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Revision 0

Support Activities to the 200-UW-1 Operable Unit Removal Action Work Plan

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

United States Department of Energy
P.O. Box 550
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

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ACRONYMS

ALARA	as low as reasonably achievable
AM	action memorandum
ARAR	applicable or relevant and appropriate requirements
BHI	Bechtel Hanford, Inc.
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	Code of Federal Regulations
CWC	Central Waste Complex
D&D	decontamination and demolition
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DOT	U.S. Department of Transportation
DQO	data quality objectives
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	200 Areas Effluent Treatment Facility
FFS	focused feasibility study
ft	foot/feet
ft^2	square foot/feet
HASP	health and safety plan
HEPA	high-efficiency particulate air
km/hr	kilometer per hour
LDR	land disposal restriction
LIGO	Laser Interferometer Gravitational Wave Observatory
mph	miles per hour
mrem/yr	millirem per year
MSW	miscellaneous solid waste
OU	operable unit
PP	proposed plan
PPE	personal protective equipment
PRG	preliminary remedial goals
RAWP	removal action work plan
RCRA	*Resource Conservation and Recovery Act of 1976*
RCW	Revised Code of Washington

RTD	removal, treatment, and disposal
RWP	radiological work permit
SAP	sampling and analysis plan
TBC	to-be-considered
TEDF	Treated Effluent Disposal Facility
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
VCP	vitrified clay pipe
WAC	Washington Administrative Code
WSCF	Waste Sampling and Characterization Facility

SUPPORT ACTIVITIES TO THE 200-UW-1 OPERABLE UNIT REMOVAL ACTION WORK PLAN

1.0 INTRODUCTION

Facilities on the Hanford Site were used from 1943 until 1990 to produce nuclear materials for national defense. In July 1989, the Hanford Site was listed on the National Priorities List under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) *of 1980*, as amended by the *Superfund Amendments and Reauthorization Act of 1986*. The Hanford Site was divided and is now listed as three National Priorities List sites: the 100 Areas, the 200 Areas, and the 300 Area. The 200-W-42 vitrified clay pipe (VCP) was utilized for effluent transport to the 216-U-8 and 216-U-12 Cribs, within the 200-UW-1 Operable Unit (OU), which is located in the 200 Areas. It has been determined by the U.S. Department of Energy (DOE) and the Washington State Department of Ecology (Ecology) that the pipeline and cribs present a potential threat to human health and/or the environment. To support the proposed installation of surface barriers over the 216-U8 and 216-U-12 Cribs, which is part of a future remedial action within the 200-UW-1 OU, a portion of the 200-W-42 VCP must be removed. As part of this removal action, DOE has designated an On-Scene Coordinator pursuant to the requirements of 40 Code of Federal Regulations (CFR) 300.120 to ensure compliance with the National Contingency Plan and the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 2003). This removal action work plan (RAWP) contains the pertinent information to support the implementation of the *Action Memorandum for the Time-Critical Removal Action for Support Activities to the 200-UW-1 Operable Unit* (AM), DOE/RL-2005-71.

The removal action supports minimization of potential releases of hazardous substances from the 216-U-8 and 216-U-12 Cribs that could adversely impact human health and the environment, is protective of site personnel and the environment, and contributes to the efficient performance of the proposed 200-UW-1 OU remedial actions.

1.1 BACKGROUND

A 45-day public comment and review period was held from May 16, 2005 through June 30, 2005 on the proposed plan (PP) (*Reissued Proposed Plan for the 200-UW-1 Operable Unit*, DOE/RL-2003-24, which includes the 200-W-42 VCP waste site). The PP was prepared to evaluate remedial action alternatives for the U Plant Area Waste Sites. The comments and responses will be contained in the administrative record for the 200-UW-1 OU.

The AM documents approval of the removal action. This RAWP describes the implementation of the actions, which will be taken in support of remediation for the 200-UW-1 OU proposed barrier installations for 216-U-8 and 216-U-12 Cribs, located on the Hanford Site, Richland, Washington.

1.2 PURPOSE

This RAWP is used to establish the methods and activities required for performance of the following functions in support of placing surface barriers or caps over the 216-U-8 and 216-U-12 Cribs, and other 200-UW-1 OU Support Activities.

- Sampling and analysis involving non-intrusive and intrusive sampling, surveying, monitoring, and field screening techniques involving a concrete pad, soils and piping, and waste generated during the field activities.

- Service isolations and installations, including any excavation and backfilling activities that may be needed, but will not be limited to, work involving electrical lines, ventilation systems, water and sewer lines, and installation of grounding rods and anchors.

- Decontamination and/or removal of systems, structures, and soils that are known or suspected to contain significant chemical or radiological material inventory, including piping and risers.

- Decontamination and/or application of fixatives, including but not limited to, scraping, scabbling, cutting, sawing, grinding, equipment removal, and application of plastic, cover soil, and sealants.

- Waste treatment, packaging and storage within the Removal Action Area (Figure 1-2) involving: treatments such as, but not limited to, filtration, evaporation, separation, elementary neutralization, solidification, size reduction, waste repackaging and amalgamation; and waste packaging and storage for shipment, and offsite storage and/or disposal.

- Sealing of subsurface piping and risers in place

- Stabilization of the affected surrounding terrain prior to revegetation.

The intent of this RAWP is to identify the basis and to provide criteria for the preparation of work packages and subcontract task orders for the project tasks. Using the most recent information concerning the area conditions, field-level work packages will be developed to direct work activities and instruct workers in the most applicable work methods.

The 200-UW-1 OU support activities schedule presents the logical progression of events and the estimated duration for each activity. The project schedule is presented by fiscal year and is included as Appendix A in this RAWP.

1.3 SCOPE

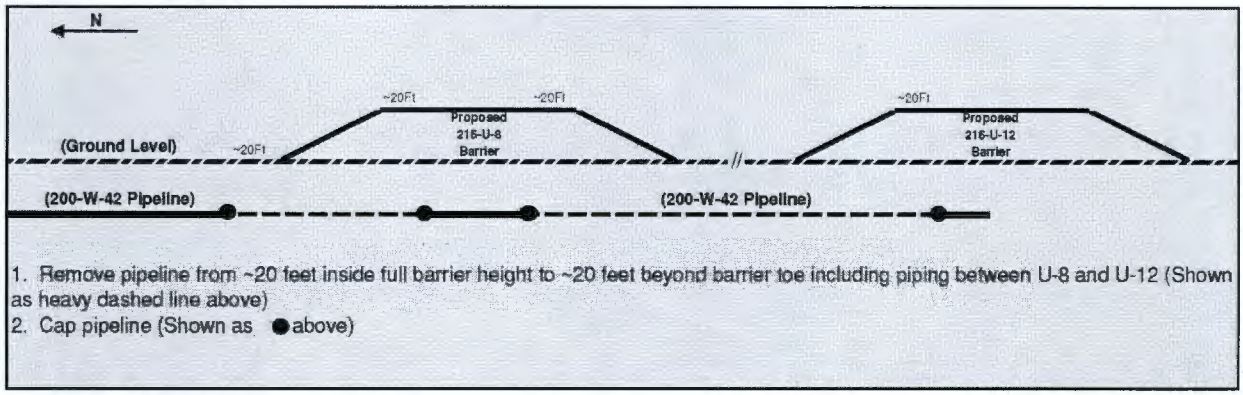
To support the proposed remedial action of surface barrier installations over the 216-U-8 and 216-U-12 Cribs (Figure 1-1) and, in order to take advantage of existing work force capabilities and to avoid adverse weather conditions that could delay cleanup efforts, the following activities have been identified for this removal action:

- Excavate approximately 122 m (400 ft) of the 200-W-42 VCP, sample pipeline trench, and then backfill the trench area (sampling of the trench will provide characterization data that will be used for other removal and remedial activities, such as the 200-IS-1 and the 200-UW-1 OU projects, and will also be used in determining whether the Remedial Action Objectives have been achieved);

- Reroute approximately 253 m (830 ft) of the Treated Effluent Disposal Facility (TEDF) line and remove or stabilize approximately 100 ft of the wastewater pipeline;

- Complete or partial removal of a 31-m by 46-m (100-ft by 150-ft) concrete slab;

- Remove and seal 3 vent risers; and
- Relocate any miscellaneous markers or utilities.



NOTE: Effluent source information is discussed in Section 2.2.

Figure 1-1. Proposed Construction of Crib Barriers
(i.e., U-8 and U-12) and Removal, Treatment, and Disposal of 200-W-42 VCP.

1.4 OBJECTIVES

This removal action is an interim step in support of the 200-UW-1 OU Remedial Action and implements the remedial alternative identified in the *Focused Feasibility Study for the 200-UW-1 Operable Unit*, DOE/RL-2003-23 (FFS) and PP (DOE/RL-2003-24) for the 200-W-42 waste site. The 200-UW-1 FFS identifies remedial action objectives for the U Plant Area Waste Sites. The following remedial action objectives were developed specific to the 200-UW-1 OU:

- Remedial Action Objective 1 –Prevent unacceptable risk to human health and ecological receptors by exposure to nonradiological constituents in soils and debris at concentrations above the industrial use criteria, as defined in Washington Administrative Code (WAC) 173-340-745(5).
- Remedial Action Objective 2 – Provide conditions suitable for future industrial land use and protect ecological receptors, respectively, by
  - Preventing exposure to radiological constituents at concentrations that will cause a dose rate limit of 15 mrem/yr above background for industrial workers (OSWER Directive 9200.4-31P, EPA/540/R-99/006, *Radiation Risk Assessment At CERCLA Sites: Q&A*). A dose rate limit of 15 mrem/yr above background generally achieves the U.S. Environmental Protection Agency (EPA) excess lifetime cancer risk threshold, which ranges from $1x10^{-6}$ to $1x10^{-4}$.
  - Protecting ecological receptors based on a dose rate limit of 0.1 rad/day for terrestrial wildlife populations [DOE-STD-1153-2002, *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota*].

- Remedial Action Objective 3[1] – Prevent migration of contaminants through the soil column to groundwater or reduce soil concentrations below WAC 173-340-747, "Deriving Soil Concentrations for Ground Water Protection," groundwater protection criteria so that no further degradation of the groundwater results from contaminant leaching from the 200-UW-1 OU waste sites.

- Remedial Action Objective 4 – Prevent adverse impacts to cultural resources and threatened or endangered species, and minimize wildlife habitat disruption.

In the 200-UW-1 FFS, the preliminary remediation goals (PRG) are identified, which are a numerical expression of the remedial action objectives. The remedial action objectives and PRGs are based on attainment of acceptable levels of human health and ecological risk. For the 200-UW-1 OU, including the 200-W-42 VCP, the PRGs are identified for individual hazardous substances identified as Contaminants of Concern.

Meeting the 200-UW-1 FFS PRG and the potential applicable or relevant and appropriate requirements (ARAR) and, by extension, achieving remedial action objectives, can be accomplished by reducing concentrations (or activities) of contaminants to remediation goal levels or by eliminating potential exposure pathways/routes. As noted above, the 200-UW-1 remedial action objectives serve as the removal action objectives, to the extent practicable. Similarly, the PRG for the remedial action also serves as the soil removal action cleanup level, to the extent practicable. If the removal action cleanup level is not met at 4.6 m (15 ft) or underneath the pipeline, then the trench will remain opened with fixative applied until future actions are determined pending evaluation of the data. All data collected during the removal action will be provided to the 200-UW-1 and 200-IS-1 OUs and the groundwater projects.

As shown by the risk assessment in the 200-UW-1 FFS, the 200-W-42 VCP waste site is contaminated with Cs-137 at levels that represent human health direct exposure and terrestrial wildlife exposure. Table 1-1 identifies the Cs-137 removal action cleanup level at the 200-W-42 VCP waste site:

Table 1-1. Summary of Radionuclide Soil Removal Action Cleanup Level.[a]

Constituent	Overall Removal Action Cleanup Level[b] (pCi/g)
Cesium-137	23.4

[a] The removal action cleanup level is the same value as the PRG specified in the 200-UW-1 FFS. Accordingly, the removal action cleanup level presented herein is a numerical expression of the 200-UW-1 FFS remedial action objectives, and is intended to address the risks identified in the associated risk assessment for the 200-W-42 VCP.

[b] The listed value represents the most restrictive soil removal action cleanup level. The value represented is for screening purposes. Site-specific evaluation and modeling will be performed to determine if remedial action objectives have been attained.

Based on these "considerations", Removal, Treatment and Disposal (RTD) was selected as the remedy for the 200-W-42 VCP from a point just south of the 2715UA building (where it transitions from stainless steel to vitrified clay pipe) to just inside the functional boundary (20 feet inside the crest of the barrier side slope) of the barrier to be placed over the 216-U-8, and between the functional boundaries of the barriers to be placed over the 216-U-8 and 216-U-12 Cribs (refer to Figure 1-2).

[1] Note: Protection of the Columbia River from contaminants in this OU is achieved through Remedial Action Objective 3; there is no surface water in the immediate vicinity of the waste sites that requires a separate Remedial Action Objective.

1.5 FACILITY AND HAZARD DESCRIPTION

This section provides description information and discusses the hazards associated with the 200-UW-1 OU Support Activities, specifically the 200-W-42 VCP.

The 216-U-8 and 216-U-12 Cribs are two of the U Plant Area Waste Sites in the 200 West Area of the Hanford Site. Highway 240 is to the southwest of the U Plant Area Waste Sites, and the Columbia River is north-northwest of the CERCLA Removal Action Area (Figure 1-2).

1.5.1 U Plant Area Waste Sites, 200-W-42 VCP Description

This section describes portions of the U Plant Area Waste Sites, specifically the 200-W-42 VCP, which is within the scope of this removal action and summarizes the chemical and radiological processes that resulted in discharges through this piping and the hazards associated with the effluent stream.

In general, process wastes generated during operation or deactivation were discharged to cribs, as well as other waste disposition areas. The primary liquid-waste generating processes in the U Plant Area and the associated building locations in the U Plant Area include the following:

- Uranium Recovery Process — 221-U Facility
- UO_3 Conversion Process — 224-U Building
- Solvent Treatment — 276-U Solvent Handling Building
- Analytical Laboratory Programs — 222-U Laboratory.

Liquid wastes often were discharged to the soil column via several types of structures in the U Plant Area including cribs, French drains, a reverse well, trenches, and septic systems. The 200-W-42 VCP carried the effluent, by gravity flow, to the 216-U-8 and 216-U-12 Cribs. Detailed information on 216-U-8 and 216-U-12 Cribs is contained in the 200-UW-1 FFS (DOE/RL-2003-23).

The 200-W-42 VCP is one of the process lines, sometimes referred to as transfer lines or process sewer lines, connecting the major process facilities with each other and with their waste-handling facilities or waste sites. Transfer lines to liquid effluent disposal facilities (e.g., cribs) from the U Plant and ancillary facilities were constructed of a variety of materials including vitreous clay and galvanized metal. The 200-W-42 VCP is a pipe 15 cm (6 in.) in diameter. The pipe is buried 2.4 to 4 m (8 to 12 ft) belowgrade, and it runs from the 221-U Building to the 216-U-8 Crib, and then to the 216-U-12 Crib.

1.5.2 U Plant Area Waste Sites Hazards, 200-W-42 VCP

This section provides a summary of the nature and extent of contamination for the 200-W-42 VCP. The results are described in detail in BHI-00033; DOE/RL-95-13; DOE/RL-95-106; DOE/RL-2003-23, Rev. 0, Appendix C; and DOE/RL-2003-24.

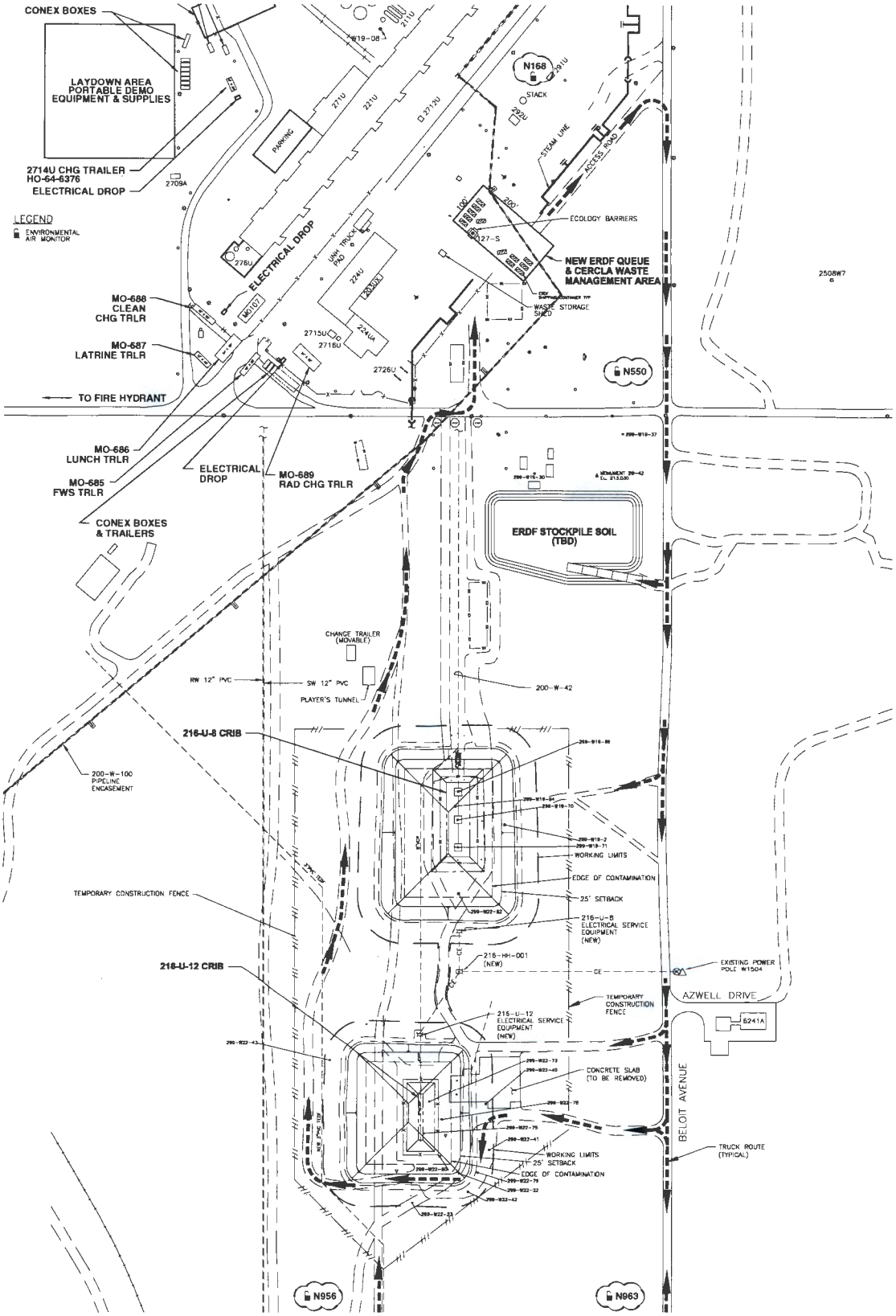


Figure 1-2. Location of the CERCLA Removal Action Area.

In the vitrified clay section of the pipeline, many of the joints were dislodged; the degree of dislodgment varied from very minor to very serious, and silty sandy material was observed. The stainless steel section of the pipe was in excellent condition and the joints were sound. However, silty material also was observed in the pipe. Surface soil samples collected during the pipeline investigation typically showed background levels of activity for analyzed constituents. The highest levels of contamination were detected in the subsurface near the 200-W-42 VCP. However, many constituents were distributed throughout the 4 m (12-ft) depth of the investigation.

Lateral spreading of no more than 1 to 2 m (3 to 5 ft) was apparent or detected at the depth of the investigation. The maximum concentrations in the soil surrounding the pipeline, of Am-241, Cs-137, Pu-239/240, and Sr-90 detected during the pipeline investigation were 426 pCi/g; 49,100 pCi/g; 70.6 pCi/g; and 180 pCi/g, respectively. The highest strontium activity was detected in a vegetation sample at a concentration of 1380 pCi/g. Maximum concentrations of U-233/234 and U-238 were 38 pCi/g and 43 pCi/g, respectively.

Table 1-2 summarizes the contaminants detected during the initial sampling campaigns.

Table 1-2. Summary of Detected Contaminants.

Constituent Name	Constituent Name
Acetone	Pentachlorophenol
Americium-241	Plutonium-238
Antimony	Plutonium-239/240
Arsenic	Radium-226
Bis(2-ethylhexyl) phthalate	Radium-228
Bromomethane	Selenium
Cesium-134	Selenium-79
Cesium-137	Silver
Chloride	Strontium-90
Chloromethane	Sulfate
Chromium	Technetium-99
Di-n-butyl phthalate	Thallium
Europium-152	Thorium-232
Europium-154	Titanium
Fluoride	Toluene
Kerosene	Uranium
Mercury	Uranium-233
Methylene chloride	Uranium-234
Neptunium-237	Uranium-235
Nitrogen in nitrite and nitrate	Uranium-238

Additional characterization will be conducted as part of the removal action activities in accordance with the approved *Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit* (DOE/RL-2005-75). The additional sampling and analysis will be used to support waste designation for the soil, concrete slab and piping and risers, and to determine if the remedial/removal action objectives have been attained.

2.0 REMOVAL ACTION ELEMENTS

The following sections provide a general description of how work activities will be performed to remove the affected portions of the 200-W-42 VCP and the concrete slab northeast of the 216-U-12 Crib, and rerouting of the TEDF line, as well as other activities needed to support barrier installations for 216-U-8 and 216-U-12 Cribs.

2.1 REMOVAL ACTION WORK ACTIVITIES

As stated at the end of Section 1.4, RTD was selected as the remedy for the 200-W-42 VCP from a point just south of the 2715UA building to just inside the functional boundary (20 feet inside the crest of the barrier side slope) of the barrier to be placed over the 216-U-8 Crib, and between the functional boundaries of the barriers to be placed over the 216-U-8 and 216-U-12 Cribs.

RTD includes excavation, material handling, and transportation of contaminated materials from selected waste sites, and further involves removal and/or plugging of pipes, vents, and risers associated with surface barrier waste sites. When this action is selected, structural materials and soil with constituent concentrations above the removal action cleanup levels are excavated to a depth of up to 4.6 m (15 ft) below ground surface, or to the bottom of the engineered structure, using observational approaches and conventional excavation techniques. Excavated material exhibiting concentrations above the removal action cleanup level would be disposed of at the Environmental Restoration Disposal Facility (ERDF), in accordance with the *Environmental Restoration Disposal Facility Waste Acceptance Criteria* (BHI-00139). The ERDF is an 'onsite' approved waste disposal facility located in the 200 West Area that is used for waste disposal on the Hanford Site. While the contaminated material is being excavated, it would be screened and segregated before being transported to ERDF. Excavation would continue until all contaminated material exceeding the removal action cleanup level is removed to the agreed upon depth, and the site would then be backfilled with clean material once the laboratory analyses are completed and the remedial/removal action objectives have been met. Removal of the concrete slab northeast of the 216-U-12 Crib, the removal of the three risers on 216-U-12 Crib, and the rerouting of the TEDF line west of the 216-U-12 Crib, are not anticipated to involve materials contaminated above action limits.

The following sections describe the field activities associated with RTD of the 200-W-42 VCP, including the activities associated with waste site excavation, material handling, and containerization of waste for disposal at the ERDF.

2.1.1 Mobilization and Site Preparation

Mobilization and site preparation include the following activities, which are necessary to prepare the site for excavation:

- Establishing site utility services as required.
- Constructing roads, field support facilities, container survey stations, and decontamination stations. Hanford Site roadways are constructed of existing site materials, except the surface course, which is imported. Field support facilities provide a changing area, lunchroom, and construction offices at individual sites. The changing area includes lockers, benches, and storage for both clean and contaminated personal protection equipment.

- Stripping the existing vegetation and debris. Stripping removes surface and near-surface materials (including vegetation and roots, cobbles, and boulders) that will be stockpiled and used later as a top dressing and planting medium for revegetation.

- Removing overburden material. Clean overburden will be segregated and stockpiled on-site for later use as backfill material.

2.1.2 Waste Site Excavation, Utility Removal, and Backfill

Excavation and backfill require equipment operations in uncontaminated and contaminated soil and debris of varying physical properties (for example, fine sand to boulders of varying sizes). While the 200-W-42 VCP excavation is in progress, the actual side slope required to prevent cave-ins and/or sloughing will vary with differences in such factors as materials that have been previously disturbed, excavation depth, soil type, environmental conditions of exposure, location of personnel, and application of surcharge loads near the excavation. Guidance for the excavation shall be determined in accordance with the requirements of 29 CFR 1910, "Occupational Safety and Health Administration, Department of Labor" and 29 CFR 1926, Subpart P, "Excavations".

During excavation layout and preliminary civil land survey, local topography will be reviewed to determine whether precipitation run-on/run-off potential exists and whether appropriate measures (e.g., installation of earthen berms) must be taken. Excessive run on from surrounding areas could affect slope stability and has the potential to spread contamination. If water does accumulate in soil removal traffic areas or excavations, operations will be suspended until the affected area dries or standing water is removed. Civil land survey shall be accomplished using coordinate datum NAD 83/91, Washington coordinate system (south zone), and elevation datum NAVD88.

Visible dust emissions from active excavations and/or concrete demolition and removal are not permitted and will result in suspension of work. Active excavations and demolitions shall use water or other methods as approved for dust control, in accordance with agreements between the U.S. Department of Energy, Richland Operations Office (DOE-RL), EPA, and the Washington State Department of Health. Water usage for dust control shall be minimized to protect against contaminant migration. Crusting agents or fixatives shall be applied to any disturbed portion of the contamination area that will be inactive for more than 24 hours. Material to be disposed at ERDF shall also comply with the moisture content and other applicable requirements of BHI-00139.

In this removal action, soils will be removed to a maximum depth of 4.6 m (15 ft), or to below the engineered structure, whichever is deeper. If the removal action cleanup level is not met at 4.6 m (15 ft) or underneath the pipeline, then the trench will remain opened with fixative applied until future actions are determined pending evaluation of the data. All data collected during the removal action will be provided to the 200-UW-1 and 200-IS-1 OUs and the groundwater projects.

Waste volume reduction practices, such as minimizing cross-contamination during the removal action or segregation of clean overburden from contaminated materials, will be implemented where feasible.

2.1.3 Stabilization

Some waste materials may require stabilization to maintain worker exposures to airborne and/or direct radiation as low as reasonably achievable (ALARA). Stabilization methods may include the use of grouts to encapsulate particulates and/or to provide shielding. Other methods of fixing contamination such as coatings or expandable foams may also be considered.

2.1.4 Material Handling and Transportation

All contaminated materials (including excavated soils, debris, disposable protective clothing, air filters, and trash) require proper packaging, handling, and transportation in accordance with this RAWP's waste management Section 4.2. Contaminated bulk materials will be hauled in the standard ERDF open-top, hinged-gate roll-off boxes that are designed for a maximum payload of approximately 18.1 metric tons (20 tons) or an approved alternative. The bulk containers will be transported on roll-on/roll-off trailers with hydraulic dumping capabilities that are towed by conventional tractor units. The trailers and tractors will be suitable for operating on sloped excavation access ramps and other off-road ramps, and meet applicable U.S. Department of Transportation (DOT) requirements. The wheel wells of the tractor will be constructed to prevent soil from being thrown onto the trailer and its containers during transport. Containers will be transported from the 200-UW-1 OU to the ERDF over existing Hanford Site roadways. Each shipment of soil/debris transported to the ERDF will be referenced to a waste profile that is intended to bound the levels of hazardous constituents in the material found at the site. The waste profile is in effect until the characteristics of the excavation site have changed significantly. Empty containers returning from the ERDF will be removed from the ERDF tractor trailers in the CERCLA Waste Management Area and rolled on to project haul trucks for refilling. The CERCLA Waste Management Area helps to maintain a continuous flow of materials through the transportation system by allowing excavation to continue for a limited time if the trucks running to the ERDF are not operating, or by allowing ERDF trucks to continue to run for a limited time if the excavators are not operating.

Transportation and handling for off-site treatment and/or disposal of contaminated material will be coordinated on a case-by-case basis. All off-site shipments will be conducted using equipment and methods that are compliant with applicable DOT regulations.

2.1.5 Data Quality Objectives Process and Characterization

The EPA-developed data quality objectives (DQO) process has been used to develop the data collection, sampling, analysis rationale, strategy, and requirements for these characterization efforts. The results of the DQO process are documented in the EPA approved *Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit*, DOE/RL-2005-75 (SAP).

2.1.6 Soil and Debris Characterization

Soil and debris characterization will be based on the observational approach and performed in accordance with the SAP (DOE-RL-2005-75). This approach relies on available historical information and limited field investigations combined with a "characterize-and- remove-in- one-step" methodology. The latter methodology consists of site excavation and monitoring at sites where remedial action and cleanup goals have been selected. Removal will continue to a depth of 4.6 m (15 ft) or the bottom of the engineered structure, whichever is deeper, at which samples will be taken to determine if RAOs have been met. If the removal action cleanup level is not met at 4.6 m (15 ft) or underneath the pipeline, then the trench will remain open with fixative applied until future actions are determined pending evaluation of the data.

2.1.7 Initial Characterization

Initial characterization (also called waste characterization) will be conducted before and during removal activities for a given waste stream (i.e., soils, piping, concrete rubble, etc.). The DQO process has been

used to develop which waste streams are expected to be generated, the initial characterization data needs, rationale, strategy, and requirements for the data collection and analysis. Data collection could include survey and sample data. The initial characterization data will be used as follows:

- Characterize waste for treatment and/or disposal
- Identify radiological and hazardous conditions encountered during removal
- Specify health and safety requirements.

Documentation on the results of the DQO process is included in the SAP (DOE/RL-2005-75).

2.1.8 Decontamination

Decontamination to support excavation activities will generally be performed using dry methods (such as wiping) to the extent possible. When the use of wet methods (for example, pressure washers and steam cleaners) is required to achieve decontamination objectives, the associated water or cleaning solutions will be collected, and work will be conducted by trained site workers in accordance with the following best management practices:

- Decontamination activities will be performed within active excavation areas of the CERCLA Removal Action Area
- The amount of water used to clean equipment will be minimized.
- Only raw or potable water will be used.
- Soaps, detergents, or other cleaning agents will not be added to wash water
- Pressure washing will normally use cold water (hot water may be used to avoid icing)
- Steam cleaning will be used only after other methods prove to be ineffective
- Spent washwater will be collected, containerized and disposed of appropriately.

When excavation operations are completed at a given site, equipment will generally be relocated to a nearby site that will undergo remedial action, and decontamination will be performed at the new site in accordance with the best management practices. If it is not practical or efficient to relocate the equipment to a new site, equipment decontamination may be performed within the initial CERCLA Removal Action Area. In such cases, a pre- and post-survey will be performed on the washing/decontamination area to determine whether any supplemental remediation of the area is needed as a result of the process. The project may also opt to perform other methods of equipment washing and/or decontamination for a completed site (e.g., wrap the equipment for transfer to a decontamination pad, provide for a temporary facility at the site to collect washwater, or fix the contamination to the equipment). Decontamination fluid/washwater that is collected will be managed in accordance with Section 4.2, "Waste Management"..

2.1.9 Backfill

The 200-W-42 VCP will be backfilled and compacted to match slope and elevations of adjacent existing ground. Uncontaminated fill shall be provided from borrow pits or stockpiles.

Waste volume reduction practices, such as minimizing cross-contamination during the removal action or segregation of clean overburden from contaminated materials, will be implemented where feasible.

2.1.10 Borrow Materials/Backfill

Backfill materials for the 200-W-42 VCP RTD will be taken from an approved borrow source on the Hanford Site, including, but not limited to, the ERDF stockpiles.

2.1.11 Waste Disposal

All waste management activities will be performed in accordance with waste management ARARs identified in the AM and as discussed in Section 4.2 of this RAWP. Certain materials are eligible for salvage and recycling, which is encouraged if the appropriate regulatory and project requirements are met and it is economically feasible for the project to do so. The radiologically contaminated CERCLA waste from the removal action will either be disposed of at ERDF, or temporarily stored offsite at the Central Waste Complex (CWC) prior to treatment and disposal, or disposed of offsite at the 200 Areas Effluent Treatment Facility (ETF). The movement and treatment, storage, and/or disposal of waste at the CWC or the ETF require an offsite determination approval.

The CERCLA waste also could be disposed of at another offsite facility that has been approved in accordance with 40 CFR 300.400. Treatment of waste could be necessary before disposal at ERDF, and containerized waste could be stored at ERDF with the appropriate concurrence(s) while the waste is awaiting treatment. Liquid waste sent to the ETF will be treated separately from other non-CERCLA sources, and any treatment residues that meet ERDF waste acceptance criteria (BHI-00139) could be disposed of at ERDF. Section 4.2 discusses waste management in further detail.

3.0 SAFETY AND HEALTH MANAGEMENT AND CONTROLS

All emergency planning and preparedness activities for this project will be consistent with planning and preparedness actions taken by other Hanford Site contractors and similar projects. Activities will be in a manner that ensures the health and safety of workers and the public and the protection of the environment in the event of an abnormal incident during removal action activities.

3.1 EMERGENCY MANAGEMENT

The contractor's Emergency Management Program (including preparedness, planning, and response) contains the administrative responsibilities for compliance with the *Hanford Emergency Response Plan* (DOE/RL-94-02) and all applicable DOE Orders. The Emergency Management Program establishes a coordinated emergency response organization capable of planning for, responding to, and recovering from industrial, security, and hazardous material incidents. Emergency action plans for contractor-managed hazardous facilities identify the capabilities necessary to respond to emergency conditions, provide guidance and instruction for initiating emergency response actions, and serve as a basis for training personnel in emergency actions for each facility.

The emergency response actions within the emergency action plan are provided for recognizing incidents and/or abnormal conditions, initiating protective actions, and making the proper notifications. The emergency action plans are consistent with Hanford Site emergency processes and meet the requirements of

the *Hanford Emergency Response Plan* (DOE/RL-94-02), applicable DOE Orders, and state and federal regulations [i.e., 29 CFR 1910.38, WAC 173-303-340, WAC 173-303-350, and WAC 173-303-360].

3.2 SAFEGUARDS AND SECURITY

Access to the Hanford Site is controlled via manned guard stations. Access to the removal action area is controlled by the contractor using such things as fences and signs. Access requirements for employees, non-employees, and/or visitors are defined in D&D-27507, *Health and Safety Plan to Support Activities for the 200-UW-1 Operable Unit* (HASP).

3.3 STRUCTURES, SYSTEMS, AND COMPONENTS TO PROTECT FACILITY WORKERS

Controls employed during the removal project may include temporary containment enclosures and glovebag containments, and will include personal protective equipment (PPE), as directed by the HASP (D&D-27507). To control emissions, vacuums will be equipped with high-efficiency particulate air (HEPA)-type and/or charcoal filters, and the exhausters will be equipped with HEPA-type filters. Radiological work permits (RWP) and an asbestos abatement work plan for asbestos removal also will be in place, as needed. Personnel monitoring and area monitoring will be used as required to determine and document worker exposures and work conditions.

Temporary containment enclosures will be constructed as required to provide proper airflow conditions and will be fabricated of noncombustible and fire-retardant materials. A standard type of temporary containment is a glovebag enclosure, which essentially will be a one-time-use protective measure used to prevent contamination release during specific operations (e.g., pipe cutting and sample collection). Radiological containments will be evaluated and constructed in accordance with internal work requirements and processes.

3.4 ELECTRICAL SYSTEMS

Removal of electrical systems is typically the last isolation activity performed because power may be needed to support the removal activities. However, if the existing electrical systems pose a threat to workers (e.g., underground conduit interfering with an excavation or demolition), the electrical system could be deactivated first and alternative power supplies used (e.g., generators and/or temporary overhead lines). Electrical utilities complies with 40 CFR 300.150, *Worker Health and Safety*, the National Electric Safety Code, and 29 CFR 1910.269, *Electric Power Generation, Transmission, and Distribution*, as applicable.

3.5 HEALTH AND SAFETY PROGRAM

The contractor's Hazardous Waste Operations Safety and Health Program was developed for employees involved in hazardous waste site activities. The program was developed to comply with the requirements of 29 CFR 1910.120 and 10 CFR 835 to ensure the safety and health of workers during hazardous waste operations.

3.5.1 Worker Safety Program

The Integrated Safety Management System will be incorporated into all work activities. The program includes the following elements:

- Organizational structure specifying the official chain of command and the overall responsibilities of supervisors and employees.
- Comprehensive work plan developed before work begins at a site to identify operations and objectives and to address the logistics and resources required to accomplish project goals.
- HASP developed when workers could be exposed to hazardous substances.
- Worker training commensurate with individual job duties and work assignments.
- Medical surveillance program administered to comply with the Occupational Safety and Health Administration requirements (29 CFR 1910.120).
- Contractor's internal work requirements and processes.
- Voluntary protection program.

3.5.2 Health and Safety Plan and Activity Hazards Analysis

A HASP (*Health and Safety Plan to Support Activities for the 200-UW-1 Operable Unit*, D&D-27507) has been prepared that defines the chemical, radiological, and physical hazards and specifies the controls and requirements for work activities. Access and work activities are controlled in accordance with approved work packages, as required by established internal work requirements and processes. The HASP addresses the health and safety hazards of each phase of site operation and includes the requirements for hazardous waste operations and/or construction activities, as specified in 29 CFR 1910.120. Depending on the specific hazards present, one or more HASPs could be written for this removal action. As part of work package development, a job or activity hazards analysis will be written to identify the hazards associated with specific tasks already not covered under a HASP. The elements included in the HASP are as follows:

- General overview of the hazards associated with the area
- List of employee training assignments
- List of PPE to be used at the work site
- Medical surveillance requirements
- Work site control measures
- Emergency response
- Confined space entry internal work requirements and processes
- Spill containment program.

In addition to the HASP, an RWP will be prepared, as needed, for work in areas with potential radiological hazards. The RWP extends the Radiological Protection Program (discussed in Section 3.5.3) to the specific work site or operation. All personnel assigned to the project and all work site visitors strictly must adhere to the provisions identified in the HASP and RWP.

Before work and before each activity begins, a pre-job briefing will be held with the involved workers. This briefing will include reviews of the hazards that could be encountered and the associated requirements. Throughout an activity, daily briefings also could be held, as well as special briefings before major evolutions.

3.5.3 Radiological Controls and Protection

The radiological controls and protection program is defined in DOE-approved programs and contractor-approved internal work requirements and processes. The radiological controls and protection program implements the contractor's policy to reduce risks to safety or health to levels that are ALARA and to ensure the adequate protection of workers. The contractor's radiological protection program meets the requirements of 10 CFR 835. Appropriate dosimetry, RWPs, PPE, ALARA planning, periodic surveys, and radiological control technical support also will be provided.

The standard contractor's controls for work in radiological areas are assessed as adequate to control project activities. These controls will provide for radiological controls planning to identify the specific conditions, and the controls also will govern the specific requirements for an activity, periodic radiation and contamination surveys of the work area, and periodic or continuous observation of the work by the radiological controls organization. The ALARA planning process will be used to identify shielding requirements, contamination control requirements (including local ventilation controls), radiation monitoring requirements, and other radiation control requirements for the individual tasks conducted during the projects.

Measures also will be taken to minimize the possibility of releases to the environment. Section 4.3 of this RAWP, quantitatively addresses the radionuclide inventory and controls which may be utilized during project activities that could prevent the potential release of the inventory, but not to the exclusion of 10 CFR 835 requirements. Therefore, monitoring will be completed as described in Section 4.3 and radiological worker exposure must also be monitored using approved occupational radiological protection methods.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

The ARARs for this removal action were identified in the AM for the 200-UW-1 OU Support Activities. A discussion of how the removal action will comply with these ARARs is provided in the following sections.

4.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

A requirement under other environmental laws may be either "applicable" or "relevant and appropriate," but not both. Identification of ARARs must be done on a site-specific basis and involves a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate.

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

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, TBCs should be considered in determining the removal action necessary for protection of human health and the environment. Requirements drawn from TBCs 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 emissions to the environment; and environment, safety, and health standards.

The ARARs for this removal action are identified in the AM (DOE/RL-2005-71).

4.2 WASTE MANAGEMENT

Waste management activities performed in this RAWP will be in accordance with the AM (DOE/RL-2005-71).

The requirements specified by the ARARs and other applicable guidance are addressed in this section, including waste storage, transportation, packaging, handling, and labeling as they specifically apply to waste streams.

Treatment will be required for land disposal restriction (LDR) material unless a treatability variance or ARAR waiver is requested by DOE and approved by the regulatory agencies. If LDR wastes are encountered, the requirements of 40 CFR 268 will be applied. Should LDR material be encountered, it will be temporarily stored within the CERCLA Removal Action Area and disposed in accordance with applicable regulations. If treatment is required to address LDR wastes, DOE will obtain regulatory agency approval.

4.2.1 Projected Waste Streams

One or all of the following waste streams are anticipated and may fall into any combination of the following categories: radioactive, mixed, hazardous, dangerous, suspect radioactive, suspect dangerous, suspect mixed, and nonregulated:

- Miscellaneous solid waste (for example, clay pipe, soil, concrete, personal protective equipment, cloth, plastic, and metal).
- Decontamination fluids and purgewater.
- Equipment and construction materials (such as well casings and risers, construction equipment and materials, sampling equipment, and decommissioning materials).

- Nondangerous/no-radiation-added (nonradioactive) solid waste (for example, paper, wood, construction debris, metal, plastic, and glass).

- Unplanned release and associated cleanup material.

4.2.1.1 Waste Categories

Waste materials will be separated into the broad categories as described in the following subsections. Depending on the levels of contamination encountered, some materials classified as contaminated may require special handling.

- Nonhazardous, nondangerous miscellaneous solid waste:
  - Filter paper, wipes, personal protective equipment, cloth, plastic, equipment, tools, pumps, wire, metal and plastic piping, and materials from cleanup of unplanned releases
  - "Demolition waste," which means solid waste, largely inert waste, resulting from the demolition or razing of roads or other man-made structures

- Uncontaminated Material: Uncontaminated material includes material excavated to gain access to contaminated material and verified as containing no contamination or contaminant levels above removal action cleanup levels. Such material does not require packaging. Uncontaminated soil will be stockpiled for future use as backfill.

- Contaminated Material: Contaminated material includes soil, hard waste, and soft waste that exhibit contamination levels in excess of the removal action cleanup levels. Soil consists of silts, sands, and gravels. Hard waste is debris that includes structural materials, pipe, and similar materials. Soft waste includes paper, rags, gloves, and similar materials.

- Contaminated soil shall be segregated from contaminated debris and containerized separately in accordance with the ERDF waste acceptance criteria (BHI-00139). Removal action contractor-generated contaminated, compacted trash consisting of materials such as gloves, disposable suits, cans, empty barrels, and cardboard containers that exhibit properties in excess of the removal action cleanup levels and below ERDF waste acceptance limits will be disposed in accordance with the ERDF waste acceptance criteria (BHI-00139).

- Contaminated Material Potentially Designated as Dangerous Waste (Anomalous Waste): Contaminated material potentially designated as dangerous waste is that portion of contaminated material subject to verification that it meets one or more of the dangerous waste designation criteria (WAC 173-303-070). Anomalous solid and/or liquid waste will be set-aside in the CERCLA Removal Action Area. Final disposition of the material will depend on the results of the verification/designation process. Dangerous waste placed in a staging pile in the CERCLA Removal Action Area must meet the substantive requirements invoked by WAC 173-303-646(8). Dangerous waste stored in containers in the CERCLA Removal Action Area must be managed in accordance with the substantive requirements of WAC 173-303-630. The CERCLA Removal Action Area is identified in Figure 1-2.

- Low-Level Radioactive Waste: Low-level radioactive waste, including soil, concrete, debris, and structures, will be removed during excavation. Plastic, paper, and other compactable waste will also be generated as part of the remediation activities. Debris that has contacted contaminated media may be disposed at the ERDF if the waste acceptance criteria can be met. If the waste acceptance criteria cannot be met, the waste will be shipped to an appropriate off-site facility, depending on the waste

designation. Off-site facilities that receive contaminated waste must be deemed acceptable by the EPA in accordance with 40 CFR 300.440.

- Hazardous and/or Mixed Waste (Both Radioactive and Hazardous): Hazardous and/or mixed waste that meets the LDR treatment standards and the most current ERDF waste acceptance criteria may be disposed in the ERDF. Wastes that do not meet the acceptance criteria may be staged until they can be treated to meet the criteria, and will be handled on a case-by-case basis. Depending on the waste designation, the waste may be shipped to an appropriate off-site facility. Off-site facilities that receive contaminated waste must be deemed acceptable by the EPA in accordance with 40 CFR 300.440.

4.2.2 Waste Characterization, Designation, and Disposal

Waste from the excavation sites will be containerized (as appropriate) and transported for storage, treatment (if required), and/or disposal. Certain bulky items that exceed the capacity of standard ERDF containers (for example, piping or concrete sections) may be packaged and shipped with specified criteria and procedures in accordance with *Environmental Restoration Disposal Facility Waste Acceptance Criteria* (BHI-00139). Shipment of DOT hazardous materials will comply with all applicable DOE and/or DOT requirements.

Miscellaneous solid waste and demolition debris that has contacted contaminated media, and/or is designated as contaminated by process knowledge or other information, may be disposed at the ERDF as described above. Waste will be characterized and designated in accordance with requirements of the receiving facility and in accordance with the approved SAP (DOE-RL-2005-75). The sorting process is observational and is performed to identify the nonconforming waste forms. Miscellaneous solid waste or demolition debris that is nondangerous, but cannot be practically or cost-effectively radiologically released, and/or that cannot be released because of the unavailability of permitted landfills at the time of removal from the ground, and/or because of the unavailability of a recycling pathway, will be stockpiled on-site near the point of origin. Alternatively, on a case-by-case basis, and as allowed by the On-Scene Coordinator, such inert materials may be used as waste site backfill provided that general size and/or placement requirements are met. These case-by-case agreements will be documented in the unit managers' meetings. Waste will be designated using process knowledge, historical analytical data, engineering calculations, and/or analyses of samples identified in the referenced documents or SAP, as appropriate. Every effort will be made to minimize waste volume for disposal at ERDF.

The ERDF is the preferred disposal location, provided that the waste acceptance criteria are met. As necessary, waste will be stored within the CERCLA Removal Action Area, or at the ERDF.

Miscellaneous solid waste and demolition debris that has contacted contaminated media may be disposed at the ERDF as described above. Miscellaneous solid waste or demolition debris that is nondangerous and has been radiologically released may be disposed at an off-site permitted disposal facility or a limited purpose inert landfill, or recycled, as appropriate. Uncontaminated soils will be placed on the ground near the point of origin.

Small volumes of liquid that have been solidified may also be disposed at the ERDF if the waste meets the ERDF waste acceptance criteria. Liquid waste that does not meet the acceptance criteria will be shipped to an appropriate off-site facility, including any EPA-approved treatment, storage, and disposal facility, depending on the waste designation. Off-site facilities that receive contaminated waste must be deemed acceptable by the EPA in accordance with 40 CFR 300.440. Used oil will be sent off-site for recycling or disposal. Spent or unusable chemicals/reagents may also be generated during field sampling and analysis and would require disposal based on the designation.

Three categories of waste exist from a designation standpoint: (1) wastes that do not require additional characterization or special handling, (2) wastes that do not require additional characterization but do require special handling, and (3) wastes that require additional characterization:

- Wastes That Do Not Require Additional Characterization or Special Handling. Wastes that do not require additional characterization or special handling include untreated wastes, and/or process soil, that may be designated without characterization and do not require special handling for human exposure or waste acceptance.

- Wastes That Do Not Require Additional Characterization, But Do Require Special Handling. Wastes that do not require additional characterization but do require special handling are untreated wastes, and/or process soil, that may be designated without characterization, but do require special handling for human exposure or waste acceptance. Waste types in this category include, but are not limited to, high-dose, highly contaminated components that do not contain dangerous/hazardous materials.

- Wastes That Require Additional Characterization. Wastes that require additional characterization include untreated and/or treated wastes that cannot be designated without characterization and may also require special handling for human exposure protection or waste acceptance. Unknown anomalous materials are included in this category.

4.2.2.1 Returned Sample Waste

Screening and analysis of both solids and liquids may be conducted at the waste sites, off-site or on-site laboratories, and/or a radiological counting facility. Samples from a radiological counting facility and from on-site laboratories may be returned to the CERCLA Removal Action Area (refer to Figure 1-2). Unused samples and associated laboratory waste from off-site analyses will be managed by the applicable laboratory in accordance with contract specifications. Waste from field screening and on-site laboratories will be managed depending on whether it has been altered. Altered samples will be contained and disposed at ETF, ERDF, or other appropriate facilities as authorized by the lead regulatory agency, depending on waste designation. Unaltered liquid waste generated during sample screening and analysis that does not exceed collection criteria limits may be discharged to the ground near the point of generation; if it exceeds the collection criteria, it may be disposed at the ETF, ERDF, or other appropriate facilities. Some liquids may be neutralized and/or stabilized to meet the disposal facility's waste acceptance criteria. Pursuant to 40 CFR 300.440, EPA approval is required before unused samples or waste can be returned from off-site laboratories.

In conducting the removal action, various waste steams will be encountered. Each waste stream will require specific processing and disposal. Similar types of waste will be managed uniformly. Assignment of waste to the appropriate waste stream depends on knowing the designation of the waste and appropriate disposal facility.

4.2.2.2 Waste Size Reduction

The most current versions of BHI-00139 will be used to assure compliance with ERDF shipping requirements, including waste size reduction requirements.

4.2.2.3 Waste Handling

At each site, containers and ERDF haul trucks being released from radiologically-controlled areas will meet exterior contamination limits for staging and transport. Highly-contaminated material may require dedicated containers for packaging (e.g., shielded).

4.2.2.4 Waste Profile

The contractor will provide waste characterization and necessary transport papers. Waste profiling for establishing values for the waste tracking form will take place concurrently with removal action activities. Field screening measurements will be used to obtain data to adjust the waste tracking form. The waste profile will be adjusted (as necessary) through a combination of in-process field screening methods, analytical laboratory analysis, and notification of the field engineer.

Sampling and laboratory analysis of anomalous waste will be used to characterize soil and debris. The data will be used to prepare or update waste profiles, as necessary.

4.2.3 Waste Generation Management

Marking, labeling, segregation, and staging of waste containers will be performed or directed by the waste specialist.

Wastes will be stored at a site-specific waste container storage area located near the 200-W-42 VCP (refer to Figure 1-2).

If, after characterization of the waste is completed, the waste must be stored for longer than 6 months at the site-specific waste container storage area, the DOE-RL will obtain concurrence from the lead regulatory agency on the current treatment, storage, and disposal options and the schedule for disposition of the waste.

The following sections describe types and management of expected wastes.

4.2.3.1 Miscellaneous Solid Waste

Miscellaneous solid waste (MSW) that has contacted suspect dangerous or suspect mixed waste will be treated as such. Field screening will be used to segregate radioactive waste from no-radiation-added (nonradioactive) waste. Container(s) will be properly marked and labeled. The containers will be segregated from other materials in accordance with their field screening results and locations, then staged at the designated site-specific waste container storage area. The containers of MSW will be dispositioned on the basis of analytical results obtained from the soil contacted in conjunction with analytical results.

4.2.3.2 Decontamination Fluids

Decontamination fluids (water and/or nondangerous cleaning solutions) generated from cleaning equipment and tools in the removal action area will be contained, sampled, and as necessary transported, and discharged into the ETF. If necessary, decontamination fluids can be containerized, over-packed, and temporarily stored at the designated site-specific waste container storage area.

Additional chemical decontamination of sample equipment may be conducted at the Waste Sampling and Characterization Facility (WSCF) because decontamination and containment systems already are established at this location. The waste generated at WSCF is not considered CERCLA waste and will be managed in accordance with applicable regulations and requirements.

4.2.3.3 Equipment and Construction Materials

Equipment and construction materials that contact suspect dangerous and/or suspect mixed waste will be decontaminated either with a three-bucket wash or with a high-temperature and high-pressure wash [82°C

and 70.3 kgf/cm^2 (180°F and greater than 1000 lbf/in^2)] within a wash basin capable of retaining rinsate, or will be treated as MSW. All water used for decontamination activities shall be potable (that is, Hanford Site potable water or City of Richland water). Rinsate shall be managed as described in Section 4.2.3.2. All sampling equipment shall be cleaned and decontaminated for chemical contamination after radiological release by a radiological control technician. If contamination is determined to be fixed for any equipment or materials, the radiological control technician and task manager will make the decision to remove the contamination using more aggressive methods or to dispose of the equipment. If equipment is to be dispositioned, a declaration of excess form will be completed and the material will be containerized. If necessary, equipment and construction materials can be containerized and stored at the designated site-specific waste container storage area.

4.2.3.4 Nondangerous/No-Radiation-Added Solid Waste

All nondangerous/no-radiation-added (nonradioactive) solid waste will be radiologically released and may be disposed to an off-site solid-waste landfill consistent with standard site refuse disposal practices. This waste will not have contacted suspect dangerous or mixed waste and will not contain free liquids. Items in this category include paper, wood, construction debris, metals, plastic, glass, etc. A radiological release certification form should be attached and visible from outside the trash bag. If necessary, nondangerous/no-radiation-added solid waste can be containerized, segregated, and stored at the designated site-specific waste container storage area.

4.2.4 Management of Waste Containers

The containers will be stored inside the applicable site-specific waste container storage area. Containers awaiting analytical results will be marked and labeled as appropriate. Weekly inspections will be performed to document the integrity, container marking/labeling, physical container placement, storage area boundaries/identification/warning signs, and spill control. Containers showing signs of deterioration will be identified on the container inspection form and will be overpacked or repackaged. Spills or releases will be reported as stated in Section 4.4. In the event of a spill or release, appropriate and immediate action will be taken to protect human health and the environment.

4.2.5 Final Disposal/Storage

All waste will be stored in the appropriate site-specific waste container storage area until the proper waste shipping papers are completed. The process for developing proper waste shipping papers includes the following: receipt of analytical results, designation, profiling, and proper disposal paperwork. The designation process ensures 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 requirements of WAC 173-303-070, "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."

Any waste that does not meet the ERDF waste acceptance criteria will remain at the designated site-specific waste container storage area pending disposal at an appropriate location. A case-by-case disposal determination will be made in instances where waste exceeds the ERDF waste acceptance criteria. Any waste requiring treatment before disposal requires approval by the lead regulatory agency.

Waste above radiological release levels that meet the ERDF waste acceptance criteria will be transported to the ERDF for disposal. Nonradiologically-contaminated dangerous waste may be shipped to ERDF or

to an off-site facility, contingent upon the waste meeting the off-site RCRA disposal facility's waste acceptance criteria and off-site determination of acceptability by the EPA.

Soils associated with analytical results below radiological release criteria specified in contractor specific waste acceptance/radiological release procedures, and below chemical cleanup values specified in WAC 173-340-740, "Unrestricted Land Use Soil Cleanup Standards," may be returned to the environment near the sample location.

The MSW identified as nondangerous/no-radiation-added solid waste that does not require disposal at ERDF and meets the Hanford Site free-release criteria may be disposed in an appropriate solid waste disposal facility (Subtitle "D" landfill).

4.2.6 Waste Disposal Records

Original copies of all sampling records, waste inventory documentation, and waste container certification forms will be forwarded to the assigned waste specialist to be included in the waste file and to initiate waste tracking in the Solid Waste Information Tracking System. The completed waste files will be included in the project file following final waste disposition.

4.2.7 Waste Transportation

Packaging, marking, and labeling for transportation will be in accordance with DOT 49 CFR requirements, as appropriate. With appropriate documentation (such as safety analysis report for packaging or risk-based exemption), packaging exceptions to DOT requirements that provide an equivalent degree of safety during transportation may be used for waste shipments. Coordination and preparation of these documents will be approved by the DOE-RL. ERDF roll-off-type containers will be used for most bulk wastes. Containers will be sealed and shipped to the identified disposal facility as quickly as economically feasible. Waste will be transported in accordance with WAC 173-303 and DOT regulations, as appropriate.

The transport of contaminated material requires reusable containers to be filled at the excavation site, surveyed, and decontaminated, if required; taken to a storage area; and then hauled to ERDF for unloading.

Based on its ability to satisfy the basic functional criteria, as well as its adaptability to large or small waste sites, the typical ERDF transport container will be used as the design basis for handling contaminated soils and debris. To fulfill their intended purpose, the containers satisfy the following requirements:

- Containers are of steel construction, lined with a minimum 0.15-mm (6-mil)-thick form-fitting removable plastic liner. The liner shall be sized to fit inside the container, to be folded over, and to completely surround the maximum container load.
- Containers are similar to roll-on/roll-off type with open top.
- Container payload is 18 metric tons (20 tons).
- Container dimensions are 6.10 m (20 ft) long, 2.13 m (7 ft) wide, and 1.32 m (4.3 ft) tall.

- Material will be transferred to ERDF using the existing transportation techniques. Vehicles and equipment will be required to meet federal, state, and local requirements. It is anticipated that the waste sites can be reached with minimal addition of new roads. To minimize eventual disposal costs of the roadways, alternatives to surfacing with oil or asphalt will be used.

- Herbicides and dust suppressants will be employed along haul routes in accordance with site procedures.

- Vehicles that enter a radiologically-controlled area that requires exit surveys will be surveyed and decontaminated, if required, before leaving the area.

- Roads constructed to provide access to ERDF haul vehicles shall have a minimum width of 4 m (13.1 ft), maximum grade of 8 percent, and a minimum turning radius of 35.1 m (115 ft). The container transfer area (waste staging or management area) shall have a minimum turning radius of 36.5 m (120 ft). Locations of interferences and other transportation limitations will be shown on the project drawings.

4.2.8 Waste Treatment

When necessary, treatment may be conducted at the site, at the ERDF (in special cases), or at an EPA-approved offsite facility. If LDR wastes are encountered, the requirements of 40 CFR 268 will be applied, unless the EPA approves a treatability variance. Offsite treatment must be performed at a facility approved by the EPA in accordance with 40 CFR 300.440. Return of treated waste from offsite treatment facilities for disposal at the ERDF will require additional authorization from the EPA.

4.2.9 Waste Minimization and Recycling

By using waste separation and segregation, waste generation will be kept to a minimum. Waste will be segregated within the removal action area as generated, which will minimize the volume of regulated waste.

Waste minimization practices will be followed to the extent technically and economically feasible during all phases of waste management. Waste materials will be recycled, reused, or reclaimed when feasible. Introduction of clean materials into a contamination area and contamination of clean materials will be minimized to the extent practicable. During all phases of waste management, emphasis will be placed on source reduction to eliminate or minimize the volume of waste generated.

All materials released offsite for disposal/recycle must be certified free of contamination in accordance with DOE guidance for nonreal property. Waste materials with no or *de minimis* levels of CERCLA hazardous substances are not considered CERCLA waste and, therefore, are not subject to the 40 CFR 300.440 offsite acceptability determination.

4.3 STANDARDS CONTROLLING RELEASES TO THE ENVIRONMENT

4.3.1 Air Emissions

The Federal *Clean Air Act of 1990* and Amendments (42 United States Code 7401 et seq.), and the Washington Clean Air Act [Revised Code of Washington (RCW) 70.94] require regulation of air pollutants. Under federal implementing regulations, the 40 CFR 61, Subpart H requires that radionuclide

airborne emissions from the facility shall be controlled so as not to exceed amounts that would cause an exposure to any member of the public of greater than 10 millirem per year effective dose equivalent. The same regulation addresses point sources (i.e., stacks or vents) emitting radioactive airborne emissions, requiring monitoring of such sources with a major potential for radioactive airborne emissions, and requiring periodic confirmatory measurement sufficient to verify low emissions from such sources with a minor potential for emissions. Under state implementing regulations, the federal regulations are paralleled by adoption, and in addition require added control of radioactive airborne emissions where economically and technologically feasible [WAC 246-247-040(3) and –040(4) and associated definitions].

In order to address the substantive aspect of these requirements, best or reasonable control technology will be addressed by ensuring that applicable emission control technologies (those reasonably operated in similar applications) will be utilized when economically and technologically feasible (i.e., based upon cost/benefit). Additionally, the substantive aspect of the requirements for monitoring of fugitive or non-point sources emitting radioactive airborne emissions [WAC 246-247-075(8)] will be addressed by sampling the effluent streams and/or ambient air as appropriate using reasonable and effective methods.

The federal implementing regulations also contain requirements for managing asbestos material associated with demolition and waste disposal (40 CFR 61, Subpart M).

4.3.2 Airborne Source Information

The total potential fugitive emissions were calculated for the removal action activities identified Section 1.3.

There is a potential for particulate radioactive airborne emissions to result from the removal action support activities. The primary radionuclides detected within the site, at this time, include Am-241, Cs-137, Pu-239/240, and Sr-90. Other radionuclides listed in Table 1-2 may also be encountered during the removal action activities.

The distance to the Laser Interferometer Gravitational Wave Observatory (LIGO) receptor is 18,310 meters East-Southeast of the 200 West Area. The total unabated and abated potential-to-emit to the receptor from the removal action activities is 2.41E-04 mrem/yr (HNF-3602).

4.3.3 Emission Controls

Based on analysis of the potential emissions and analysis of available control technologies, the following controls have been selected for use during the removal action.

- Water will be applied, as needed, during any excavation and backfilling activities, for suppression of fugitive emissions and dust.

- Fixatives will be applied to contaminated soil and/or debris and equipment, as needed, to minimize airborne contamination during the removal action activities for fugitive emissions and dust. Fixative application techniques may include spraying, brushing on, pouring or some other method, as necessary.

- Fixatives or cover material (e.g., soil, gravel, etc.) will be applied to disturbed contaminated soils, associated with the removal action, when field activities will be inactive more than 24 hours.

- If the sustained wind speed is predicted overnight to be greater than 32 km/hr (20 mph) based on the Hanford Meteorological Station morning forecast, fixative or cover material will also be applied, as needed. This will allow the project enough time, if necessary, to prepare for the application of dust control measures. If a fixative has already been applied and the contaminated items will remain undisturbed, further use of fixatives will not be needed. The fixatives or other controls will not be applied when the contaminated items are frozen, or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

- The waste packages will remain closed, except during packaging and waste inspection activities, once they are staged, but within the CERCLA Removal Action Area.

- Vacuum cleaners and portable exhausters may be used to support the removal action, and will be equipped with HEPA-type filters. A smear sample of the exhaust port for either the vacuum cleaners and/or portable exhausters will be surveyed at the end of each shift, if used.

- Temporary contamination control structures may be utilized with or without a portable HEPA-type-filtered exhauster(s) during some portion of the removal action activities, as needed.

4.3.4 Monitoring

The calculated unabated annual dose combined for all related activities during the removal action is below 0.1 mrem/year; therefore, this activity is not subject to continuous emissions monitoring as required by 40 CFR 61.93. Periodic confirmatory measurement will be provided, however, as required by 40 CFR 61.93. Alternative monitoring techniques have been considered and near-facility monitors are sufficient to meet the periodic confirmatory measurement requirement.

Near-Facility Monitoring Stations N168, N550, N956 and N963 (Figure 1-2) will be utilized for the removal action activities. The Hanford Site protocol established for near-facility monitors will be followed for data collection, sampling frequencies, sample analysis, and data reporting (*Environmental Monitoring Plan*, DOE/RL-91-50, or latest revision).

Air monitor downtime will be minimized and all four designated air monitors shall be operated, as required. However, if a downwind designated air monitor is out of operation for more than 48 hours during normal work operations (excluding weekends and holidays, when work activities are not being conducted), where there is a potential for radiological emissions, the DOE and the Ecology will be notified. If two or more downwind designated air monitors are out of operation during normal work operations, activities where there is a potential for radiological emissions shall be temporarily suspended until operation of at least two downwind designated air monitors are restored or backup equipment is deployed and operational.

4.4 REPORTING REQUIREMENTS FOR NONROUTINE RELEASES

The following reporting requirements apply for hazardous substances that could be released during the removal action activities.

4.4.1 Federal Hazardous Substance

40 CFR 302 requires immediate notification to the National Response Center on discovery of a release of a hazardous substance into the environment in excess of a reportable quantity.

40 CFR 355 requires immediate notification to the community emergency coordinator for the local emergency planning committee and to the State Emergency Response Commission for a release of a reportable quantity of an extremely hazardous substance, a comprehensive release of a reportable quantity of an extremely hazardous substance, or a CERCLA hazardous substance.

4.5 RELEASE OF PROPERTY

All property released for offsite disposal and/or reuse and recycle is nonreal property. The release of nonreal property will follow DOE guidance. If the property meets the surface contamination limits based on radiological surveys and/or characterization information, and the person or entity receiving the property is aware of the measured radioactivity on the property, the property could be dispositioned with low-levels of residual radioactivity. Property released via this process will be viewed as containing no or *de minimis* levels of CERCLA hazardous substances, and therefore will not be subject to CERCLA.

4.6 CULTURAL, HISTORICAL, AND ECOLOGICAL RESOURCE PROTECTION STANDARDS

Cultural and ecological resource reviews will be performed before starting the removal action activities to identify any potential impacts. The cultural and ecological resource reviews will be conducted in accordance with DOE requirements. If potential impacts are discovered by these reviews, an appropriate mitigation plan will be developed and implemented.

5.0 PROJECT ADMINISTRATION

5.1 PROJECT SCHEDULE AND COST ESTIMATE

The 200-UW-1 OU Support Activities will be scheduled and estimated using the contractor's hierarchy of schedules, which include activity logic and restraints.

Activities will be resource loaded for personnel. Equipment needs will be identified and other materials estimated and included in the budgeted cost of work scheduled.

Estimates of project costs will be prepared at the activity level by the project team and subsequently will be reviewed and approved by the contractor and the DOE. Cost collection will occur at the code of account level.

The schedule, which encompasses the work scope of the 200-UW-1 OU Support Activities removal action (beginning in fiscal year 2006) is included in Appendix A. The schedule included in this document also will be subject to change to be compliant with the funding of continued work for the removal action.

5.1.1 Project Cost and Schedule Tracking

Performance measurement and analysis will be performed by the contractor. Project cost and schedule will be controlled and updated using the contractor's project management.

An earned-value system will track the cost, schedule, and performance as the project progresses towards completion. Cost/schedule performance reports will provide budgeted cost of work-scheduled comparisons and budgeted costs of work performed against the actual cost of work performed. These reports will provide variances to the baseline schedule and cost as budgeted. Variances above threshold values will be documented, as well as the rationale for the variance(s) and any recovery plan required.

Trends and baseline change proposals readily will be identified through the contractor's formal trend and change control program. All changes that affect the baseline will be documented. The contractor's trend register, which will be reviewed monthly by contractor senior management, categorizes trends from conception to final resolution. Trends will be identified as either performance trends or scope trends and will be defined further as resolved or unresolved.

Fiscal year project staffing, as budgeted, will be reconciled monthly during project review meetings to the actual number of full-time-equivalent personnel used during the month. Likewise, the corresponding number of hours actually worked will be presented and compared to the budgeted current work plan. Actual overtime will be monitored monthly (by department) and will be reconciled to the current budgeted overtime.

Cost and schedule variances to the current budget will be tracked monthly and on a to-date basis and will be reconciled back to the cause of the variance. Project impacts because of the cost and/or schedule variance will be described and corrective actions identified and tracked to the point of final resolution.

5.2 CHANGE MANAGEMENT/CONFIGURATION CONTROL

Established configuration/change control processes will ensure that proposed changes are reviewed in relation to the specified commitments. If a breach of these commitments is discovered, work will cease so stabilization and/or recovery actions can be identified and implemented as appropriate. Change management will comply with the appropriate contractor's internal work requirements and processes.

5.3 PERSONNEL TRAINING AND QUALIFICATIONS

During the performance of project activities, the experience and capabilities of the operating staff will be extremely important in maintaining worker and environmental safety. Day-to-day knowledge of ongoing operations, month-to-month understanding of conditions encountered, and lessons learned will be utilized for continued safe operations.

Training requirements will ensure that personnel have been instructed in the technologies to work safely in and around radiological areas, and to maintain their individual radiation exposure and the radiation exposures of others ALARA. Standardized core courses and training material will be presented, and site-specific information and technologies will be added to adequately train workers. Records of required training will be maintained in accessible files.

Health physics workers will be required to have completed and be current in radiological control technician qualification training. These training courses require the successful completion of examinations to demonstrate understanding of theoretical and classroom material.

Specialized training will be provided as needed to instruct workers in the use of nonstandard equipment, in the performance of abnormal operations, and in the hazards of specific activities.

Specialized training could be provided by on-the-job training activities, classroom instruction and testing, or pre-job briefings. The depth of training in any discipline will be commensurate with the degree of the hazard(s) involved and the knowledge required for task performance.

Some activities will require the acquisition of expert services as opposed to project staff training. Assaying of waste packages is one example of activities requiring expert assistance.

The contractor Training Program will provide workers with the knowledge and skills necessary to safely execute assigned duties. A graded approach will be used to ensure that workers receive a level of training commensurate with their responsibility that complies with applicable requirements. Specialized employee training will include pre-job safety briefings, plan-of-the-day meetings, and facility/work site orientations. Training and qualifications will be determined as required by job assignment for work activities.

The HASP, RWP, and activity hazards analysis will include specific requirements for project activities being conducted, which will include PPE and required training for project personnel. This is discussed in detail in Section 3.5.

5.4 QUALITY ASSURANCE REQUIREMENTS

Overall quality assurance for the RAWP will be planned and implemented in accordance with 10 CFR 830, Subpart A, *Quality Assurance Requirements*: *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5) and *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA/SW-846). The quality assurance activities will use a graded approach based on the potential impact on the environment, safety, health, reliability, and continuity of operations. The SAP (DOE/RL-2005-75) also contains a quality assurance project plan, which will be used to support the sampling and characterization activities. Other specific activities will include quality assurance implementation, responsibilities and authority, document control, quality assurance records, and audits. These activities are discussed in the following sections.

5.4.1 Quality Assurance Implementation

All project-related activities will establish and implement appropriate quality assurance requirements. Conditions adverse to quality will be identified in nonconformance reports, audit reports, surveillance reports, and corrective action requests. Investigation and corrective actions in response to these adverse conditions will be completed in a timely manner.

5.4.2 Responsibilities and Authority

The contractor must perform quality engineering, design reviews, surveillance, and audits (as necessary) to achieve quality assurance objectives. The contractor also must ensure that the various contractors and design agencies establish programs to control design and quality assurance in accordance with applicable requirements. The contractor must establish, implement, and document an inspection plan in accordance with approved specifications and drawings.

5.4.3 Document Control

All technical documents (e.g., specifications and drawings) will be controlled in accordance with approved configuration management internal work requirements and processes. The responsible design agency will maintain control of the design documents through acceptance of the documents.

5.4.4 Quality Assurance Records

Each organization that maintains quality assurance records will be required to control the records in accordance with applicable contractor quality assurance requirements. A project records checklist will be initiated to identify those records required for the final project file.

5.4.5 Audits/Assessments

Internal and external audits may be performed by the contractor's assessments, regulatory, and quality program organizations to ensure project compliance with the quality assurance program requirements.

5.4.6 Self-Assessments

Self-assessments may be conducted by project personnel to determine compliance in accordance with the requirements of the contractor's internal work requirements and processes.

5.5 FINAL REMOVAL ACTION ACTIVITIES, INCLUDING SITE VERIFICATION AND CLOSEOUT

Site verification and closeout includes sample collection, demonstration of attainment of RAOs, cleanup documentation, site closure, and site release, as summarized in the following subsections.

5.5.1 Verification Sample Collection

Verification samples of the residual soil from the excavated site will be collected in accordance with the SAP (DOE/RL-2005-75). Results from the verification samples will be used to demonstrate attainment of the RAOs.

5.5.2 Attainment of Remedial Action Objectives and Release of Site Under the Removal, Treatment, and Disposal Alternative

The general approach for verifying attainment of RAOs identified in the AM (DOE\RL-2005-71) for the 200-W-42 VCP involves the following steps:

- Calculating summary statistics using the verification data set
- Evaluating summary statistics against the appropriate PRGs identified in the 200-UW-1 FFS*
- Modeling exposure and risk to future site inhabitants (human and ecological)
- Modeling future impacts to groundwater.

* PRG values may be updated on agreement between the DOE and Ecology.

Details regarding verification sampling and analysis may be found in the SAP (DOE/RL-2005-75).

Once attainment of the RAOs industrial users has been verified, the 200-W-42 VCP site will be backfilled as prescribed by the AM (DOE/RL-2005-71). To the extent practicable, the grading will maximize the amount of large flat areas and minimize rolling contours or depressions where water may accumulate.

5.5.3 CERCLA Cleanup Documentation

After completion of the removal action activities described in Section 1.3 of this RAWP, an On-Scene Coordinator Report will be completed for use in future remedial actions and to support the eventual deletion of the waste site from the NPL. The report will be placed in the administrative record.

At a minimum, the following documentation is required for the 200-W-42 VCP.

- Description of current waste site condition;
- Basis for reclassification; and
- Analytic data or data references (if applicable).

6.0 REFERENCES

BHI-00033, *Surface and Near Surface Field Investigation Data Summary Report for the 200-UP-2 Operable Unit*, Bechtel Hanford, Inc., Richland, Washington.

BHI-00139, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, Bechtel Hanford, Inc., Richland, Washington.

D&D-27507, *Health & Safety Plan to Support Activities for the 200-UW-1 Operable Unit*, Fluor Hanford, Inc., Richland, Washington.

DOE/RL-2003-23, *Focused Feasibility Study for the 200-UW-1 Operable Unit*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2003-24, Revision 0, April 29, 2005, *Reissued Proposed Plan for the 200-UW-1 Operable Unit*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2005-71, *Action Memorandum for the Time-Critical Removal Action for Support Activities to the 200-UW-1 Operable Unit*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2005-75, *Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-50, *Environmental Monitoring Plan*, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-94-02, *Hanford Emergency Response Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-95-106, *Focused Feasibility Study for the 200-UP-2 OU*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-95-13, *Limited Field Investigation for the 200-UP-2 Operable Unit*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE STD-1153-2002, *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota*, U.S. Department of Energy, Washington, D.C.

Ecology, EPA, and DOE-RL, 2003, *Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, U.S. Environmental Protection Agency, U.S. Department of Energy, Richland Operations Office, Olympia, Washington, amended periodically.

EPA QA/R-5, *EPA Requirements for Quality Assurance Project Plans*, U.S. Environmental Protection Agency, Washington, D.C.

HNF-3602, *Calculating Potential-To-Emit Releases and Doses for FEMPs and NOCs*, 2002, Fluor Hanford, Richland, Washington.

OSWER Directive 9200.4-31P, EPA/540/R-99/006, *Radiation Risk Assessment at CERCLA Sites: Q&A*, U.S. Environmental Protection Agency, Washington, D.C.

SW-846, 1999, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition; Final Update III-A, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

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APPENDIX A

SCHEDULE FOR SUPPORT ACTIVITIES TO THE 200-UW-1 OPERABLE UNIT

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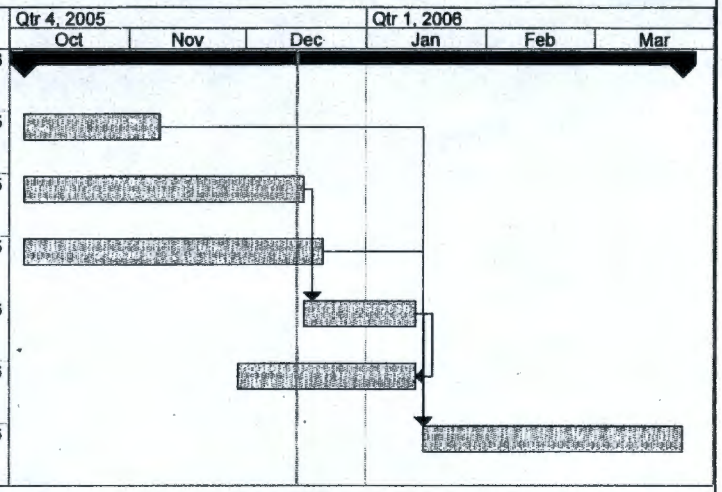
U Plant Waste Sites Project Schedule

ID	Task Name	Duration	Start	Finish
1	**Time Critical Removal Action (TCRA)**	**122 days**	**Wed 10/5/05**	**Thu 3/23/06**
2	Develop, Review and Approve TCRA	25 days	Wed 10/5/05	Tue 11/8/05
3	Develop, Review and Approve TCRA Scope SAP	52 days	Wed 10/5/05	Thu 12/15/05
4	Develop, Review and Approve TCRA Scope RAWP	55 days	Wed 10/5/05	Tue 12/20/05
5	Develop ERDF Waste Profiles	21 days	Fri 12/16/05	Fri 1/13/06
6	Develop, Review and Approve Field Documentation	34 days	Tue 11/29/05	Fri 1/13/06
7	Mobilize, Complete Field Work and Demobilize	49 days	Mon 1/16/06	Thu 3/23/06



Project: UW-1 TCRA RAWP Schedule
Date: Wed 12/14/05

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

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