D	Backwash Recycle Pump Station		X	
320-BA	320 Boiler Annex		X	X[c]
323-BA	323 Boiler Annex		X	X[c]
324-BA	324 Boiler Annex		X	X[c]
326-BA	326 Boiler Annex		X	X[c]
327-BA	327 Boiler Annex		X	X[c]
328	Engineering Services and Safety Building	X		
328A	Sheet Metal Shop		X	
328-BA	328 Boiler Annex		X	X[c]
337	Technical Management Center	X		
337B	High-Bay and Service Wing	X		
337-BA	337 Boiler Annex		X	X[c]
338	Maintenance Building	X		X[c]
352E	Switch Station East Side		X	X[c]
352F	Electrical Switch House, 2.4 kV		X	X[c]
382	Pump House Building		X	
382B	Fire Pump Station		X	
382-BA	382 Boiler Annex		X	X[c]
382C	Sanitary Water Storage Tank		X	
382D	Sanitary Water Storage Tank		X	
3128	Gas Bottle Dock		X	
3503B	Electrical Cable Pit		X	
3506A	Powerhouse Maintenance Shop		X[d]	
3506B	Maintenance Shop		X[d]	
3605	Fences, power poles, guard shacks, and other unnumbered above-ground structures/items		X	
3614A	River Monitoring Station		X	
3621BC	Emergency Generator Building		X	
3621D	Emergency Generator Building & Shop		X	
3701D	Office Building (Remaining slab and below-grade structure)		X[d]	
3701U	Security Office Building		X[d]	

Table 2. Summary of Potentially Contaminated Facilities. (3 Pages)

Facility	Name	Major Facilities[a]	Small Facilities[b]	Active Facility
3718	Office and Storage Building	X		X[c]
3718A	Laboratory Equipment Central Pool Building		X	
3718B	Laboratory Equipment Central Pool Building		X	
3718C	Storage Building		X	
3718N	Insulation Shop		X	
3718P	General Storage		X	X[c]
3718S	General Storage		X	
3721	Classified Shredder Facility		X	
3760	Hanford Technical Library	X		X[c]
3763	Office Building		X[d]	
3766	Office Building		X	
3790	Security Office Building	X		
3802A	Steam PRV Station		X	
3906	Sanitary and Process Lift Station		X	X[c]
3906B	Sanitary Sewer Lift Station #3		X	
3906C	Sanitary Sewer Sample Station		X	
MO-036	Mobile Office		X	
MO-059	Mobile Office		X	
MO-258	Mobile Office		X	X[c]
MO-262	Mobile Office		X	X[c]
MO-263	Mobile Office		X	X[c]
MO-270	Mobile Office		X	
MO-271	Mobile Office		X	
MO-274	Mobile Office		X	
MO-275	Mobile Office		X	
MO-391	Mobile Office		X	
MO-443	Mobile Office at TEDF		X	X[c]
MO-741	Mobile Office		X	X[c]
MO-744	Mobile Office at TEDF		X	X[c]
MO-745	Mobile Office at TEDF		X	X[c]

Table 2. Summary of Potentially Contaminated Facilities. (3 Pages)

Facility	Name	Major Facilities[a]	Small Facilities[b]	Active Facility
Misc.	Miscellaneous Connex box storage, modular buildings such as "HS" designated structures, unnumbered above-ground structures/items, laydown areas and yard storage areas, slabs and/or foundations for previously demolished structures		X	

[a] Major facilities are the larger, multi-room structures, generally with significant radiological and/or chemical contamination.
[b] Small facilities are small structures, with one to three rooms, and generally with minor radiological and/or chemical contamination.
[c] Facility is actively being used as of the end of 2005 and will be designated as a surplus facility at a future date and will not immediately implement the CERCLA requirements of this removal action. They will fall under the requirements of the removal action (e.g., applicable or relevant and appropriate requirements) after the facilities are designated as surplus facilities.
[d] This building has been demolished; however, a slab and/or below-grade structure.
HS = "Hazardous Storage" (also used as alternate storage)
TEDF = Treated Effluent Disposal Facility

2.2 FACILITY DESCRIPTION

The facilities addressed in this action memorandum include a combination of testing facilities, storage buildings, shops, and offices mostly located in the southern section of the 300 Area Complex. A brief description and history of each of the facilities can be found in the *Engineering Evaluation/Cost Analysis #3 for the 300 Area* (DOE-RL 2005a).

2.3 SOURCE, NATURE, AND EXTENT OF CONTAMINATION

In general, the facilities addressed in this action memorandum are contaminated with CERCLA 101(14) hazardous substances associated with fabricating and testing uranium fuel elements and operating laboratories and research facilities. The source of contamination at each facility within the 300 Area Complex depends on the specific operations conducted at the facility. To help identify hazardous substances, several sources of information were used, including historical operations information, radiological survey reports, vulnerability assessments, inspections, and knowledge of construction materials. In some facilities, the presence of hazardous substances is suspected but has not been confirmed. After further characterization, facilities determined to not be contaminated with hazardous substances will be addressed outside of this action.

To the extent practicable, hazardous substances including bulk chemicals that are no longer in use have been or will be removed from the facilities during routine operations and surveillance and maintenance (S&M). However, residual contamination remains or will remain on facility surfaces (including the roof), in piping and ductwork.

In general, the primary contaminants of concern are the following radionuclides:

- Americium-241

- Cesium-137
- Cobalt-60
- Plutonium isotopes
- Strontium-90
- Technetium-99
- Thorium isotopes
- Uranium isotopes.

The facilities also contain nonradioactive hazardous substances, as either contaminants from operations or components of structural materials. The contaminants that could potentially be present in one or more of the facilities are as follows:

- Asbestos
- Beryllium
- Cadmium
- Commercial solvents
- Corrosives
- Contamianted High-efficiency particulate air (HEPA) filter media (desiccants)
- Lead
- Lubricants
- Mercury (in electrical switches)
- Polychlorinated biphenyls (PCBs)
- Refrigerants (Freon™)
- Sodium vapor and mercury vapor lighting.

Characterization will be conducted as part of the removal action activities in accordance with approved sampling and analysis plans. The characterization information, which may include nondestructive assay, will be used to support waste designation and to determine if the removal action objectives have been met. Characterization data will also be used to determine whether any contamination remaining after facility removal should be identified as a waste site to be incorporated into the 300-FF-2 OU for subsequent remedial action.

2.4 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

Most of the facilities included in this removal action are contaminated with hazardous substances. In some facilities, the presence of hazardous substances is suspected but has not been confirmed. After further characterization, facilities determined to not be contaminated with hazardous substances will be addressed outside of this action. The risks associated with the radioactive and nonradioactive contaminants have not been quantified in detail, in part because of limited characterization data. Consequently, a discussion of the qualitative risks is provided.

The major contaminants of concern at the facilities addressed in this action memorandum are radionuclides that, when above acceptable levels, are known to be carcinogenic and/or hazardous

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to human health and the environment. While the levels of radioactive contamination in the remaining 300 Area facilities remain significant, many of the ancillary facilities may contain low levels of radioactive contamination as surface contamination. Hazardous substances including asbestos insulation, heavy metals, (such as mercury in switches and lead shielding), and PCBs in building materials are also present in the facilities.

Security controls, including administrative and physical access controls, are currently in place for the 300 Area facilities to limit unauthorized entrance. The facilities are locked and require approval prior to entry. As long as DOE retains control of the 300 Area, these institutional controls would prevent direct contact with and exposure to hazardous substances. However, institutional controls will not prevent deterioration of the facilities or eliminate the threat of release of hazardous substances to the environment. Hazardous substances could be released directly to the environment via a breach in a pipe, containment wall, roof, or other physical control as facilities age and deteriorate. Hazardous substances could also be released to the environment through animal intrusion into the contaminated structures and systems. Historically, intrusion and spread of contamination by rodents, insects, birds, and other organisms has been difficult to control and prevent.

As the facilities continue to age, the threat of a release of hazardous substances from the facility deterioration and animal intrusion increases, and it becomes more difficult to confine these materials from the environment. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. Also, potential releases from associated waste sites pose a significant risk to human health and the environment as described in the 300-FF-2 feasibility study (DOE-RL 2000). Some of the facilities must also be removed to accommodate remediation of the waste sites.

2.5 OTHER ACTIONS TO DATE

The 300-FF-2 OU contains 56 waste sites. Forty of these waste sites are located beneath existing facilities and/or covered areas inside the 300 Area industrial complex fences. The 300-FF-2 ROD was issued in April 2001 (EPA 2001). The selected remedy requires removal of contaminated soil, structures, and associated debris; treatment if necessary to meet the waste acceptance criteria of the acceptable disposal facility; and disposal in the Environmental Restoration Disposal Facility (ERDF), the Waste Isolation Pilot Plant, or other disposal facilities approved by EPA.

In January 2005 and May 2006, the EPA and the U.S. Department of Energy, Richland Operations Office (DOE-RL) issued *Action Memorandum #1 for the 300 Area Facilities* (DOE 2005) and *Action Memorandum #2 for the 300 Area Facilities* (DOE 2006), respectively. The action memoranda established non-time-critical removal actions to deactivate, decontaminate, decommission, and demolish buildings and structures located in the 300 Area Complex. The buildings addressed in Action Memorandum #1 were grouped geographically to address the buildings and structures located north of Apple Street in the 300 Area. The buildings addressed in Action Memorandum #2 were grouped together because they are similar in size and complexity.

Cleanup activities for waste sites within the 300 Area complex are being conducted (in most cases) after the demolition of structures above and adjacent to the waste sites. Nearly 150 buildings and structures, including some of the buildings addressed by this action memorandum, will have to be removed before the cleanup of waste sites beneath them can be completed. At present, approximately 30 buildings and structures have been addressed under Action Memorandum #1 (DOE-RL 2005b).

3.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Conditions persist wherein threats to the public health or the environment exist.

The "National Oil and Hazardous Substance Pollution Prevention Contingency Plan" (NCP), 40 *Code of Federal Regulations* (CFR) 300.415(b)(2), establishes factors to be considered in determining the appropriateness of a removal action. Those factors include the following:

- *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants*. Hazardous substances, including radionuclides, are present as contamination within the buildings, equipment, and additional structures. There is an increasing substantial threat of release of these hazardous substances to the environment, including humans and ecological receptors as the facilities continue to deteriorate with age. As contamination becomes exposed and as structural integrity is compromised, the potential direct exposure (e.g., inhalation of contaminated dust and debris, direct contact with contaminated debris) of nearby personnel and the environment, and exposure to the public through airborne radioactive contaminants increases. In addition, the S&M activities required to maintain confinement of the building and additional structures increasingly pose a potential exposure to the environment.

- *Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released*. The potential for wind or precipitation-related releases of hazardous substances within the facilities is substantial and increases as the facilities continue to deteriorate with age.

- *Hazardous substances or pollutants or contamination in barrels, tanks, or other bulk storage containers that may pose a threat of release*. Hazardous substances, including radioactive substances, are contained within the pipes and vessels of the facilities addressed in this action memorandum. These substances pose a substantial threat of accidental release that may result from container deterioration or animal intrusion.

The external radiation, inhalation, and ingestion risks to the workers, the public, and ecological receptors associated with substantial risk of releases of contamination under a continued S&M scenario justify a non-time-critical removal action.

4.0 ENDANGERMENT DETERMINATION

The selected response action is necessary to protect public health or welfare or the environment from the actual or substantial threat of release of hazardous substances, including radioactive substances from the facilities into the environment. Such a release or threat of a release may present an imminent and substantial endangerment to public health or welfare or the environment.

5.0 PROPOSED ACTIONS AND ESTIMATED COSTS

Proposed actions and estimated costs are presented in the following sections.

5.1 PROPOSED ACTION

An EE/CA was prepared to develop removal action alternatives for approximately 145 buildings located in the 300 Area of the Hanford Site. The scope of this removal action addresses only the facilities themselves. The soil underlying some of the facilities may also be contaminated. Where there is previous knowledge of such contamination, the soil has already been identified as a separate waste site and will be remediated under the authority of CERCLA response actions under the 300-FF-2 OU interim action ROD (EPA 2001). If new contamination associated with the underlying soil is identified in the future, it will be noted within the Waste Information Data System (WIDS) and addressed under the 300-FF-2 OU remediation process or other soil remediation activity. Orphan or otherwise unidentified facilities and foundations within the geographical boundary of this removal action (the southern portion of the 300 Area) that are not addressed by the 300-FF-2 OU may be addressed as part of this action if the facility is found to be contaminated with hazardous substances and poses a substantial threat of release to the environment.

The removal action alternatives evaluated for the facilities must meet the removal action objectives. The specific removal action objectives for this response are as follows:

- Protect human receptors from exposure to hazardous substances released from facility structures above acceptable exposure levels for employees
- Control the release of hazardous substances from the facilities into the environment
- Facilitate remediation of the 300 Area waste sites in accordance with the 300-FF-2 OU interim action ROD (EPA 2001)
- Achieve applicable or relevant and appropriate requirements (ARARs) to the fullest extent practicable

- Safely treat, as appropriate, and dispose of waste streams generated by the removal action.

Based on these considerations, the following three removal actions are identified:

- Alternative 1: No action
- Alternative 2: Deactivation, Decontamination, Decommission, and Demolish (D4)
- Alternative 3: S&M followed by D4

5.1.1 Alternative 1: No Action

Under the no action alternative, the Hanford Site access controls would be maintained to help prevent worker or public entry to the contaminated facilities. No other specific controls would be established for the facilities. Risks over time are expected to increase as facility deterioration progresses and structural integrity is compromised. The no action alternative does not address the hazards posed by the facilities, which will increase as the facilities continue to deteriorate. Eventually, decay is expected to result in radiological releases to the environment and potential exposure to personnel, the public, and environmental receptors. Physical hazards associated with partial structure collapse also are anticipated.

In addition, the no action alternative would impede remedial action progress for the 300-FF-2 OU waste sites located in the geographical area.

5.1.2 Alternative 2: Deactivation, Decontamination, Decommission, and Demolish (D4)

The objective of the D4 alternative is to demolish the structures and eliminate the threat of release of hazardous substances. The action includes deactivating the facilities by removing physical, chemical, and radiological barriers to demolition. Decontamination of the remaining facility would be performed to meet waste acceptance criteria for ERDF or other approved waste management facilities. Then, permanent utilities and services would be discontinued as part of facility decommissioning. Finally, the buildings and structures would be demolished, and materials would be disposed at ERDF or other facility in accordance with the waste acceptance criteria. The D4 alternative would initiate the process for the up to 110 structures, mostly located in the southern half of the 300 Area, in the near future. Excluding the 30 facilities that will continue to be operated in the 300 Area, work would be completed no later than September 30, 2015, to support *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) Milestone M-94-00 (Ecology et al. 1989).

The majority of the facility demolition would require the use of heavy equipment (e.g., excavator with various attachments) to demolish structures. Other industry standard practices for demolition also might be used (e.g., mechanical saws and cutting torches). In general, below-grade structures (e.g., slab, basement, and foundation) would be demolished and removed. Approximately 1 meter of surrounding soil will be removed and disposed with the building material. On a case-by-case basis, the facility slab or foundation may be left in place where the facilities are located above or adjacent to known or suspected 300-FF-2 OU waste sites. These structures will be remediated in accordance with the ROD. In these instances, clean fill/soil or

other barrier may be placed over remaining contamination in accordance with an EPA-approved RAWP.

5.1.3 Alternative 3: Long-Term Surveillance and Maintenance Followed by D4

The objective of long-term S&M is to sustain the buildings and structures in a safe condition for up to 10 years (until 2016) before initiating the demolition process. To the extent possible, S&M would be performed to minimize the potential for an environmental release and to protect workers while maintaining compliance with applicable state and federal regulations and DOE orders. During the S&M phase, existing access controls would be maintained to warn workers of potential hazards and restrict public access to the 300 Area. Major repairs, such as re-roofing and shoring structural components, would be performed only as necessary to ensure facility integrity for containment of hazardous materials.

In general, as facilities age and deteriorate, S&M must become more aggressive over time, and worker safety is a critical factor. Without an increasingly aggressive S&M program, the threats associated with unplanned releases to the environment and injury or exposure to workers would increase. Conversely, an aggressive S&M program would require more frequent worker entry into the facilities to perform more invasive maintenance procedures, which would increase the potential for exposure to workers. In addition, personal protection requirements to maintain a more aggressive program could continually increase, which would add to the cost.

Following the S&M phase of this alternative, the facilities would still need to undergo deactivation, decontamination, decommissioning, and demolition. The D4 phase of the alternative is assumed to be performed as described in Section 5.1.2. Although this alternative would not satisfy Tri-Party Agreement Milestone M-94-00, this alternative would support completion of all remedial actions by the Tri-Party Agreement Milestone M-16-00 target date of September 30, 2024.

5.2 WASTE MANAGEMENT CONSIDERATIONS FOR ALTERNATIVES

With the exception of the no action alternative, each of the alternatives results in the generation of waste requiring appropriate disposal. The majority of the contaminated debris is likely to be designated as low-level waste (LLW); however, quantities of mixed waste, dangerous waste, and transuranic (TRU) waste might be generated. Waste management ARARs are discussed in Section 5.3.

Contaminated waste for which no reuse, recycle, or decontamination option is identified would be characterized and assigned an appropriate waste designation (e.g., solid, asbestos, PCB, radioactive, dangerous, mixed). Most of the contaminated waste generated during implementation of these alternatives would be disposed onsite at the ERDF near the 200 West Area. The ERDF is the preferred waste disposal option because the ERDF is an engineered facility that provides a high degree of protection to human health and the environment, and previous EE/CAs for other Hanford Site facilities have shown that this disposal option is more cost effective than disposal at other disposal sites. Construction of the ERDF was authorized using a separate CERCLA ROD (EPA 1995). The ERDF is designed to meet minimum

Resource Conservation and Recovery Act of 1976 (RCRA) technological requirements for landfills, including standards for double liner, a leachate collection system, leak detection, monitoring, and a final cover.

In 1996, an explanation of significant difference (Ecology et al. 1996) clarified the ERDF ROD (EPA 1995) for eligibility of waste generated during Hanford Site cleanup activities. In accordance with the explanation of significant difference, any LLW, mixed waste, and hazardous/dangerous waste generated as a result of CERCLA or RCRA cleanup actions (e.g., decontamination and decommissioning, RCRA past-practice, and investigation-derived wastes) is eligible for ERDF disposal, provided that appropriate CERCLA decision documents are in place and that the waste meets ERDF waste acceptance criteria (BHI 2002). The waste that would be generated under these alternative CERCLA removal actions falls within the definition of waste eligible for disposal at the ERDF.

While most waste generated during the removal action is anticipated to meet ERDF acceptance criteria, some waste may require treatment to meet ERDF waste acceptance criteria or RCRA land disposal restrictions. The type of treatment and location of treatment would be conducted in accordance with the approved RAWP. In most cases, the type of treatment anticipated would consist of solidification/stabilization techniques such as macroencapsulation or grouting. Specifically, this includes low-level radioactive and nonradioactive liquid waste.

Liquid waste containing levels of hazardous substances meeting the 200 Area Effluent Treatment Facility (ETF) waste acceptance criteria would be transferred to the ETF and treated to meet ETF waste discharge criteria. Liquids that do not meet ETF waste acceptance criteria would be treated to meet land disposal restrictions and either disposed at the ERDF (if ERDF waste acceptance criteria are met) or stored at the Central Waste Complex (CWC) or another approved storage facility, subject to final disposition under CERCLA. Uncontaminated water (e.g., nonradioactive and nonhazardous) could be used for dust suppression.

If TRU waste is encountered, it would be placed in interim storage at the Waste Receiving and Processing Facility, Module 1 or the CWC and shipped offsite to the Waste Isolation Pilot Plant (WIPP) in accordance with the WIPP waste acceptance criteria and the schedule established for completing remedial actions no later than September 30, 2024.

Of the above Hanford Site disposal options, only the ERDF is considered to be "on site" for management and/or disposal of waste from removal actions proposed in this document.[4] There

[4] 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 President may, at his discretion, treat these facilities as one for the purpose of this section. The preamble of the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300) clarifies the stated EPA interpretation that when noncontiguous facilities are reasonably close to one another, and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4) allows the lead agency to treat these related facilities as one site for response purposes and, therefore, allows the lead agency to manage waste transferred between such noncontiguous facilities without having to obtain a permit. Therefore, the 300 Area NPL site and the ERDF are considered to be on site for response purposes under this removal action. It should be noted that the scope of work covered in this removal action is for facilities and waste contaminated with hazardous substances. The DOE will disposition materials encountered during implementation of the selected removal action that are not contaminated with hazardous substances under non-CERCLA authority.

is no requirement to obtain a permit to manage or dispose of CERCLA waste at the ERDF. It is expected that the great majority of the waste generated during the removal action selected in this document can be disposed on site at the ERDF. For waste that must be disposed of elsewhere, other than TRU waste, the EPA would make a determination in accordance with 40 CFR 300.440 as to the acceptability of the proposed facility for receiving this CERCLA removal action waste. The EPA has already made the determination for the WIPP disposal of TRU waste. Residuals from an offsite treatment of waste originating from facilities addressed in this action memorandum can be disposed at ERDF providing the treatment residuals meet the ERDF waste acceptance criteria.

5.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND OTHER CRITERIA, ADVISORIES, OR GUIDANCE TO BE CONSIDERED

40 CFR 300.415(j) requires that removal actions attain ARARs to the extent practicable, considering the exigencies of the situation. When requirements are identified, a determination must be made as to whether those requirements are applicable or relevant and appropriate. A requirement is applicable if it specifically addresses a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance at the site. If not applicable, a requirement may nevertheless be relevant and appropriate if it addresses problems or situations sufficiently similar to the problems or situations encountered and their use is well suited to the site.

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) or 42 U.S.C. 9621 (e)).

To-be-considered (TBC) information consists of nonpromulgated advisories or guidance issued by federal or state governments that are not binding legally and do not have the status of ARARs. As appropriate, TBC information should be considered in determining the removal action necessary for protection of human health and the environment. Requirements drawn from TBC information may be included in the selected alternative.

Because the alternatives would 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.[5] The ARARs are discussed generally in the following sections.

[5] 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 are included in this action memorandum.

5.3.1 Waste Management Standards

A variety of waste streams would be generated under the proposed removal action alternatives. It is anticipated that most of the waste will designate as LLW. However, quantities of TRU waste, dangerous or mixed waste, PCB waste, and asbestos and asbestos-containing material also could be generated. The great majority of the waste will be in a solid form. However, some aqueous solutions might be generated.

Waste designated as LLW that meets ERDF waste acceptance criteria (BHI 2002) would be disposed at the ERDF, which is engineered to meet relevant and appropriate performance standards under 10 CFR 61. If TRU waste is encountered, it would be placed in interim storage at the Waste Receiving and Processing Facility or the CWC and shipped off site to the WIPP in accordance with the WIPP waste acceptance criteria.

The identification, storage, treatment, and disposal of the hazardous component of mixed wastes are governed by RCRA. Washington State, which implements RCRA requirements under *Washington Administrative Code* (WAC) 173-303, has been authorized to implement most elements of the RCRA program. The dangerous waste standards for generation, treatment, storage, and disposal are applicable to the management of any dangerous or mixed waste generated under this action. Treatment standards for dangerous or mixed waste subject to RCRA land disposal restrictions are specified in WAC 173-303-140, which incorporates 40 CFR 268 by reference. Waste that does not qualify for disposal in ERDF will be disposed of at an offsite facility approved by EPA in accordance with 40 CFR 300.440 and will be performed in accordance with an EPA-approved RAWP.

Waste designated as dangerous or mixed waste would be treated as appropriate to meet land disposal restrictions and ERDF acceptance criteria, and disposed at ERDF. The ERDF is engineered to meet minimum RCRA technological requirements for landfills, including standards for double liner, a leachate collection system, leak detection, monitoring, and a final cover. All applicable packaging and pre-transportation requirements for dangerous or mixed waste generated under this action would be identified and implemented before movement of any waste.

Some of the aqueous waste designated as LLW, dangerous, or mixed waste may be transported to ETF for treatment and disposal. ETF is a RCRA-permitted facility authorized to treat aqueous waste streams generated on the Hanford Site and dispose of these streams at a designated state-approved land disposal facility. Such treatment would be conducted in accordance with ETF permits and all other applicable requirements, and in accordance with the EPA-approved RAWP.

The management and disposal of PCB waste are subject to the *Toxic Substances Control Act of 1976* (TSCA) and regulations at 40 CFR 761. 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. Waste designated as PCB remediation waste likely would be disposed at the ERDF. All waste suspected to contain PCBs would be evaluated to determine whether the waste meets ERDF acceptance criteria. Any PCB waste that does not

meet ERDF acceptance criteria would be retained and managed at a PCB storage area meeting the requirements for TSCA storage until disposed of at an appropriate disposal facility, in accordance with the EPA-approved RAWP.

Removal and disposal of asbestos and asbestos-containing material are regulated under the *Clean Air Act of 1977* (40 CFR 61, Subpart M). The 40 CFR 61 requirements applicable to this removal action are contained in 40 CFR 61.145(a), 40 CFR 61.145(c), and 40 CFR 61.150. These regulations also specify handling, packaging, and disposal requirements for regulated sources having the potential to emit asbestos. Substantive requirements of these standards are applicable because this removal action includes abatement of asbestos and asbestos-containing materials. Asbestos and asbestos-containing material would be removed, packaged as appropriate, and disposed at ERDF.

40 CFR 82, Subpart F is applicable for the recovery, recycling, and reclamation of ozone-depleting substances from refrigeration equipment that is present at the facilities subject to this removal action. The substantive requirements of Subpart F will apply to actions being taken on the CERCLA site. The substantive and administrative requirements are applicable when performing recovery, recycling, reclamation, or disposal actions at offsite facilities. As with any other waste, offsite treatment and/or disposal would require an offsite acceptability determination from EPA in accordance with 40 CFR 300.440 (unless present in de minimis concentrations).

The *Hazardous Materials Transportation Act of 1974* (49 U.S.C. 1801-1813), as implemented by the "U.S. Department of Transportation Requirements for the Transportation of Hazardous Materials" (49 CFR 100 through 179), governs the transportation of potentially hazardous materials, including samples and waste. These requirements are not ARARs, but would have to be met where applicable for any wastes or contaminated samples that would be shipped from the 300 Area in commerce and over public roads.

The removal action will be performed in compliance with all waste management ARARs. All 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. Details on how compliance with ARARs will be achieved during implementation of the removal action will be contained the RAWP.

5.3.2 Standards Controlling Emissions to the Environment

The proposed removal action alternatives would have the potential to generate both radioactive and nonradioactive airborne emissions.

The federal *Clean Air Act* and the "Washington Clean Air Act" (*Revised Code of Washington* [RCW] 70.94) regulate both criteria/toxic and radioactive airborne emissions. Implementing regulations found in 40 CFR 61.92 set limits for emission of radionuclides. Radionuclide emissions cannot exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem/yr. This requirement is applicable because there is the

potential to emit radionuclides to unrestricted areas from the removal action. WAC 173-480-070 requires verification of compliance with this standard.

Radioactive air emissions are to be controlled through the use of best available radionuclide control technology (WAC 246-247-040(3)) or as low as reasonably achievable control technology (WAC 246-247-040(4)). Emissions of radionuclides are to be measured for point sources (40 CFR 61.93) and for nonpoint sources (WAC 246-247-075(8)). Measurement techniques may include, but are not limited to, sampling, calculation, or smears for identifying emissions, and will be outlined in the EPA approved air monitoring plan. The substantive requirements of these regulations are applicable because fugitive, diffuse, and point source emissions of radionuclides to the ambient air may result from activities performed during the removal action.

WAC 173-400 and WAC 173-460 establish requirements for emissions of criteria/toxic air pollutants. The primary source of emissions resulting from this removal action would be fugitive particulate matter. Requirements applicable to this removal action are contained in WAC 173-400-040(3) and (8). These regulations require that reasonable precautions be taken to (1) prevent the release of air contaminants associated with fugitive emissions resulting from materials handling, demolition, or other operations, and (2) prevent fugitive dust from becoming airborne from fugitive sources of emissions.

WAC 173-460 would be applicable to removal actions that require the use of a treatment technology that emits toxic air pollutants. Treatment of some waste may be required to meet the ERDF waste acceptance criteria. In most cases, the type of treatment anticipated would consist of solidification/stabilization techniques such as macroencapsulation or grouting, and WAC 173-460 would not be considered an ARAR because it would not result in the emission of toxic air pollutants. No treatment requirements have been identified at this time that would be required to meet the substantive applicable requirements of WAC 173-460. However, if unknowns are encountered that require more aggressive onsite treatment and result in the emission of toxic air pollutants, the substantive requirements of WAC 173-460-030, WAC 173-460-060, and WAC 173-460-070 would be satisfied if the requirements are applicable or relevant and appropriate, as specified in the EPA-approved RAWP.

Conditions and limitations for the control and monitoring of radioactive and nonradioactive emissions from 318, 320, 323, 325, 326, 329, 331, 340, 340B, 3730, and MO-423 are currently incorporated into the *Hanford Air Operating Permit* (Ecology 2001). The substantive requirements from the regulations cited above will be incorporated into the RAWP for this removal action.[6] The terms and conditions contained in the Washington State Department of Health License and the Hanford Site Air Operating Permit for the identified facilities will be considered obsolete once facility deactivation is initiated under an EPA-approved air monitoring plan.

In addition, the RCF (MO-423 and MO-265) will continue to process samples under CERCLA authority for an extended period of time prior to being subject to D4. These facilities may

[6] Pursuant to Section 121(e)(1) of CERCLA, the permit does not apply to CERCLA removal action conducted entirely on site.

receive and analyze samples from CERCLA activities in the 100 and 300 Areas, as well as samples from ERDF. The activities in the RCF are being performed under the authority of the noncontiguous onsite provisions of CERCLA Section 104(d)(4). As a consequence, no permits will be required at the RCF for processing samples from CERCLA actions. The terms and conditions related to the RCF will be obsolete upon approval of an EPA-approved air monitoring plan.

5.3.3 Standards for Protection of Natural Resources

The *Archeological and Historic Preservation Act of 1974* (16 U.S.C. Sections 469-469c) provides for the preservation of historical and archeological data (including artifacts) that might be irreparably lost or destroyed as the result of a proposed action. Although the removal action will occur in previously disturbed areas and the discovery of artifacts is unlikely, this law would be applicable to any significant artifacts that may be discovered.

The *Native American Graves Protection and Repatriation Act of 1990* (as implemented by 43 CFR 10) requires agencies to notify and consult culturally affiliated tribes when Native American human remains are inadvertently discovered during project activities and to seek ways to protect or repatriate the human remains. It is unlikely that work proposed in this removal action would inadvertently uncover human remains. If human remains were encountered, the procedures documented in the *Hanford Cultural Resources Management Plan* (DOE-RL 2003) would be followed to satisfy substantive requirements.

The *National Historic Preservation Act of 1966* (as implemented by 36 CFR 800) requires federal agencies to evaluate historic properties for National Register of Historic Places eligibility, and to mitigate adverse effects of federal activities on any site eligible for listing in the Register. Physical effects (i.e., demolition of the building structure) to all properties addressed in this removal action have been photographed and documented, as necessary. However, tagged historic items will either be retrieved and transported to an appropriate curation facility as identified by DOE or recorded through photography or other appropriate means prior to demolition.

The *Endangered Species Act of 1973* and WAC 232-012-297 require the conservation of critical habitat on which endangered or threatened species depend and prohibit activities that threaten the continued existence of listed species or destruction of critical habitat. The *Migratory Bird Treaty Act of 1918* makes it illegal to remove, capture, or kill any migratory bird or any part of nests or the eggs of any such birds. Although adverse impacts to endangered or threatened species or migratory birds are not expected, activity specific to ecological review will be conducted to identify and mitigate any potentially adverse impacts prior to beginning field work.

5.3.4 Worker Safety and Health Standards

Worker safety and health requirements are not potential ARARs under CERCLA but are included in the discussion for the sake of completeness. The DOE radiation protection standards, limits, and program requirements for protecting workers from ionizing radiation are specified in "Occupational Radiation Protection" (10 CFR 835). The rule also requires that measures be taken to maintain radiation exposures as low as reasonably achievable. In addition, DOE must

meet Occupational Safety and Health Administration requirements for worker protection (e.g., 29 CFR 1910 and 29 CFR 1926), national consensus standards, and DOE orders. Exposure limits, personnel protection requirements, and decontamination methods for hazardous chemicals are established by 29 CFR 1910. Identification and mitigation of physical hazards posed by a facility including (but not limited to) confined spaces, falling hazards, fire, and electrical shock are also required. 29 CFR 1926 provides requirements for worker safety during construction activities. The applicable DOE orders require analysis of hazards posed by work activities and identification of controls necessary to work safely.

Under Alternatives 2 and 3 of the EE/CA, radiological and physical hazards would be identified and analyzed prior to the start of field activities, and appropriate measures for mitigation would be addressed in a task-specific health and safety plan. A combination of personal protective equipment, personnel training, and administrative controls (e.g., limiting time in and distance from radiation zones) would be used to ensure that the requirements for worker protection are met. Individual monitoring would be performed as necessary to verify compliance with the requirements.

5.3.5 Standards for Controlling Stormwater Discharges and Well Decommissioning

Stormwater runoff from some of the facilities listed in this action memorandum discharges to engineered structures (e.g., french drains) that are registered pursuant to the "Underground Injection Control Program" (WAC 173-218). A Hanford Site-Wide State Waste Discharge Permit issued pursuant to the *State Waste Discharge Permit Program* (WAC 173-216) addresses discharges of stormwater to engineered structures. Substantive provisions of the permit include implementation of best management practices and meeting the Groundwater Quality Criteria (WAC 173-200). The requirements of WAC 173-218 are applicable to the decommissioning of underground injection control wells that do not require further remediation under the 300-FF-2 OU. The practices and controls to be implemented will be described in the EPA-approved RAWP. This could include eliminating or rerouting stormwater discharges or creating new discharge locations. The substantive requirements of the "Minimum Standards for Construction and Maintenance of Wells" (WAC 173-160) are applicable to the decommissioning of water wells or other wells that are subject to the requirements of WAC 173-160.

There is also overland stormwater runoff from areas adjacent to some of the facilities. Some of this stormwater runoff has the potential to reach the Columbia River, through drainage ditches, erosion areas, or other conveyances. These areas were at one time included in a stormwater pollution prevention plan written to address the requirements of a National Pollutant Discharge Elimination System general permit issued pursuant to 40 CFR 122. It was subsequently determined that the activities that are discharging water to the existing discharge points are excluded from the permit requirements. Controls will be established, as necessary, to ensure that the removal action does not impact the discharge points. Substantive control requirements from the General Permit for Storm Water Discharges from Construction Activities will be considered, as appropriate.

5.4 ESTIMATED COST

The following is a summary of the estimated costs for the alternatives in the EE/CA. The near-term costs for implementing the no action alternative are negligible as no new costs are expected for such things as security, radiological surveys, or maintenance activities.

Present-worth and nondiscounted cost estimates for the three alternatives are shown in Table 3[7]. Individual cost estimates for performing alternatives two and three are provided in the *Engineering Evaluation/Cost Analysis #3 for the 300 Area* (DOE-RL 2005a) in Tables 4-2 and 4-3 of the EE/CA, respectively. Consistent with guidance established by the EPA and the U.S. Office of Management and Budget (OMB), present-worth analysis is included as a basis for comparing costs of cleanup alternatives under the CERCLA program (EPA 1993). Present-worth (discounted) cost values were calculated using the real interest rate on treasury notes and bonds from OMB Circular A-94, Appendix C (OMB 1992).

The summarized estimate is shown in Table 3, which includes a projection of the total nondiscounted cost for implementing facility Deactivation, Decontamination, Decommissioning, and Demolition (D4) (Alternative 2) for the facilities included in the scope of this action memorandum, which would be $160 million based on present-day (2006) dollars. The nondiscounted cost is the total cost without any adjustment based on an assumed interest rate over the duration of the project. The present-worth (discounted) cost is $141.5 million.

The total projected nondiscounted costs for implementing the S&M followed by D4 alterative (Alternative 3) for the facilities included in the scope of this action memorandum would be $205 million based on present day (2006) dollars. The present-worth (discounted) cost is $ 146.3 million.

Table 3. Total Costs for Removal Action Alternatives for Buildings Located in the Southern Portion of the 300 Area.

Alternative Description	Nondiscounted Cost ($k)			Present-Worth Cost ($k)
	S&M	D4	Total	
Alternative #1: No Action	-0-	-0-	-0-	-0-
Alternative #2: D4	$35.3	$124.7	$160	$141.5
Alternative #3: Long-term surveillance and maintenance followed by D4	$80.3	$124.7	$205	$146.3

5.5 PROJECT SCHEDULE

This removal action is scheduled to begin in late 2006. The RAWP, which will include an air monitoring and waste management plan, will be submitted to EPA for review and approval and will be implemented as written and approved. The existing *300 Area D&D Waste Sampling and*

[7] Estimated costs exclude D4 costs for facilities that have been removed from this removal action.

Analysis Plan (DOE-RL 2005c) will be followed while performing removal activities associated with this action memorandum.

6.0 EXPECTED CHANGES IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Severe weather can create facility conditions amenable to radiological releases to the environment, and long-term aging of engineered controls can lead to eventual failure. Additionally, failure to remove certain facilities precludes cost-effective remediation of underlying and adjacent waste sites in accordance with the 300-FF-2 ROD (EPA 2001). These conditions could result in an unplanned release to the environment. This may cause a threat to human health and the environment by direct exposure to nearby personnel and the environment, and exposure to the public through airborne radioactive contaminants.

7.0 OUTSTANDING POLICY ISSUES

There are no outstanding policy issues for this removal action.

8.0 SELECTED ALTERNATIVE

The selected removal action alternative for the facilities included in this action memorandum is D4 (Alternative 2). This alternative provides increased protection of human health and the environment and is effective in maintaining that protection in both the short term and long term. The alternative removes the threat of release of radiological and nonradiological hazardous substances to the environment resulting from facility deterioration or animal intrusion, and reduces the potential exposure to personnel caused by continued S&M of aging facilities. In addition, removal of the associated buildings contributes to the efficient performance of long-term remedial actions for the 300-FF-2 OU.

A qualitative assessment of the NEPA values is included in the EE/CA. The cumulative impacts of implementing the selected removal action, with respect to these values, are expected to be insignificant in comparison with ongoing Hanford activities. As explained in the EE/CA, the D4 alternative results in an irreversible and irretrievable commitment of natural resources in the form of petroleum products and geological materials required to backfill and recontour the sites following D4. In selecting the D4 alternative, DOE is authorizing the commitment of these resources

This action memorandum represents the selected removal action for buildings located in the southern portion of the 300 Area of the Hanford Site, and was developed in accordance with CERCLA, as amended, and is consistent with the "National Oil and Hazardous Substances

Pollution Contingency Plan" (40 CFR 300. This decision is based on information provided in the Administrative Record for this project.

9.0 REFERENCES

10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations*, as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.

29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations,* as amended.

29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations,* as amended.

36 CFR 800, "Protection of Historic Properties," *Code of Federal Regulations,* as amended.

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations,* as amended.

40 CFR 122, "EPA Administered Permit Programs: The National Pollutant Discharge Elimination System," *Code of Federal Regulations,* as amended.

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations,* as amended.

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations,* as amended.

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan" *Code of Federal Regulations*, as amended.

40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," *Code of Federal Regulations,* as amended.

43 CFR 10, "Native American Graves Protection and Repatriation Regulations," *Code of Federal Regulations*, as amended.

49 CFR 179, "Transportation," *Code of Federal Regulations,* as amended.

Archeological and Historic Preservation Act of 1974, 16 U.S.C. 469-469c, as amended.

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DOE-RL, 2005b, *Action Memorandum #1 for the 300 Area Facilities*, U. S. Department of Energy, Richland Operations Office, Richland, Washington.

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DOE-RL, 2006, *Action Memorandum #2 for the 300 Area Facilities*, U. S. Department of Energy, Richland Operations Office, Richland, Washington.

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Ecology, EPA, and DOE, 1989, *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.

EPA, 1993, *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA*, EPA/540/F-94/009, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1995, *Record of Decision, U.S. Department of Energy Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA, 2001, *Declaration of Record of Decision for the 300-FF-2 Operable Unit*, U. S. Environmental Protection Agency, Region 10, Seattle, Washington.

Endangered Species Act of 1973, 16 U.S.C. 1531, et seq.

Hazardous Materials Transportation Act of 1974, 49 U.S.C. 1801-1813, et seq.

Migratory Bird Treaty Act of 1918, 16 U.S.C. 703, et seq.

National Historic Preservation Act of 1966, 16 U.S.C. 470, et seq.

Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. 3001, et seq.

OMB, 1992, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs,* Circular A-94, Office of Management and Budget, Washington, D.C.

RCW 70.94, "Washington Clean Air Act," *Revised Code of Washington* 70.94, as amended.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

Toxic Substances Control Act of 1976, 15 U.S.C. 2601, et seq.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

WAC 173-216, "State Waste Discharge Permit Program," *Washington Administrative Code*, as amended.

WAC 173-218, "Underground Injection Control Program," *Washington Administrative Code*, as amended.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-400, "General Regulations for Air Pollution Sources," *Washington Administrative Code*, as amended.

WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," *Washington Administrative Code*, as amended.

WAC 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides," *Washington Administrative Code*, as amended.

WAC 232-012-297, "Ambient Air Quality Standards and Emission Limits for Radionuclides," *Washington Administrative Code*, as amended.

WAC 246-247, "Radiation Protection -- Air Emissions," *Washington Administrative Code*, as amended.

Signature sheet for the Action Memorandum #3 for the Removal Action of the 300 Area Facilities between the U. S. Environmental Protection Agency and the U. S. Department of Energy.

for

Joe R. Franco, Assistant Manager
for the River Corridor
Richland Operations Office
U. S. Department of Energy

11/15/06
Date

Concurrence sheet for the Action Memorandum #3 for the Removal Action of the 300 Area Facilities between the U. S. Environmental Protection Agency and the U. S. Department of Energy.

Nick Ceto

Nick Ceto, Hanford Project Manager
U. S. Environmental Protection Agency

11/16/06
Date

APPENDIX A

SUMMARY OF RESPONSES TO PUBLIC COMMENTS ON THE ENGINEERING EVALUATION/ COST ANALYSIS #3 FOR THE 300 AREA

Comments & Responses on the
Engineering Evaluation/Cost Analysis #3 for the 300 Area
DOE/RL-2005-87 Rev 0

Gabriel Bohnee, Nez Perce Tribe (GB):

1. **Comment (GB):** *4.1 - It is unreasonable to consider that Alternative 1 has no associated cost. Institutional controls and their maintenance do represent costs, and those are not outlined. As long as contamination is to remain in the buildings, there would be need for S&M and institutional controls.*

   Response: The "no action" alternative (Alternative 1) provides a baseline for comparing the other alternatives. In accordance with EPA guidance, the "no action" alternative does not include any actions to reduce the potential for exposure (e.g., site fencing, institutional controls, etc), and hence has no associated cost.

   The costs for maintaining institutional controls are not included in the cost evaluation for any of the alternatives. If costs for maintaining institutional controls were included in the alternatives, the cost would be similar for all.

2. **Comment (GB):** *In section 5.4.3.2, the cultural resource mitigation plan (DOE-RL 2002b) is referenced as a guide, to avoid known cultural resource and traditional use areas. (ERWM is not familiar with this document, and requests that a copy be sent as soon as possible.)*

   Response: Rudy Guercia provided Gabriel Bohnee an electronic copy of DOE-RL 2002b on October 5, 2006.

3. **Comment (GB):** *DOE/RL-98-10, The Hanford Cultural Resources Management Plan, is not referenced in this EE/CA, which lessens the confidence of ERWM that cultural resources are being adequately protected in the 300 Area remediation projects.*

   Response: Department of Energy intends to protect cultural resources consistent with the Hanford Cultural Resources Management Plan. Although the management plan was not referenced in the EE/CA, the removal action will be performed to meet the expectations of the Hanford Cultural Resources Management Plan (DOE/RL-98-10).

4. **Comment (GB):** *In section 2.1.5 DOE suggests that former disturbance of the area renders the possibility of finding in situ cultural resources during demolition very unlikely, it is highly probable that cultural resource reviews were never conducted when this area was originally disturbed for developing the 300 Area. It is probable that there could be cultural resources, particularly below-grade, disturbed or not. ERWM would like to understand better how DOE and its contractors intend to protect those resources during the actions outlined in this EE/CA.*

Response: Cultural resource reviews will be completed prior to performing facility deactivation, decontamination, decommissioning, and demolition. The purpose of the review will be to identify sensitive areas, and establish controls in culturally sensitive areas to ensure that cultural resources are protected. Such controls could include monitoring, as appropriate. The Nez Perce would be invited to participate in this action.

5. **Comment (GB):** *ERWM was pleased to see in section 5.4.3.1 that DOE intends to perform ecological surveys prior to remediation, presumably as one of the standards for comparison after remediation is complete.*

   Response: The DOE intends to follow the Hanford Site Biological Resources Management Plan and the Mitigation Action Plan for the 300 Area of the Hanford Site in mitigating impacts to natural resources from removal and remediation activities in the 300 Area.

6. **Comment (GB)** *In section 5.4.7 ERWM is troubled with the comments that contamination above industrial clean-up standards may remain at depth in the 300 Area, which would require institutional controls for an indefinite time into the future. With current attempts to further understand the vadose zone contaminant transport to groundwater in this area, with the realization that natural attenuation has not proceeded as effectively as had been assumed it would, and knowing the recharge will continue to occur throughout the centuries, ERWM cannot support leaving significant levels of contaminants of concern in the vadose zone in the 300 Area. The Nez Perce Tribal Executive Committee, empowered to act for and on behalf of the Nez Perce Tribe, gave clear direction to ERWM in this regard when the committee passed Resolution NP 05-411 in September 2005.*

   Response: The cleanup standards reflected in the EE/CA are consistent with the 300-FF-2 interim action Record of Decision. Final cleanup standards and land use decisions will be evaluated by DOE and the regulatory agencies in the future.

Robert Welch, City of Richland (RW):

1. **Comment (RW):** *In order to provide ongoing service to buildings that will remain in the 300 Area, we would like to ask that you develop plans for replacing sanitary sewer, water and electrical lines to facilities that will continue in operation. This should be part of the remedial plan. It will also be necessary to replace streets and parking lots. Parking lots which would limit infiltration could become part of the remedy. In addition grading and storm drainage/detention should support the remedial goal to reduce infiltration. We encourage you to contact our Public Works Department and Energy Services to coordinate planning for new utilities so they will have capacity to serve remaining buildings as well as future facilities that may be needed by the Department of Energy.*

   Response: Obtaining sewer, water, and electrical utilities from the City of Richland is the preferred option being considered to serve any facilities that would remain in the 300 Area. The Department of Energy will coordinate with the City of Richland Public Works

Department and Energy Services as we define the detailed plans for the facilities in the 300 Area.

2. **Comment (RW):** *The 300 Area potable water treatment plant was designed using technology compatible to that operated by the City of Richland. In the mid-1990's the plant was idled in favor of receiving treated water from the City's plant, which had been recently upgraded and expanded. The 300 Area plant has access to water from the Columbia River under a defense mission permit. This water right should be maintained and the river intake and plant facilities evaluated for potential ongoing use. There are opportunities to partner with the City of Richland regarding this valuable resource.*

   Response: The current plan is to demolish the 300 Area potable water treatment plant. The 312 pump facility will continue to withdraw water to serve research work for PNNL in the 331 Facility. The Department of Energy at this time does not plan on removing any water from the Columbia River to serve the facilities remaining long term in the 300 Area with the exception of work in the 331 Facility. The water rights are a complex issue that would require further detailed evaluation by the Department of Energy and the City of Richland.

3. **Comment (RW):** *If you plan to keep the TEDF facility operational you may want to consider contracting with the City of Richland to operate the plant. Its systems could be operated remotely by the City for much less than DOE's current costs. Richland's public works department previously discussed this option suggesting that only one to three employees would need to be in the facility during the week. This facility could potentially serve other clients that may choose to locate in the 300 Area in the future and operating costs could be shared. If the Department of Energy is interested in pursuing new missions, TEDF is a significant attribute that other sites could not offer.*

   Response: At this time, the Department of Energy does not have a long term mission for TEDF. The Department of Energy will take the comment into consideration when evaluating how best to provide the necessary infrastructure to the Pacific Northwest National Laboratory.

4. **Comment (RW):** *The City of Richland does not provide electrical service to the 300 Area, however the 300 Area is within the Richland Energy Services Department's established electrical service area. We would consider extending power lines to the site should the remaining facilities require electrical service.*

   Response: Obtaining sewer, water, and electrical utilities from the City of Richland is the preferred option being considered to serve any facilities that remain in the 300 Area. The Department of Energy will coordinate with the City of Richland Public Works Department and Energy Services as we define the detailed plans for retention of facilities in the 300 Area.

Ken Niles, Oregon Department of Energy (KN):

1. **Comment (KN):** *Our review was complicated by what seems to be uncertainty by the U.S. Department of Energy (DOE) in its plans for the 300 Area, and associated uncertainty in the completeness of proposed alternatives in the EE/CA. While this document was open for review, we became aware that DOE is reconsidering plans for the 300 Area, as described in comments attributed to Megan Barnett of DOE in the September 18, 2006 Tri-Cities Herald. As described in this article, DOE has begun consideration of a plan to keep several 300 Area buildings for use by Pacific Northwest National Laboratory (PNNL), and is determining whether keeping those buildings would be safe and could stay within the cost range and cleanup schedule for the 300 Area. Because this option was not included or analyzed in the current EE/CA, and because decisions whether to retain some buildings will be tied to uncertain future federal funding, stakeholders cannot effectively evaluate this alternative in the content of the current process. We assume any tentative DOE decision to retain buildings in the 300 Area will lead to a revised or amended EE/CA for review and comment.*

   Response: DOE is currently evaluating which 300 Area facilities are needed to support the mission of the Pacific Northwest National Laboratory (PNNL). The buildings that are being considered for continued PNNL operations are in areas that are relatively clear of 300-FF-2 waste sites. These laboratory facilities are being excluded from the Action Memorandum #3 for the 300 Area. Facilities that are determined to be inactive (i.e., surplus) and are contaminated with CERCLA hazardous constituents will either be addressed through incorporation into Action Memorandum #3 or under a separate action memorandum. Considerations for whether laboratory facilities will be addressed under this removal action or a separate action will be determined based on the threat to human health and the environment, the complexity of the removal action, and the differences in variables from those evaluated in EE/CA #3 for the 300 Area. DOE and EPA will determine what level of documentation is necessary in order to prepare the separate action memorandum.

2. **Comment (KN):** *DOE faces difficult decisions regarding continued use of buildings in the 300 Area by PNNL. DOE's preferred alternative for the area calls for expeditious removal of all remaining buildings in the 300 Area by 2015. As such, Alternative 2 does not address the likely need for continued use of several buildings that are presumably contaminated and are likely to interfere with cleanup of the 300-FF-2 OU. This concern will be exacerbated if DOE makes a decision to continue using, rather than replace, these facilities. Oregon supports the continued use of existing facilities when it does not substantively impede cleanup.*

   Response: The buildings that are being considered for continued operations are in areas that are relatively clear of 300-FF-2 waste sites. Careful coordination will be required to address waste sites located in close proximity to the buildings that would continue to be operated by PNNL.

3. **Comment (KN):** *After careful review of the alternatives described in the EE/CA, Oregon does not fully endorse either alternative #2 (deactivation, decontamination, decommissioning, and demolition, or D4) or alternative #3 (surveillance and monitoring, followed by D4). Both of these alternatives call for removal of remaining buildings in the 300 Area, and differ primarily in the schedules for removal. Neither alternative considered overall minimization of risk to human health and the environment in the 300 Area.*

Moreover, DOE's preferred alternative (#2, D4) is likely not fully implementable because (as noted above) there are likely to be delays in building replacement buildings.

Response: Section 5.1.1 compares the risks to human health and the environment from the proposed alternatives and determined that the risks would be better minimized under Alternative 2 because of the shortened time-frame for performing the removal action. In addition, the risks to human health and the environment are minimized under Alternative 2 because 300-FF-2 waste site remediation could be performed in a timely manner.

4. **Comment (KN):** *For Oregon, the highest priority for Hanford is waste cleanup to protect human health and the environment. Rather than spending funds on removal of uncontaminated buildings, we would prefer to see a more targeted effort towards cleanup of burial grounds and other waste sites within the 300-FF-2 OU. To the extent that 300 Area buildings are significantly contaminated and/or they impede cleanup of the 300-FF-2 OU, prompt demolition is appropriate and prudent. However, since the incremental increase in costs for deferred demolition as presented in the EE/CA is minimal (<5%), we urge DOE to defer demolition of buildings that do not impede cleanup and are not themselves contaminated. Funds should then be redirected to cleanup the 300-FF-2 OU. Empty buildings do not pose a threat to the groundwater and the Columbia River, but wastes pose a very real threat until their removal.*

Response: Priorities for 300 Area facility demolition are developed based on the following considerations: proximity to 300-FF-2 waste sites; complexity of the facility; and other considerations (e.g., physical hazards).

Although the empty buildings do not currently pose a direct threat to the groundwater and the Columbia River, many of these buildings are old and the level of surveillance and monitoring increases as the integrity of the buildings degrades. The potential for biological intrusion, spread of contamination, and physical dangers increase with time. Removal of buildings also enhances future remediation efforts.

5. **Comment (KN):** *The EE/CA sidesteps difficult decisions that must be made regarding future land uses in the 300 Area. Given the divergent perspectives of DOE and the City of Richland regarding future land uses of this area, we strongly encourage DOE to plan and clean to standards consistent with the least restrictive land use. Language in this and other recent documents indicates a continued preference by DOE to clean up to the lowest possible standard. Cleanup to a lower standard could result in environmental and health impacts. Further, it would mean that DOE is either precluding options for future use of the area, or is forcing additional cleanup in the future when land use decisions for the 300 Area are modified to be consistent with needs of the City of Richland.*

Response: One of the objectives of this removal action is to eliminate physical barriers to performing waste site remediation in the 300 Area. The cleanup standards reflected in the EE/CA are consistent with the 300-FF-2 interim action Record of Decision. Final cleanup standards and land use decisions will be evaluated by DOE and the regulatory agencies in the future. Currently the 300 Area contain industrial land use into the foreseeable future and no decisions have been made to transfer this parcel of land from DOE's administration.

6. **Comment (KN):** *The document does not address restoration of the upland ecosystems following demolition. Although mitigation or restoration of the 300 Area is not required under the Hanford Biological Resources Mitigation Strategy (BRMiS), mitigation of ecological degradation is consistent with the goals of BRMiS. To the extent that mitigation is not incorporated into cleanup of the 300-FF-2 OU, we strongly encourage DOE to incorporate ecological restoration of the 300 Area into Removal Action Objectives in Section 3.0 and to add costs estimates for restoration in Section 4.*

   Response: Mitigation for impacts to habitats and species of concern is practiced on all projects in accordance with the *Hanford Site Biological Resources Management Plan* (BRMaP). The removal of the buildings in the 300 Area will be followed by 300-FF-2 remediation of the waste sites that exist in this area. Restoration is tied to the remedial action work and will occur after remediation and backfilling is complete. The *Mitigation Action Plan for the 300 Area* (DOE/RL-2002-19, Rev. 0) describes the goals and type of restoration that will be conducted, as specified in the approved *Remedial Design Report/Remedial Action Work Plan for the 300 Area* (DOE/RL-2001-47).

7. **Comment (KN):** *Section 5.4.7 could be construed as suggesting an irreversible and irretrievable (I&I) commitment of resources in vadose zone soils and groundwater of the 300 Area following cleanup in accordance with the 300-FF-2 record of decision. An EE/CA is not an appropriate forum for proposing an I&I commitment, and we encourage addition of unambiguous language making it clear that no such I&I commitment is being proposed.*

   Response: The EE/CA reflects the resource commitments as described in the 300-FF-2 interim action Record of Decision. It was not the intent of the 300 Area EE/CA to establish an I&I commitment for vadose zone soils or groundwater; such a determination would be beyond the scope of the associated work.